

The Relationship Between Alexithymia and Self-Harm: A Mixed Methods Investigation

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ABSTRACT

Objective

This thesis addresses the question of why people who self-harm score more highly on alexithymia, a trait characterised by difficulties identifying and describing feelings and an externally-orientated thinking style. With rates of self-harm increasing, understanding this complex phenomenon remains a research priority.

Method

A mixed-methods, convergent design was used. Following a systematic literature review and meta-analysis (Study 1), two separate online surveys of adults investigated the mediating role of, first, dispositional mindfulness (Study 2), and, second, emotion dysregulation (Study 3). An exploratory study investigated the functions of self-harm in the context of alexithymia (Study 4). Finally, eight interviews, exploring the experience of self-harm among young adults who reported difficulties identifying and describing feelings, were analysed using Interpretative Phenomenological Analysis (Study 5). The results of the individual studies were integrated using a joint display and an analysis of convergent and divergent findings.

Results

The meta-analysis confirmed a significant, positive relationship between self-harm and alexithymia, with a medium effect size ($g = 0.57$, 95% CI 0.45 to 0.71). The mediation studies found evidence to support a model in which heightened perception of physical sensation contributes to a lack of emotional clarity, leading to facets of emotional dysregulation and engagement in self-harm. Analysis of the functions of

self-harm revealed that, although affect regulation was the most commonly endorsed function across all participants, the use of self-harm to generate feeling was significantly associated with alexithymia. The qualitative study found that difficulty understanding the self and describing feelings prevented participants from conveying their subjective experience to others, increasing their isolation.

Conclusions

The results support a model in which self-harm is used by people with high alexithymia to regulate an emotional experience that is poorly understood and therefore difficult to accept without judgment. That experience is exacerbated by the difficulties in communicating to other people. The thesis concludes with a discussion of the implications for clinical practice and future research.

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List of Abbreviations

AAQ-II	Acceptance and Action Questionnaire	(Bond et al., 2011)
ACT	Acceptance and Commitment Therapy	(S. C. Hayes et al., 1999)
APA	American Psychiatric Association	
BDP	Borderline Personality Disorder	
BPQ	Body Perception Questionnaire	(Porges, 1993)
CFA	Confirmatory Factor Analysis	
DBT	Dialectical Behavioural Therapy	(Linehan, 1993)
DERS-SF	Difficulties in Emotion Regulation Scale (Short Form)	(Gratz & Roemer, 2004; Kaufman et al., 2016)
<i>Aware</i>	Lack of emotional awareness	
<i>Clarity</i>	Lack of emotional clarity	
<i>Goals</i>	Difficulties in engaging in goal directed behaviour	
<i>Impulse</i>	Impulse control difficulties	
<i>Non-accept</i>	Non-acceptance of emotional response	
<i>Strategies</i>	Limited access to emotion regulation strategies	
DSM-V	Fifth edition of the Diagnostic and Statistical Manual	(American Psychiatric Association, 2013)
EDI	Eating Disorder Inventory	(Garner et al., 1983)
<i>EDI-IA</i>	Interoceptive Awareness	
FFMQ	Five Facets of Mindfulness Questionnaire	(Baer et al., 2006)
<i>Act Aware</i>	Acting with awareness	
<i>Describe</i>	Describing with words	
<i>Non-judge</i>	Non-judging of experience	
<i>Non-react</i>	Non-reactivity to inner experience	
<i>Observe</i>	Observing sensations, thoughts and feelings	
GAD	General Anxiety Disorder Scale	(Spitzer et al., 2006)
IMV	Integrated Motivational Volitional Model of Suicidal Behaviour	(O'Connor, 2011; O'Connor & Kirtley, 2018)
IPA	Interpretative Phenomenological Analysis	(J. A. Smith et al., 2009)
ISAS	Inventory of Statements about Self-Injury	(Klonsky & Glenn, 2009)

ISSS	International Society for the Study of Self-Injury	
MAIA	Multidimensional Assessment of Interoceptive Awareness Scale	(Mehling et al., 2012, 2018)
<i>MAIA-EA</i>	Emotional Awareness	
NICE	National Institute for Health and Care Excellence (UK)	
NSSI	Non-suicidal self-injury	
PAQ	Perth Alexithymia Questionnaire	(Preece, Becerra, Robinson, Dandy, et al., 2018)
PHQ	Patient Health Questionnaire	(Kroenke et al., 2001)
SAQ	Self-Awareness Questionnaire	(Longarzo et al., 2015a)
TAS20	Toronto Alexithymia Scale (revised version)	(Bagby, Parker, et al., 1994)
<i>DIF</i>	Difficulty Identifying Feelings	
<i>DDF</i>	Difficulty Describing Feelings	
<i>EOT</i>	Externally Orientated Thinking	
TAS26	Toronto Alexithymia Scale (original version)	(G. J. Taylor et al., 1985)

Preface

How do you feel? This is a question we ask each other often, and which lies at the heart of many talking therapies. But what if you cannot find the words to describe how you feel, or if you do not even ‘know’ how you feel? These features are characteristic of alexithymia, a cognitive deficit in emotion processing, which has been associated with many psychological disorders and maladaptive behaviours (G. J. Taylor et al., 1997). One such behaviour is self-harm, defined as any act of self-injury or self-poisoning, irrespective of motivation (National Institute for Health and Care Excellence [NICE], 2013). There is growing public concern about the phenomenon of self-harm, which appears to be increasing (Mcmanus et al., 2019; C. Morgan et al., 2017; Tørmoen et al., 2020). Alexithymia has been shown to be higher among people with a history of self-harm, compared with people who have never self-harmed (Norman & Borrill, 2015). Why is this the case? And what does this relationship tell us about self-harm that might help improve or shape clinical and preventive interventions? These are the questions explored through this programme of research.

My motivation for this research came from working as a Samaritan listening volunteer. Samaritans is a charity which provides 24-hour telephone support to anyone who is struggling or in crisis. Its overall mission is to reduce the number of people who die by suicide by providing a non-judgmental space to talk and be heard. Many callers do have suicidal thoughts, some have attempted to end their lives. They may call because they are trying not to act on suicidal impulses. Self-harm is one of the ways in which some callers say that they manage suicidal thoughts.

Samaritans are trained to encourage callers to talk less about the facts of their situation and more about the way it has made them feel. Early in my time as a

volunteer I noticed that some callers were better able than others to talk about their feelings. Sometimes they were unwilling to do so, but at other times it seemed as if they were not able to articulate their feelings, or even to understand the question. Some callers responded with broad labels such as “*I feel angry*”, “*lonely*” or “*bad*” but were unable to elaborate further, preferring to detail what had happened to them, or perhaps the physical symptoms that were the apparent cause of their distress.

At this time I was also undertaking an MSc course in Psychology and chose to use the opportunity of a free choice of subject for a literature review to investigate the phenomenon of self-harm. My supervisor, Dr Jo Borrill, introduced me to the concept of alexithymia. The more I read about alexithymia, the more it seemed to offer one possible explanation for the difficulties some callers had in expressing how they felt. The narrative review of the literature conducted as part of my MSc found strong evidence to support a significant relationship between alexithymia and self-harm, particularly in women (Norman & Borrill, 2015). My frustration with the existing literature was that, despite the proliferation of studies identifying a correlation between alexithymia and self-harm, none could offer an evidenced answer to the question of why such an association might exist. This frustration has driven my continued interest in this subject throughout the duration of my PhD and I hope that my research has provided some initial answers to the question that will be of practical use.

The Current Research Programme

The original research presented in this thesis is based on data collected in two, separate online surveys and eight in-depth qualitative interviews, plus a new systematic review and meta-analysis. These form the basis of five studies which are detailed below.

The thesis begins, in Chapter One, by defining the key concepts of alexithymia and self-harm in the context of relevant theoretical and empirical literature.

Chapter Two presents Study 1, an updated systematic review and meta-analysis to establish the size of the effect of the relationship between alexithymia and self-harm. The meta-analysis tests potential moderators of the relationship, including characteristics of the sample (age, gender and clinical versus community) as well as the definition of self-harm.

As noted above, the literature revealed a paucity of empirical analysis investigating *why* there was a relationship between alexithymia and self-harm. Consequently this became my overall research question. I hoped that understanding the mechanisms that lie behind the relationship between alexithymia and self-harm would be of greater clinical utility than merely knowing such a relationship exists. A set of subsidiary research questions were developed which addressed, from different perspectives, the overall question. The different research questions called for different methodological techniques. Chapter Three sets out the epistemological and ontological basis for the mixed methods approach taken in this thesis, as well as the framework for the integration of the findings.

The empirical analysis conducted for this PhD is set out in Chapters Four to Eight. The strong associations between self-harm and the alexithymia facets difficulty identifying feelings and difficulty describing feelings have been interpreted in the literature as indication that the relationship concerns the experience and management of emotions, consistent with affect regulation theories of self-harm (Chapman et al., 2006; Klonsky, 2007; Nock & Prinstein, 2004). The analysis presented in Chapters Four and Five of this thesis tests this hypothesis. These

chapters present the results of two separate studies investigating whether the observed relationship between self-harm and alexithymia can be explained first, by the absence of protective traits, in particular mindfulness and, second, by deficits in emotion regulation skills. Thus, the analysis in Chapter Four tests the hypothesis that mindfulness mediates the relationship between alexithymia and self-harm (Study 2). In Chapter Five, Study 3 tests the hypothesis that emotion dysregulation mediates the relationship between alexithymia and self-harm (controlling for depression). In addition, Study 3 included a measure of interoceptive sensibility (the perception of bodily sensations) which enabled the testing of the hypothesis that alexithymia mediates between interoceptive sensibility and self-harm. As will be described in more detail in Chapter One, recent theory and empirical evidence have linked alexithymia to more general deficits in interoceptive awareness, which may also be an important consideration in the context of the physical act of self-harm.

Chapter Six approaches the overall research question by exploring which, if any, non-suicidal functions of self-harm are associated with alexithymia (Studies 4a and 4b). Identifying what self-harm does for people with high alexithymia is necessary to inform effective clinical interventions.

Finally, Chapters Seven and Eight present a qualitative study (Study 5) about the experience of self-harm for young adults who report difficulties identifying and describing how they feel. Very little qualitative research has been conducted which focusses specifically on alexithymia. Taking a phenomenological approach, the study was designed to allow themes to emerge which add context and meaning to the findings of the quantitative analyses.

The results of the empirical chapters are brought together and discussed in Chapter Nine, in light of the overall research question, why is there a relationship

between alexithymia and self-harm. The thesis concludes with an assessment of implications of the findings for clinical practice and future research priorities.

Chapter One: Introduction

This opening chapter introduces the key concepts of self-harm and alexithymia in the context of the theoretical and empirical literature. It then presents the case for a deeper investigation into why alexithymia tends to be higher among people with a history of self-harm.

1.1 Self-Harm

1.1.2 Defining Self-Harm

The analysis presented in this thesis is based on the UK's National Institute for Health and Care Excellence's (NICE) definition of self-harm as

“any act of self-poisoning or self-injury carried out by a person, irrespective of their motivation. (NICE, 2013)

This definition focuses first on the method, and is inclusive of any act which causes *direct* bodily harm. As such it excludes risky behaviours, such as alcohol or drug abuse, dangerous driving or starvation. Socially-sanctioned acts such as tattoos or body piercing are also conventionally excluded from definitions of self-harm. The most common method of self-harm among people presenting to hospital is taking an overdose of pills (Horrocks et al., 2003). However, overall, the evidence suggests that cutting is the most commonly used method, and an increase in reported self-cutting accounted for the rise in the rates of self-harm in the UK between 2000 and 2014 (Mcmanus et al., 2019).

Second, NICE's (2013) definition focusses on the behaviour, without reference to motivation. This reflects the evidence that self-harm is a complex phenomenon with multiple causes and functions. In surveys, respondents cite multiple reasons for self-harming (Rasmussen et al., 2016; Scoliers et al., 2009), which can vary between episodes, or even within the same episode (Cooper et al.,

2011). Even the distinction between self-harming with an intent to die and self-harming in order to carry on living may be hard to draw in practice. Hawton et al. (1982) found that 40% of adolescents who had self-poisoned expressed that they had not cared whether they lived or died at the point they took the overdose.

The prevailing, clinical definition of self-harm in the UK, therefore, conceptualises self-harm and suicide as existing along a spectrum of self-harming behaviour. This reflects strong evidence that, although some people never self-harm with suicidal intent (Bae et al., 2020; Mars et al., 2014), and, conversely, others have never self-harmed prior to dying by suicide (Shelef et al., 2018), there is a considerable overlap between the behaviours. A large study of young adults in Scotland found that 40% of respondents who had self-harmed without suicidal intent had also at some point attempted suicide (O'Connor et al., 2018).

In contrast, in the US and elsewhere, a clear distinction tends to be drawn between suicide and non-suicidal self-injury (NSSI), defined by the International Society for the Study of Self-Injury (ISSS) as “*deliberate damage to body tissue without suicidal intent for reasons not culturally or socially sanctioned*” (ISSS, 2018). Proponents of this approach argue that non-suicidal self-injury and suicidal behaviour have some different risk factors (Mars et al., 2019; Wichstrøm, 2009) and psychological correlates (Brausch & Gutierrez, 2010) and may therefore benefit from different treatment approaches. As a consequence, non-suicidal self-injury disorder (NSSI-D) has been proposed as a condition for further study in the most recent edition of the Diagnostic and Statistical Manual (DSM-V, American Psychiatric Association, 2013).

As a result of these differences in definition, the research literature varies in focus. A large body of research is concerned explicitly with the phenomenon of

suicide. Within the literature on self-harm, there is a distinction between studies that specify non-suicidal self-harm, and those which use a broader definition. A review by Muehlenkamp, Claes, et al. (2012) found no significant difference in self-harm prevalence rates between those studies defining self-harm as NSSI and those defining it as ‘deliberate self-harm’ (e.g. Madge et al., 2008) and concluded that both definitions were measuring a similar phenomenon. On this basis, this thesis draws on the empirical and theoretical literature on both NSSI and self-harm, making clear, where appropriate, the authors’ original focus and any consequences for the conclusions drawn.

1.1.3 Prevalence of self-harm

Self-harm is a major and growing public health concern (Mcmanus et al., 2019; Pilling et al., 2018) with significant costs to the economy and to the individual. It has been estimated to account for over 200,000 hospital presentations per year in England alone, at a cost of £128m (Tsiachristas et al., 2020), with the number of incidences of self-harm in the community up to ten times higher (Geulayov et al., 2018). Self-harm is a significant risk factor for subsequent completed suicide (Carroll et al., 2014; Hawton, Bergen, et al., 2015) as well as elevated levels of morbidity and misuse of alcohol (Sinclair et al., 2010).

Estimates of the prevalence of self-harm vary because of differences in methodology and definition. A meta-analytic review calculated pooled prevalence of lifetime non-suicidal self-injury as 17.2% in adolescent samples, 13.4% among young adults and 5.5% among older adult samples (Swannell et al., 2014). In psychiatric clinical samples, reported rates of non-suicidal self-injury range from 11 to 51% in adults and 45 to 81% in adolescents (Cipriano et al., 2017). The onset of self-harm occurs on average during the early teenage years (Whitlock & Selekmán,

2014), peaking at 15-17 year (Plener et al., 2015) with rates declining into adulthood (Moran et al., 2012). Because many studies measure lifetime self-harm, statistics concerning the prevalence of self-harm among adults, particularly in the community, are relatively rare. Of a representative sample of Scottish young adults, aged between 18 and 34, 2.7% had attempted suicide and 4.8% had engaged in non-suicidal self-harm within the past year (O'Connor et al., 2018).

Two relatively recent studies based on UK data suggest that the incidence of self-harm may be increasing in some populations. C. Morgan et al. (2017) identified a steep rise in self-harm among girls aged 13 to 16 years old between 2011 and 2014, according to general practice records, while a general population survey found increased prevalence in non-suicidal self-harm in 2014 compared with in 2000, particularly in women and girls aged between 16 and 24 (Mcmanus et al., 2019). Most, though not all studies, indicate that self-harm is more common among females than males (Hawton, Haw, et al., 2015; Mars et al., 2014; Moran et al., 2012; O'Connor et al., 2018 but see also Briere & Gil, 1998; Klonsky, 2011). Completed suicides, however, are significantly more common among men (Hawton & van Heeringen, 2009), with UK data indicating that men aged between 45-49 have the highest rate of suicide (Office for National Statistics [ONS], 2019).

1.1.4 Correlates of Self-Harm

Self-harm is associated with increased psychopathology, particularly depression and anxiety (Brunner et al., 2014; Groschwitz et al., 2015; Jacobson & Gould, 2007; Moran et al., 2012) and dissociation (Briere & Gil, 1998; Calati et al., 2017). Studies that have distinguished between suicidal and non-suicidal self-harm suggest that the severity of co-morbid disorders is higher among people who have self-harmed for suicidal reasons. Self-harm is also associated with stressful life

events (Wong et al., 2007), low self-esteem (Junker et al., 2019) and impulsivity (McHugh et al., 2019). Interpersonal correlates include childhood abuse (Briere & Gil, 1998; Swannell et al., 2012; Zlotnick et al., 1996), invalidating family environment (Cassels et al., 2018; Warzocha et al., 2010) and peer victimisation (Brunner et al., 2014). People who self-harm have been found to exhibit higher emotional dysregulation (Wolff et al., 2019), including a tendency for avoidance (Nielsen et al., 2016), and lower coping skills (Glazebrook et al., 2016; Nielsen et al., 2017). This evidence is seen as corroborating theories which conceptualise self-harm, particularly non-suicidal self-harm, as a means of regulating unwanted affect, for people who lack safer and more adaptive regulation strategies.

1.1.5 Theories of Self-Harm

Theoretical models of self-harm have been developed predominantly along the silos of suicide and, separately, non-suicidal self-harm. However, they all acknowledge that the causes of self-harm are complex and multifaceted. At a broad level, most theories posit that self-harm is a means of escaping from painful, negative emotions (Nock, Jacobson, et al., 2014; Nock, Selby, et al., 2014). While most theories incorporate environmental and genetic risk factors, plus the triggering effect of stressful life events, the NSSI literature in particular draws on theories of emotion regulation (Chapman et al., 2006; Gratz & Roemer, 2004; Gross, 1998; Linehan, 1993; Selby & Joiner, 2009) to describe how NSSI is used as a means of regulating unwelcome, aversive emotions (Hasking et al., 2017; McKenzie & Gross, 2014). These theories are supported by empirical studies in which affect regulation is the most commonly endorsed function of self-harm (Klonsky, 2007; Nock & Prinstein, 2004). In addition, people tend to report a feeling of relief (Nixon et al., 2002) or an improvement in mood (Muehlenkamp et al., 2009) immediately after

self-harming. In their four function model, Nock and Prinstein (2004) specify that self-harm can serve two distinct intrapersonal functions: ‘automatic negative reinforcement’, in which the aim is to reduce negative feelings, and ‘automatic positive reinforcement’, where self-harm is used to bring about a desired affective state. For example, a minority of participants describe self-harm as a means of feeling something, rather than nothing (Lloyd-Richardson et al., 2007).

Self-harm was often viewed in the past dismissively as a means of manipulating others (Favazza, 1998). This theory is now largely discounted, although it lives on in the stigma faced by people who self-harm (Burke et al., 2019; Mitten et al., 2016; R. Parker, 2018). However, although theory and empirical evidence favour intrapersonal reasons for self-harm, most theories recognise that self-harm can additionally serve an interpersonal function (Muehlenkamp et al., 2013). Nock and Prinstein (2004) describe as ‘social positive reinforcement’ the use of self-harm to elicit a certain desired response from another person, such as attention or revenge, and ‘social negative reinforcement’ the use of self-harm to avoid an unwanted interaction. For example, one study found that a sample of adult female psychiatric inpatients used self-harm to communicate their distress to others when they were otherwise unable to ask for help (Himber, 1994).

Recently theories of self-harm have attempted to explain what distinguishes between people who think about self-harm (‘ideators’) and people who engage in it (‘enactors’). Hasking et al. (2017) proposed that cognitive factors mediate between emotional regulation difficulties and NSSI. These include the person’s expectations for the outcome of self-harm, as well as their beliefs in their own efficacy at carrying out self-harm. Similarly, the Integrated Motivational-Volitional model (IMV; O’Connor, 2011; O’Connor & Kirtley, 2018) identifies a set of volitional factors,

which include, for example, beliefs about self-harm, having family or friends who self-harm, impulsivity and access to means. Originally devised in the context of suicide, the IMV has also been tested in the broader context of self-harm, where it was found that only these volitional factors, and not background or motivational factors, distinguished between ideators and enactors (O'Connor et al., 2012).

This brief summary serves to demonstrate the complex range of factors which comprehensive theoretical models of self-harm attempt to map. While it is vital that the contributory factors are studied together as a system (Townsend et al., 2016), it is also important to build understanding of how each individual factor may increase a person's vulnerability to self-harm. This thesis examines one such factor, the trait alexithymia, which some models identify as an intrapersonal risk factor (Nock, Jacobson, et al., 2014), based on increasing evidence of significantly higher alexithymia in people who self-harm (D. Greene, Boyes, et al., 2020; Hemming et al., 2019; Norman & Borrill, 2015). The next section will introduce alexithymia, before the chapter concludes by presenting the arguments for investigating the relationship between alexithymia and self-harm.

1.2 Alexithymia

The term 'alexithymia' was coined by psychiatrist and psychotherapist Peter Sifneos to describe a set of characteristics he and his colleague John Nemiah had observed in some of their patients who were suffering from psychosomatic illnesses (Sifneos, 1973). The word itself is derived from Greek: "a", meaning "no", "lexis" meaning "word" and "thymia" meaning "emotions". However, alexithymia was not solely characterised, as the etymology might suggest, by a difficulty in describing feelings. Instead, the term described a cluster of characteristics including a difficulty identifying feelings and distinguishing them from bodily sensation, difficulty

describing feelings, a thinking-style focussed on external rather than internal stimuli, and a lack of fantasy and imagination (Nemiah et al., 1976; Sifneos, 1973; G. J. Taylor et al., 1997). Haviland and Reise (1996) conducted a study in which they asked 100 clinical and/or academic experts in the field to rate a set of statements about personality according to whether they felt they were characteristic of alexithymia. The experts associated alexithymia with an emotional blandness, an overemphasis on bodily symptoms and functions and a preference for action over verbal communication. Similarly, imagination, self-insight, introspection and close personal relationships were thought to be extremely uncharacteristic of alexithymia. This profile is brought to life in published case studies. For example, Mr A., a patient with hypertension, illustrated the tendency to focus on external factors, rather than engage in introspective analysis:

“He showed minimal insight into his feelings or psychological life, and he focused primarily on external factors (e.g. the weather, light, diet, job, his wife) as potential symptom triggers.” (Lumley et al., 2007, p. 230)

Mary, a student with psychosomatic symptoms, demonstrated the inability to describe emotional states beyond an initial, high level label.

“When the therapist asks Mary how she is feeling, she usually replies that she is “upset” or “nervous” and is unable to elaborate further on her affective experience.” (Taylor & Bagby, 2013, p. 117)

A third example is Jane, who stated that she did not feel emotions, and, when describing a distressing situation, such as leaving her marriage, could only report physical symptoms.

“She states that she was not upset as she was driving the moving van, but that she developed an upset stomach and sweating.” (R. Smith et al., 2019)

1.2.1 Prevalence of Alexithymia

Although Nemiah and Sifneos appeared to view alexithymia as a categorical trait, which a person either had or did not have, subsequent evidence, including taxometric analysis, has shown it to be a dimensional construct, with normal distribution (Keefer et al., 2019; Mattila et al., 2010; J. D. A. Parker et al., 2008). To talk of prevalence rates is, therefore somewhat misleading. Cut-off scores for “high” or “clinical” alexithymia were proposed by the authors of the Toronto Alexithymia Scale (G. J. Taylor et al., 1997), but the same authors recently declared this to be a “*mistake*” (Bagby et al., 2020, p. 8). Nevertheless, these cut-offs have been widely used in the literature to compare the proportion of people with elevated scores across different populations. The proportion of people with high alexithymia scores ranges between 7 and 18% in community samples (Joukamaa et al., 2003; Mason et al., 2005; Salminen et al., 1999). Men tend to score more highly than women (Levant et al., 2009). Alexithymia scores are higher in adolescent samples (Honkalampi et al., 2009; Oskis et al., 2013) and tend to rise again with age in older adults (Mattila et al., 2006). Alexithymia has also been associated with low levels of education (Kokkonen et al., 2001; Salminen et al., 1999). In contrast to the general population, rates of between 30 and 60% have been recorded across different clinical samples (McGillivray et al., 2017; J. D. A. Parker et al., 2008; G. J. Taylor, 2000). Alexithymia is common among people with autism spectrum disorder (ASD) with a recent meta-analysis finding a prevalence rate of around 50% (Kinnaird et al., 2019).

At the other end of the distribution, another cut-off was proposed below which people were assumed to have ‘no’ alexithymia (G. J. Taylor et al., 1997). However, in light of the dimensional nature of the alexithymia construct, empirical papers tend to specify participants has having ‘low’ alexithymia scores, rather than

‘no’ alexithymia (e.g. Luminet & Zamariola, 2018). This approach is taken throughout this thesis.

1.2.2 Primary (Trait) Versus Secondary (State) Alexithymia

Alexithymia has been associated with psychological disorders, such as anxiety (Paniccia et al., 2017) and depression (Honkalampi et al., 2000; Son et al., 2013), and with physical illnesses such as asthma (Serrano et al., 2006), diabetes (Luca et al., 2015) and cardiovascular mortality (Tolmunen, Lehto, et al., 2010). Significant correlations have also been observed between alexithymia and behaviours such as alcohol dependence (Thorberg et al., 2016), eating disorders (Westwood et al., 2017) and gambling (Elmas et al., 2017). As a result, alexithymia is increasingly conceptualised as a trans-diagnostic trait rather than a psychological condition in its own right. Alexithymia is generally assumed to be causally related to these illnesses and behaviours, although studies tend to be cross-sectional in nature. A review of studies in which alexithymia was investigated as a prospective risk factor found mixed results (Kojima, 2012). Around half the eligible studies reported an adverse effect of alexithymia on health problems or treatment outcomes, and many of the remaining studies that reported non-significant results were based on small samples with no controls. Interestingly, five studies reported a *positive* effect of alexithymia on health outcomes; four of these related to recovery following surgery. The authors hypothesise that the external orientation of alexithymia may be associated with strict adherence to post-operative behavioural advice.

Thus the theoretical model, evidenced in some, though not all, empirical prospective studies, is that primary alexithymia is a trait, which increases the risk of developing health problems as well as recourse to maladaptive coping behaviours. There is also evidence that levels of alexithymia can increase as a result of trauma or

illness, termed ‘secondary’ alexithymia (Messina et al., 2014). In particular, the strong association with depression (Li et al., 2015) has caused some to argue that alexithymia may be a state-dependent phenomenon (Honkalampi et al., 2001). However, although alexithymia scores may rise as a result of an illness such as depression, or conversely fall as depression decreases (Grabe et al., 2008; Honkalampi et al., 2001), the inter-individual differences in scores appear to remain stable over time (Luminet et al., 2001). A consensus has been reached, therefore, that alexithymia is a trait with relative rather than absolute stability (Porcelli et al., 2011).

1.2.3 Theories of Alexithymia

The dominant model of alexithymia over the past thirty years was devised by a Canadian team of researchers, Graeme Taylor, Michael Bagby and James Parker. Building on the original writings and observations of Sifneos and Nemiah, the Toronto team conceptualised alexithymia as a deficit in emotion processing (G. J. Taylor et al., 1997). They drew on Bucci (1997)’s multiple code theory, which describes how emotion schema are comprised of both verbal and nonverbal symbols. Nonverbal symbols can be sensory, visceral and motoric, for example, and may occur at a subsymbolic or unconscious level. A referential process transforms the meanings contained in the subsymbolic components into verbal language, necessary for communication and self-reflection (G. J. Taylor, 2018). In this model, which is influenced by psychoanalytic theory, alexithymia occurs due to a disruption or dissociation between the symbolic and subsymbolic components, leaving the individual “*without symbols for somatic states*” (Bucci, 1997, p. 165). This lack of integration of emotional schema is evidenced in experimental studies using cognitive tasks (Lundh & Simonsson-Sarnecki, 2002; Suslow & Junghanns, 2002). Bucci

herself believed that the multiple-code theory offered an explanation of *why* alexithymia might be associated with poor health outcomes, since the individual is unable to draw on cognitive resources to regulate emotional responses.

“To the extent that physiological activation associated with strong emotion occurs without corresponding activation of cognitive contents in either initial or displaced form, thus without “symbolic” focus and regulation, the activation is likely to be prolonged and repetitive, and the ultimate effects on physiological systems to be more severe.” (Bucci, 1997. p. 165)

The Toronto team developed a self-report measure of alexithymia, the Toronto Alexithymia Scale (TAS20; Bagby, Parker, et al., 1994; G. J. Taylor et al., 1985). The three factor structure of the TAS20, comprising Difficulty Identifying Feelings (DIF), Difficulty Describing Feelings (DDF) and Externally Orientated Thinking (EOT), has been widely replicated (Sekely et al., 2018) and is supported by evidence from neuroimaging studies (Goerlich, 2018). A fourth factor, included in the original Toronto Alexithymia Scale (TAS26, G. J. Taylor et al., 1985), was designed to capture the difficulty fantasising (DFAN) observed by Sifneos and Nemiah in their patients. However, this factor was subsequently found to be negatively correlated with DIF (Haviland et al., 1991; G. J. Taylor et al., 1985) and subject to social desirability bias (Bagby, Parker, et al., 1994) so was excluded from the revised version of the Toronto Scale. The resulting three factor TAS20 has become by far the most widely used means of measuring alexithymia. Its strengths and limitations will be discussed later in the thesis.

In a variant on the cognitive model of alexithymia, Lane et al. (1997, 2015) argued that the emphasis should be placed less on the ability to represent emotional experience verbally, and more on the inability consciously to experience emotion.

(It should be noted that the Toronto group argue that this is inherent in their conception of alexithymia, as well as Sifneos and Nemiah's original writing; G. J. Taylor et al., 2016.) Lane described alexithymia first as a form of emotional blindsight (Lane et al., 1997) and subsequently as an 'affective agnosia' (Lane et al., 2015). Such terms are intended to describe the way in which emotions are only experienced at a subconscious level, resulting in autonomic responses which are not translated into higher levels of emotional awareness (Lane & Schwartz, 1987). Thus, although people with high alexithymia scores may present in a way that appears emotionally bland or flat (Haviland & Reise, 1996), the consensus between the models presented thus far is that emotions are experienced at a somatic level, but that the individual lacks the capacity to interpret them cognitively and therefore experience them consciously (R. Smith et al., 2019).

A recent extension of the cognitive model has sought to locate alexithymia within Gross (2015)'s process model of emotion regulation. According to this model, emotions arise in response to a situation, to which the individual first pays attention, then appraises what it means in terms of their own goals. Finally, they respond to the situation, behaviourally, physiologically or experientially (Gross, 1998, 2015). Emotion regulation strategies can be employed at any of the four stages (situation selection or modification, attention, appraisal and response). Preece et al. (2017) theorises that the external orientation component of alexithymia represents a difficulty at the attention stage of the process model, through which individuals are unable to focus their attention on their emotional response to a situation. In contrast the difficulty identifying and describing feelings components relate to the appraisal stage of the model, such that individuals are unable to interpret their physiological response to a situation. Furthermore, the difficulties at the

appraisal stage differ according to the emotional valence; a new tool, the Perth Alexithymia Questionnaire, distinguishes between individual's self-reported difficulties identifying and describing both positive and negative emotions (Preece, Becerra, Robinson, Dandy, et al., 2018). This reflects evidence from neuroimaging studies which indicate valence-specific effects of alexithymia in the brain (Van der Velde et al., 2013). The advantage of this reconceptualization of the alexithymia model in the context of emotion regulation theory is that it offers a direct explanation for the observed correlation between alexithymia and poor emotion regulation (Stasiewicz et al., 2012; G. J. Taylor, 2000; Venta et al., 2013). For example, evidence that people with high alexithymia are more likely to use suppressive regulation strategies at the response stage of the process model than reappraisal strategies (Swart et al., 2009) may reflect the failure to interpret effectively the emotional response at the appraisal stage.

The main challenge to the dominant cognitive model of alexithymia has come from a team from Amsterdam, led by Bob Bermond and Harrie Vorst. Bermond and Vorst interpreted brain imaging studies as evidence of two types of alexithymia: one in which there *is* an underlying impairment in the experience of emotion, leading inevitably to a reduced cognitive emotional awareness, and the other, akin to the Toronto model, in which the impairment is limited to the cognitive interpretation rather than a deficit in emotional experience (Bermond, 1997; Vorst & Bermond, 2001). Bermond and Vorst developed a scale according to their conception of alexithymia as encompassing both a cognitive aspect and an affective aspect, the latter capturing reduced emotional experience and reduced ability to fantasise (the Bermond-Vorst Alexithymia Questionnaire [BVAQ], Bermond et al., 2007). The inclusion of an affective component was based on Sifneos' original

observations, which included “*a marked constriction in experiencing emotions*” (Sifneos, 1973, p. 255). However, contrary to the original conception, psychometric analysis found that the two components were orthogonal to each other, and the affective component correlated negatively with the TAS20 (Bermond et al., 2007). Subsequent network analysis suggests that the affective component may not be part of the same underlying phenomenon of ‘alexithymia’ (Watters et al., 2016). The question of the nature of the experience of emotion in alexithymia has also not been settled in the empirical literature. A recent review of physiological studies found that the majority ($n = 33$) reported normal levels of physiological arousal in response to emotional challenge tasks, but a sizeable minority ($n = 24$) found lower reactivity (hypoarousal) in individuals with high levels of alexithymia compared with a much smaller number ($n = 7$) reporting significantly higher reactivity (hyperarousal; Panayiotou et al., 2018). Whether these contrasting results are explained by methodological factors (G. J. Taylor et al., 2018) or heterogeneity in the process difficulties inherent in alexithymia (R. Smith et al., 2019) remains a question for further investigation.

Finally, a relatively recent theory characterises alexithymia as a general failure of interoception (the awareness of internal bodily sensation), rather than one specifically related to emotional experiences (Brewer et al., 2016). The role of the body in emotional experience is central to early and current models of emotion (Cannon, 1927; Garfinkel et al., 2016; James, 1884; Laird & Lacasse, 2014; Pollatos & Herbert, 2018). Empirical evidence indicates that interoceptive awareness, measured, for example, using heartbeat detection tasks, is impaired in people with high levels of alexithymia (Herbert et al., 2011). The novel theoretical development is to suggest that alexithymia might not be limited to deficits in the interoceptive

signals relating to emotional experience, but instead involve a more general failure of interoception across a range of bodily signals. This would explain evidence linking alexithymia with delays in seeking treatment for heart attacks (Carta et al., 2013) and with overconsumption of caffeine (Lyvers et al., 2014). People with eating disorders, who tend to score highly on alexithymia (Westwood et al., 2017), have been found to struggle to recognise and interpret physical sensations of hunger and satiety (Khalsa et al., 2015; Tylka, 2006). The exploration of the connection between alexithymia and awareness of bodily sensation is complicated by the multiple facets of interoception, which include the accuracy with which an individual perceives internal sensations, the subjective reporting of awareness and the correspondence between the two (Garfinkel & Critchley, 2013). However, in the context of a body-based behaviour such as self-harm, the issue of interoceptive deficits in alexithymia is worthy of further exploration and is the subject of Chapter Five of this thesis.

1.2.4 Aetiology of Alexithymia

The confirmation, using statistical analysis, that alexithymia is a dimensional, rather than categorical, construct (Keefer et al., 2019; J. D. A. Parker et al., 2008) is consistent with a complex aetiology that is not attributable to a single genetic cause or single life event, but rather to a combination of genetic and environmental factors (Haslam, 1997). Twin studies have identified between 30 and 39% heritability in alexithymia, with the residual variance explained largely by non-shared environmental factors (Baughman et al., 2011, 2013; Jørgensen et al., 2007). The genetic influence of alexithymia was found in one twin study to be significantly correlated with depression (Picardi et al., 2011). As far as the environmental factors are concerned, empirical evidence has consistently shown a significant relationship

between alexithymia, childhood trauma (Frewen, Lanius, et al., 2008; Paivio & McCulloch, 2004; Zlotnick et al., 2001) and poor attachment (Barbasio & Granieri, 2013; Oskis et al., 2013; G. J. Taylor et al., 2014). One study used path analysis to confirm a model in which childhood trauma led to attachment insecurity, which was associated with alexithymia and which, in turn, led to an increase in number and severity of OCD symptoms (Carpenter & Chung, 2011).

The role of childhood trauma and neglect in the development of alexithymia is consistent with the multiple code theory of emotion processing discussed above (Bucci, 1997). Traumatic childhood experiences may disrupt the referential process by which the subsymbolic and symbolic components of emotional schema are associated, with the result that the individual struggles to transform the meaning of sensory or visceral information into an awareness of emotional experience and, in turn, into verbal expression (Taylor, 2018). This disruption may also occur as a result of trauma later in life, as indicated by studies of alexithymia in people with post-traumatic stress disorder (PTSD; Frewen, Dozois, et al., 2008).

1.3 Alexithymia and Self-Harm

A growing number of empirical studies have shown that people who self-harm score significantly higher on measures of alexithymia than people who have never self-harmed (e.g. Borrill et al., 2009; Gatta et al., 2016; Zlotnick et al., 1996). A narrative, systematic review of the literature, conducted by the author in 2014, found that there was strong evidence for a correlational relationship, particularly in women (Norman & Borrill, 2015). Recently, two meta-analyses have been published which calculated a small to medium effect size between alexithymia and suicide (Hemming et al., 2019) and between alexithymia and NSSI (D. Greene, Boyes, et al., 2020). These analyses present a partial view of the literature, because

D. Greene, Boyes, et al. (2020) focussed exclusively on studies in which self-harm was defined as NSSI. For this reason a further systematic review and meta-analysis is presented in Chapter Two of this thesis (Norman et al., 2020).

Of all the identified correlates of self-harm, why focus on alexithymia? First, despite the strong evidence of a relationship between alexithymia and self-harm, there has been little accompanying analysis of why this association might exist. This gap in our understanding of the mechanisms underpinning the relationship is a barrier in the translation of research into useful clinical knowledge (Samur et al., 2013). A second reason relates to the high prevalence of alexithymia among people who self-harm. Although alexithymia is normally reported on a continuous scale, one study reported the rate of high or clinical alexithymia among participants with a history of self-harm as 44% compared to 10% among participants who had never self-harmed (Paivio & McCulloch, 2004). The high prevalence of ‘clinical’ alexithymia in the self-harming population suggests that a greater understanding of alexithymia might affect the way we view self-harm and approach therapeutic interventions.

A third reason to investigate the relationship between alexithymia and self-harm is that alexithymia has been shown to be a barrier to psychological treatment (Lumley et al., 2007; Ogrodniczuk et al., 2011). Alexithymia may affect people’s tendency to seek therapeutic help (Rufer et al., 2014 although see also Ogrodniczuk et al., 2009), perhaps as a result of lower expectations about the likelihood of a successful treatment outcome (Terock et al., 2017). In a review of the effect of alexithymia at baseline on the outcome of psychological therapy, Ogrodniczuk et al. (2018) found that a small majority of studies ($n = 11$) reported a negative effect (i.e. that higher alexithymia scores were associated with less improvement compared to

patients with lower baseline alexithymia). In contrast, six studies reported no effect of alexithymia and only three studies identified a positive effect. Most psychotherapeutic interventions rely on the individual's ability to identify, analyse and verbalise emotional experience, abilities which are impaired in people with high alexithymia (G. J. Taylor, 1984). In addition, people with high alexithymia are more likely to consider their health outcomes as subject to external factors over which they have no control (Hungry et al., 2016). Several studies have shown that these alexithymic characteristics affect the relationship with the therapist (Mallinckrodt et al., 1998; Rasting et al., 2005) and that this in turn affects treatment outcomes (Ogrodniczuk et al., 2005).

An awareness of alexithymia and its possible effects on treatment efficacy is therefore very important in the context of interventions for self-harm. A fourth reason to focus on alexithymia is that alexithymia itself appears to be modifiable through targeted interventions (Cameron et al., 2014; Ogrodniczuk et al., 2018). Although no single therapy has been identified as optimal at reducing alexithymia, promising results were observed using mentalisation exercises (Bressi et al., 2010; Byrne et al., 2016), emotional awareness techniques (Burger et al., 2016) and group therapy (Beresnevaite, 2000). A meta-analysis, conducted as part of this research programme and included as Appendix 1.1, found a significant pooled effect of mindfulness-based interventions on reducing alexithymia (Norman et al., 2019). Overall, the evidence suggests that treatments which are not designed to target alexithymia are less likely to result in a reduction in alexithymia scores (Cameron et al., 2014; Ogrodniczuk et al., 2018); this in turn indicates that the reduction in alexithymia may not be achieved 'by chance' as a result of any intervention process. Importantly, changes in alexithymia have been shown to be predictive of positive

changes in clinical outcomes, such as fewer cardiac events among coronary heart disease patients (Beresnevaite, 2000), reduced pain among cancer patients (Tulipani et al., 2010) and reduced pain among patients with musculoskeletal pain (Burger et al., 2016). As yet, however, no study has tested whether a reduction in alexithymia leads to a reduction in the frequency or severity of self-harm.

To summarise, the growth in the number of studies reporting a significant relationship between alexithymia and self-harm has not yet been matched by an empirical investigation into the mechanisms which might underpin the relationship. The association between alexithymia and self-harm has been attributed to an intrapersonal model, in which self-harm is used to regulate an emotional experience that is poorly understood. However, few studies have set out to test this hypothesis or to test the function self-harm serves for people with high alexithymia.

Alexithymia is both a potential barrier to the effective treatment of self-harm but also itself modifiable through treatment. Understanding better the relationship between the two variables may therefore offer new insights to shape clinical and preventative interventions. The empirical work presented in this thesis addresses, from several different perspectives, the question of why there is a relationship between alexithymia and self-harm. First, however, Chapter Two will present a systematic review and meta-analysis of the existing literature.

Chapter Two: A Systematic Review and Meta-Analysis of the Relationship Between Self-Harm and Alexithymia

The systematic review and meta-analysis of the relationship between self-harm and alexithymia constitutes the first study of the current thesis. An abridged version of this chapter has been published in the *Scandinavian Journal of Psychology* (Norman et al., 2020).

ABSTRACT

Objective: Self-harm, defined for the purpose of this review as any act of self-injury without explicit suicidal intent, is an increasing public health concern, with potential long-term implications for those who engage in it. This systematic review examines the association between self-harm and alexithymia, a deficit in emotion processing.

Method: Terms relating to alexithymia and self-harm were used to search six prominent databases in November 2019. Studies were included which reported original, quantitative findings, in which both alexithymia and self-harm were measured. Studies which measured suicide attempts only were excluded to avoid duplication with other published reviews.

Results: Thirty-one studies met the inclusion criteria. A meta-analysis found a significant, positive relationship between self-harm and alexithymia, with a medium effect size ($g = 0.57$, 95% CI 0.45 to 0.71). All included studies used the Toronto Alexithymia Scale (TAS20) to measure alexithymia. The alexithymia subcomponents difficulty identifying feelings and difficulty describing feelings were significantly associated with self-harm, but there was no significant association between self-harm and externally-orientated thinking. The effect size of the relationship was significantly larger in adolescent samples compared with adult

samples and in female compared with male samples. Heterogeneity between the included studies was high.

Conclusion: The results support an affect regulation model of self-harm, in which self-harm is used to regulate an emotional experience that is poorly understood.

2.1 Introduction

A narrative review of the literature found a significant relationship between self-harm and alexithymia, particularly among women (Norman & Borrill, 2015). The relationship appeared to be driven by the alexithymia subcomponents difficulty identifying and describing feelings, rather than externally-orientated thinking. Interest in the subject continues to grow and more relevant studies have been published during the subsequent years. A recent meta-analysis found significant associations between lifetime non-suicidal self-injury (NSSI) and alexithymia ($r = 0.25$, D. Greene, Boyes, et al., 2020). However, the authors only included studies meeting the International Society for the Study of Self-Injury's (ISSS, 2018) definition of NSSI as "*deliberate damage to body tissue without suicidal intent for reasons not culturally or socially sanctioned*". While this approach has the advantage of definitional clarity, relevant evidence may have been missed. Historically, a range of other terms for self-harm have been used, including, but not limited to, para-suicide, deliberate self-harm, auto-destructive behaviour and self-mutilation, and motivation has not always been explicitly defined as non-suicidal. This reflects evidence that the reason for self-harm is not always clear, either to the individual or to a clinician (Grandclerc et al., 2016). Motivations may change between incidences of self-harm by the same person, or even within a single incident of self-harm (Kapur et al., 2013). Muehlenkamp, Claes, et al. (2012) found that the term used to define self-harm (deliberate self-harm versus non-suicidal self-injury)

did not affect reported prevalence rates and concluded that they were measuring similar phenomena. For this reason, the current review extends the search of the literature beyond a narrow focus on NSSI to include studies that have investigated deliberate self-harm, where the motivation for the behaviour is not specified. Studies that are explicitly and exclusively focussed on suicide, however, are excluded, to avoid duplication of a recent meta-analysis (Hemming et al., 2019), which identified an effect size of $r = .25$ in the relationship between alexithymia and suicidal behaviour.

2.1.1 Aim of the Study

The aim of the current study, therefore, is to synthesise the evidence concerning the relationship between self-harm and alexithymia, including its subcomponents. Self-harm is defined, for the purpose of this review, as any act of self-injury, with the exception of those which are explicitly suicidal. It is hypothesised that there will be a significant, positive relationship between self-harm and alexithymia.

A planned subgroup analyses will investigate whether the effect size of the relationship is affected by the definition of self-harm (NSSI versus a broader definition of self-harm in which motivation is not specified, and lifetime versus recent self-harm). It is expected that the definition of self-harm will not be a significant moderator (Muehlenkamp, Claes, et al., 2012), but that recent self-harm may be more strongly associated with alexithymia than lifetime self-harm (D. Greene, Boyes, et al., 2020). Additional subgroup analyses will test the moderating effect of gender, age and clinical versus community samples. Norman and Borrill (2015) found stronger evidence for a significant relationship between alexithymia and self-harm among women than among men. It is therefore expected that gender

will be a significant moderator. As noted above, prevalence rates of both self-harm and alexithymia tend to be higher in adolescent versus adult samples, and in clinical versus community samples. D. Greene, Boyes, et al., (2020) found age, but not the sample type (clinical versus non-clinical) to be a significant moderator of the relationship between NSSI and alexithymia. This review will test these findings using a broader definition of self-harm.

2.2 Method

2.2.1 Databases and Search Terms

The review was pre-registered with PROSPERO International prospective register of systematic reviews (CRD42018118305) and was granted ethical approval by Middlesex University Ethics Committee (reference 7049). Searches of six databases (PsycINFO; Medline; Web of Science; PubMed; CINAHL; Cochrane Central Register of Controlled Trials [CENTRAL]) were conducted for the final time on 25 November 2019. Titles, abstracts and keywords were searched for alexithymia (alexithymi*) combined using the Boolean operator AND with synonyms for self-harm (suicid* OR “attempt* suicide” OR overdos* OR parasuicid* OR para-suicid* OR self-harm* OR selfharm* OR “deliberate self-harm” OR “DSH” OR self-injur* OR selfinjur* OR “non-suicidal self-injur*” OR NSSI OR self-mutilat* OR selfmutilat* OR self-destruct* OR selfdestruct* OR self-inflict* OR selfinflict* OR self-poison* OR selfpoison* OR self-immolat* OR selfimmolat* OR automutilat* or auto-mutilat* OR self-cut* or selfcut* OR autodestruct* or auto-destruct* OR “self-injurious behavio*” OR self-burn* OR selfburn).

2.2.2 Inclusion Criteria and Selection Process

The following inclusion criteria were set.

- Articles must be published in English.

- Articles must be published in a peer reviewed journal.
- A validated measure of alexithymia must be used.
- Studies must include a measure of self-harm. No restriction was placed on the way in which self-harm was measured, other than to exclude any study which is explicitly and solely concerned with suicide. Studies which did not specify motivation, or which measured non-suicidal self-harm alongside (but separately from) suicide were included.
- Studies must report a statistical assessment of the relationship between alexithymia and self-harm, or sufficient data to allow such an assessment to be made.
- Additionally, to be included in the meta-analysis, study authors needed to report or provide sufficient data to enable an effect size of the relationship between alexithymia and the presence or absence of self-harm to be calculated.

Abstracts were screened separately by two researchers and disagreements resolved through discussion.

2.2.3 Data Extraction

Data were extracted by the author. Means and standard deviations for alexithymia, and any reported subscales, for participants with and without experience of self-harm were recorded. If these were not available, correlation statistics describing the relationship between alexithymia and self-harm were extracted. The extraction also included sample size and characteristics, and the scales used to measure alexithymia and self-harm.

2.2.4 Quality Assessment

The studies were checked for risk of bias using the AXIS Appraisal Tool for Cross-Sectional Studies (Downes et al., 2016). The quality assessment was carried out by the lead reviewer. A second reviewer independently checked 20% of the studies and the results were compared. The tool does not provide a single, quantitative assessment of quality; rather it is designed to be used as a guide to inform interpretation of the results. It prompts the reviewer to consider, for each study, whether the aims are clear, whether the method is robust and described sufficiently to enable replication and whether the results are complete and internally consistent. It also contains questions about ethics and conflicts of interest.

2.2.5 Data Analysis

The meta-analyses for total alexithymia and each subscale were based on Borenstein et al. (2009) and calculations were made using the excel workbooks provided by Suurmond et al. (2017). Because the studies reported different statistical tests, Hedges' *g* was used as the common effect size, with a 95% confidence interval (CI). A *P* value of less than 0.05 and a 95% CI that did not cross the line of no effect was interpreted as statistically significant. Effect sizes of 0.20, 0.50 and 0.80 were considered small, medium and large respectively (Cohen, 1992). For individual studies, Hedges' *g* was derived from the mean difference in alexithymia using pooled standard deviation to account for differences in sample sizes. Where the means and standard deviations were not reported, Hedges' *g* was derived from the correlation statistic Pearson's *r*. The calculations of Hedges' *g* and standard errors were made using equations set out in Borenstein et al. (2009) and described in Appendix 2.1. To test whether the overall results were affected by the deriving of Hedges' *g* from a correlation statistic rather than the underlying means, a

sensitivity analysis was conducted to test the effect of removing those studies reporting correlational data.

A random effect meta-analysis was conducted because it provides a more conservative estimate of the effect size, allowing for the fact that the effect size in samples with different characteristics (such as age or gender) might differ from the 'true' effect size across the whole population (Borenstein et al., 2009).

Heterogeneity was measured using the I^2 statistic, which describes the percentage of variation that can be attributed to differences between the studies. I^2 of less than 40% was interpreted as low heterogeneity, while I^2 of over 75% was taken to indicate considerable heterogeneity (Higgins & Green, 2011). Publication bias was checked visually using a funnel plot, and statistically using Rosenthal's fail safe N (Rosenthal, 1979) and Begg and Muzumdar's test of bias (Begg & Mazumdar, 1994). If necessary, the trim and fill method was used to adjust for any bias (Duval & Tweedie, 2000).

Subgroup analyses were planned to examine differences in effect sizes according to a) adolescent (mean age < 18), young adult (18-29) and adult samples (≥ 30), b) male versus female samples, c) clinical versus community samples, d) lifetime versus recent self-harm and e) NSSI versus a broader definition of self-harm. Studies were included in the subgroup analysis if the number of participants per subgroup exceeded $n = 10$. Between-study variance (T^2) was computed separately for each subgroup, or pooled if subgroups contained fewer than five studies (Borenstein et al., 2009).

2.3 Results

The search returned 651 studies. Figure 2.1 sets out the results of the selection process. In 15 cases where insufficient data were reported the

corresponding authors were contacted. Additional data was received relating to five studies (Gatta, Rago, et al., 2016; Oskis & Borrill, 2019; Osuch et al., 2014; Sleuwaegen et al., 2017; Wester & King, 2018).

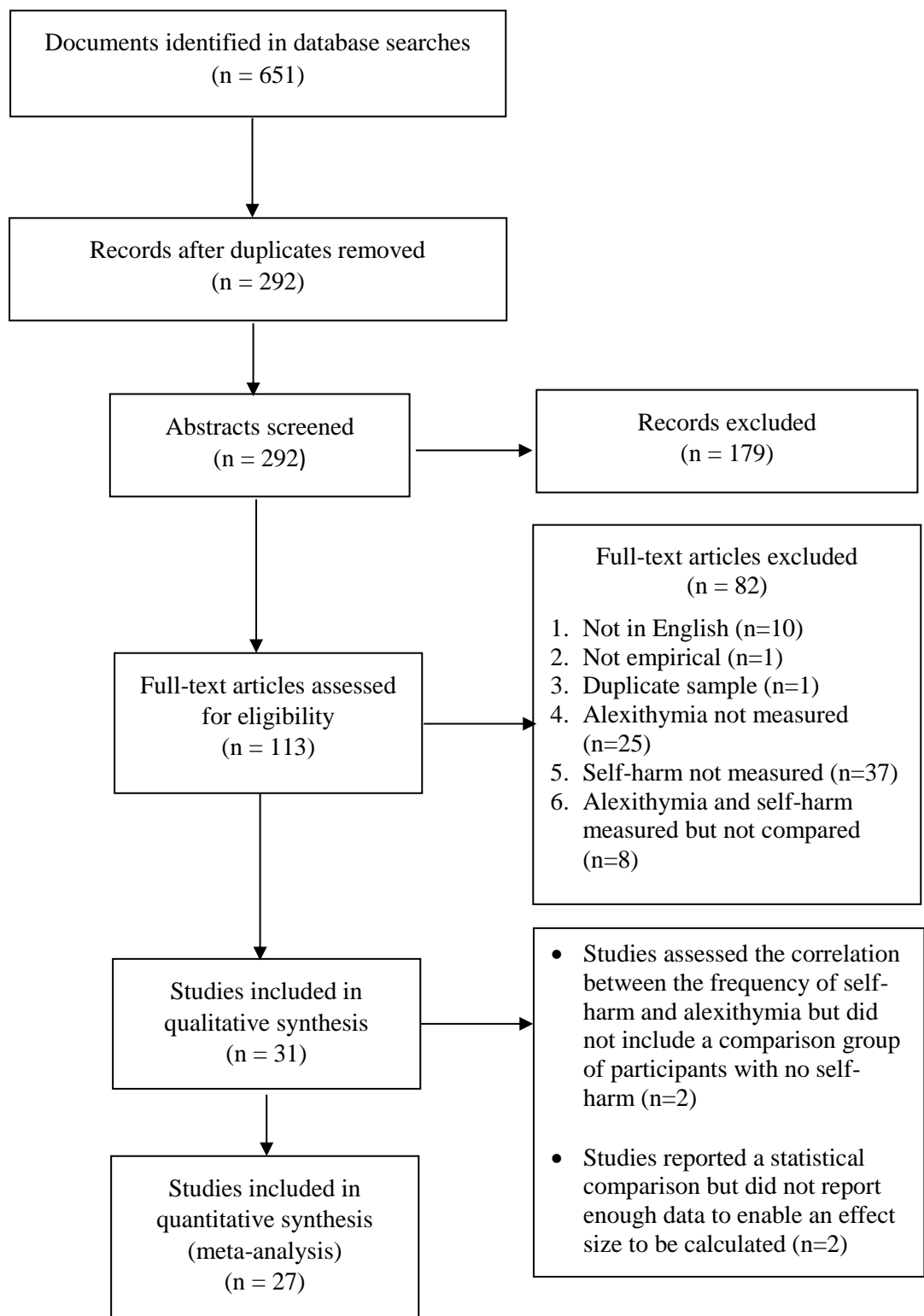
A total of 31 studies met the criteria for inclusion. Twenty-seven studies provided sufficient data to be included in the meta-analysis.

2.3.1 Quality Assessment

The studies were found to be generally good quality. There were two areas of weakness, common to the majority of studies. First, it was rare for the studies to justify whether the sample size enabled the study to be sufficiently powered. Second, only a minority of studies analysed non-responders or missing data. This may introduce bias if the participants choosing not to respond share certain characteristics. No study was excluded from the review on grounds of quality.

Figure 2.1

PRISMA Flow Chart of the Study Selection Process



2.3.2 Measures

Although the inclusion criteria did not specify the measure of alexithymia, all studies except one used the Toronto Alexithymia Scale. Two studies (Lüdtke et al., 2016; Zlotnick et al., 1996) used the original version, the TAS26 (Taylor et al., 1985) while the rest used the more recent TAS20 (Bagby, Parker, et al., 1994). The remaining study used the Alexithymia Questionnaire for Children (Rieffe et al., 2006) which was derived from the TAS20 to be suitable for younger participants. Four studies only reported one or more TAS20 subscales (Difficulty Identifying Feelings [DIF], Difficulty Describing Feelings [DDF] or Externally-Orientated Thinking [EOT]) rather than total TAS20 (Anderson & Crowther, 2012; Cerutti et al., 2018; D. Greene et al., 2019; Hsu et al., 2013). The other studies all reported total TAS20, with (10 studies) or without (16 studies) the subscale scores.

Appendix 2.2 details the way in which self-harm was defined in each study. Twenty studies clearly defined self-harm in a manner consistent with the ISSS (2018). These studies defined self-harm as NSSI in the introduction and either used a validated and accepted measure of NSSI (most commonly the Deliberate Self-harm Inventory [Gratz, 2001], used in eight studies) or were explicit that their instructions to participants had defined self-harm as without suicidal intent. A further four studies measured self-harm as well as, and as distinct from, suicide attempts, for example, through clinical assessment. It was not apparent in the remaining seven studies that the definition of self-harm given to participants excluded suicidal intent. In addition, there were differences in the type of methods included in the definition of self-harm. Some studies restricted self-harm to superficial body tissue damage (excluding, for example, taking an overdose of pills or swallowing dangerous

substances), including two studies which focussed only on self-cutting (Lambert & de Man, 2007; Laukkanen et al., 2013).

2.3.4 Qualitative Review

Table 2.1 provides a summary of the study characteristics. The studies may be grouped into four categories as follows: non-clinical adolescent samples, clinical adolescent samples, university students and clinical adult samples. All but three studies (Osuch et al., 2014; Oyefeso et al., 2008; Verrocchio et al., 2010) found a significant association between total alexithymia and self-harm.

2.3.4.1 Non-Clinical Adolescent Samples. Eight studies looked at adolescent participants recruited from school settings. Seven studies reported significant and positive associations between self-harm and total alexithymia (Garisch & Wilson, 2010, 2015; Gatta, Rago, et al., 2016; Howe-Martin et al., 2012; Laukkanen et al., 2013; Lee, 2016; Lin et al., 2017). The eighth study, by Cerutti et al. (2018), did not measure total alexithymia but reported significant correlations between self-harm and the TAS20 subcomponents DIF and DDF.

Garisch and Wilson (2015) was the only longitudinal study identified in this review. They reported that, not only was self-harm significantly correlated with alexithymia scores at baseline, but also that initial alexithymia scores predicted self-harm during the five months between baseline and follow-up.

2.3.4.2 Clinical Adolescent Samples. Four studies recruited adolescent participants from a clinical setting (Cerutti et al., 2014; Gatta, Dal Santo, et al., 2016; Lambert & de Man, 2007; Luedtke et al., 2016). All reported a significant relationship between total alexithymia and self-harm. While two of these studies used an exclusively clinical sample (Cerutti et al., 2014; Luedtke et al., 2016), the other two studies compared a group of adolescents with a history of self-harm,

recruited in clinical settings, with a control group of adolescents with no self-harm, recruited from the community (Gatta, Dal Santo, et al., 2016; Lambert & de Man, 2007). In both cases alexithymia (total TAS20) was significantly higher among participants with a history of self-harm.

2.3.4.3 University Student Samples. Of the eight studies that were based on university student samples, all reported significant and positive associations between self-harm and alexithymia (total and/or subscales) (Anderson & Crowther, 2012; Borrill et al., 2009; D. Greene et al., 2019; Hasking & Claes, 2019; Oskis & Borrill, 2019; Paivio & McCulloch, 2004; Polk & Liss, 2007; Wester & King, 2018). Among those that reported the subcomponents of alexithymia, all found DIF to be significantly higher in those with a history of self-harm (Anderson & Crowther, 2012; Borrill et al., 2009; D. Greene et al., 2019; Oskis & Borrill, 2019). The findings regarding DDF were more mixed, with two studies finding a significant positive association (Borrill et al., 2009; D. Greene et al., 2019) and one reporting a non-significant result (Oskis & Borrill, 2019), while all those which measured EOT reported a non-significant relationship with self-harm.

2.3.4.4 Adult Clinical Samples. The remaining eleven studies with adult participants drew on clinical samples. Here, the results were more varied. Of the two studies with participants with Borderline Personality Disorder (BPD), one reported that total alexithymia and all three subscales were significantly correlated with the frequency of self-harm (Mojahed et al., 2018), while Sleuwaegen et al. (2017) found that only DDF was correlated with self-harm frequency. A further four studies focussed on participants with substance dependency. Bolognini et al. (2003) and Evren and Evren (2005) reported significantly higher total alexithymia among those with a history of self-harm. In contrast, Oyefeso et al. (2008) compared

treatment-seeking opiate addicts with and without a history of self-harm and reported a significant difference only in DIF and not in the total alexithymia score, DDF or EOT. Similarly, Verrocchio et al. (2010) found no significant relationship between self-harm and total alexithymia or any of the subscales among a group of substance dependent men.

Bedi et al. (2014) recruited women attending a day treatment programme for survivors of abuse. They found total alexithymia to be significantly higher among those participants with a history of self-harm. These results are consistent with Zlotnick et al., (1996), who found significantly higher alexithymia in women psychiatric inpatients who had self-harmed, a high proportion of whom had suffered childhood sexual abuse. In contrast, Osuch et al. (2014) measured alexithymia and self-harm in a small ($N = 32$), sample of young adults with mood and/or anxiety disorders and reported no significant differences in total alexithymia or any of the subscales between those participants with and without a history of self-harm.

Of the remaining two studies, Hsu et al., (2013) compared participants admitted to a hospital emergency room following a first-time incident of self-harm or suicide attempt (measured separately) with a control group of chronic pain outpatients. DIF was found to be significantly higher among those participants who had engaged in self-harm compared to the control group. The final study focussed on adults with autism (Moseley et al., 2019). In a logistic regression model, alexithymia scores were able to differentiate significantly between people who had self-harmed within the past year and those who had never self-harmed, but not between those who had never self-harmed and those who last self-harmed over a year ago.

2.3.5 Multivariate analysis of the relationship between alexithymia and self-harm.

Of those studies which conducted multivariate analysis, most reported that alexithymia was a significant predictor of self-harm, controlling for other variables in the model. Borrill et al. (2009) found that DIF and rumination predicted self-harm history, controlling for DDF and total TAS20. In Zlotnick et al. (1996), TAS26 scores significantly predicted self-harm, after a wider measure of self-injurious behaviours and dissociation. Lüdtke et al. (2016) found that alexithymia was the only significant predictor of self-harm, in a model that included maternal and paternal antipathy, neglect and abuse, dissociation, depression and obsessive compulsive disorder. Polk and Liss (2007) found that DIF and DDF, together with anxiety, sleep disturbance and sexual and emotional abuse (but not EOT, dissociative experiences, physical abuse and neglect and sexual problems) were strongly correlated with a discriminant function which distinguished between a group of university students with no history of self-harm and a group of internet users who had self-harmed. Lee (2016) reported that alexithymia, depression and peer relations all significantly predicted self-harm behaviour. In contrast, in Sleuwaegen et al. (2017)'s study, TAS20 was no longer a significant predictor of NSSI among patients with BPD, when gender and depression were controlled for, although the subfactor DDF remained a significant predictor. A further two studies found that depression mediated, at least partially, the relationship between alexithymia and self-harm (Garisch & Wilson, 2010; Lambert & de Man, 2007).

Table 2.1*Systematic Review of the Literature on the Relationship Between Alexithymia and Self-Harm: Study Characteristics*

Author (year)	Country	Sample		Age	Gender	Sample size SH/no SH	Measure of self- harm	Definition of self-harm*	Lifetime/ current SH	Measure of alexithymia	Results
		type	Population								
Anderson & Crowther (2012)	United States	Community	University students	Adults $M_{age}=18.86$ ($SD=1.97$)	Mixed	95/119	Deliberate Self-Harm Inventory (Gratz, 2001)	NSSI	Past (> 1 year) and current (< 1 year)	TAS20 DIF	ANOVA (TAS20 DIF for no SH/past SH/current SH) $F(2,211)=8.94$, $p<0.001$. No NSSI TAS20 DIF differed significantly from past and current NSSI (which were not significantly different from each other).
Bedi et al. (2014)	Canada	Clinical	Participants in an outpatient therapy programme for women recovering from abuse.	Adults $M_{age}=39.85$ ($SD=11.11$)	Female	67/100	Structured interview based on the Dissociative Disorders Interview Schedule (DDIS, Ross et al., 1989)	Deliberate self-harm measured separately from suicide attempts.	Lifetime	TAS20	Difference in TAS20 $t(148) = 3.72$, $p<0.001$.

Author (year)	Country	Sample			Sample size	Measure of self-harm	Definition of self-harm*	Lifetime/ current SH	Measure of alexithymia	Results	
		type	Population	Age							Gender	SH/no SH
Bolognini et al. (2003)	Switzerland	Clinical and community	Individuals with drug abuse or eating disorders plus a control group from schools and the community	14-25 years old (M _{age} =20.6)	Mixed	83/225	Semi-structured interview based on the Mini Neuropsychiatric Interview (Sheehan et al., 1998).	Deliberate self-mutilation measured separately from suicide attempts.	Lifetime	TAS20	TAS20 significant difference (p<0.001)
Borrill et al. (2009) [†]	United Kingdom	Community	University students	Adults M _{age} =23.4	Mixed	46/123	Participants asked to endorse a list of methods of self-harm, including overdose	Motivation not specified.	Lifetime	TAS20 and subscales	TAS20 t(167)=2.54, p=0.012, DIF t(167) = 3.57, p<0.0001, DDF t(167) = 2.06, p=0.041, EOT t(167) = 0.23, p=0.816
Cerutti et al. (2014) ^{††}	Italy	Clinical	Adolescent girls recruited from therapeutic communities.	Adolescents M _{age} =16.1, SD=1.1	Female	10/0	DSHI (Gratz, 2001)	NSSI	Recent (<1 year)	TAS20	TAS20 and self-harm frequency significantly correlated r=0.78, p<0.001

Author (year)	Country	Sample		Age	Gender	Sample size SH/no SH	Measure of self-harm	Definition of self-harm*	Lifetime/ current SH	Measure of alexithymia	Results
		type	Population								
Cerutti et al. (2018)	Italy	Community	Middle school students	Adolescents M _{age} =12.6 (SD=1.06)	Mixed	204/505	DSHI (Gratz, 2001)	NSSI	Lifetime	Alexithymia Questionnaire for Children (AQC; Rieffe et al., 2006)	Correlations between DIF and NSSI frequency r=0.26, p<0.001, NSSI and DDF r=0.21, p<0.001 DIF and DDF
Evren & Evren (2005)	Turkey	Clinical	Inpatients receiving treatment for drug or alcohol addiction	Adults M _{age} =36.42 (SD=9.74)	Male	47/89	Clinical interview and Childhood Abuse and Neglect Questionnaire (CANQ, Yargic, Tutkun, & Sar, 1994)	NSSI	Lifetime	TAS20 and subscales	TAS20 t=2.07, p=0.04, DIF t=2.22, p=0.028, DDF t=2.65, p=0.009, EOT t=-0.21, p=0.84
Garisch & Wilson (2010)	New Zealand	Community	Secondary school students	Adolescents M _{age} =16.67	Mixed	49/276	Self-report self-harm questions (De Leo & Heller, 2004)	Deliberate self-harm, defined as non-fatal.	Lifetime	TAS20	TAS20 t=2.82, p<0.005

Author (year)	Country	Sample				Sample size	Measure of self-harm	Definition of self-harm*	Lifetime/current SH	Measure of alexithymia	Results
		type	Population	Age	Gender						
Garisch & Wilson (2015)	New Zealand	Community	Secondary school students	T1: Adolescents M _{age} =16.35 (SD=0.62)	Mixed	T1 566/596	DSHI (Gratz, 2001)	NSSI	Lifetime	TAS20	Correlation between TAS20 and lifetime self-harm r=0.37, p<0.10
				T2: Adolescents M _{age} =16.49 (SD=0.71)		T2 286/544			Current	TAS20	Correlation between TAS20 and current self-harm r=0.33, p<0.10
Gatta, Rago, et al. (2016) ^{†††}	Italy	Community	High school students	Adolescents M _{age} =15.76 (SD=1.35)	Mixed	35/241	Single question	Study focus is NSSI but motivation is not specified to participants.	Lifetime	TAS20	Mann Whitney U=3.46, p<0.05
Gatta, Dal Santo, et al., (2016)	Italy	Clinical vs community	Individuals attending a neuropsychiatry unit plus control group of local high school students.	Adolescents Clinical M _{age} =15 (SD=1.37) Control M _{age} =15.37 (SD=1.17)	Mixed	33/79	Patients presenting with self-harm, assessed through clinical interview	NSSI	Current	TAS20	TAS20 Z=5.04, p<0.05, DIF Z=3.65, p<0.05, DDF Z=3.92, 0.05, EOT Z=3.73, p<0.05

Author (year)	Country	Sample			Sample size SH/no SH	Measure of self-harm	Definition of self-harm*	Lifetime/ current SH	Measure of alexithymia	Results	
		type	Population	Age							Gender
Greene et al. (2019)	Australia	Community	University students	Adults $M_{age}=22.27$ ($SD=6.71$)	Mixed	126/365	Inventory of Statements about Self-Injury (ISAS) (Klonsky & Glenn, 2009)	NSSI	Lifetime	TAS20 subscales	ANOVA between participants with history of NSSI, risky drinking, both or neither, DIF $F=24.62$, $p<0.01$, DDF $F=9.37$, $p<0.01$, EOT $F=2.17$, NS.
Hasking & Claes (2019)	Australia	Community	University students	Adults $M_{age}=21.86$ ($SD=6.05$)	Mixed	255/696	ISAS (Klonsky & Glenn, 2009)	NSSI	Lifetime	TAS20	TAS20 and NSSI $r=0.20$, $p<0.001$
Howe-Martin et al. (2012)	United States	Community	High school students	Adolescents $M_{age}=16.22$ ($SD=1.23$)	Mixed	71/135	Adapted version of DSHI (Gratz, 2001)	NSSI	Lifetime	TAS20	TAS20 $t=2.76$, $p<0.005$

Author (year)	Country	Sample				Sample size SH/no SH	Measure of self-harm	Definition of self-harm*	Lifetime/ current SH	Measure of alexithymia	Results
		type	Population	Age	Gender						
Hsu et al. (2013)	Taiwan	Clinical	Individuals presenting at a hospital emergency room plus control group of chronic pain outpatients.	Adults Self-harm group M _{age} =43.25 (SD=19.98) Suicidal M _{age} =29.28 (SD=11.17) Control M _{age} =50.13 (SD=18.54)	Mixed	69/66 Plus 36 participants with suicidal intent	Presented at casualty as self-harm patients assessed through clinical interview.	Deliberate self-harm with no suicidal intent (as distinguished from group with suicidal intent)	Current	TAS20 DIF	ANOVA between patients presenting with suicidal intent, self-harm and control F=14.45, p<0.001. Tukey post hoc tests between self-harm and control groups MD = 7.40, p<0.001
Lambert & de Man (2007)	France	Clinical vs community =	Psychological health service users plus control group of girls from the community.	Adolescents Clinical M _{age} =16.8 (SD=0.4) Control M _{age} =17.5 (SD=0.4)	Female	15/18	Self-reported engagement in self-mutilation (defined as cutting) plus observed physical evidence	Self-cutting (distinguished from suicide attempts)	Current	TAS20 and subscales	TAS20 t=2.33, p=0.026, DIF t=3.95, p=0.0001, DDF t=1.0, p=0.32, EOT t=0.08, p=0.94

Author (year)	Country	Sample				Sample size SH/no SH	Measure of self-harm	Definition of self-harm*	Lifetime/ current SH	Measure of alexithymia	Results
		type	Population	Age	Gender						
Laukkanen et al. (2013)	Finland	Community	High school students	Adolescents Age range 13-18	Mixed	440/440	Self report questionnaire (based on Rissanen, Kylmä, & Laukkanen, 2009)	Motivation not specified. Method restricted to self-cutting	Lifetime	TAS20	Mann Whitney U tests of the difference between TAS20 scores in those with a history of self-cutting and those without such a history reported as significant (p<0.001).
Lee (2015)	South Korea	Community	Middle school students	Adolescents M _{age} =14.38 (SD=1.68)	Mixed	97/687	Self-harm Questionnaire (Ougrin & Boege, 2013)	Motivation not specified.	Lifetime	TAS20	TAS20 t=7.56, p<0.001
Lin et al. (2017)	Taiwan	Community	High school students	Adolescents M _{age} =15.83 (SD=0.38)	Mixed	434/1688	Multiple item questionnaire (You et al., 2012)	NSSI	Current	TAS20	TAS20 predictive of NSSI odds ratio (OR) = 1.02, p<0.05
Lüdtke et al. (2016)	Germany and Switzerland	Clinical	Psychiatric inpatients	Adolescents M _{age} =16.08 (SD=1.29)	Female	46/26	Interview to assess NSSI disorder according to DSM-V criteria	NSSI	Current	TAS26	TAS26 t=3.52, p<0.01, DIF t=3.05, p<0.01, DDF t=3.36, p<0.01, EOT t=0.93, p=0.35

Author (year)	Country	Sample		Age	Gender	Sample size	Measure of self-	Definition of self-	Lifetime/	Measure of	Results
		type	Population			SH/no SH	harm	harm*	current SH	alexithymia	
Mojahed et al. (2018) ^{††}	Iran	Clinical	Psychiatric inpatients with borderline personality disorder	Adults M _{age} =22.77 (SD=2.83)	Male	94/0	DSHI (Gratz, 2001)	NSSI	Current	TAS20 and subscales	Frequency of NSSI correlated with TAS20 r=0.46, p<0.001, DIF r=0.42, p<0.001, DDF r=0.45, p<0.001 and EOT r=0.41, p<0.001.
Moseley et al. (2019)	United Kingdom	Clinical (individuals have received a diagnosis)	Individuals with autism	Adults M _{age} =43 (SD=13.6)	Mixed	76/27	Non-suicidal self-injury assessment tool (NSSI-AT) (Whitlock et al., 2014)	NSSI	Historic (>1 year) and current (<1 year)	TAS20	Alexithymia predicted the categorisation of participants as historic, current or no self-harm ($\chi^2(2)=10.78, p=0.005$). Alexithymia distinguished current and no self-harm (b=.062, p=.002) but not historic and no self-harm (p=.232)

Author (year)	Country	Sample			Sample size	Measure of self-harm	Definition of self-harm*	Lifetime/current SH	Measure of alexithymia	Results	
		type	Population	Age							Gender	SH/no SH
Oskis & Borrill (2019) ^{†††}	United Kingdom	Community	University students	Adults NSSI group M _{age} =21.08 (SD=3.95) Controls M _{age} =19.24 (SD=5.98)	Mixed	26/29	DSHI (Gratz, 2001)	NSSI	Lifetime	TAS20 and subscales	TAS20 t=2.06, p=0.044, DIF t=4.08, p<0.0005, DDF t=1.17, p=0.249, EOT t=1.91, p=0.062
Osuch et al. (2014) ^{†††}	Canada	Clinical	Individuals with mood and/or anxiety disorders with and without NSSI	Adults (age range 16-24) NSSI group M _{age} =20 (SD=2.4) Controls M _{age} =21 (SD=1.8)	Mixed	13/15	Clinical interview to assess NSSI involving the epidermis. Self-Injury Motivation Scale v.2 (Osuch et al., 1999) Ottawa Self-Injury Inventory (Cloutier et al., 2012)	NSSI	Lifetime	TAS20 and subscales	No significant differences in TAS20 between NSSI and no NSSI groups

Author (year)	Country	Sample			Gender	Sample size SH/no SH	Measure of self- harm	Definition of self- harm*	Lifetime/ current SH	Measure of alexithymia	Results
		type	Population	Age							
Oyefeso et al. (2008) ^{††}	United Kingdom	Clinical	Opiate addicts admitted to an inpatient hospital treatment programme	Adults M _{age} =38.4 (SD=9.4)	Mixed	39/41	Two items from the Schedule for Nonadaptive and Adaptive Personality (Clark, 1996) assessed through interview	Motivation not specified	Lifetime and current	TAS20 and subscales	TAS20 DIF t=2.00, p<0.05, but TAS20, DDF and EOT not significantly different
Paivio & McCulloch (2004)	Canada	Community	University students	Adults M _{age} =21 (SD=1.66)	Female	41/59	Self report Self-Injurious Behaviors Questionnaire developed for this study.	Motivation not specified.	Lifetime	TAS20	Frequency of self-harm (never to often) correlated with TAS20 r=0.45, p<0.01

Author (year)	Country	Sample			Sample size	Measure of self-harm	Definition of self-harm*	Lifetime/current SH	Measure of alexithymia	Results	
		type	Population	Age							Gender
Polk & Liss (2007) ^{††}	United States	Community	University students Internet users of a self-help website	Adults Students no self-harm $M_{age}=18.79$ ($SD=1.17$) Students self-harm $M_{age}=19.18$ ($SD=2.71$) Internet group $M_{age}=22.59$ ($SD=6.31$)	Mixed	259/155	Participants were asked whether they had self-harmed according to a definition from Winchel and Stanley (1991)	NSSI	Lifetime	TAS20 subscales	Discriminant function analysis found a significant difference between those with a history of self-harm recruited via the internet and those with no history. Correlations between the TAS20 subscales and the discriminant functions: TAS DIF $r=0.570$, DDF $r=0.551$, EOT $r=0.282$
Sleuwaegen et al. (2017) ^{†††}	Belgium	Clinical	Inpatients with Borderline Personality Disorder	Adults $M_{age}=30.03$ ($SD=8.62$)	Mixed	153/32	Self-Injury Questionnaire-Treatment Related (SIQ-TR) (Claes & Vandereycken, 2007)	NSSI	Lifetime	TAS20 and subscales	Frequency of self-harm significantly correlated with DDF $r=0.16$, $p<0.05$ but not TAS20 ($r=0.08$), DIF ($r=0.06$) or EOT ($r=-0.04$)

Author (year)	Country	Sample				Sample size SH/no SH	Measure of self-harm	Definition of self-harm*	Lifetime/ current SH	Measure of alexithymia	Results
		type	Population	Age	Gender						
Verrocchio et al. (2010)	Italy	Clinical and community	Substance-dependent inpatients plus a control group from the community.	Adults Clinical M _{age} =29.32 (SD=6.42) Control M _{age} =28.12 (SD=3.84)	Male	46/108	Self-Injury Inventory developed by the authors	NSSI	Lifetime	TAS20 and subscales	Across all participants correlation between self-harm and TAS20 r=0.13 NS, DIF r=0.22, p<0.01, DDF r=0.08 NS, EOT r=-0.04 NS (p>0.05).
Wester & King (2018)	United States	Community	First year university students	Adults Age not reported	Mixed	117/145	Deliberate Self-Harm Inventory - Adapted (Murray et al., 2008)	NSSI	Lifetime and current (< 90 days)	TAS20	Correlation between TAS20 and current NSSI r=0.38, p<0.01 and between TAS20 and lifetime NSSI r=0.31, p<0.01
Zlotnick et al. (1996)	United States	Clinical	Inpatients in a women's psychiatric unit	Adults M _{age} =33 (SD=9.23)	Female	103/45	Self-Injury Inventory, developed by authors.	NSSI	Current (<3 months)	TAS26	TAS26 t=0.274, p<0.01

* "NSSI" indicates a definition consistent with the International Society for the Study of Self-Injury (2018), "the deliberate damage to body tissue without suicidal intent, for reasons not culturally or socially sanctioned".

†In Borrill et al. (2009) only a subgroup of participants completed the TAS20 and it was not stated how many of these had self-harmed. Proportions have therefore been estimated using the proportion who had self-harmed in the whole sample.

††Studies not included in the meta-analysis.

†††Additional data was obtained from authors for inclusion in the meta-analysis

2.3.6 Quantitative Analysis

Twenty-three studies with a combined sample of 8724 were included in a meta-analysis to assess the scale of the difference in alexithymia between participants who had engaged in self-harm and people who had never self-harmed (Figure 2.2). The combined studies had a medium effect size of $g = 0.57$ (95% CI 0.46 to 0.69). The overall effect was significant ($Z = 10.57$, $p < 0.001$) indicating that participants who had self-harmed had significantly higher alexithymia than participants who had never self-harmed. The heterogeneity was high ($I^2 = 70.2\%$). A sensitivity analysis was conducted to test the effect of removing the four studies that reported the correlation between alexithymia and self-harm rather than the mean alexithymia score for those with and without a history of self-harm. Their removal made very little difference to the effect size ($g = 0.58$, 95% CI 0.45 to 0.71) although heterogeneity was reduced ($I^2 = 61.6\%$).

The funnel plot (Figure 2.3), Rosenthal's fail-safe N test and Begg and Mazumbar's test ($p = 0.206$) indicated that publication bias was not a concern. Applying the trim and fill method to impute hypothetically unpublished studies made no difference to the effect size or confidence intervals.

Planned subgroup analyses of the relationship between total alexithymia and self-harm were conducted based on the demographics of the sample and the definition of self-harm (Table 2.2). A significantly larger effect size was observed in adolescent samples ($M_{\text{age}} \leq 18$) compared with adult samples, although when the adults samples were further subdivided into young adults and older adults the variance in effect sizes was not significant. There was a significantly larger effect size in female samples compared to male samples. The relationship between alexithymia and self-harm was significant in both male and female samples, although

the effect size for men was small. The result of the gender subgroup analysis should, however, be interpreted cautiously, because it is based on only the eight studies that reported, or provided, data disaggregated by gender.

The relationship between alexithymia and self-harm was significant in both clinical and community samples and the size of the effect was not significantly different between the two groups. There was no significant difference in the combined effect size of studies measuring lifetime self-harm, compared to those measuring recent self-harm. Similarly, there was no significant difference in the effect size between studies that defined self-harm as NSSI or clearly distinguished self-harm from suicide, compared with those which did not specify motivation.

Meta-analyses were conducted on the TAS20 subscales, where reported. Figures 2.4 and 2.5 illustrate that there was a significant relationship between self-harm and the subscales DIF and DDF with medium effect sizes (DIF $g = 0.61$, 95% CI 0.45 to 0.76, $SE = 0.07$, $I^2 = 50.8\%$; DDF $g = 0.41$, 95% CI 0.29 to 0.53, $I^2 = 25.7\%$, $SE = 0.06$). The confidence interval around the effect size for the subscale EOT crossed the line of no effect, indicating that it was not significant, and the effect size was small ($g = 0.10$, 95% CI -0.11 to 0.31, $I^2 = 64.2\%$, $SE = 0.10$, Figure 2.6). Begg and Mazumbar's test and Rosenthal's fail-safe N test indicated that publication bias was not a concern for DIF and DDF. However, for EOT, Rosenthal's fail-safe N test suggested that there might be publication bias, although Begg and Mazumbar's test was not significant ($p = .225$). Subgroup analyses for each subscale are set out in Table 2.3, although the small numbers in some of the subsets mean that these results should be interpreted with caution. The effect size in the relationship between DIF and self-harm was significantly moderated by age, with higher effect sizes observed in adolescent and young adult samples than in older adults ($p = .021$).

The effect size of the relationship between DIF and self-harm was also significantly higher in community samples compared with clinical samples ($p = .003$).

Figure 2.2

Forest Plot of Combined Effect Size of the Difference in Alexithymia Between Those With and Without a History of Self-Harm

#	Study name	Effect size	CI Lower limit	CI Upper limit	Weight
1	Bedi et al. (2010)	0.62	0.30	0.94	4.44%
2	Bolognini et al. (2003)	0.49	0.23	0.75	5.19%
3	Borrill et al. (2009)	0.43	0.09	0.77	4.21%
4	Evren & Evren (2005)	0.37	0.01	0.73	3.99%
5	Garisch & Wilson (2010)	0.72	0.41	1.03	4.44%
6	Garisch & Wilson (2015)	0.80	0.68	0.92	7.02%
7	Gatta, Dal Santo, et al. (2016)	1.28	0.84	1.72	3.22%
8	Gatta, Rago, et al. (2016)	0.77	0.42	1.12	3.99%
9	Hasking & Claes (2019)	0.41	0.27	0.55	6.78%
10	Howe-Martin et al. (2012)	0.41	0.11	0.71	4.68%
11	Lambert & de Man (2007)	0.80	0.09	1.51	1.70%
12	Laukkanen et al. (2013)	0.43	0.29	0.57	6.78%
13	Lee (2015)	0.83	0.61	1.05	5.73%
14	Lin et al. (2017)	0.42	0.32	0.52	7.23%
15	Lüdtke et al. (2016)	0.86	0.36	1.36	2.75%
16	Moseley et al. (2019)	0.63	0.17	1.09	3.05%
17	Oskis & Borrill (2019)	0.55	0.01	1.09	2.48%
18	Osuch et al. (2014)	-0.02	-0.78	0.74	1.55%
19	Paivio & McCulloch (2004)	1.04	0.62	1.46	3.39%
20	Sleuwaegen et al. (2017)	0.10	-0.27	0.47	3.78%
21	Verrocchio et al. (2010)	0.25	-0.07	0.57	4.44%
22	Wester & King (2019)	0.65	0.39	0.91	5.19%
23	Zlotnick et al. (1996)	0.50	0.14	0.86	3.99%
24	Total Effect (Hedges g)	0.57	0.46	0.69	

(SE=0.05)

Test of total effect size $Z=10.57, p<0.0001$

Heterogeneity $I^2=70.2\%$ Total number of participants = 8724

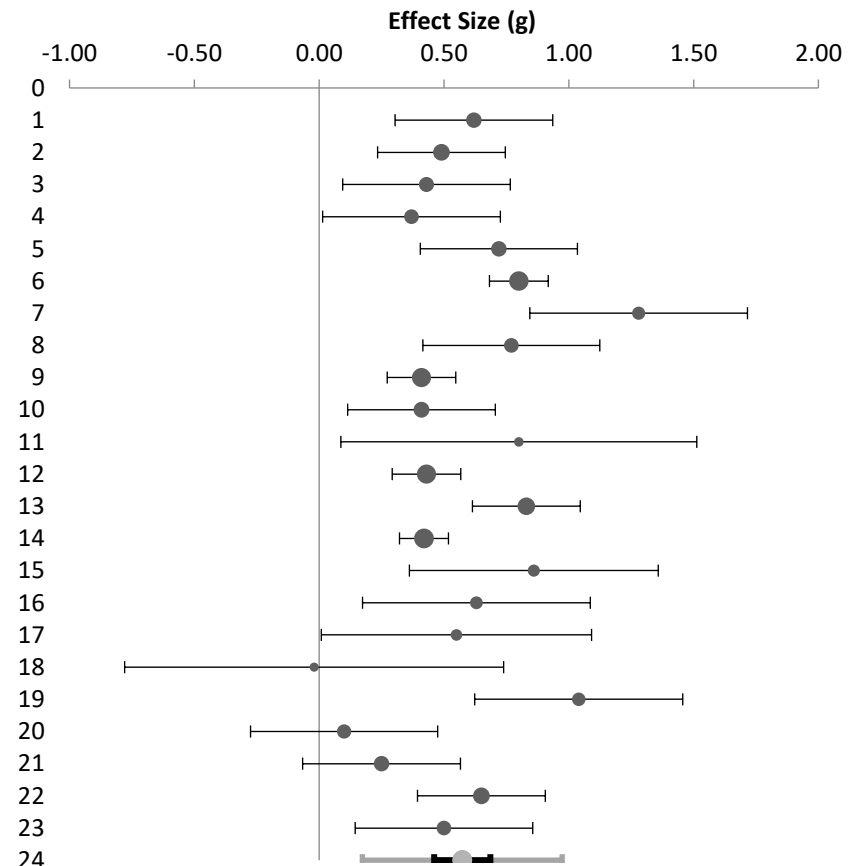


Figure 2.3

Funnel Plot of Included Studies to Test for Publication Bias

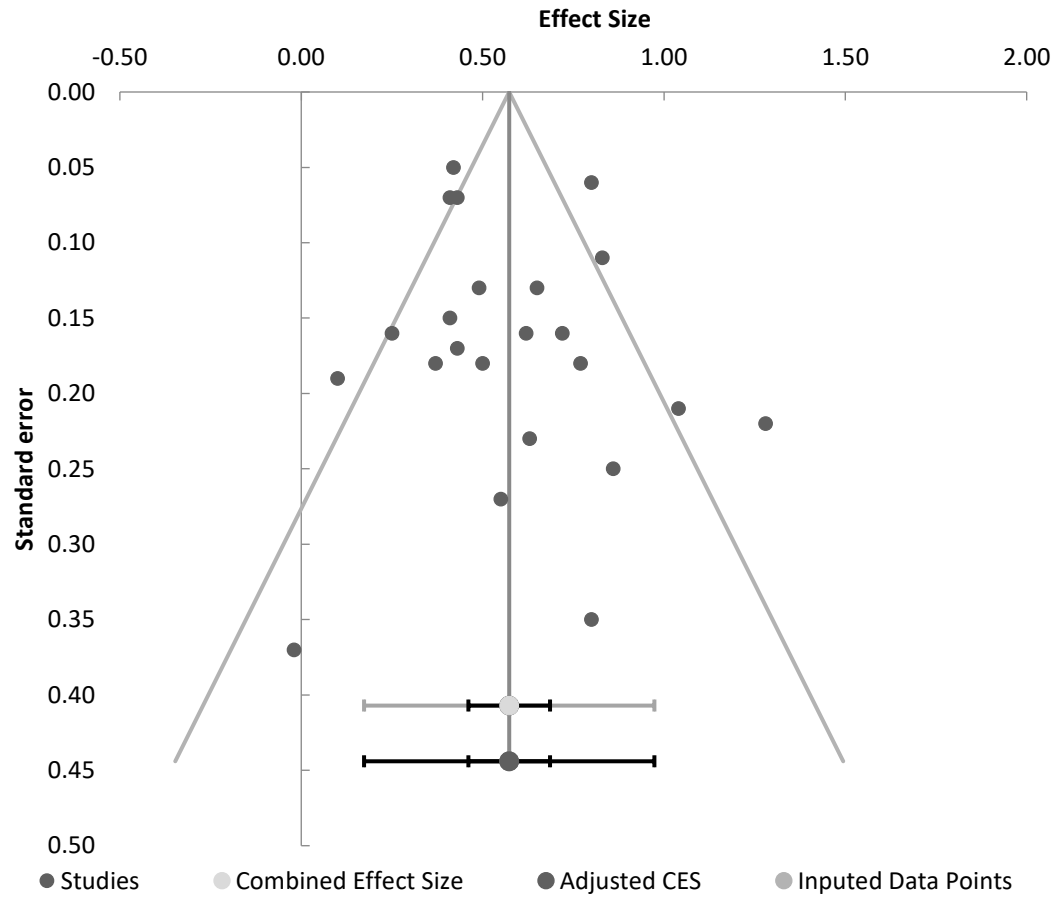


Table 2.2

Subgroup Random Effect Analyses of the Difference in Alexithymia Between Those With and Without a History of Self-Harm by Demographics and Definition of Self-Harm

Subgroup	N studies ^c	N sample	g	95% CI	I ²	Q* (between groups)	df	p
Adolescent ($M_{age} < 18$)	10	5972	0.69	0.50 to 0.87	81.35%	5.63	2	0.060
Young adult ($M_{age} = 18-29$) ^a	6	1759	0.46	0.33 to 0.58	0.0%			
Adult ($M_{age} \geq 30$) ^a	7	993	0.49	0.21 to 0.76	59.31%			
Men	5	462	0.28	0.02 to 0.54	0.00%	5.72	1	0.017
Women	8	1014	0.60	0.38 to 0.83	41.50%			
Clinical	9	1224	0.44	0.25 to 0.63	32.58%	2.29	1	0.130
Community	13	7369	0.59	0.46 to 0.72	75.32%			
Lifetime self-harm ^b	19	6385	0.54	0.43 to 0.66	66.32%	1.69	1	0.193
Recent self-harm (<12 months) ^b	4	2339	0.75	0.12 to 1.37	83.15%			
NSSI	17	6190	0.53	0.40 to 0.67	71.06%	1.46	1	0.226
Motivation not specified	6	2534	0.68	0.43 to 0.92	70.77%			

^aWhen the studies of adult samples were combined, the effect size of the relationship between alexithymia and self-harm was significantly larger in adolescent samples ($g = 0.69$, 95% CI 0.50 to 0.87, $I^2 = 81.35\%$, $N = 10$) compared with adult samples ($g = 0.48$, 95% CI 0.34 to 0.61, $I^2 = 37.83\%$, $N = 13$; $Q^* = 4.43$, $p = .035$).

^bFour studies (Garisch & Wilson, 2015; Moseley et al., 2019; Sleuwaegen et al., 2017; Wester & King, 2018) reported, or provided, separate data on lifetime and recent self-harm. The data reported here include these studies in the lifetime self-harm group. When their data were included in the recent self-harm subgroup, the difference in the effect size of the relationship between self-harm and alexithymia in studies measuring lifetime versus those measuring recent self-harm remained non-significant ($p = .131$).

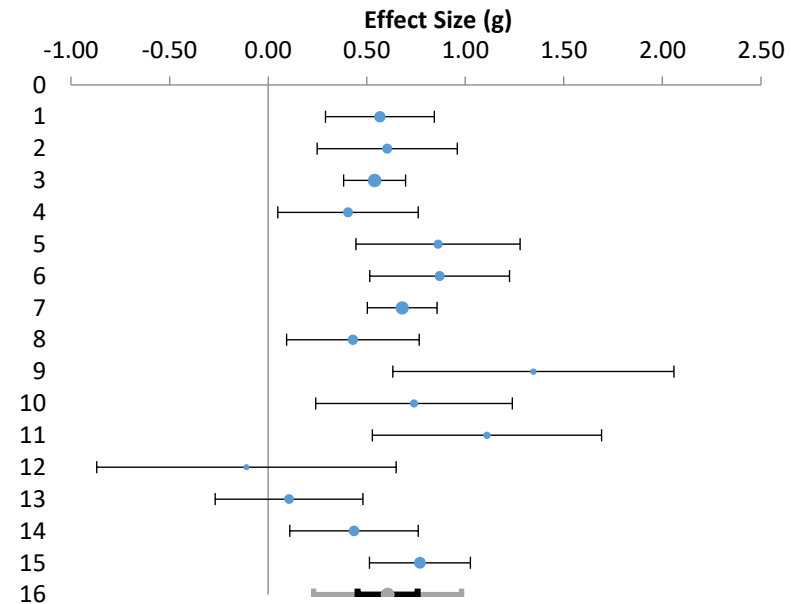
^cBetween-study variance was calculated separately when there were at least five studies per subgroup and pooled where groups contained fewer than five studies (Borenstein et al., 2009).

Figure 2.4

Forest Plot of Combined Effect Size of The Difference in Alexithymia Subcomponent Difficulty Identifying Feelings (DIF) Between Those With and Without a History of Self-Harm

#	Study name	Effect size	CI Lower limit	CI Upper limit	Weight
1	Anderson & Crowther (2012)	0.57	0.29	0.84	8.53%
2	Borrill et al. (2009)	0.60	0.25	0.96	6.64%
3	Cerutti et al. (2018)	0.54	0.38	0.70	12.05%
4	Evren & Evren (2005)	0.41	0.05	0.76	6.64%
5	Gatta, Dal Santo, et al. (2016)	0.86	0.45	1.28	5.53%
6	Gatta, Rago, et al. (2016)	0.87	0.52	1.22	6.64%
7	Greene et al. (2019)	0.68	0.50	0.86	11.44%
8	Hsu et al. (2013)	0.43	0.09	0.77	7.07%
9	Lambert & de Man (2007)	1.35	0.63	2.06	2.60%
10	Lüdtke et al. (2016)	0.74	0.24	1.24	4.37%
11	Oskis & Borrill (2019)	1.11	0.53	1.69	3.51%
12	Osuch et al. (2014)	-0.11	-0.87	0.65	2.37%
13	Sleuwaegen et al. (2017)	0.11	-0.27	0.48	6.24%
14	Verrocchio et al. (2010)	0.44	0.11	0.76	7.30%
15	Wester & King (2018)	0.77	0.51	1.03	9.07%
16	Total Effect Hedges g	0.61	0.45	0.76	

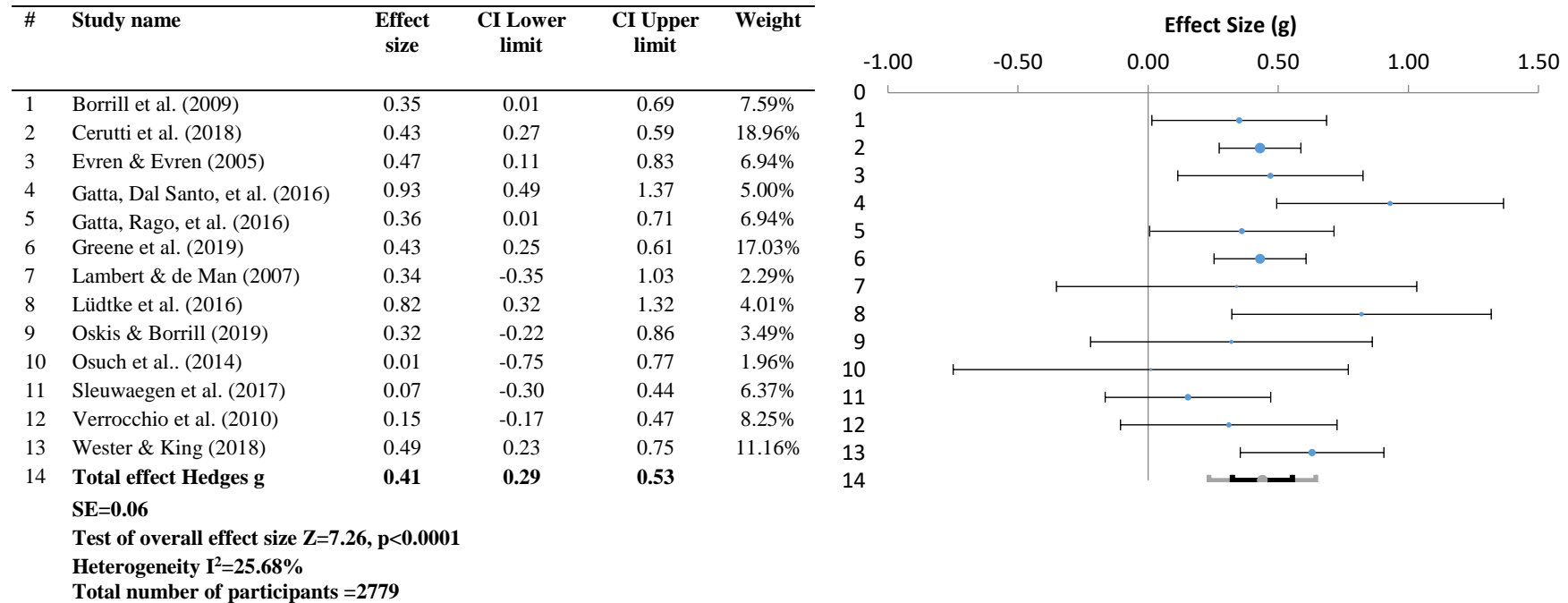
(SE=0.07)
 Test of total effect size $Z=8.53, p<.0001$
 Heterogeneity $I^2=50.81\%$
 Total number of participants = 3128



* Data shown here relate to lifetime self-harm. Anderson and Crowther (2012), Sleuwaegen et al. (2017) and Wester and King (2018) also provided DIF scores for participants with recent (<12 months) self-harm. Using data from these studies relating instead to recent self-harm resulted in a slightly increased effect size of $g=0.63$, (95% CI 0.48 to 0.77), $SE=0.07$, $I^2 = 42.97\%$.

Figure 2.5

Forest Plot of Combined Effect Size of The Difference in Alexithymia Subcomponent Difficulty Describing Feelings (DDF) Between Those With and Without a History of Self-Harm



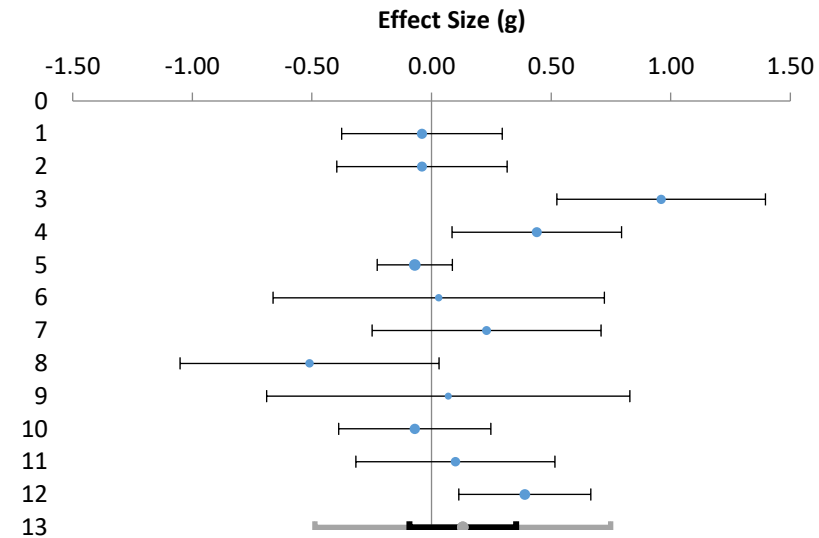
*Sleuwaegen et al. (2017) and Wester and King (2018) provided DDF scores for participants with lifetime self-harm and with recent self-harm. Data shown here relate to lifetime self-harm. Using data from these studies relating instead to recent self-harm results in a slightly increased effect size of $g=0.44$ (95% CI 0.32 to 0.55) $SE=0.05$, $I^2=19.13\%$.

Figure 2.6

Forest Plot of Combined Effect Size of The Difference in Alexithymia Subcomponent Externally Orientated Thinking (EOT) Between Those With and Without a History of Self-Harm

#	Study name	Effect size	CI Lower limit	CI Upper limit	Weight
1	Borrill et al. (2009)	-0.04	-0.38	0.30	9.48%
2	Evren & Evren (2005)	-0.04	-0.40	0.32	9.10%
3	Gatta, Dal Santo, et al. (2016)	0.96	0.52	1.40	7.67%
4	Gatta, Rago, et al. (2016)	0.44	0.09	0.79	9.10%
5	Greene et al. (2019)	-0.07	-0.23	0.09	13.05%
6	Lambert & de Man (2007)	0.03	-0.66	0.72	4.62%
7	Lüdtke et al. (2016)	0.23	-0.25	0.71	7.03%
8	Oskis & Borrill (2019)	-0.51	-1.05	0.03	6.18%
9	Osuch et al. (2014)	0.07	-0.69	0.83	4.10%
10	Sleuwaegen et al. (2017)	0.06	-0.31	0.43	8.72%
11	Verrocchio et al. (2010)	-0.07	-0.39	0.25	9.84%
12	Wester & King (2018)	0.16	-0.10	0.42	11.10%
13	Total (95% CI) Hedges g	0.10	-0.11	0.31	

Test of overall effect size $Z = 1.06, p = 0.290$
Heterogeneity $I^2=64.17\%$
Total number of participants = 2070



*Sleuwaegen et al. (2017) and Wester and King (2018) provided EOT scores for participants with lifetime self-harm and with recent self-harm. Data shown here relate to lifetime self-harm. Using data from these studies relating instead to recent self-harm results in a slightly increased effect size of $g=0.13$ (95% CI -0.09 to 0.35), $SE=0.10$, $I^2 = 68.90\%$.

Table 2.3

Subgroup Random Effect Analyses of the Difference in Alexithymia Subscales Between Those With and Without a History of Self-Harm by Demographics and Definition of Self-Harm

Subgroup	DIF					DDF					EOT				
	N studies ^a	g (95% CI)	I ²	Q*	p	N studies ^a	g (95% CI)	I ²	Q*	p	N studies ^a	g (95% CI)	I ²	Q*	p
Adolescent	5	0.74 (0.43-1.05)	52.8%	7.69	.021	5	0.51 (0.24-0.78)	43.0%	4.28	.118	4	0.48 (-0.12-1.07)	60.8%	11.24	.004
Young Adult	6	0.66 (0.41-0.91)	37.7%			5	0.41 (0.27-0.54)	0.0%			5	-0.04 (-0.29-0.21)	28.8%		
Adult	4	0.35 (0.11-0.60)	0.0%			3	0.23 (-0.28-0.74)	26.4%			3	-0.02 (-0.19-0.15)	0.0%		
Men	4	0.44 (0.06-0.81)	0.0%	0.87	.352	4	0.33 (-0.22-0.87)	44.2%	0.09	.758	4	0.01 (-0.27-0.29)	0.0%	0.47	.495
Women	4	0.66 (-0.05-1.38)	71.7%			4	0.39 (-0.06-0.84)	36.3%			4	0.11 (-0.05-0.27)	0.0%		
Clinical	6	0.33 (0.07-0.59)	20.3%	8.64	.003	5	0.30 (-0.13-0.72)	53.2%	0.48	.490	5	0.05 (-0.08-0.18)	0.0%	0.03	.857
Community	8	0.65 (0.54-0.76)	4.2%			7	0.41 (0.33-0.49)	0.0%			6	0.02 (-0.26-0.31)	58.2%		
Lifetime self-harm	11	0.57 (0.40-0.75)	51.5%	1.18	.278	11	0.38 (0.29-0.47)	0.0%	6.56	.010	9	0.02 (-0.15-0.19)	35.1%	5.79	.016
Recent self-harm	3	0.74 (0.20-1.29)	54.2%			3	0.78 (0.11-1.44)	7.63%			3	0.49 (-0.74-1.71)	73.5%		
NSSI	12	0.60 (0.41-0.79)	55.8%	0.03	.852	11	0.42 (0.27-0.57)	37.1%	0.16	.685	10	0.08 (-0.17-0.33)	65.0%	0.24	.628
Motivation not specified	3	0.63 (0.08-1.18)	37.1%			2	0.35 (0.29-0.42)	0.0%			2	0.20 (-2.85-3.24)	73.4%		

^aBetween-study variance was calculated separately when there were at least five studies per subgroup and pooled where groups contained fewer than five studies (Borenstein et al., 2009).

2.4 Discussion

The current meta-analysis found an overall medium effect size of the relationship between alexithymia and self-harm, indicating that alexithymia is significantly higher in people who have engaged in self-harm than in people who have not. The relationship was driven by the Difficulty Identifying Feelings (DIF) and Difficulty Describing Feelings (DDF) subscales, while the relationship between self-harm and Externally-Orientated Thinking (EOT) was not significant. Specifying the motivation for self-harm as non-suicidal did not significantly alter the effect size. Similarly, there was no significant difference in the effect size between those studies that measured lifetime self-harm and those that measured recent self-harm. The effect size was significantly larger in female than in male samples and in adolescent than in adult samples.

2.4.1 Definition of Self-Harm

One objective of the current review was to assess whether the definition of self-harm affected the size of the association with alexithymia. The six studies which did not explicitly define motivation as non-suicidal had a higher combined effect size ($g = .68$) than the seventeen studies which defined self-harm as NSSI ($g = .53$), although the difference between the two was not significantly different. As far as studies of NSSI are concerned, the result is consistent with the review by D. Greene, Boyes, et al., (2020), who found a similarly sized association between alexithymia and lifetime NSSI ($r = .25$). The current review excluded studies which focussed solely and explicitly on suicide attempts, because this literature had recently been synthesised in a published meta-analysis by Hemming et al. (2019). According to the results of that analysis, the relationship between suicide attempts and alexithymia was of a similar effect size to that found in the current review of

alexithymia and self-harm ($r = .25$; Hemming et al., 2019). It should be noted that two narrative reviews have suggested that there is greater heterogeneity in studies of alexithymia and suicide, compared with studies of alexithymia and NSSI (Davey et al., 2018; Iskrac et al., 2020), due possibly to the greater prevalence and diversity of clinical samples. However, the results of the current review, assessed alongside meta-analyses by D. Greene, Boyes, et al., (2020) and Hemming et al. (2019), do not suggest that specifying self-harm as suicidally or non-suicidally motivated affects the size of the relationship with alexithymia.

The lack of any clear distinction in the size of the relationship between alexithymia and the range of self-harming behaviours may indicate that, to some extent, the studies are drawing on the same population. A recent study found the prevalence of suicide attempts among people with a history of NSSI to be 40% (O'Connor et al., 2018). Only one of the studies in the current review which focused on engagement in NSSI explicitly excluded individuals who had also attempted suicide (Lin et al., 2017). In the majority of studies, therefore, it is likely that a proportion of participants had engaged in suicidally-motivated self-harm as well as NSSI. This makes it difficult to identify whether alexithymia is related to suicidal intent. Studies which have asked participants to distinguish between non-suicidal and suicidal self-harm have identified both unique risk factors, and also those that differ by degree. For example, Mars et al. (2014) found that depression and anxiety were related to both suicidal and non-suicidal self-harm but that the associations were significantly stronger among participants who had self-harmed with suicidal intent. Only one study in the current review compared alexithymia scores (TAS20 DIF) among participants who had self-harmed with and without suicidal intent, and no significant difference was found (Hsu et al., 2013). Further studies of this kind

would be needed in order to establish whether the relationship between alexithymia and self-harm is affected by suicidal intent.

The definition of self-harm used in the empirical studies in this thesis does not specify the motivation for the behaviour, following the UK's clinical guidelines (NICE, 2013). However, in studies 2 and 3 participants were additionally asked if they had ever attempted suicide (following Mars et al., 2014), in order to assess whether there was any difference in the relationship between alexithymia and self-harm with and without suicidal intent.

2.4.2 Gender

Although based only on eight studies, the result of the subgroup analysis provides strong support for a significant relationship between alexithymia and self-harm in women. A small effect size was also observed in male samples. This finding can only be taken as indicative, given the small combined sample size and the fact that the majority of studies with mixed samples did not report the results by gender and therefore were excluded from this analysis. Given the continuing uncertainty about the relationship between self-harm and alexithymia in men, it would be helpful if future studies ensured sufficient sample sizes to allow the reporting of the results by gender.

It may be, however, that the finding that the relationship between alexithymia and self-harm has a larger effect size in women than in men reflects genuine gender differences. A meta-analysis has shown that men score higher on average than women on measures of alexithymia (Levant et al., 2009) but are less likely than women to self-harm (Bresin & Schoenleber, 2015; see also Hawton et al., 2015). Men tend to use different methods of self-harm compared to women (Bresin & Schoenleber, 2015) and to self-harm for different reasons (Laye-Gindhu & Schonert-

Reichl, 2005; Scoliers et al., 2009). For example, Rasmussen et al. (2016) found that adolescent girls were more likely to endorse wanting to die, and boys more likely to say that they wanted to frighten someone. The authors take this as evidence to suggest that, in adolescents at least, boys are more likely to have external motivations for self-harm than girls, which are perhaps less related to the ability to understand what it is they are feeling, as measured by the TAS20.

2.4.3 Age

There was also a significant difference in the effect size between adult and adolescent samples, with the size of the effect of the relationship between self-harm and alexithymia larger among adolescents than among adults. These results may be confounded by the predominance of clinical settings for adult samples, compared with a majority of community settings for the adolescent studies, a comparison of which is discussed below. Alexithymia scores tend to be higher in adolescent samples (Honkalampi et al., 2009; Oskis et al., 2013). The TAS20 has been shown to be less reliable in children and young teenagers, with reliability increasing with age (J. D. A. Parker et al., 2010). It is possible that the features of alexithymia are mimicked in adolescents, who have not yet developed emotional awareness abilities, and that it is only in early adulthood that alexithymia itself can be measured as a stable personality trait. The early teenage years are also a common time for the onset of self-harm (Griffin et al., 2018; C. Morgan et al., 2017). It may be that for adolescents rather more than for adults, self-harm is related to the difficulty in understanding emotions and talking about feelings. Unfortunately a systematic review of self-reported, non-suicidal reasons for self-harm found that the heterogeneity of the literature precluded any meaningful analysis of function by

demographic characteristics, including age, so this remains an interesting area for future research (Edmondson et al., 2016).

2.4.4 Community and Clinical Samples

Subgroup analysis revealed a larger effect size in those studies of community samples compared with clinical samples. The difference between the two groups was statistically significant in the subscale DIF but not total TAS20. A smaller effect size in clinical samples is unsurprising, given the evidence that levels of alexithymia are generally higher in clinical populations than in the general population (McGillivray et al., 2017). Alexithymia has been found to be higher among people with psychological disorders, such as depression (Honkalampi et al., 2000; Son et al., 2013). Among the studies in the current review, two found that depression mediated, at least partially, the relationship between alexithymia and self-harm (Garisch & Wilson, 2015; Lambert & de Man, 2007). In contrast, Lee, (2016) found that alexithymia was a significant predictor of self-harm, independent of depression, and Sleuwaegen et al. (2017) observed that in their sample of BPD patients the relationship between self-harm and DDF (although not DIF or total TAS20) held, even controlling for depression. The finding of the current review, of a significant relationship between alexithymia and self-harm even in clinical settings, suggests that this is a relationship that is at least partially independent of other clinical symptoms.

2.4.5 Lifetime and Recent Self-Harm

Studies that measured lifetime self-harm had a smaller combined effect size than those studies that measured recent self-harm, although the difference was not statistically significant. It is hard to draw conclusions about the nature of the relationship between alexithymia and self-harm over time from these almost

exclusively correlational studies. Only two studies distinguished between participants who had never self-harmed, those who last self-harmed over a year ago ('historic') and those who had self-harmed within the past year ('recent'). Anderson and Crowther (2012) found that, in their undergraduate sample, DIF scores were significantly lower among those who had never self-harmed than among those with either recent or historic self-harm. There was no significant difference in the DIF scores between participants with recent or historic self-harm. Moseley et al. (2019) reported a marginal ($p = 0.53$) difference between participants with recent and those with historic self-harm, but in a logistic regression alexithymia could not distinguish between participants who had never self-harmed and those with historic self-harm. If alexithymia were a stable trait, it would be expected that the relationship between alexithymia and past self-harm would be similar to that between alexithymia and recent self-harm. However, it is generally accepted that alexithymia has relative, rather than absolute, stability (Porcelli et al., 2011) and may change over time, for example in relation to depression (Honkalampi et al., 2001) or as a result of treatment (Cameron et al., 2014). In addition, the studies may to some degree be capturing secondary alexithymia which, like self-harm, may have developed in response to stressful life circumstances (de Vente et al., 2006). Future research could usefully distinguish between recent and past engagement in self-harm, in order to extend understanding about the longitudinal relationship between alexithymia and self-harm.

2.4.6 Model of Self-Harm

Many of the studies included in the review interpreted the association between alexithymia and self-harm as consistent with an affect regulation model of self-harm. According to this model, self-harm is conceptualised as a means of

regulating unwanted emotional experience (Chapman et al., 2006), either to manage overwhelming emotion (Klonsky, 2007), or to feel something instead of feeling numb (Tolmunen et al., 2008). Only one of the studies in the current review analysed the functions of self-harm in relation to alexithymia. Moseley et al. (2019) found that alexithymia was a significant predictor of participants' endorsement of NSSI as a means of regulating high-energy states, such as to relieve stress or pressure, or of communicating to others. This would appear to be consistent with the general finding of this review and D. Greene, Boyes, et al. (2020) that the relationship between self-harm and alexithymia is driven by difficulties in identifying and describing feelings, which may hamper use of more adaptive regulatory strategies.

2.5 Limitations

Searches for the current review were limited to published data and articles published in English, which may have led to the exclusion of other relevant research. Furthermore, of the 31 studies which were identified as meeting the original search criteria, only 23 provided sufficient data to include in the meta-analysis of total alexithymia and self-harm, with a further four contributing to the analysis of the TAS20 subscales. The availability of gender specific data was also patchy, with the result that these results require further replication.

Heterogeneity between the studies was high. Although the review investigated whether specifying motivation for self-harm as non-suicidal affected the relationship between self-harm and alexithymia, there were other differences between the studies in the way in which self-harm was defined, which were too various to allow for further subgroup analyses. Definitions varied between single questions to multi-item lists, in which methods of self-harm are specified. Single

question definitions have been shown to underestimate the prevalence of self-harm (Swannell et al., 2014), and therefore may not be comparable with validated measures of self-harm such as the DSHI (Gratz, 2001). In addition, while some studies used a continuous scale, taking into account the frequency of self-harm, most used a binary distinction between people who had never self-harmed, and people who had self-harmed at least once. There is evidence to suggest that frequency of self-harm is related to severity of psychological distress and that a single incident may not be comparable to habitual engagement in self-harm (Fox et al., 2015).

Alexithymia was consistently measured using the TAS20 or its predecessor the TAS26. This makes comparison between studies easier, but it relies on the scale adequately capturing the underlying trait. Other measures exist, such as the Bermond-Vorst Alexithymia Questionnaire (BVAQ; Vorst & Bermond, 2001, see section 1.2.3), reflecting alternative conceptions of alexithymia. Both the TAS20 and the BVAQ are self-report scales, however, and, it has frequently been observed that asking people who struggle to identify their emotions to complete a questionnaire about their emotional experience is inherently problematic (G. J. Taylor et al., 1997). It would be useful to test the findings of the current review using observer rated measures of alexithymia. Alternatively, building on evidence associating alexithymia with broader failures in interoception (awareness of bodily sensation), proxy measures, such as heartbeat detection tasks, may provide a more objective means of assessment (Brewer et al., 2016; Herbert et al., 2011).

2.6 Conclusions for the Current Research Programme

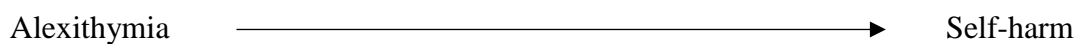
The meta-analysis identified a medium effect size of the relationship between self-harm and alexithymia, particularly difficulty identifying and describing feelings, indicating that people with a history of self-harm score on average significantly

higher on measures of alexithymia than people with no history of self-harm. The effect size of the relationship between self-harm and alexithymia was larger among women than men, and in adolescent than adult samples. The review identified three outstanding issues concerning the relationship between alexithymia and self-harm, namely the robustness of the association in men, whether the relationship is mediated by depression or other psychological factors and whether the association with alexithymia is different for historic, compared with recent, self-harm. Each of these questions is addressed in Study 3 (Chapter Five), and the issue of alexithymia in relation to recent versus historic self-harm is also tested in Study 2 (Chapter Four).

The relationship between alexithymia and self-harm confirmed by the current review and meta-analysis is summarised in a very simple model (Figure 2.7), which will be developed throughout this thesis. The correlational design of almost all the studies included in the review preclude firm conclusions being drawn about the causal direction of the relationship. The theoretical conception of alexithymia as a trait, however, would suggest that it is the difficulty understanding and describing feelings that leads to the use of maladaptive coping mechanisms such as self-harm. Indeed, the sole longitudinal study in the review found that alexithymia predicted self-harm during the five months between baseline and follow-up, while self-harm at baseline did not significantly predict alexithymia at follow-up (Garisch & Wilson, 2015). As a result of this evidence, and alexithymia theory, therefore, Model 1.1 proposes a causal relationship from alexithymia to self-harm.

Figure 2.7

The Relationship Between Alexithymia and Self-Harm



Despite the continued interest in the relationship between alexithymia and self-harm, none of the reviewed studies set out to test *why* the relationship might exist. As detailed in section 2.4.6 above, the relationship tended to be interpreted as consistent with an affect regulation model of self-harm, based on the strong associations between self-harm and the alexithymia subfactors DIF and DDF. Studies 2 and 3 of this thesis therefore test the hypotheses that the relationship between alexithymia and self-harm is mediated by, first, low levels of a protective regulatory trait, namely mindfulness (Study 2) and, second, by poor emotion regulation (Study 3). In addition, based on evidence linking alexithymia with impaired interoception (Brewer et al., 2016), Study 3 tests the hypothesis that alexithymia mediates between interoceptive sensibility and self-harm. An exploratory study (Study 4) was also carried out to identify which, if any, non-suicidal functions of self-harm were associated with alexithymia. Finally, Study 5 is a qualitative inquiry into the experience of self-harm in young adults who report difficulties identifying and describing how they feel. The research questions and hypotheses addressed in the respective studies required different methodological approaches. These are detailed in the next chapter, which also sets out the methodological framework for the research programme as a whole.

Chapter Three: Methodology

3.1 Introduction

The aim of this chapter is to describe the methodological approach used to investigate the relationship between alexithymia and self-harm. First, the overall research design is presented. Second, the use of both qualitative and quantitative methods within a mixed methods design is explained and justified, based on an epistemology of pragmatism. Third, I outline how the findings of the separate studies were integrated using a mixed methods framework. The penultimate section outlines the ethical challenges faced during this programme of research. Finally, the chapter concludes with some reflections on how my personal motivation may have affected the research process.

3.2 Research Design

The design and the choice of method for the individual studies in the research programme was based on the nature of the research questions set out at the end of the previous chapter. Table 3.1 sets out the main research questions and summarises the methods used to investigate each one. The programme is comprised of both quantitative and qualitative empirical research and uses a mixed methods approach to integrate the findings from the separate studies.

Table 3.1*Research Hypotheses and Questions Addressed in this Thesis*

Research question	Methodological approach
Why is there a relationship between alexithymia and self-harm?	
1 Mindfulness mediates the relationship between alexithymia and self-harm. (Study 2)	Theory-driven Hypothesis-testing
2 Emotion dysregulation mediates the relationship between alexithymia and self-harm. (Study 3)	Confirmatory Quantitative
3 Alexithymia mediates between interoceptive sensibility and self-harm. (Study 3)	
4 What non-suicidal functions of self-harm are associated with alexithymia, controlling for depression and anxiety? (Studies 4a and 4b)	Exploratory Mixed methods (QUAN+qual)
5 What is the experience of self-harm in young adults who report difficulties identifying and describing how they feel? (Study 5)	Exploratory Qualitative Interpretative Phenomenological
6 What do the combined results of the quantitative and qualitative enquiries tell us about the relationship between alexithymia and self-harm?	Mixed methods integration (QUAN+QUAL)

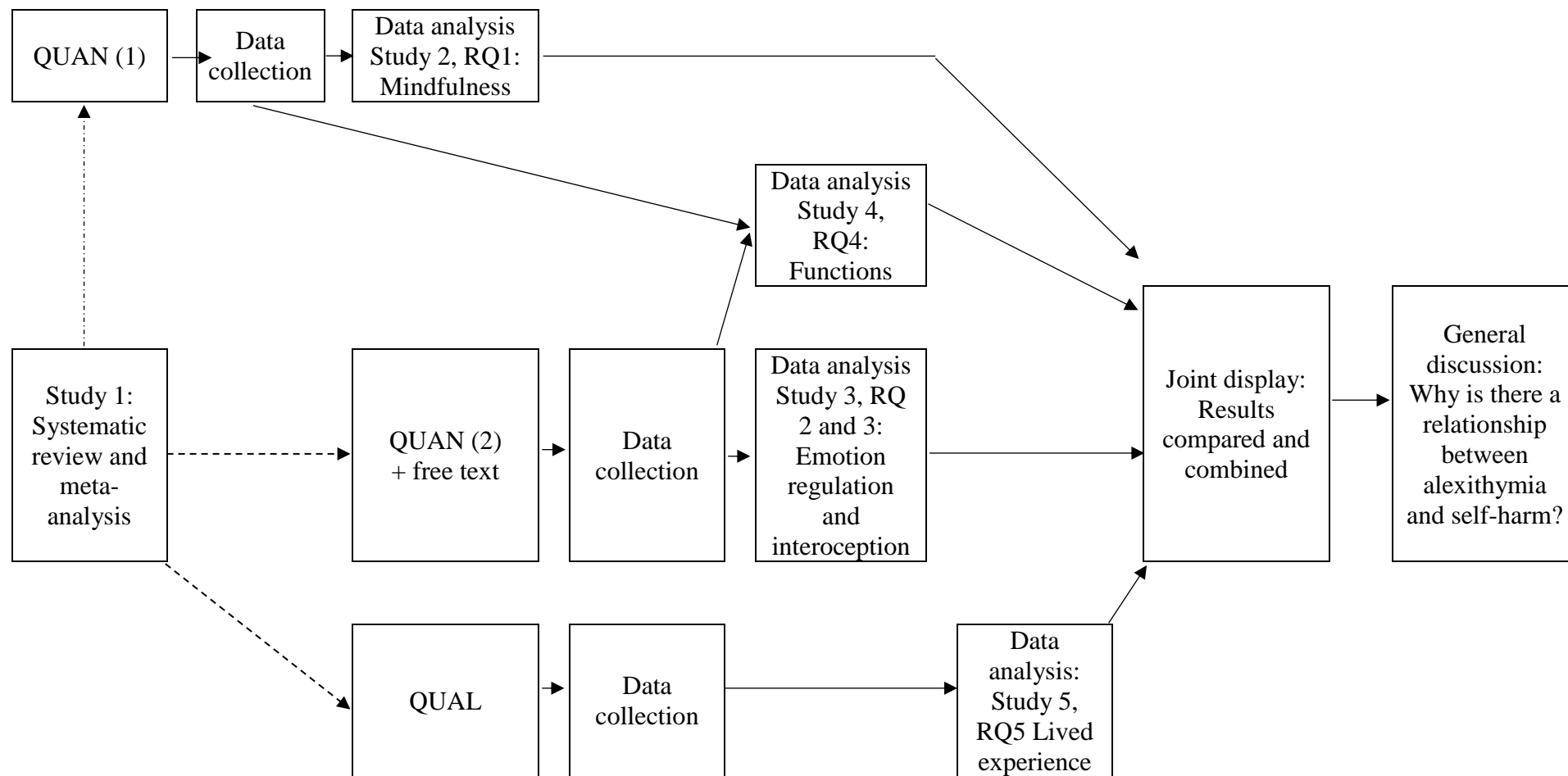
In practice, the design of the research programme occurred in two phases. The first phase used an online survey to collect data to test the first hypothesis, that mindfulness mediates the relationship between alexithymia and self-harm (see Table 3.1). The survey also captured data with which to explore research question four, concerning the non-suicidal functions of self-harm. The functions analysis in the context of alexithymia (Study 4a) was planned and carried out after the data collection and in that sense was exploratory. The second phase consisted of another online survey, to test research hypotheses two (emotion dysregulation mediates between alexithymia and self-harm) and three (alexithymia mediates between

interoceptive sensibility and self-harm). In addition, the second survey sought to replicate the results from the first survey, with regard to the relationship between alexithymia. It also tested the results of Study 4a concerning the functions of self-harm and their relationship with alexithymia, controlling for depression and anxiety. Phase two also included a qualitative study, which consisted of eight in-depth interviews with young adults with a recent history of self-harm and who scored highly on the Toronto Alexithymia Scale. This study was designed to explore the fifth research question, what is the experience of self-harm in young adults who report difficulties identifying and describing how they feel?

The research programme as a whole is based on a mixed methods approach (J. W. Creswell & Plano Clark, 2017; Teddlie & Tashakkori, 2009). It used a convergent design, in which quantitative and qualitative studies are first conducted and analysed separately, and the results then compared and integrated to generate a more complete answer to one overarching research question (J. W. Creswell & Plano Clark, 2017). The design is illustrated in full in Figure 3.1. A ‘true’ mixed methods study is designed as such from the start, with each part exploring the same phenomenon, using different methodological techniques (J. W. Creswell & Plano Clark, 2017). A more accurate description of the approach taken in this thesis, therefore, is that it is a “*program of inquiry*” (Tashakkori & Creswell, 2007, p.4), using mixed method techniques to integrate results from a series of independent studies to answer the overall question, why is there a relationship between alexithymia and self-harm. The rationale for, and implications of, using a mixed method approach are discussed in the next section.

Figure 3.1

Convergent Design of the Research Programme: Integrating the Results of Quantitative (QUAN) and Qualitative (QUAL) Research



RQ = Research Question (Table 3.1)

3.2.1 A Mixed Method Approach

Mixed methods has been described as a “third paradigm”, following quantitative and qualitative research methods (Dures et al., 2011). Definitions vary, depending on the extent to which the emphasis is placed solely on the mixing of methods at a practical level or, additionally, on the methodological and philosophical underpinnings (J. W. Creswell & Plano Clark, 2017). According to Creswell and Plano Clark (2017) a mixed methods research project should include both quantitative and qualitative data collection and analysis, an integration of both sets of results, a clear research design which justifies the sequencing of the quantitative and qualitative elements, and a theoretical or philosophical framework. Advocates of mixed methods research argue that using multiple analytical tools generates more evidence about a research problem than any single tool alone (J. W. Creswell & Plano Clark, 2017). A combined approach benefits from the strengths of quantitative and qualitative research, while compensating for the weaknesses in each. For example, Yardley and Bishop (2017) discuss how quantitative research has high internal validity, which enables generalisable conclusions to be drawn, but the conditions required to test a specific hypothesis may result in low external validity, whereby the test scenario is removed from a real world environment. Qualitative research can address that weakness by exploring the lived experience of the phenomenon of interest in depth in a small group of participants. Combining both approaches can lead to conclusions that are greater than the sum of their parts (Fetters & Freshwater, 2015).

Another advantage of a mixed methods approach is it allows for confirmatory and exploratory questions to be addresses within the same research project. A mixed methods approach can address both outcome (what, when, how much) and process

(how, why) questions simultaneously within one programme of study (Teddlie & Tashakkori, 2009).

The different rationale for using mixed method research were categorised by J. C. Greene et al. (1989) as triangulation, complementarity, development, initiation and expansion. Of these, complementarity, in which the results of one study enhances understanding of the results from another study, and expansion, in which the use of different methods leads to a greater breadth of knowledge about the problem, are the most relevant to the current research programme. Here, both quantitative and qualitative techniques have been used because they facilitate different approaches to answering the overall research question, why is there a relationship between alexithymia and self-harm? The review of the literature presented in the previous chapter highlighted how very few studies had attempted to answer the question of *why* the relationship exists. We considered that different methodological approaches would provide different perspectives on this question. Specifically, the research programme combines confirmatory studies (Chapters Four and Five) with exploratory studies (Chapters Six, Seven and Eight). Together, these build on the existing evidence base, while acknowledging that there may be different reasons for the relationship between alexithymia and self-harm that have not yet been identified.

Often mixed methods research is conducted by teams, in which experts in quantitative and qualitative methods carry out the separate phases of the study, thereby maximising the skills and knowledge brought to bear on the research question. This was not possible in the current research programme, since all the research was undertaken by one person, but the research benefited from the support of a supervisory team with expertise in quantitative and qualitative research. In

addition, the decision to use a range of methods, appropriate to the research questions, had a secondary advantage in enabling me to learn several new research methods during my doctorate.

3.3 Ontological and Epistemological Paradigm

The current thesis is based on pragmatism as its underlying philosophical paradigm. Pragmatism has become the most common epistemological approach for mixed methods research (Bryman, 2006b, 2007) and is the one recommended by two of the leading textbooks on the subject (J. W. Creswell & Plano Clark, 2017; Teddlie & Tashakkori, 2009). To understand why that is the case, and the implications of the adoption of pragmatism, including in the current thesis, it is useful to review briefly the debate that have been at the heart of the development of mixed methods research practice.

Although there are earlier examples of different methods being combined in a single study or programme of research, Creswell and Plano Clark (2017) suggest that it was during the 1980s that mixed methods began to be formalised as a means of exploring complex research problems. This period was, however, characterised by the ‘paradigm wars’, in which qualitative researchers in particular argued that the combination of qualitative and quantitative research was not possible, due to their fundamentally opposing ontological bases (Guba & Lincoln, 1994; Lincoln & Guba, 1985; Smith, 1983). Their arguments often relied on a simplified characterisation of quantitative research as based on a positivist philosophy, in which reductive methods had long been used to prove testable hypotheses about the nature of an objective reality. In contrast, qualitative research was only recently gaining recognition and respect as a means of exploring subjective meaning making, largely based on constructionism, in which there is no one ‘truth’, but only our individual

constructions of our experiences of the world. This debate led to the ‘incompatibility thesis’ which maintained that it was impossible to combine quantitative and qualitative data because of these apparently opposing and irreconcilable ontological positions (Howe, 1988). Those who adhered to this purist argument of incompatibility assumed a one to one correspondence between epistemology and method, such that researchers who held a positivist world view would inevitably use quantitative research techniques, while constructionists would employ qualitative techniques (Smith, 1983).

However, others argued that the apparent dichotomy between quantitative and qualitative research and their respective ontological underpinnings was never as absolute as this purist account would imply (Morgan, 2007). In practice, it was argued, the impossibility of combining quantitative and qualitative data was refuted daily in the ‘real’ world, where information is frequently presented numerically, alongside contextual narrative examples. Furthermore, quantitative research was also subject to context and the value-driven decisions made by the humans that practice it. Even at a paradigmatic level, Morgan (2007) argued that the definition and delimitation of specific paradigms (such as ‘positivism’ or ‘constructivism’) was itself contextually subjective (rather than being, in some way, pre-ordained). Paradigms viewed in this way are not fixed and do not correspond to siloed methodologies. In contrast, some mixed method researchers took the view that the ontological differences between the traditional paradigms were valid, but rather than prevent a mixed approach, they were themselves a valuable part of the research process (J. C. Greene, 2008). Greene (2007) proposed a ‘dialectical approach’ in which the differences inherent in multiple paradigms were made explicit. Such

differences give rise to contradictory ideas and tensions within the research process which may produce new insights (J. C. Greene, 2007).

Other mixed method researchers pursued a different approach and adopted a ‘third way’ paradigm, based on the philosophy of pragmatism as articulated by John Dewey, William James and Charles Sanders Peirce (Teddlie & Tashakkori, 2009). Pragmatism served both as a practical means of moving the debate on from the ‘paradigm wars’, which reflected actual research practice, and also as a different philosophical basis for methodological choices (Bryman, 2006b). Although pragmatists agreed with positivist philosophy that there is a ‘reality’ independent of ourselves, they argued that this ‘reality’ may not be determinable in a world in which knowledge is subject to historical, social and cultural context (Cherryholmes, 1992). ‘Truth’, therefore, is provisional and subject to change. Instead of a search for truth, pragmatist philosophers such as Dewey placed great importance on the practical consequences of actions. Dewey emphasised the importance of focussing on “consequent phenomena” in research (Dewey, 1931, cited in Cherryholmes, 1992, p. 13). Thus it is not sufficient to explain past events or experiences; rather the role of research should be to generate “functional” knowledge that that will lead to consequences consistent with the researcher’s own values (Dures et al., 2011). Those values are made an explicit and integral part of the research process (Teddlie & Tashakkori, 2009). The pragmatic emphasis on functionality means that the starting point, and driving force, of a research programme becomes the research question, rather than a particularly ontological stance. The researcher is free to make methodological choices that provide the best means of answering the question, drawing as appropriate on both quantitative and qualitative tools (J. W. Creswell & Plano Clark, 2017).

It should be acknowledged that there remain some who believe that the ontological differences inherent in quantitative and qualitative research are not compatible (e.g. Sale et al., 2002). However, in practice, pragmatism has become a popular guiding principle for mixed method researchers. Interviewing practitioners about the challenges of mixed method research, Bryman (2007) found that nearly all interviewees saw themselves as pragmatists and only one of the twenty people interviewed expressed concern about combining two potentially opposing ontological positions.

The current programme of research is based on a philosophy of pragmatism for three main reasons. First, pragmatism emphasises the search for ‘functional’ knowledge. Mixed methods are, for example, commonly used in the field of health psychology, because of the need to combine medical knowledge with the subjective experiences of illness (Dures et al., 2011). In the current programme of research, the goal of investigating the relationship between self-harm and alexithymia was not a rarefied academic exercise, but rather one which it is hoped may affect understanding of self-harm, and, potentially, influence future clinical or preventative interventions. Second, pragmatism allows the choice of methods to be dictated by the research question, and not by any prior ontological preference. Since the question of why there is a relationship between alexithymia and self-harm is a broad one, it has been broken down into separate and specific research hypotheses and questions which each lend themselves to a particular method of enquiry. Thus, the confirmatory research questions (Table 3.1) were investigated using quantitative, inductive techniques, while the question about lived experience was explored through a qualitative design based on a phenomenological epistemology. Third, a pragmatic approach recognises the role of the researcher as an active participant in

the research process, although quantitative research techniques include steps to limit the possibility of bias, while in qualitative research the researcher plays an explicit and active role in the generation and interpretation of data. In a doctoral thesis, in which all the research has been designed and carried out by one person, it may be particularly important to recognise where and in what way the researcher's influence has been felt.

3.4 The Method of Mixed Methods

Methods specific to the quantitative and qualitative studies are presented and discussed in the relevant empirical chapters. However, the value of taking a mixed methods approach lies in the integration of the results such that the whole is greater than the sum of the parts. The aim of the research programme was to answer one overarching question, namely why is there a relationship between alexithymia and self-harm. To keep this question in mind, each empirical chapter concludes with a diagrammatic model of the relationship to which is added the results of the current study. However, the main integration phase occurs only in Chapter Nine, after the quantitative and qualitative studies have been presented individually.

In planning the approach to the integration of results, I drew on three sources. First, I found Yardley and Bishop's (2017) conception of "composite analysis" a useful one. They argue that it is not the methods that should be mixed, because of the need for both quantitative and qualitative aspects of a research project to be conducted with integrity and rigour. Instead it is the findings that should be integrated "*in a manner that respects their unique characteristics and thus exploits their potential to yield complementary insights*" (Yardley & Bishop, 2017, p. 362). Thus, in the current thesis, each study was designed, carried out and presented according to the required standards of the respective method used and only

integrated in full in Chapter Nine. Second, I followed Creswell and Plano Clark (2017)'s framework for integrating data collected using a convergent design, in particular the idea of finding 'common concepts' across the studies, and the use of a joint display to represent the results. Finally, I drew on Teddlie and Tashakkori's (2009) recommendation to examine the results of each study in relation to each research question, before considering how each study contributes to the overarching question of why there is a relationship between alexithymia and self-harm. Thus, the overall integration process followed these steps:

1. Each research question was investigated separately in full, using the appropriate quantitative or qualitative method. The results were written up for each study separately, and discussed in the context of theory and the empirical literature.
2. The results from each study were then considered in the context of each research question (Table 3.1). The aim of this step was to assess whether there was confirmatory or conflicting evidence concerning individual research questions, and not merely in relation to the main research question of why there is a relationship between alexithymia and self-harm.
3. A joint display (J. W. Creswell & Plano Clark, 2017) was constructed in which the results from each study were presented according to each research question, with an additional column to provide an assessment on whether the results converge or diverge (Chapter Nine, Table 9.1).
4. If divergent results were found, an assessment was made to judge whether the differences were due to methodological factors. If this was not the

case, and if the necessary data were available, the results were re-examined to see if they could be interpreted in a different light.

5. The integrated results were then discussed in the context of theory and empirical literature to draw inferences and conclusions about why there is a relationship between alexithymia and self-harm.

3.5 Ethics

Each study in the current research programme received ethical approval from Middlesex University Ethics Committee. Again, specific measures designed to ensure ethical standards were met are described in the individual empirical chapters. However, the ethical considerations that underpin the research programme as a whole justify a separate discussion at this point in the thesis.

3.5.1 Ethics of Researching Self-Harm

Engagement in self-harm is a personal and potentially sensitive subject. The research objectives, including the desire to improve clinical practice, need to be set against the potential for invoking negative or distressing feelings in participants. Concern for the wellbeing of participants has been linked to a conservative approach among members of ethics committees when considering applications for research into suicide or self-harm (Lakeman & FitzGerald, 2009). The evidence suggests, however, that participating in research about suicide or self-harm does not lead to a significant increase in distress or the urge to self-harm (Biddle et al., 2013; DeCou & Schumann, 2018; P. Smith et al., 2010; Whitlock, Pietrusza, et al., 2013). In one experimental, online study, Muehlenkamp et al. (2015) randomly allocated participants to respond either to a survey which included questions about self-harm from the Inventory of Statements About Self-Injury (Klonsky & Glenn, 2009) or to a survey which did not include questions about self-harm. There were no significant

differences between participants in the two conditions in the urge to self-harm or the incidence of self-harm either immediately after the survey or at a three-week follow-up. Furthermore, participants in the experimental condition reported a *greater* reduction in distress after taking the survey than participants in the control condition. It might be assumed that qualitative research, in which the participant is asked to talk at length about their experiences, might affect participants more than an online survey, but here too there is evidence to suggest the experience may be cathartic. Reviewing evidence from four qualitative studies about self-harm, Biddle et al. (2013) found that between 50% and 70% of participants reported improved mood after the interview, while those participants reporting a worsening of mood (18-27% across studies) believed the effects would be short-lived. In both these studies, participants who answered questions about self-harm reported positive feelings arising from the opportunity to contribute to scientific research (Biddle et al., 2013; Muehlenkamp et al., 2015).

A small minority of Muehlenkamp et al.'s (2015) participants did, however, report some lasting distress after taking part in the study, and, although this was not related to whether or not they had answered the self-harm questions, the authors reflected that there was always a need for researchers to make every effort to minimise any negative impact of participation in research. With this in mind, to mitigate against potential distress to participants, a number of practical measures were put in place at each stage of the current research programme, over and above the basic requirements of ensuring fully informed consent. These are detailed in the respective empirical chapters.

3.5.2 Ethics of Researching Alexithymia

Alexithymia is not a widely-known concept. It was therefore unlikely that potential participants would be familiar with alexithymia or to know how they themselves would score on a measure of alexithymia. This presented an additional ethical dilemma in the qualitative study (Study 5), where the eligibility criteria included scoring above 51 on the Toronto Alexithymia Scale. Alerting participants to their score might be considered to constitute a diagnosis, or at the very least impose on the participants a label (“alexithymic”) that may change the way they think about themselves. The literature offered little guidance on how other researchers had dealt with this issue. Qualitative researchers often employ purposive sampling techniques to select people who fit their area of interest. Inevitably, purposive sampling will involve the inclusion and exclusion of certain participants according to the researcher’s criteria. However, usually the screening is to exclude people who might be distressed by the research (e.g. current suicidal ideation) or to include people with a certain condition of which they are already aware (e.g. people suffering from depression). In a rare exploration of this subject, Palmer et al. (2011) discuss the ethics of screening for depression and intimate partner violence in intervention studies. The authors argue that “*screening brings with it new information and possible burdens that did not exist before*” (Palmer et al., 2011, p. 4). They cite qualitative evidence of people declining to take part in trials following screening, because they did not want to be labelled. In intervention studies the potential impact on the individual may be considered to be offset by the potential benefit to future sufferers, or, if the participant is allocated to the intervention group, the potential benefit of receiving treatment. In a qualitative study, however, although the intention is to increase understanding of a particular experience, there is no treatment on offer to participants, nor is the study trialling a

treatment approach that might directly benefit future sufferers. Participation in a qualitative study can have a positive impact, through the act of telling one's story and being listened to, but those benefits are not guaranteed.

The decision was taken to adopt the approach taken by Martin et al. (2003) who used qualitative interviews to explore students' self-handicapping, defensive pessimism and goal orientation. In that study, the researchers explicitly used descriptive language in all communication with participants, rather than potentially labelling terms such as a "high self-handicapper".

"At no stage were the terms self-handicapping or defensive pessimism used by the interviewer in the interviews. Descriptions of the behavior [sic] rather than their labels were used." (Martin et al., 2003, p. 619)

Similarly, in the current research, no communication with potential participants used labels such as "alexithymic" or "alexithymia" and no numerical scores were provided to participants. Instead it was made clear to participants that they had been recruited because, in the online or screening surveys, they had endorsed statements that indicated they had difficulties in identifying and describing feelings.

This left one dilemma which was not resolved by Martin et al. (2003), namely how to present the results in any oral or written dissemination. At no point in this thesis do I use the term "alexithymic", which would, in any case be inappropriate, given the characterisation of alexithymia as a dimensional rather than a categorical trait. In writing up the qualitative study for this thesis and for potential publication, I have described participants as having scored above a certain level on a measure of alexithymia, which measures their ability to identify and describe their feelings. It is hoped that this approach limits the 'new information' provided to any participant

who might read a published report and contextualises it against information that is already known to them and which was explicitly discussed in the briefing and interview process.

3.6 Reflexivity

The fact that my interest in this subject grew from my experience as a Samaritan's listening volunteer, and the very practical desire to find a way to help people in distress talk about their feelings, has doubtless influenced the direction of the research. The potential mediators investigated in Chapters Four and Five were chosen in part because they could help focus future interventions targeted at people who struggle to identify and describe their feelings. In addition, it was important to me to include in the research programme the qualitative element of the functions analysis presented in Chapter Six, and more specifically the qualitative study (Chapters Seven and Eight). Aware that every caller to Samaritans has their own individual story, I wanted to give voice to the individuals who live the phenomenon which I was investigating. The eight interviews were without doubt the most inspiring and humbling part of the research and I have reflected further on this experience in Chapter Eight, Section 8.4.

**Chapter Four: Study 2 - The Alexithymia and Self-Harm Relationship: The
Mediating Role of Mindfulness**

ABSTRACT

Objectives. The aim of the current study was to investigate whether the observed relationship between alexithymia and self-harm was explained by low levels of dispositional mindfulness. Self-harm was defined as any act of self-injury or self-poisoning, irrespective of motivation.

Methods. An opportunity sample of 325 community-based adults completed an online survey measuring their history of self-harm, alexithymia (Toronto Alexithymia Scale) and mindfulness (Five Facets of Mindfulness Questionnaire).

Results. Alexithymia was significantly higher among participants with a history of self-harm, compared with participants with no history of self-harm. All mindfulness facets were significantly lower among participants with a history of self-harm except the facet Observe which was significantly higher in that group. A multiple mediation analysis found that the mindfulness facets Non-judge and Non-react were positive, significant mediators of the relationship between alexithymia and self-harm, but the facet Observe suppressed the relationship.

Conclusions. The relationship between alexithymia and self-harm can be explained in part by deficits in mindfulness skills, particularly the ability to accept emotional experience without judgment or reaction. Conversely, the external orientation of alexithymia may itself be protective against self-harm, through the avoidance of excessive introspection. Thus, merely learning to observe inner experience, without the ability to understand and accept that experience, may have adverse consequences.

4.1 Introduction

The systematic review summarised the evidence from multivariate analyses, which assessed the additional variables that might affect or explain the relationship between self-harm and alexithymia (section 2.3.5). Aside from demographic characteristics, the majority of the variables tested alongside alexithymia as predictors of self-harm were risk factors, such as depression, dissociation, poor emotion regulation or a history of abuse. Very few studies considered protective factors. One exception was Garisch and Wilson (2015), who found self-esteem to be protective against self-harm among adolescents, as well as resilience and mindfulness. This was corroborated by Lin et al. (2017) who, conversely, identified low self-esteem as a significant predictor of self-harm in adolescents, controlling for alexithymia, the Big 5 personality traits and coping styles. However, neither study tested whether the relationship between self-harm and alexithymia was mediated by any protective factors. The aim of Study 2 of the current research programme, therefore, was to investigate whether the relationship between alexithymia and self-harm may be attributable to the absence of protective factors, in particular dispositional mindfulness.

Defined as “paying attention in a particular way: on purpose, in the present moment, and non-judgmentally” (Kabat-Zinn, 1994, p.4), mindfulness appears to protect against symptoms of poor mental health (De Frias & Whyne, 2015) such as obsessive, intrusive thoughts (Emerson et al., 2018) and rumination (Keune et al., 2012). Dispositional, or trait, mindfulness is, in many ways, the conceptual opposite of alexithymia. The external orientation of alexithymia results in a lack of attention paid to inner experiences (Preece et al., 2017), with the result that health outcomes are attributed to external factors over which the individual feels they have no control

(Hungr et al., 2016). In contrast, integral to mindfulness is an awareness of present moment experience, including thoughts, feelings and sensations, which contributes to greater emotional clarity (Coffey & Hartman, 2008). Unsurprisingly, therefore, mindfulness has been found to be negatively correlated with alexithymia (Baer et al., 2006; Teixeira & Pereira, 2013). Furthermore, a meta-analysis of four randomised controlled trials found a significant pooled effect of mindfulness-based interventions in reducing alexithymia (Norman et al., 2019). In one of these trials (Santarnecchi et al., 2014), the decrease in alexithymia observed in participants undertaking an eight week Mindfulness-Based Stress Reduction course (Kabat-Zinn et al., 1985) was negatively correlated with an increase in right insula thickness, an area of the brain associated with awareness of bodily sensation and emotional awareness (Craig, 2009).

Mindfulness has been found to be significantly lower in people who self-harm, in samples of both adolescents (Lundh et al., 2007) and young adults (Heath, Joly, et al., 2016). Mindfulness partially mediated between depression and self-harm in an adolescent sample (Heath, Carsley, et al., 2016), and another study found that the relationship between mindfulness and self-harm was itself mediated by self-control (Yusainy & Lawrence, 2014). These results provide evidence for the protective role of dispositional mindfulness, particularly the ability to accept, rather than react to, emotional experience. Furthermore, longitudinal evidence suggests that the act of self-harm may itself reduce levels of mindfulness, leading to reliance on self-harm as a coping mechanism in the absence of more adaptive strategies (Garisch & Wilson, 2015).

Mindfulness practice forms part of some of the therapeutic treatments for self-harm such as Dialectical Behavioural Therapy (DBT; Linehan, 1993) and

Acceptance and Commitment Therapy (ACT; S. C. Hayes et al., 1999). Whilst a systematic review indicated tentatively promising results for DBT in treating self-harm (Turner et al., 2014), little research has been conducted to identify the types of people engaging in self-harm for whom mindfulness training would be most beneficial. In addition, mindfulness is a multifaceted construct, incorporating both the awareness and acceptance of experience (Baer et al., 2006). A greater understanding of the differential relationship between individual mindfulness facets and self-harm would improve understanding of the mechanisms involved in the therapeutic use of mindfulness practice.

4.2 Aim of the Study

The aim of the current study therefore was to examine the relationships between alexithymia, mindfulness and self-harm in a community sample of adults, in order to inform possible preventative or therapeutic interventions. Self-harm was defined as any act of self-injury, irrespective of motivation (NICE, 2013). Two main hypotheses, based on the literature, were tested:

- 1) Alexithymia is significantly higher, and mindfulness significantly lower, among those with a history of self-harm, in men and women.
- 2) Mindfulness mediates the relationship between alexithymia and self-harm.

In addition, given the lack of conclusive evidence identified in the systematic review, this study also explored whether the relationship between alexithymia and self-harm was affected by the recency and frequency of self-harm.

4.3 Method

4.3.1 Design

This cross-sectional study was based on an online questionnaire measuring history of self-harm, alexithymia and trait mindfulness.

4.3.2 Participants

Participants were adults over 18 years of age recruited from the general population. There were three reasons for using a sample of adults in the community. First, the systematic review had shown that previous studies sampled principally from three main groups: adolescents, university students and adults in clinical settings, reflecting evidence of the high prevalence of self-harm in these groups (Cipriano et al., 2017; Swannell et al., 2014). There were therefore very few studies of adults in the community, a gap which this study sought to address. Second, the measurement of alexithymia has been shown to be more reliable in adults and older adolescents than in young adolescents (J. D. A. Parker et al., 2010; Säkkinen et al., 2007). Third, adult participants were able to give their informed consent to take part in the survey, which was important for ethical reasons, particularly given that the data collection was conducted over the internet with no direct contact with the researcher.

Opportunity sampling was used and the study was advertised within Middlesex University, and to the general public, via social media and on posters. It was also advertised on websites designed to attract research participants (e.g. www.Callforparticipant.com) and with a specific focus on self-harm and suicide (e.g. Samaritans and the National Self-harm Network). The survey attracted some respondents from outside the UK but, although the questionnaire did not capture data on nationality, the numbers are assumed to be small. A breakdown of the recruitment pathways is given in Appendix 4.1. Participants were predominantly female (89%) and were aged between 18 and 76 with a mean age of 28.75 years (SD = 12.9) (median of 24 and mode of 19). Of the final sample ($N = 325$), 151 (47%)

had a history of engagement in self-harm. Further demographic details are given in Table 4.1.

4.3.3 Materials

The study was given the name of the Mindfulness and Emotion Management (MEM) Study. A bespoke website (www.memstudy.org) was used to present the research and direct people to the survey. Screen shots of the website's pages are included at Appendix 4.2. A poster was created to advertise the study within Middlesex University and locally. The survey itself was hosted on Qualtrics and is replicated in Appendix 4.3.

4.3.4 Measures

4.3.4.1 Demographic data. Participants were asked for demographic information including age, gender, ethnicity, level of education and employment status. The characteristics were chosen in light of evidence of an association with self-harm. Self-harm is consistently associated with younger age (Klonsky, 2011; Mcmanus et al., 2019). Some studies have found higher prevalence of self-harm in women than men (Mcmanus et al., 2019; Muehlenkamp et al., 2013) while other studies have found no gender difference (Klonsky, 2011). There is also some evidence for an association between self-harm and ethnicity (Klonsky & Muehlenkamp, 2007) education achievement (Rahman et al., 2018) and employment status (Barnes et al., 2016), although this is not consistent across all studies (e.g. Klonsky, 2011; Mcmanus et al., 2019). A wide range of demographic characteristics were therefore measured, in order to understand the current sample, and to account for any potential confounding factors.

4.3.4.2 Self-harm. Participants were asked “ Have you ever deliberately harmed yourself, for example by cutting, biting, scratching, burning or hitting

yourself, by self-poisoning or by other methods?”. If they said yes to this question they were directed to additional questions about self-harm, based on the Inventory of Statements about Self-injury (ISAS; Klonsky & Glenn, 2009). The ISAS is a 2-part, self-report measure of self-harm, and one of only seven validated measures of self-harm in adults identified in a systemic review (Borschmann et al., 2012).

Correlations with clinical measures indicate good construct validity (Klonsky & Glenn, 2009; Klonsky & Olino, 2008) and the ISAS has been shown to have good one-year test-retest reliability (Glenn & Klonsky, 2011a). In addition to its psychometric properties, the ISAS was chosen as a measure for this study because it was validated using a non-clinical sample of young adults (Klonsky & Glenn, 2009). The first part of the ISAS consists of questions concerning age of onset, frequency and recency of 12 different self-harmful behaviours. To reduce the reporting burden, the standard scale was modified for the current study such that participants were asked to choose from a set of options regarding the frequency of each method of self-harm (never (= “1”), once (= “2”), 2-5 times (“3”), 5-20 times (“4”), 20-100 times (“5”), over 100 (“6) times), rather than estimate an absolute amount. An estimate of overall frequency was then calculated by taking the mean of the ordinal level responses, although clearly this approach may under estimate the frequency of self-harm in participants who have used one method over a hundred times and over estimate it in participants who have used a number of methods a small number of times. In addition, the original ISAS asks participants to give the approximate date of last self-harm, but as the objective of this study was merely to distinguish between those with current (within the past 12 months) and historic (over 12 months ago) self-harm participants were only asked whether they had last self-harmed “within the

last week, between a week and six months ago, between six months and a year ago or over a year ago”.

The second part of the ISAS measures the functions of self-harm. This is the subject of Chapter Six of this thesis where it will be described in more detail.

Although this survey focussed on self-harm without specifying motivation, there is strong evidence that people who self-harm are at elevated risk of subsequent completed suicide (Whitlock, Muehlenkamp, et al., 2013). In addition, it was felt that some people might have attempted to take their own life, but not view that as ‘self-harm’. History of suicidal self-harm was measured by a single, additional question: have you ever attempted suicide? This question was put to all participants, whether or not they had indicated earlier in the survey that they had a history of self-harm. In order to be consistent with the definition of self-harm as any act of self-injury, irrespective of motivation (NICE, 2013), any participant responding yes to the question about attempted suicide was included as having a history of self-harm. In the event, eight participants who answered ‘no’ to the question about self-harm indicated that they had attempted suicide. The analysis presented here includes these participants in the group with a history of self-harm. A sensitivity analysis was conducted excluding these participants from the sample and there was no effect on the pattern of results.

4.3.4.4 Mindfulness. The Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006) is a 39 item scale that combines five previous scales into one in order to provide an overarching measure of trait mindfulness, as well as measuring five separate facets of mindfulness (non-reactivity to inner experience [Non-react], observing sensations, thoughts and feelings [Observe], acting with awareness [Act aware], describing with words [Describe] and non-judging of experience [Non-

judge]). Respondents are asked to rate statements such as “I perceive my feelings and emotions without having to react to them” on a 5 point Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true). The five factors were found to have good internal reliability (Baer et al., 2006) and construct validity (Baer et al., 2008; de Bruin et al., 2012). In the current study the FFMQ and its subscales had good internal consistency, with Cronbach’s Alpha coefficients ranging from .83 (Non-react) to .92 (Non-judge; Table 4.3).

4.3.4.5 Alexithymia. Alexithymia was measured using the Toronto Alexithymia Scale (TAS20; Bagby et al., 1994). The TAS20 was chosen for its psychometric properties and also to ensure that the results could be interpreted against existing evidence. All the studies included in the systematic review (Chapter 2) used the TAS20 to measure alexithymia, which illustrates its ubiquity in the literature. Participants rate statements on a 5 point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The items measure three different aspects of alexithymia: difficulty identifying feelings (DIF; e.g. “I am often confused about what emotion I am feeling”), difficulty describing feelings (DDF; e.g. “It is difficult for me to find the right words for my feelings”) and externally-orientated thinking (EOT; e.g. “I prefer to just let things happen rather than to understand why they turned out that way.”). The TAS-20 was validated using student and clinical samples and has demonstrated good internal consistency ($\alpha = .80$ to $.83$ across different samples), test-retest reliability ($r = .77$; Bagby et al., 1994; Richards et al., 2005) and construct validity (Bagby, Taylor, et al., 1994). It has also been validated for online data collection (Bagby et al., 2014). In the current sample the Cronbach’s Alphas indicated good internal consistency for the total TAS20 score ($\alpha = .89$), DIF (.89) and DDF (.84). In common with the original validation study (Bagby, Parker,

et al., 1994), the consistency of the EOT subscale was slightly below the recommended threshold, at .65.

Participants were also asked about their experience of, and views on, mindfulness training, and about rumination (Roger et al., 2011). For the most part, these data were the subject of a separate analysis and are not reported here.

4.3.5 Procedures

Participants were alerted to the study on Middlesex University's research portal or by email, twitter, by seeing a poster or via a link on a website (e.g. Samaritans). This initial contact made clear that the subject of the research was the relationship between self-harm, mindfulness and emotion management and that participants were sought both with a history of self-harm and also with no history of self-harm, to allow comparisons to be made. Participants were directed to the website www.memstudy.org and those who then decided to take part in the survey followed a link to the survey in Qualtrics. There they were presented with briefing information about the survey and the nature of their participation (Appendix 4.3). They were informed that they could stop at any time, that their participation was entirely voluntary and the responses would be treated confidentially. As part of the briefing participants were given the information of organisations that support people who self-harm. They were asked to indicate their consent by ticking a box; only having ticked the box were they able to continue to the survey itself.

The survey was open in two phases between April 2016 and June 2017. Between April 2016 and August 2016 the survey was available to the general public. Between December 2016 and June 2017, data collection was limited to students at Middlesex University. The data from the two waves were combined for analysis. Participants in the first wave of data collection were given the opportunity to be

entered into a prize draw to win a £50 Amazon voucher. Email addresses for this purpose were collated separately from the rest of the survey data to maintain anonymity. In addition, psychology students at Middlesex University were granted course credits in exchange for participation during either phase of the data collection.

4.3.6 Ethics

The study was granted ethical approval by Middlesex University Ethics Committee (reference PG011). Care was taken to ensure participants were fully briefed about the nature of the study before they agreed to take part. In view of the sensitive nature of the questions concerning self-harm participants were asked at two points during the survey if they needed help now. If they responded 'yes', they were given advice on contacting Samaritans and NHS 111. Details of a wider range of relevant support organisations were included in the debriefing documentation and Middlesex University students were also alerted to the University's Counselling Services (Appendix 4.4).

4.3.7 Data Analysis

This section sets out the principles of data preparation and analysis which apply to all the quantitative studies in this thesis. Specific statistical analyses relating to the relevant research hypotheses are described in the respective, individual chapters. All analysis was conducted using SPSS v.25.

4.3.7.1 Type I and II Errors. Following convention, the threshold for statistical significance throughout this thesis was set at 0.05. This indicates that the probability of a Type I error, or identifying an effect where none exists, is 5% or below. Where multiple tests of significance were carried out on the same data, a Bonferroni correction was used in which the level of significance was divided by the number of tests.

Consideration was given to the sample size in each study to ensure that it was large enough to avoid a Type II error, in which a genuine effect is missed. In each case, evidence was drawn from relevant literature to determine an expected effect size. *G*Power* was then used to calculate the minimum sample size required.

4.3.7.2 Missing data. Participants were excluded if they had not completed over 50% of the responses and/or had not completed the question about whether or not they had a history of self-harm. This was considered to be a good balance between minimising potential bias and ensuring that, from an ethical perspective, as many people as possible who provided data for the studies were included as participants.

Where individual questions had not been answered, data were not imputed, and therefore the relevant variable would not be calculated for that participant. For example, if a participant failed to answer the last question in the TAS20 scale, they would not have a score for the total TAS20 scale, and would therefore be excluded from any analyses involving the TAS20. However, since question 20 relates to the EOT subscale only, the participant would have scores for the DIF and DDF subscales. In each study, the data were examined to determine the proportion of missing values for each computed variable: 5% was considered acceptable. Bivariate analyses were conducted ‘pairwise’, to maximise the use of participant data. However, in multivariate analyses such as multiple regression, the decision was taken to exclude cases ‘listwise’ (following Field, 2013) to ensure that the calculation was based on a complete set of data.

4.3.7.3 Outliers. As part of the data screening each computed variable was examined for outliers, first visually, using boxplots, and second, statistically, using *Z* scores and Mahalanobis D^2 test for multivariate outliers. A conservative approach

was taken (again, following Field, 2013). Any cases where the Z score had an absolute value of 3.29 or over, or where the Mahalanobis D^2 probability was less than 0.001 were examined, and if there was a clear reason for considering that the responses were not genuine (for example, if the answers were all the same, including for any reverse scored items) the case was deleted. However, if there was no such clear reason, then the cases were retained, but a sensitivity analysis was conducted to determine whether the retention of the outliers affected the results of the tests. This approach was taken because all the measures used Likert scales, which have a natural floor and ceiling, and where it is feasible that a participant might genuinely consider that the extreme scores apply to them.

4.3.7.4 Linearity. In order to check that the data meet the assumptions of linearity, the data were inspected visually, using scatterplots.

4.3.7.5 Normality. Computed variables were inspected visually, using histograms, and statistically, using Shapiro-Wilk tests.

4.3.7.6 Multi-collinearity. Multi-collinearity between predictor variables was assessed using tolerance and VIF statistics. Tolerance of below 0.1 and VIF greater than 10 were taken as indicators of multi-collinearity (Field, 2013).

4.3.7.7 Analytical approach to issues of bias. Field (2013) suggests that in samples over 100 the sampling distribution will approximate to normal, due to the central limit theorem. This is the case even if the sample itself appears skewed. The decision was therefore taken to report parametric tests throughout the analysis, because they are more powerful and because there are no non-parametric equivalents of the more advanced multivariate tests. As a matter of precaution, non-parametric tests were carried out (for example on the difference in the key variables between

those with and without a history of self-harm) to check that the results would have been the same.

Where possible, bootstrapping was used (for example in the mediation and regression analyses) because it is a robust method that can overcome issues of bias. In the bootstrapping process, many small samples are drawn from the study sample and the relevant parameters are calculated for each sample in turn. These parameters are then ordered, which provides the limits between which 95% of the parameters fall (the 95% confidence interval).

4.3.7.8 Analysis Relating to the Current Study. Tests of association were conducted using Chi-Square and the difference between groups tested using Students t test or one-way ANOVA. Pearson's r correlation coefficients were derived to test the strength of bilateral relationships between all continuous predictor variables. To test whether mindfulness explained the relationship between self-harm and alexithymia, a mediation analysis was carried out using the bootstrapping technique (Preacher & Hayes, 2004). Since the outcome variable (self-harm) was dichotomous, a method based on logistic regression analysis was used, through the SPSS "PROCESS" tool v.3.4 (A. F. Hayes, 2018).

4.3.8 Power Analysis

Based on the results of the meta-analysis (Chapter Two), a medium effect size of the relationship between alexithymia and self-harm was expected. Using G*Power 3 (Faul et al., 2007), it was estimated that a medium effect size of a significant difference between two independent groups could be reliably identified with a sample size of 176 participants. The study is therefore sufficiently powered for the tests of difference to be reliable. The mediation analysis, based on logistic regression, involved seven predictor variables. Logistic regression requires a larger

sample than linear regression to achieve sufficient power. Bujang et al. (2018) recommend a sample of at least 500 cases, unless a large effect is expected. As previous studies have reported relatively small regression coefficients for TAS20 as a predictor of self-harm (e.g. $\beta = .23$, Lee, 2016), it is likely that the mediation analysis in the current study, was based on 299 cases, is underpowered, increasing the risk of a Type II error.

4.4 Results

4.4.1 Data Preparation

386 people agreed to take part in the survey. One respondent did not meet the minimum age requirement of 18 years of age. A further 60 responses were excluded due to missing data. Of these, 56 people did not complete the outcome variable (history of self-harm) and a further four people did not complete the majority of the predictor variables. The excluded respondents did not differ from included study participants in age, gender, ethnicity or employment status. There was a significant association between missing data and level of education ($\chi^2(5) = 20.58$, exact $p = .002$) with excluded respondents more likely to have no formal qualifications but also more likely to have a first degree as their highest qualification than the included participants. Missing values in the remaining dataset were found to be minimal and to be evenly distributed across participants with a history of self-harm and those with no such history. Two univariate outliers were identified (Z-scores above 3.29). An examination of these two cases revealed no clear reason to exclude them so they were retained in the data presented here. A sensitivity analysis excluding these two cases made no difference to the results. Full details of the data screening are found in Appendix 4.5. The final sample comprised 325 participants.

4.4.2 History of Self-Harm

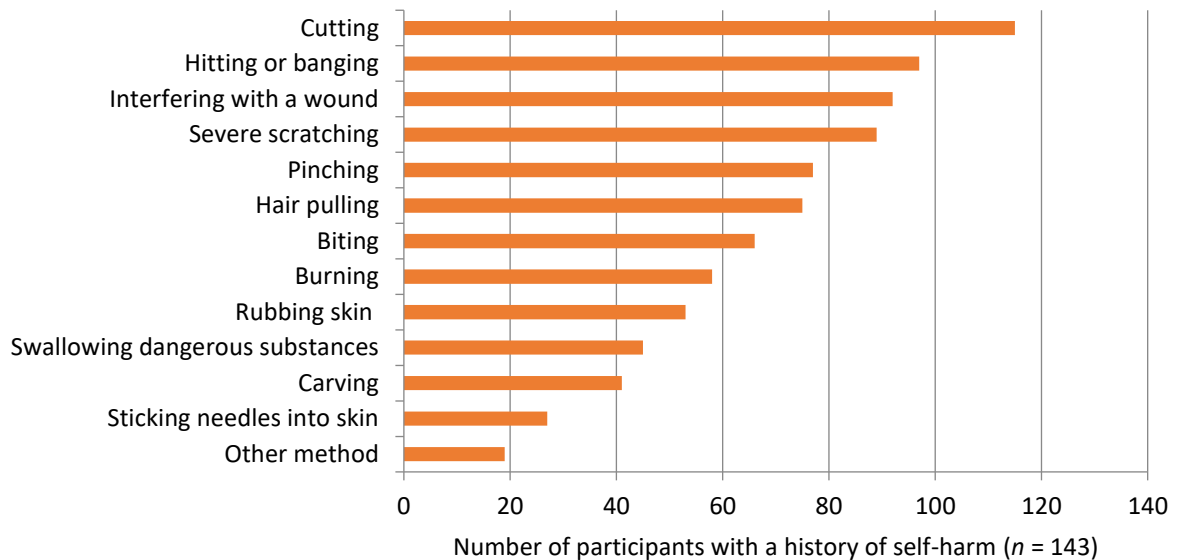
In total, 151 (47%) participants reported having self-harmed at some point in the past. Of these, 58% had self-harmed within the past year (including 19% who had self-harmed within the past week and 27% between a week and six months previously). The mean age of first self-harm was 13.87 ($SD = 4.74$). A total of 57 participants (17.5%) said that they had attempted suicide.

4.4.3 Method and Frequency of Self-Harm

Cutting was the most frequently endorsed method of self-harm (by 80% of participants with a history of self-harm), although, as Figure 4.1 shows, many participants reported using several methods.

Figure 4.1

Method of Self-Harm (Study 2)



Participants were asked to indicate how many times they had used each method of self-harm (Table 4.1). Notably, 24% of participants with a history of self-harm estimated that they had cut themselves over a hundred times.

Table 4.1

Frequency of Self-Harm According to Method (Study 2)

Times engaged in method	Cutting		Biting		Burning		Carving		Pinching		Pulling hair		Severe scratching		Banging or hitting self		Interfering with wound		Rubbing skin		Sticking self with needles		Swallowing dangerous substances		Other	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Never	28	19.6	76	53.5	84	53.5	98	70.5	63	45.0	67	47.2	53	37.3	45	31.7	49	34.8	88	62.4	115	81.0	98	68.5	81	81.0
Once	11	7.7	4	2.8	11	2.8	6	4.3	6	3.6	7	4.9	9	6.3	9	6.3	4	2.8	4	2.8	2	1.4	8	5.6	0	0
2-5 times	27	18.9	25	17.6	23	17.6	15	10.8	15	12.1	22	15.5	20	14.1	28	19.7	14	9.9	17	12.1	11	7.7	19	13.3	4	4
5-20 times	20	14.0	19	13.4	12	13.4	10	7.2	10	15.7	19	13.4	29	20.4	25	17.6	16	11.3	15	10.6	6	4.2	11	7.7	1	1
20-100 times	23	16.1	7	4.9	10	4.9	7	5.0	7	10.0	14	9.9	15	10.6	20	14.1	27	19.1	7	5.0	3	2.1	4	2.8	13	13
Over 100 times	34	23.8	11	7.7	2	7.7	3	2.2	3	13.6	13	9.2	16	11.3	15	10.6	31	22.0	10	7.1	5	3.5	3	2.1	1	1.0

4.4.4 Demographic Differences Among Participants According to History of Self-Harm

Details of participants' age, gender, ethnicity, employment status and educational achievement, according to their history of self-harm, are set out in Table 4.2. There was a significant difference in the mean age of those with a history of self-harm ($M = 27.28$, $SD = 10.21$) and those without a history of self-harm ($M = 30.02$, $SD = 14.04$, Levene's $p < 0.05$ therefore equality of variance not assumed, $t(311.88) = 2.02$, $p = .04$, BCa 95% CI -0.08 to 5.65). Additional analysis showed that there was no significant difference in age between those who had self-harmed within the past year ($M = 25.87$, $SD = 9.66$ $n = 82$) and those who had self-harmed over a year ago ($M = 28.25$, $SD = 9.71$, $n = 60$) ($t(140) = -1.45$, $p = 0.15$ BCa 95% CI -5.44 to 0.94). There was a significant association between each of ethnicity, employment status and educational achievement and self-harm (Table 4.2). Unemployed participants and those with no formal qualifications had the highest proportion of respondents with a history of self-harm (although the numbers of participants in these groups were small). Asian participants were the least likely to report past self-harm, relative to the other ethnic groups (see charts in Appendix 4.6). There was no significant association between gender and self-harm.

Table 4.2*Participant Demographics, With and Without a History of Self-Harm (Study 2)*

Variable		Self-harm		No self-harm		Total		Association between test variable and self-harm
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Gender	Female	134	88.7	155	89.1	289	88.9	$\chi^2(1, N = 321) = 0.38,$ $p = .536^a$
	Male	13	8.6	19	10.9	32	9.8	
	Other	4	2.6	0	0	4	1.2	
Ethnicity	White	100	66.2	96	55.2	196	60.3	$\chi^2(4, N = 325) = 10.23,$ $p = .035$
	Black or black British	15	9.9	20	11.5	35	10.8	
	Asian or Asian British	14	9.3	37	21.3	51	15.7	
	Mixed ethnicity	11	7.3	8	4.6	19	5.8	
	Other/unknown/prefer not to say	11	7.3	13	7.5	24	7.4	
Employment status ^b	Student	68	45.0	79	45.4	147	45.2	$\chi^2(5, N = 325) = 19.91,$ $p = .001$
	Employed	56	37.1	61	35.1	117	36.0	
	Unemployed	18	11.9	4	2.3	22	6.8	
	Self-employed	4	2.6	13	7.5	17	5.2	
	Retired	2	1.3	9	5.2	11	3.4	
	Home/caring responsibilities	3	2.0	8	4.6	11	3.4	
Level of education	No formal qualifications	14	9.3	2	1.1	16	4.9	$\chi^2(5, N = 325) = 22.54,$ $p < .001$
	GSCEs	13	8.6	5	2.9	18	5.5	
	A levels	67	44.4	90	51.7	157	48.3	
	First degree	28	18.5	23	13.2	51	15.7	
	MsC/prof. qualification	25	16.6	45	25.9	70	21.5	
	PhD	4	2.6	9	5.2	13	4.0	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Age		27.28	10.21	30.02	14.04	28.75	12.46	$t(311.88) = 2.02, p = .044$

^aChi square test calculated on the difference between men and women participants only, because of the small number of participants who identified as 'other' in this category.

^bData from five participants who said they were in the 'other' category were recoded based on the answers provided. Two participants who said they were students and in employment, and one participant who was a volunteer, were reclassified as employed. Two participants on disability benefits were reclassified as unemployed.

4.4.5 Alexithymia and Demographic Variables

Across the whole sample there was a significant, negative correlation between alexithymia (total TAS20) and age ($r = -.28, p < .001, N = 315$). There was no significant difference in alexithymia between men ($M = 49.32, SD = 15.23, n = 31$) and women ($M = 49.04, SD = 13.77, n = 282, t(311) = 0.11, p = .915, BCa\ 95\% CI -5.27\ to\ 5.96$). There was no significant effect of ethnicity on TAS20 ($F(4, 312) = 1.43, p = .224$). There was a significant effect of employment status ($F(5, 311) = 4.77, p < .001$) and educational achievement ($F(5, 311) = 5.41, p < .001$) on alexithymia. Post hoc tests revealed that unemployed participants had significantly higher TAS20 scores than employed or self-employed participants, but the number of unemployed participants was small ($n = 21$) so the results can only be taken as indicative. Participants with a master's degree or above had significantly lower TAS20 scores than participants with A levels or below. The association between educational attainment and alexithymia might be a function of age, since younger participants would not have had a chance to gain a degree. Participants with A levels or below were significantly younger than those with a Bachelor's degree or above ($F(5, 317) = 33.76, p < .001$).

4.4.6 Differences in Test Variables According to History of Self-Harm

Descriptive statistics and tests of the difference in FFMQ and TAS20 between those participants with and without a history of self-harm are set out in Table 4.3. There was a significant difference between the groups in all variables except the TAS20 subscale EOT. Scores for total TAS20 and the subscales DIF and DDF were significantly higher among those with a history of self-harm compared with those with no such history ($p < .001$). Total FFMQ and subscales were significantly lower among participants with a history of self-harm, except for the

subscale Observe, which was significantly higher in this group. Effect sizes for those variables that were significantly different ranged from small ($r = .18$ for FFMQ Observe) to medium ($r = .34$ for FFMQ Non Judge).

Although alexithymia was treated as a continuous variable in this study, the number of participants scoring 61 or above on the TAS20 was also calculated, in order to facilitate a comparison with published prevalence rates. Overall, 23.7% of participants scored 61 or above on the TAS20, rising to 36.7% among participants with a history of self-harm (compared with 12.4% for participants with no past self-harm).

Hypothesis 1, that participants with a history of self-harm would score significantly higher on alexithymia and significantly lower on mindfulness, is therefore accepted.

A one way ANOVA was conducted to compare mean TAS20 scores between participants with no history of self-harm, those who had self-harmed but never attempted suicide and those who had self-harmed including with suicidal intent. There was a significant association between self-harm status and alexithymia (TAS20, $F(2,316) = 21.02, p < .0001$). Bonferroni post-hoc tests showed that participants who never self-harmed ($M = 45.25, SD = 11.94, n = 170$) scored significantly lower on TAS20 than those who had only self-harmed without suicidal intent ($M = 51.49, SD = 14.32, n = 92$). Participants who had only self-harmed without suicidal intent scored, in turn, significantly lower on TAS20 than those who had also self-harmed with suicidal intent ($M = 57.85, SD = 14.56, n = 55$).

Table 4.3*Test Variables Descriptive Results, Including the Difference Between Participants With and Without a History of Self-Harm (Study 2)*

Variable ^a (range)	Self-harm			No self-harm			Test of difference		Mean Difference BCa 95% CI		Effect size	
	Cronbach's α	<i>M</i>	<i>SD</i>	N	<i>M</i>	<i>SD</i>	N	<i>t</i>	<i>p</i> ^b	Lower	Upper	<i>r</i>
Total FFMQ (39-195)	0.913	113.45	21.81	145	124.86	18.26	162	4.94	<.001	6.60	16.23	0.28
Observe (8-40)	0.835	23.01	6.31	149	20.71	6.10	168	-3.30	.001	-3.62	-0.95	0.18
Describe (8-40)	0.906	23.71	7.58	150	27.13	5.91	171	4.46	<.001	1.78	5.02	0.26
Act Aware (8-40)	0.890	26.98	6.38	148	29.37	5.91	170	3.47	.001	1.05	3.78	0.19
Non judge (8-40)	0.921	24.48	8.01	149	30.09	6.35	169	6.87	<.001	4.08	7.36	0.38
Non react (7-35)	0.830	15.24	4.71	149	17.22	4.84	171	3.68	<.001	0.92	3.11	0.20
Total TAS20 (20-100)	0.889	53.87	14.69	147	45.25	11.94	170	-5.68	<.001	-11.61	-5.63	0.33
DIF (7-35)	0.886	20.28	7.24	150	15.34	6.02	173	-6.61	<.001	-6.39	-3.49	0.36
DDF (5-25)	0.843	15.63	5.37	173	12.16	4.23	173	-6.39	<.001	-4.57	-2.31	0.36
EOT (8-40)	0.650	17.87	5.01	149	17.89	4.47	172	0.03	.975	-1.05	1.02	0.00

^aFFMQ = Five Facets of Mindfulness Questionnaire; TAS20 = Toronto Alexithymia Scale; DIF = Difficulty Identifying Feelings; DDF = Difficulty Describing Feelings; EOT = Externally Orientated Thinking.

^bThe *p* values were judged against an adjusted critical value of (0.05/11=) 0.005 to account for multiple tests.

4.4.7 Gender Differences in the Relationship Between Alexithymia and Self-Harm

The tests of difference were carried out separately for men and women. These results should be treated with caution as data were only available for 32 men (13 of whom had a history of self-harm). Judged against a critical alpha value of $\alpha = 0.05$, significant differences were observed between men with a history of self-harm and men with no past self-harm only in TAS20 DDF ($t(30) = -2.46, p = .020$) and FFMQ Non-Judge ($t(29) = -2.26, p = .032$). However, these differences did not meet the threshold for significance when adjusted to account for multiple tests ($\alpha = 0.005$). Among female participants there were significant differences in all variables apart from TAS20 EOT, although the difference in FFMQ Observe did not meet the adjusted threshold for significance ($t(280) = 2.72, p = .007$).

4.4.8 Effect of Mindfulness Training on Test Variables

There was no significant relationship between experience of mindfulness training and TAS20, FFMQ or their subscales. There was a significant relationship between experience of mindfulness training and self-harm ($\chi^2(1) = 5.78, p = .016$). Of those participants with a history of self-harm, 58% had some experience of mindfulness training, compared with 42% who had no experience.

4.4.9 Tests of Correlation

Pearson's bilateral tests of correlation between all continuous variables were calculated separately for those with and without a history of self-harm and are set out in Table 4.4. Alexithymia (TAS20) was significantly and negatively correlated with mindfulness (FFMQ) in participants with self-harm ($r = -.743$) and those with no past self-harm ($r = -.680$). The TAS20 subscale DDF and the FFMQ subscale Describe were highly correlated, particularly in participants with a history of self-harm ($r = -.850$).

Table 4.4*Correlations (Pearson's r) for Study Variables (Study 2)*

Variable ^a	Age	TAS20 total	DIF	DDF	EOT	FFMQ total	Observe	Describe	Act aware	Non judge	Non react
Age	1	-.198*	-0.160	-.194*	-0.111	0.074	-0.088	0.154	0.097	0.156	-.223**
TAS20 total	-.320**	1	.864**	.899**	.706**	-.743**	-.322**	-.809**	-.363**	-.530**	-.296**
DIF	-.164*	.876**	1	.697**	.327**	-.667**	-0.161	-.630**	-.405**	-.559**	-.320**
DDF	-.310**	.815**	.622**	1	.544**	-.725**	-.341**	-.850**	-.259**	-.505**	-.315**
EOT	-.357**	.715**	.398**	.396**	1	-.426**	-.342**	-.532**	-.176*	-.203*	-0.063
FFMQ total	.268**	-.680**	-.625**	-.620**	-.378**	1	.551**	.735**	.628**	.738**	.628**
Observe	0.055	-0.089	-0.004	-0.043	-.196*	.433**	1	.335**	0.091	0.074	.370**
Describe	.364**	-.708**	-.555**	-.775**	-.398**	.709**	0.150	1	.307**	.349**	.327**
Act Aware	0.150	-.496**	-.509**	-.404**	-.271**	.692**	-0.045	.348**	1	.430**	0.145
Non Judge	.165*	-.496**	-.566**	-.432**	-.168*	.642**	-0.138	.302**	.626**	1	.407**
Non React	0.118	-.323**	-.294**	-.271**	-.166*	.628**	.409**	.414**	.157*	0.102	1

Note. Coefficients above the diagonal are for participants with a history of self-harm. Coefficients below the diagonal are for participants with no history of self-harm.

^aFFMQ = Five Facets of Mindfulness Questionnaire; TAS20 = Toronto Alexithymia Scale; DIF = Difficulty Identifying Feelings; DDF = Difficulty Describing Feelings; EOT = Externally Orientated Thinking.

*Correlation is significant at the 0.05 level (2-tailed) **Correlation is significant at the 0.01 level (2-tailed)

4.4.10 Difference in Test Variables Depending on the Recency and Frequency of Self-Harm

A one-way between subjects ANOVA was conducted on the recency of the last incidence of self-harm (with levels no self-harm, self-harm within the past year, self-harm over a year ago). There was a significant association between recency of self-harm and alexithymia (TAS20, $F(2, 307) = 32.24, p < .0001$) and mindfulness (total FFMQ, $F(2, 296) = 30.51, p < .0001$). Bonferroni post-hoc tests showed that participants who had self-harmed within the past year ($M = 58.89, SD = 14.23, n = 82$) scored significantly higher on TAS20 than either those who had self-harmed over a year ago ($M = 47.29, SD = 13.13, n = 58$) or those who had never self-harmed ($M = 45.25, SD = 11.91, n = 170$). There was no significant difference in TAS20 between participants who had self-harmed over a year ago and those who had never self-harmed. Similarly, on the FFMQ, participants who had self-harmed within the past year ($M = 105.34, SD = 19.85, n = 80$) scored significantly lower than either those who had self-harmed over a year ago ($M = 124.49, SD = 20.05, n = 57$) or those who had never self-harmed ($M = 124.86, SD = 18.26, n = 162$). There was no significant difference in FFMQ between participants who had self-harmed over a year ago and those who had never self-harmed.

Among participants with a history of self-harm, frequency of self-harm was significantly correlated with TAS20 ($r = .38, p < .001, n = 140$) and FFMQ ($r = -.39, p < .001, n = 137$).

The second hypothesis, that alexithymia and mindfulness would be significantly related to the recency and frequency of self-harm, is therefore accepted.

4.4.11 Regression and Mediation Analysis

A hierarchical logistic regression was conducted with age, total TAS20 and total FFMQ as the predictor variables and the presence or absence of self-harm as the dichotomous outcome variable. Total TAS20 and age were the predictor variables at Step 1 and total FFMQ was added to the model at Step 2. Age was included in the model because it was significantly associated with both self-harm and TAS20¹. The final model was statistically significant (omnibus $\chi^2(1) = 33.93, p < .001$) and predicted 62.9% of cases accurately, compared to the constant only model (53.2%). Nagelkerke's pseudo R^2 , which calculates the proportion of unexplained variance that is reduced by adding variables to the constant only model, was 0.14, indicating a small relationship of 14% between TAS20, FFMQ and self-harm history, taking into account age. TAS20 was a significant predictor of self-harm history ($B = 0.04$, BCa 95% C.I. 0.01 to 0.07, $p = .008$). However, FFMQ was not a significant predictor of self-harm, with TAS20 in the model, ($B = -.01$, BCa 95% C.I. -0.03 to 0.01, $p = .289$).

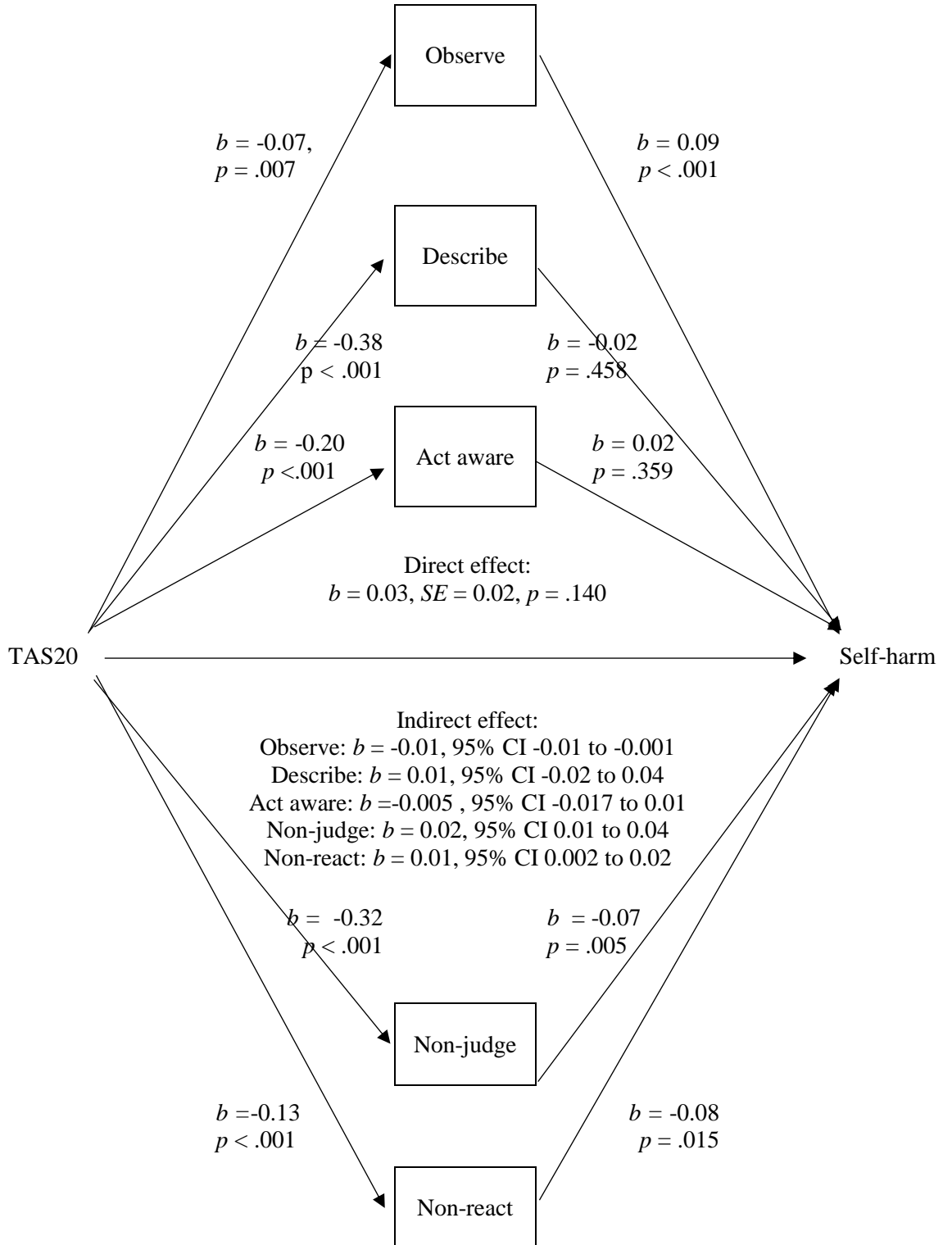
Because the t-tests had shown a varying pattern of results across the different facets of mindfulness (Table 4.3), a multiple parallel mediation analysis was carried out to establish whether the five facets of mindfulness separately mediated between alexithymia (TAS20) and self-harm, controlling for age (Figure 4.2). With the mediators in the model, the direct effect of alexithymia on self-harm was not significant, indicating that the five facets of mindfulness fully mediated the relationship between alexithymia and self-harm ($b = 0.03$, 95% CI -0.01 to 0.06, $p =$

¹ In order to preserve power, other demographic variables were not included as covariates. It was assumed that any effect of employment status and educational achievement would be accounted for, at least in part, by the effect of age.

.140, $n = 299$). The indirect effect of alexithymia on self-harm via Non-judge ($b = 0.02$, 95% CI 0.01 to 0.04) and Non-react ($b = 0.01$, 95% CI 0.002 to 0.02) was positive and significant. There was also a significant, negative indirect path from alexithymia to self-harm via Observe ($b = -0.01$, 95% CI -0.01 to -0.001). Observe, therefore, suppressed the effect of the relationship between alexithymia and self-harm. The indirect effects via Describe and Act Aware were not significant. Tolerance and VIF statistics were within the required thresholds, despite the high correlation observed between TAS20 and FFMQ Describe.

Figure 4.2

Model of Alexithymia (TAS20) as a Predictor of Self-Harm, Mediated by the Five Facets of Mindfulness Controlling for Age (BCa bootstrapped CI based on 5000 samples; N = 299)



TAS20 = Toronto Alexithymia Scale; Observe, Describe, Act Aware, Non-judge and Non-react are the five facets of mindfulness from the Five Facets of Mindfulness Questionnaire (FFMQ)

4.5 Discussion

This study set out to examine the relationships between mindfulness, alexithymia and self-harm. The first hypothesis, that alexithymia would be significantly higher, and mindfulness significantly lower, among those with a history of self-harm, was accepted. This was the case for the whole sample and for female participants. However, the demographics of the sample prevented firm conclusions from being drawn about men. The second hypothesis, that mindfulness mediated the relationship between alexithymia and self-harm, was partly accepted. While the total mindfulness score was not a significant mediator, a multiple mediation analysis found that facets Non-react, Non-judge and Observe significantly mediated between alexithymia and self-harm. Non-react and Non-judge were, as expected, positive mediators, while Observe appeared to suppress the relationship between alexithymia and self-harm.

Consistent with the results of the meta-analysis in Chapter Two, the present study found that participants with a history of self-harm had significantly higher alexithymia than participants who had never self-harmed, with a medium effect size. The demographics of the current sample allow a clear conclusion to be drawn that the relationship between alexithymia and self-harm among women is statistically significant. Among the male participants, only the subscale Difficulty Describing Feelings (DDF) was significantly associated with self-harm, but the number of men in the sample was too small for this finding to be considered reliable. The association between alexithymia and self-harm in the current study was driven by the subscales Difficulty Identifying Feelings (DIF) and Difficulty Describing Feelings (DDF). In common with the meta-analysis in Chapter Two, no difference was found

in the subscale EOT between participants who had self-harmed and those with no history of self-harm.

A relatively novel, exploratory aspect of the current study was the ability to distinguish between participants who had self-harmed recently (within the past year) and those who had self-harmed more than a year ago. There was no significant difference in TAS20 between those who had last self-harmed more than a year ago and those who had never self-harmed, and both these groups had significantly lower TAS20 scores than participants who had self-harmed within the past year. This appears to be consistent with Moseley et al. (2019) but not with Anderson and Crowther (2012), who found no significant difference in DIF scores between participants with recent or past self-harm. In the absence of longitudinal data it is not possible to know for sure whether those participants with past engagement in self-harm would have scored more highly on the TAS20 at the time they were self-harming. Perhaps those participants who no longer self-harmed always had lower alexithymia than those who have not been able to, or not chosen to, stop. This hypothesis would accord with evidence from a longitudinal study of community-based adolescents by Andrews et al. (2013), which found that better emotion regulation strategies such as higher cognitive reappraisal and lower suppression predicted self-harm cessation at the one-year follow-up. Alternatively, it may be that alexithymia scores would have been higher among these participants at the time of their engagement in self-harm, but have fallen over time, perhaps as the result of intervention (Cameron et al., 2014) or a concurrent decrease in a third factor such as depression (Honkalampi et al., 2001). This interpretation would be consistent with the concept of alexithymia as a trait with relative, rather than absolute, stability (Porcelli et al., 2011). Unfortunately, it is not possible to draw firm conclusions

from this cross-sectional study and longitudinal research would be required to track the trajectory of the relationship between self-harm and alexithymia.

This study also found a significant association between mindfulness and self-harm, in line with other studies (Caltabiano & Martin, 2017; Heath, Joly, et al., 2016). The facets Describe, Act Aware, Non-judge and Non-react were all significantly correlated with alexithymia (consistent with Baer et al., 2006) and also significantly lower among those with a history of self-harm. In contrast, both this study and Caltabiano and Martin (2017) found the FFMQ Observe subscale was significantly *higher* among those with a history of self-harm. This is in line with previous analyses of the FFMQ, in which the Observe facet has been shown to be related to the other facets of mindfulness only among experienced meditators (Baer et al., 2006, 2008; Gu et al., 2016). Furthermore, among people with no meditation experience, the Observe facet has been found to correlate positively with measures of psychological distress (Baer et al., 2006). Emerson et al. (2018) found that the Observe facet of mindfulness significantly predicted obsessive, intrusive thoughts, in contrast to the facets Act aware, Non-judge and Non-react which were protective against such thoughts. Taken together this evidence suggests that the tendency to be very attentive to internal and external experience, when not accompanied by other mindfulness skills such as acceptance, may increase the emotional stress that can lead to self-harm. Interestingly, half the participants in the current study said they had some experience of mindfulness training, and the proportion was greater among those with a history of self-harm. The assumption that mindfulness training should result in an increase in mindfulness has been validated by a meta-analysis of randomised controlled trials of mindfulness training (Quaglia et al., 2016). In the current study, however, there were no significant differences in the FFMQ subscales

between those with experience of mindfulness training and those with no experience. This suggests that their experience of mindfulness training had not been sufficient to make them ‘experienced meditators’. This cross-sectional study gives no indication as to whether participants had tried mindfulness before they started to self-harm, or whether they sought it out because of their self-harm or emotional distress.

In addition to extending knowledge about the way in which alexithymia and mindfulness relate separately to self-harm, this study also set out to explore the mediating role of mindfulness. The five facets were analysed separately within the model, because the logistic regression had shown that the total FFMQ score was not a significant predictor of self-harm over and above TAS20 (possibly as a result of the high correlation between the predictors). Three of the five facets of mindfulness (Observe, Non-judge and Non-react) were significant mediators in the relationship between alexithymia and self-harm, albeit in different directions. Non-judge and Non-react were positive mediators, indicating that the absence of these mindfulness traits help to explain the relationship between alexithymia and self-harm. This finding is in line with expectations, based on previous evidence identifying mindfulness as a protective factor against self-harm (Heath, Carsley, et al., 2016) and negative associations between FFMQ Non-judge and Non-react and alexithymia (TAS20, Baer et al., 2006). The results suggest that people with high alexithymia find it hard to tolerate emotional experience that they struggle to understand. This is consistent with empirical evidence linking alexithymia with the avoidance of unwanted, specifically negative, feelings (Dupont-Leclerc & Lecours, 2018; Meganck et al., 2013; Panayiotou et al., 2015). It suggests that the Experiential Avoidance Model (EAM) of self-harm, in which “*the primary function of [deliberate self-harm is] the avoidance of, or escape from, unwanted or aversive states of*

emotional arousal” (Chapman et al., 2006, p. 386), may be of particular relevance in the context of alexithymia. One mechanism through which mindfulness might protect against self-harm is the decoupling of associations made between internal experiences and reactive behaviour (Levin et al., 2015). Since self-report and laboratory studies indicate that overwhelming negative emotion tends to precede self-harm (Klonsky, 2007), increasing the person’s ability to ‘decouple’ the emotion from their normative reaction to it may lead to a reduction in self-harm.

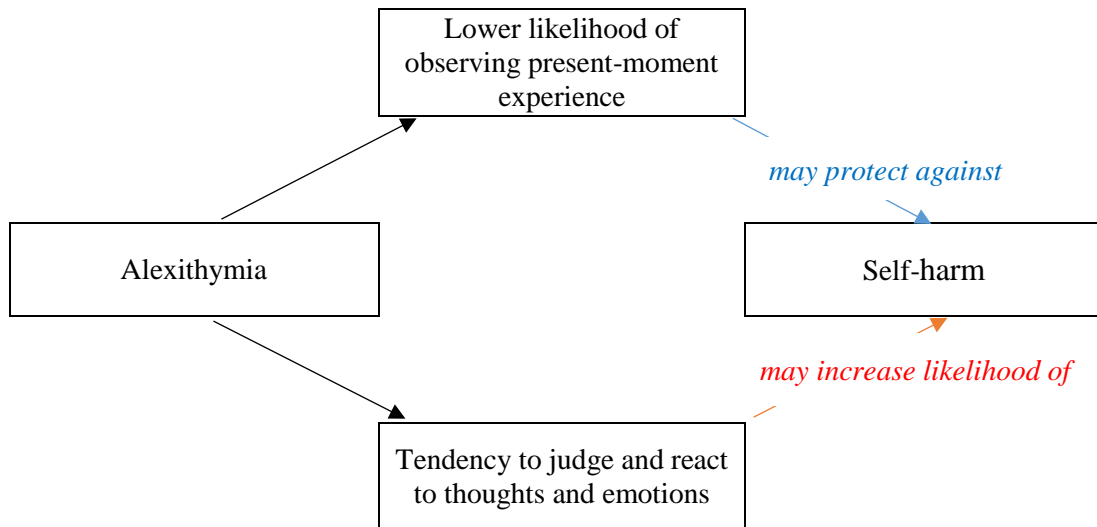
In contrast, Observe ‘suppressed’ the relationship between alexithymia and self-harm, that is, with Observe in the model, the relationship became less significant. This perhaps surprising finding arose because alexithymia (DDF and EOT) was negatively correlated with Observe among people with a history of self-harm (Table 4.4). The items making up the Observe facet relate to the degree to which an individual pays attention to external sounds, smells, sights and sensations (e.g. “When I take a shower or bath I stay alert to the sensation of water on my body”). In contrast the EOT facet of the TAS20 measures the individual’s propensity for analytical introspection (e.g. “I prefer just to let things happen rather than to understand why they turned out that way.”). It appears that the operative thinking inherent in alexithymia is related to a tendency to pay less attention to present-moment sensations (Observe), which in turn *reduces* the likelihood of self-harm. However, this effect may normally be offset by the dominance of the other facets of alexithymia, difficulty identifying and describing feelings, which drive the relationship with self-harm.

It should be noted that the study was underpowered, beta coefficients in the mediation analysis were small and the confidence intervals close to zero, so the results should only be taken as indicative. However, the implications are important

and worthy of replication. They suggest that certain facets of mindfulness, particularly the ability not to judge or react to emotional experience, are protective against self-harm among people with high alexithymia. However, any intervention to reduce alexithymia should avoid merely focussing on the ability to observe one's inner experiences. Without the ability to understand and describe that experience, and without the detachment provided by other mindfulness skills, such an intervention could be potentially harmful and increase the risk of self-harm. The evidence from the current study has been incorporated into the model of the relationship between alexithymia and self-harm (Figure 4.3).

Figure 4.3

The Relationship Between Alexithymia and Self-Harm, Based on the Findings of Studies 1 and 2



4.6 Limitations

This study has a number of limitations. First, although the hypothesised model (Figure 4.3) posits that the presence of alexithymia contributes to the recourse to self-harm, based on alexithymia theory and longitudinal evidence (Garisch & Wilson, 2015), the cross-sectional nature of the study precludes the confirmation of causal influences. Second, although responses distinguished those participants who had last self-harmed over a year ago from those who had self-harmed within the past year, it was not possible to be more specific as to how long in the past their self-harm had been. This made it impossible to know whether their self-harm had been limited to their teenage years, when the rates of self-harm are known to be higher, or had persisted into adulthood. In addition, a long lapse of time between the last incident of self-harm and the survey could increase the risk of bias already inherent in retrospective, self-report accounts of self-harm function (for a review of the

limitations of retrospective accounts of non-suicidal self-harm see Hamza & Willoughby, 2015).

Third, the opportunity sampling technique carries the risk of bias which limits extrapolation to the general population. The prevalence of self-harm in the current sample, at 47%, was considerably higher than would be expected in a population-based community sample, where rates have been reported as 17.2% in adolescent samples, 13.4% among young adults and 5.5% among older adults (Swannell et al., 2014). Participants may have chosen to participate in the study because of their experience of self-harm, or because of particular personal feelings about mindfulness, which may bias the results. Whilst the sample was adequately sized for the tests of difference, there were too few men to allow for a conclusive analysis by gender. In addition, a relatively high proportion of potential participants (16%) were excluded because of missing data. It is possible that people with high alexithymia might find self-report questions about emotional experience difficult, and therefore be more likely to abandon the survey at an early stage.

Fourth, it is possible that other variables, not measured in the current study, might affect or explain the relationships between alexithymia, mindfulness and self-harm. For example, the systematic review (Chapter 2) highlighted the potential mediating role of depression in the relationship between alexithymia and self-harm, identified by both Garisch and Wilson (2010) and Lambert and de Man (2007). Similarly, anxiety has been associated with alexithymia (Son et al., 2013) and self-harm (Robinson et al., 2017) and might be a confounding variable in the relationship between the two. This limitation is addressed in the following Chapter, in Study 3.

4.7 Conclusions

This study confirmed the significant relationships between recent (but not past) self-harm and each of alexithymia and dispositional mindfulness. The Observe facet was higher among participants with a history of self-harm, consistent with previous research, and suppressed the relationship between alexithymia and self-harm. In contrast the facets Non-judge and Non-react were positive mediators between alexithymia and self-harm. Overall, the results indicate that mindfulness facets are protective against the risk of self-harm among people who struggle to identify and describe their feelings. However, merely learning to observe inner experience, without the capacity to understand and accept that experience, may have adverse consequences. The implications of these findings for clinical practice are discussed in Chapter Nine.

The results of Study 2 support the hypothesis that self-harm is used as a means of managing unwanted emotional experience in people with high alexithymia who lack more adaptive regulatory strategies. The next chapter presents Study 3, in which emotional dysregulation is examined as a mediator between alexithymia and self-harm. In addition, Study 3 tests the hypothesis that interoceptive impairments may be a precursor to the difficulties identifying and describing emotions characteristic of alexithymia.

Chapter Five: Study 3 - The Alexithymia and Self-Harm Relationship: The Role of Interoception and Emotion Dysregulation

ABSTRACT

Background: Building on the results of Study 2, Study 3 tested the hypothesis that the relationship between alexithymia and self-harm was mediated by emotion dysregulation, controlling for negative mood. It also examined whether a heightened perception of physical sensation, termed interoceptive sensibility, was a precursor to the difficulties identifying and describing emotions characteristic of alexithymia.

Method: An opportunity sample of 467 community-based adults completed an online survey including questions about self-harm and measures of alexithymia (Toronto Alexithymia Scale), emotion regulation (Difficulties in Emotion Regulation Scale) and interoceptive sensibility (Self-Awareness Questionnaire).

Results: Alexithymia, emotion dysregulation and interoceptive sensibility were significantly higher among participants with a history of self-harm, compared with participants with no history of self-harm. Difficulties in Emotion Regulation, and specifically facets Clarity, Non-Acceptance and Goals, were found to be significant mediators of the relationship between alexithymia and self-harm, controlling for depression and age. Alexithymia mediated between interoceptive sensibility and self-harm.

Conclusion: Like Study 2, the results from Study 3 are consistent with an affect regulation model, in which self-harm is used to regulate emotions that are poorly understood, in the absence of more adaptive regulatory strategies. In addition, the finding of positive relationship between interoceptive sensibility and both alexithymia and self-harm may suggest that self-harm, as a body-based intervention, is used to integrate the physical and affective dimensions of emotion.

5.1 Introduction

5.1.1 *Alexithymia, Self-Harm and Emotion Regulation*

The systematic review and meta-analysis found strong evidence of a significant relationship between alexithymia and self-harm, particularly in women. This finding was replicated in the original research presented in Chapter Four. As noted earlier, the significant association between alexithymia and self-harm is generally interpreted as consistent with an affect regulation model of self-harm (Chapman et al., 2006; Klonsky, 2007). This theory proposes that self-harm is used to regulate unwanted emotional experience in the absence of other, more adaptive regulation strategies, including, as proposed in the previous chapter, mindfulness. Emotion regulation is defined as how “*individuals influence which emotions they have, when they have them, and how they experience and express these emotions*” (Gross, 1998, p. 275). McKenzie and Gross (2014) examined how non-suicidal self-injury (NSSI) might be used as a means of regulating emotion at different stages of the Process Model of Emotion Regulation (Gross, 1998). For example, self-harm might be used as a means of attentional deployment to distract from painful emotion, or as a way of changing cognitions about the self, though self-punishment. Alternatively, self-harm might be used to modify the emotional response once it has occurred, for example by triggering the release of endorphins (Sher & Stanley, 2008). Recourse to self-harm as an emotion regulation strategy may then become habitual, and preclude use of more adaptive ways of dealing with difficult feelings (Chapman et al., 2006). Individuals with a history of self-harm tend to demonstrate poor emotion regulation skills, such as a tendency to use suppression rather than reappraisal (Andrews et al., 2013). Many studies have associated poor emotion regulation with self-harm (see Hasking, Whitlock, Voon & Rose, 2017 and

McKenzie & Gross, 2014 for reviews), but there is evidence to suggest that the relationship may be mediated by depression and anxiety (Kranzler et al., 2016).

While Gross (1998)'s model focusses on a person's response to their emotions, Gratz and Roemer (2004) propose that the concept of emotion regulation should also incorporate the clarity with which emotions are experienced. As such, the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) includes, among its six subscales, Lack of Emotional Awareness (Awareness), relating to the degree to which a person pays attention to their emotions, and Lack of Emotional Clarity (Clarity), which captures the extent to which they understand their emotions. The original validation study found these two subscales, plus Difficulties in Engaging in Goal Directed Behaviour (Goals) and Impulse Control Difficulties (Impulse) to be significantly associated with self-harm frequency in women, and Impulse and Non-acceptance of Emotional Responses (Non-accept) to be significantly correlated with self-harm frequency in men (Gratz & Roemer, 2004). Subsequent studies have also found significant associations between self-harm and emotion regulation using DERS (Heath et al., 2008; Muehlenkamp et al., 2010; Tatnell et al., 2017). A recent meta-analysis found significant associations between all six DERS subscales and non-suicidal self-injury with the lowest odds ratio observed for the Awareness subscale, and the highest for the Strategies subscale (Wolff et al., 2019).

The concept of clarity over one's emotional experience overlaps with the concept of alexithymia. Studies have shown that the DERS subscale Clarity correlates highly, though not perfectly, with the TAS20 subscale DIF (Giromini et al., 2012). More broadly, people with high alexithymia exhibit poor emotion regulation (Stasiewicz et al., 2012; G. J. Taylor, 2000; Venta et al., 2013) and are

more likely to use suppressive regulation strategies than reappraisal strategies (Swart et al., 2009). A mediation study by da Silva et al. (2017) identified a direct relationship between alexithymia and emotion dysregulation, but also found that emotional awareness and differentiation mediated between the alexithymia facet difficulty identifying feelings and a lack of adaptive regulatory strategies. This suggests that clarity of emotional experience is a precursor to effective regulatory skills. As a result, the current study tests a model in which emotion dysregulation mediated between alexithymia and self-harm.

Emotion dysregulation, as conceptualised in the DERS, is in many respects inversely related to dispositional mindfulness. The original validation study of the Five Facets of Mindfulness Questionnaire (FFMQ, Baer et al., 2006) reported significant, negative correlations between the total DERS score and all FFMQ facets except Observe. The results of Study 2 (Chapter Four) indicated that a tendency to react to and to judge emotional experience mediated between alexithymia and self-harm. It was expected, therefore, that the DERS subscale Non-accept, which is conceptually very similar to FFMQ Non-judge, would play a similar mediating role in the current study.

5.1.2 Alexithymia, Self-Harm and Interoception

A consideration of *why* clarity of emotional experience is impaired in people with alexithymia may shed further light on the relationship between alexithymia and self-harm. One theory positions alexithymia (awareness of emotional experience) within a broader spectrum of deficiencies in interoception (awareness of bodily sensation; Brewer et al., 2016; Herbert & Pollatos, 2012). Interoception is a complex and multifaceted construct, and comparisons between studies are difficult because of differences in definition and measurement. Garfinkel and Critchley

(2013) proposed distinguishing between three different aspects of interoception. Interoceptive sensitivity or accuracy describes the objective ability to perceive bodily sensations accurately. Interoceptive sensibility refers to the *subjective* perception of bodily states, as reported by the individual. Finally, metacognitive interoceptive awareness, which describes the degree to which a person's objective interoceptive sensitivity matches their subjective interoceptive sensibility. Evidence from neuroimaging studies suggest that both alexithymia and interoception are governed by activity in the same region of the brain, namely the insula (Craig, 2009; Santarnecchi et al., 2014). Some (but not all) studies have found people with high alexithymia to be less accurate in heart beat perception tasks than those with lower alexithymia, indicating low interoceptive accuracy (Bornemann & Singer, 2017; Herbert et al., 2011; but see also Nicholson et al., 2018).

The relationship between alexithymia and interoceptive sensibility is complex, and results appear to be dependent on the way in which interoceptive sensibility is defined and measured. The psychotherapists who originally identified and defined alexithymia observed that patients with alexithymia found it difficult to distinguish emotional experience from other bodily sensations (Sifneos, 1973). The Toronto Alexithymia Scale (TAS20) includes two items which specifically refer to a difficulty in interpreting bodily sensations (“I have physical sensations that even doctors don’t understand” and “I am often puzzled by sensations in my body”) (Bagby, Parker, et al., 1994). Unsurprisingly therefore, measures that capture self-reported confusion in the interpretation of bodily sensations tend to be positively correlated with alexithymia. A recent study found that, in separate community and clinical samples, those with higher alexithymia were more likely to score highly on a measure of interoceptive confusion (example item “I only realise I am stressed when

others tell me”). They were also more likely to experience affective and non-affective states as similar to each other (such as anger and feeling hot, or fear and shortness of breath) than participants with lower alexithymia (Brewer et al., 2016). Similarly, the Interoceptive Awareness subscale of the Eating Disorder Inventory (EDI-IA; Garner et al., 1983), which measures deficits in recognising emotional and gastro-intestinal bodily sensation (e.g. “I don’t know what’s going on inside of me”), was found to correlate significantly and positively with the TAS20 (Forrest et al., 2015). Indeed, a recent study used principal components analysis to show that the DIF and DDF subscales from the TAS20 and the EDI-IA subscale loaded onto a single factor (Young & Davies, 2019).

In contrast, self-report scales, such as the Body Perception Questionnaire (BPQ; Porges, 1993) and the Self-Awareness Questionnaire (SAQ; Longarzo et al., 2015a), which focus specifically on perception of physical sensation (rather than interpretation of that sensation), have a different relationship with alexithymia. Comprised of items such as “I feel a sudden pang of hunger” (Longarzo et al., 2015a) these scales correlate positively with alexithymia, such that people with high alexithymia scores are more likely to report a high degree of perception of physical symptoms (Ernst et al., 2013; Hughes et al., 2018; Longarzo et al., 2015b). It seems that people with high alexithymia are highly aware of physical sensation but find the interpretation of that sensation problematic. This accords with reports that people with high alexithymia are more likely to present to health services with physical complaints (Lumley et al., 2007) and report more severe hypochondriac symptoms (Longarzo et al., 2015b).

A final perspective on interoceptive sensibility comes from the Multidimensional Assessment of Interoceptive Awareness Scale (Mehling et al.,

2012, 2018). The authors of this scale draw a distinction between a hyper-vigilant, anxiety-driven propensity to be aware of bodily sensation and a more adaptive, mindful (therefore non-judgmental) interoceptive awareness. The MAIA has eight subscales, including, for example, attention regulation (e.g. “I can maintain awareness of my inner bodily sensations even when there is a lot going on around me”) and emotion awareness (MAIA-EA, e.g. “I notice how my body changes when I feel happy / joyful”). Studies using the MAIA have identified a negative correlation with the TAS20, such that people with high alexithymia are less likely to report an ability to be aware of bodily sensation without judgment and to identify the association between physical and emotional states (Muir et al., 2017; Zamariola et al., 2017).

Taken together the evidence suggests that alexithymia is associated with enhanced but inaccurate interoceptive sensibility, which leads to the misinterpretation of physical and emotional states.

A recent literature review proposed that interoceptive difficulties may help to explain the relationships between alexithymia, emotion regulation and suicidality (Davey et al., 2018). Given the physical, body-based nature of self-harm, it is perhaps surprising there have not been more studies investigating the role of interoception in self-harm. Behavioural studies examining pain sensitivity indicate that individuals with a history of non-suicidal self-harm may take longer to perceive pain than controls (Franklin et al., 2012; Pavony & Lenzenweger, 2014). This suggests that interoceptive accuracy may be lower in people who self-harm. In terms of interoceptive sensibility, several studies have reported an association between self-harm and interoceptive deficits, measured using the EDI-IA (Forrest et al., 2015; Fujimori et al., 2011; Hagan et al., 2019; S. Ross et al., 2009). One study found that,

among people with an eating disorder, those who had self-injured had lower interoceptive abilities (according to the EDI-IA) than those with an eating disorder but no other self-injurious behaviours (Muehlenkamp, Peat, et al., 2012). In light of the similarities between the EDI-IA and the TAS20, discussed above, these findings are consistent with the observed association between alexithymia and self-harm. There is less evidence available to assess how the perception of bodily sensation relates to self-harm. A recent systematic review found most studies investigating experience of bodily sensation and self-harm used the EDI (Hielscher et al., 2019). One exception by Kubiak and Sakson-Obada (2016) measured perception of both lowered and raised sensation and found propensity for both states were positively associated with self-harm. Young and Davies (2019) found that interoceptive awareness, measured using subscales of the MAIA (Mehling et al., 2012, 2018), was significantly and positively correlated with non-suicidal self-injury in one study, although this was not replicated in two further studies. There appears to be a gap in the literature, therefore, in testing how perception of bodily states (e.g. using the BPQ or the SAQ) varies according to engagement in self-harm.

In summary, the evidence indicates that alexithymia and self-harm are both associated with lower interoceptive accuracy and deficits in interoceptive sensibility, but also, potentially, with a heightened perception of physical sensation. The current study is designed to test the hypothesis that a heightened perception of physical sensation, will also predict self-harm, via alexithymia. This hypothesis is based on studies using the BPQ (Porges, 1993), which have found that alexithymia mediates between interoceptive perception and problematic symptomology such as anxiety (Palser et al., 2018) and alcohol misuse (Betka et al., 2018).

5.2 Aims of the Study

The current study was designed, in part, to replicate the baseline findings of Study 2 (Chapter Four) concerning the relationship between alexithymia and self-harm. In this respect the current study (Study 3) benefitted from the lessons learned from Study 2. Participants in Study 2 with a history of self-harm were significantly younger than participants with no history of self-harm. They were also likely to be better educated, leading to concerns that participants might have been drawn from two different populations. In addition, in Study 2, 42% of participants with a history of self-harm had last self-harmed over a year ago. If a long period had elapsed since the last engagement in self-harm, it could both affect recall and also result in temporal inconsistency between the measurement of current traits, such as alexithymia or mindfulness, and past self-harm. As a result, in order to make the sample in the current study more homogeneous, the age range was set between 18 and 30 years of age. Rates of self-harm are highest in adolescence and young adulthood (Moran et al., 2012), so it is likely that any self-harm reported by participants aged between 18 and 30 would be current or, at least, recent.

The central aim of the current study was to investigate the relationship between alexithymia, self-harm, emotion dysregulation and interoceptive sensibility. As such it tested the following hypotheses:

1. Emotion dysregulation mediates the relationship between alexithymia and self-harm.
2. Alexithymia mediates between interoceptive sensibility and self-harm.

In addition, the study tested a model where interoceptive sensibility predicts alexithymia, which, in turn, leads to poor emotional regulation strategies, including recourse to self-harm.

The current study also aimed to replicate findings from the meta-analysis and Study 2, such that the following hypotheses were tested:

3. Alexithymia is significantly higher in young adults with a history of self-harm than those with no history of self-harm.
4. The relationship between alexithymia and self-harm is significant in women and men.
5. The relationship between alexithymia and self-harm is moderated by age.
6. Alexithymia is significantly higher among participants who have self-harmed within the past year, than over a year ago.

In addition, three studies identified in the systematic review indicated that depression might, at least in part, explain the relationship between alexithymia and self-harm (Garisch & Wilson, 2010; Lambert & de Man, 2007; Sleuwaegen et al., 2017).

Given the known associations between alexithymia and both depression (Li et al., 2015) and anxiety (Son et al., 2013) as well as between self-harm and depression (Zubrick et al., 2017) and anxiety (Robinson et al., 2017) the current study tested the following additional hypothesis:

7. Depression and anxiety mediate the relationship between alexithymia and self-harm.

5.3 Method

5.3.1 Participants and Recruitment

Participants were adults between the ages of 18 and 30 recruited from the general population, using opportunity sampling. Data for this study were collected in two periods, between February and March 2018 and between July and December 2018. In total, 528 participants meeting the age criteria (18-30 years old) consented to take part in the online survey. Ninety three participants were recruited during the

first period which was limited to Middlesex University students. During the second period, in which 435 participants were recruited, the study was again advertised within Middlesex University, and also to the general public, via social media and on posters. It was also advertised on websites designed to attract research participants (e.g. www.Callforparticipant.com) and with a specific focus on self-harm and suicide (e.g. the National Self-harm Network). The measures of interoception were added to the survey for the second period of data collection.

Following data screening (Appendix 5.1), the final sample consisted of 467 participants. Full demographic information is summarised in Table 5.1.

5.3.2 Procedures

Participants were alerted to the study on Middlesex University's research portal or by email, twitter, by seeing a poster or via a link on a website (e.g. www.Callforparticipants.com). People who followed the link were taken to the survey in Qualtrics. There they were presented with briefing information about the survey and the nature of their participation (Appendix 5.2). They were informed that they could stop at any time, that their participation was entirely voluntary and the responses would be treated confidentially. As part of the briefing participants were given the information of organisations that support people who self-harm. They were asked to indicate their consent by ticking a box; only having ticked the box were they able to continue to the survey itself (Appendix 5.3).

Participants were given the opportunity to be entered into a prize draw to win a £50 Amazon voucher. Email addresses for this purpose were collated separately from the rest of the survey data to maintain anonymity. In addition, psychology students at Middlesex University were granted course credits in exchange for participation.

5.3.3 Measures

5.3.3.1 Demographic Data. Participants were asked for demographic information about their age, gender, ethnicity, level of education and employment status. These variables were selected because of their potential differential association with self-harm.

5.3.3.2 Self-Harm. Participants were asked “Have you ever intentionally (i.e. on purpose) harmed yourself, for example by cutting; biting; burning; carving; pinching; pulling hair; severe scratching; banging/hitting self; interfering with wound healing; rubbing skin against rough surfaces; sticking self with needles, taking an overdose of pills, swallowing dangerous substances or in another way?” If they said yes to this question they were directed to additional questions about self-harm, based on the Inventory of Statements about Self-injury (ISAS) (Klonsky & Glenn, 2009). As described in the previous chapter, the ISAS is a 2-part, self-report measure of self-harm. The first part consists of questions concerning age of onset, frequency and recency of 12 different self-harmful behaviours. An additional behaviour (“taking an overdose of pills”) was added to the list of self-harm behaviours, in order to make it more consistent with the UK definition of self-harm as any act of self-injury or self-poisoning (NICE, 2013). Post-hoc analysis of the data indicated that only two participants endorsed taking an overdose and no other method.

Two further changes were made to the measurement of self-harm, compared with Study 2. To simplify the reporting and analysis of the frequency of self-harm, participants were asked to estimate the total number of times they had self-harmed, irrespective of method, rather than give a separate estimate for each method. In addition, to enable a more accurate analysis of the recency of self-harm, participants

who said they last self-harmed over a year ago were asked to give an approximate date.

Participants were again asked about any past suicide attempts. This was measured by a single question: have you ever attempted suicide? Again, in order to be consistent with the UK definition of self-harm (NICE, 2013), anyone answering yes to this question was included as having a history of self-harm. In the event, only one participant said they had attempted suicide, but answered no to the question about self-harm.

The second part of the ISAS includes questions about the function of self-harm, which will be the subject of the next chapter.

5.3.3.3 Alexithymia. Alexithymia was again measured using the 20 item Toronto Alexithymia Scale (TAS20, Bagby et al., 1994). The TAS20 was chosen because it is by far the most commonly used measures of alexithymia, and therefore the results of this study could be compared with previous research. At this stage in the overall research programme, however, further investigation into the evidence for its validity revealed some discrepancies. The three factor structure derived in the original validation study (Bagby, Parker, et al., 1994) has been replicated in other studies, including in translation to other languages (Bressi et al., 1996; Meganck et al., 2008; Simonsson-Sarnecki et al., 2000). Nevertheless, a number of recurrent issues have led some to question the robustness of the factor structure (Koch et al., 2015; Müller et al., 2003). In particular, the third factor, EOT, has persistently demonstrated inadequate internal consistency, both in the original validation study ($\alpha = .66$) and in many subsequent studies (e.g. Bressi et al., 1996). In addition, DIF and DDF tend to be highly correlated, and in some validation studies, have been found to map onto a single factor (Erni et al., 1997; Franz et al., 2001). Finally,

results from different populations suggest that the factor structure may vary across samples (Müller et al., 2003).

Because of the concerns about the TAS20, a Confirmatory Factor Analysis (CFA) was carried out using data from the current study to test the original three factor structure and a number of other factor structures that have been identified by other authors (Erni et al., 1997; Koch et al., 2015; Müller et al., 2003). The full analysis is set out in Appendix 5.4. The original three factor model was found to fit the data best, although several of the items loaded very poorly onto the third factor EOT (consistent with previous studies e.g. Bressi et al., 1996). All fit indices met the required thresholds for acceptability but only when a method factor was included in the model to account for additional variance shared between the reverse-scored items (following Preece, Becerra, Robinson & Dandy, 2018). All these items, except one, related to the third factor, EOT. A second order model was also tested and the three factors were all found to load significantly onto a higher order factor 'alexithymia', with the method factor included in the model. Again, the fit indices were all good. These results were consistent with Preece, Becerra, Robinson and Dandy (2018) and indeed the fit indices for both the factor structure and the higher order model showed a better fit than Preece et al. (2018) found in separate community and psychiatric samples. Overall, the CFA analysis suggested that the total TAS20 and factors DIF and DDF were robust, but there were significant concerns over the EOT factor. The use of the total score rather than the individual subscales has been recommended, including by the original scale authors (Luminet et al., 2018; Reise et al., 2013). The decision was taken to report results for the total TAS20 and subscales, but to use only the total score in the mediation analysis.

Internal consistency in the study sample was good for total TAS20 ($\alpha = .87$), DIF ($\alpha = .89$) and DDF ($\alpha = .82$) but EOT failed to meet the acceptable threshold ($\alpha = .59$).

5.3.3.4 Anxiety. Anxiety was measured using the General Anxiety Disorder Scale (GAD-7; Spitzer et al., 2006), in which participants are asked how often over the past two weeks they have been bothered by a set of seven symptoms (e.g. “Feeling nervous, anxious or on edge”), rated on a four point Likert scale from 0 (“not at all”) to 3 (“nearly every day”). This scale has been shown to have good internal consistency ($\alpha = .92$) and external validity (Spitzer et al., 2006). In the current sample, Cronbach’s Alpha was .91.

5.3.3.5 Depression. Depression was measured using the nine item Patient Health Questionnaire (PHQ-9; Kroenke & Spitzer, 2002), which uses a four point Likert scale to rate how often in the past two weeks participants have been bothered by a range of symptoms. The widely used scale has good reliability and validity and, in the current study, Cronbach’s Alpha was .91.

5.3.3.6 Experiential Avoidance. Avoidance was measured using the Acceptance and Action Questionnaire (AAQ-II; Bond et al., 2011). This scale was developed in the context of Acceptance and Commitment Therapy (ACT; S. C. Hayes et al., 1999) to measure experiential avoidance and psychological inflexibility. In the revised version, participants are asked to rate seven statements on a seven point Likert Scale ranging from 1 (never true) to 7 (always true). The validation study showed the scale to be a unidimensional measure with good internal and external validity and test-retest reliability (Bond et al., 2011). Cronbach’s Alpha for the AAQ-II in the current study was also excellent ($\alpha = .90$).

5.3.3.7 Emotion Regulation. Emotion regulation was measured using the Difficulties in Emotion Regulation Scale Short Form (DERS-SF; Kaufman et al., 2016), which was derived from the 36 item Difficulties in Emotion Regulation Scale (DERS) created by Gratz and Roemer (2004). The DERS-SF is an 18 item scale, in which participants are asked how often a set of statements apply to them (e.g. “When I’m upset, I have difficulty focusing on other things”) on a five point Likert scale from 1 (almost never) to 5 (almost always). The DERS-SF was found to replicate the six factor structure of the original DERS, capturing six subscales, Awareness, Clarity, Goals, Impulse, Strategies and Non-acceptance. The DERS-SF has been validated in adult and adolescent samples and found to have good internal consistency and reliability (Kaufman et al., 2016). In the current study Cronbach’s Alphas demonstrated good internal consistency in the total DERS-SF score ($\alpha = .91$) and all subscales (Aware $\alpha = .80$, Clarity $\alpha = .90$, Goals $\alpha = .93$, Impulse $\alpha = .91$, Non-acceptance $\alpha = .85$ and Strategies $\alpha = .86$).

5.3.3.8 Interoception. Two measures of interoception were introduced to the survey during the second period of data collection. Interoceptive sensibility (i.e. the self-reported account of the perception of bodily sensation) was measured using the 28 item Self-Awareness Questionnaire (Longarzo et al., 2015a). Participants are asked how often they experience a physical sensation (e.g. “I feel pain excessively”) on a five point Likert scale ranging from 1 (never) to 5 (always). Longarzo et al. (2015b) found the SAQ to have good internal consistency ($\alpha = .88$) and to be significantly and positively correlated with the TAS20 (Bagby, Parker, et al., 1994). In the current study the SAQ had a Cronbach’s Alpha of .85.

In addition to the SAQ, the Emotional Awareness subscale of the Multidimensional Assessment of Interoceptive Awareness (MAIA-EA) was used to

capture self-reported awareness of the connection between body sensations and emotional states (Mehling et al., 2012, 2018). Participants indicate on a six point Likert scale how often a statement such as “I notice how my body changes when I am angry” applies to them in daily life. This subscale has five items and was found to have good internal consistency ($\alpha = .82$) (Mehling et al., 2012), which was replicated in the current study ($\alpha = .85$).

5.3.4 Ethics

The study was granted ethical approval by Middlesex University Ethics Committee (reference 3008). Care was taken to ensure participants were fully briefed about the nature of the study before they agreed to take part. In view of the sensitive nature of the questions concerning self-harm participants were asked at two points during the survey if they needed help now. If they responded ‘yes’, they were given advice on contacting Samaritans and NHS 111. Details of a wider range of relevant support organisations were included in the debriefing documentation (Appendix 5.5), and Middlesex University students were also alerted to the University’s Counselling Services.

5.3.5 Data Analysis

All analysis was conducted using SPSS v.25. Data were checked for missing values, and predictor variables were examined using t-tests to check there was no significant relationship between missing data and the outcome variable, self-harm. In order to assess normal distributions, Shapiro Wilk tests were conducted and considered alongside graphical representations of the data. To test for univariate outliers, boxplots were examined and z-scores calculated. The data were tested for multivariate outliers using Mahalanobis D^2 . Outliers were excluded from the dataset if there appeared to be errors in the completion of the survey or if the case was

identified as a multivariate outlier across the predictor variables. Scatterplots were used to examine whether there appeared to be linear relationships between TAS20 and the other predictor variables.

Chi-square tests were used to assess for significant associations between categorical variables and t tests were used to assess difference in predictor variables between participants with and without a history of self-harm, with confidence intervals derived from 5000 Bias Corrected Accelerated (BCa) bootstrap samples. Pearson's correlation coefficients were derived to test the strength of bilateral relationships between all continuous predictor variables. A logistic hierarchical regression was carried out with the presence and absence of self-harm as the dichotomous outcome variable and TAS20 and demographic variables as the predictor. Interaction terms were included at step three of the model. Lastly, mediation analysis was carried out using the bootstrapping technique and the SPSS "PROCESS" tool v. 3.4 (A. F. Hayes, 2018). Since the outcome variable (self-harm) was dichotomous, a method based on logistic regression analysis was used. Analysis of the residuals was carried out after each regression and mediation analysis. Any cases with standardised residuals greater than 3, Cook's distance of greater than 1, and leverage over the expected $(k+1)/N$ (where k is the number of predictors) were examined to check that the responses appeared genuine. Where outliers were identified, a sensitivity analysis was conducted to compare the results with the outlier excluded. Multi-collinearity between predictor variables was assessed using tolerance and VIF statistics. Tolerance of below 0.1 and VIF greater than 10 were taken as indicators of multi-collinearity (Field, 2013).

5.3.6 Power Analysis

Using G*Power 3 (Faul et al., 2007), it was estimated that a medium effect size of a significant difference between two independent groups could be reliably identified with a sample size of 176 participants. The study, with a total sample of 467 participants, is therefore sufficiently powered for the tests of difference to be reliable. Although this study had a larger sample than Study 2 (Chapter Four) it still did not reach the threshold of 500 for logistic regression analysis recommended by Bujang et al. (2018). The results should therefore be interpreted with caution.

5.4 Results

5.4.1 Data Preparation

A total of 529 people agreed to take part in the survey. One participant was found to be below the age limit of 18. Fifty-nine participants failed to complete the outcome variable (past engagement in self-harm; $N = 50$) or any of the independent variables ($N = 9$). The excluded cases did not differ significantly from the included cases by age, gender, education, employment or ethnicity (see Appendix 5.1). A further two cases were identified as outliers and excluded from the dataset. Full details of the data screening are set out in Appendix 5.1.

5.4.2 Demographic Information

The final dataset comprised 467 participants. The average age of participants was 21.98 ($SD = 3.18$). The sample comprised 341 women (73%), 106 men (23%), 18 people who defined their gender as ‘other’ (4%) and two people who preferred not to give their gender (<1%). Further demographic information can be found in Table 5.1.

5.4.3 Engagement in Self-Harm

Sixty-three percent ($N = 294$) participants said they had engaged in self-harm. Table 5.1 sets out participants’ demographic characteristics according to

whether or not they reported past engagement in self-harm. Age was not significantly related to self-harm ($t(451) = -0.27, p = .791$), although further analysis revealed that those who had last self-harmed over a year ago were significantly older ($M_{age} = 22.73, SD = 3.22$) than those who had self-harmed within the past year ($M_{age} = 21.16, SD=3.1, t(282) = -4.22, p < .001$). Women were significantly more likely to have self-harmed than men ($\chi^2(1) = 14.17, p < .001$). A minority (46%) of male participants had self-harmed, compared to 67% of female participants. Ethnicity was significantly associated with self-harm ($\chi^2(4) = 25.71, p < .001$). A majority of white participants (71%) and participants with mixed ethnicity (65%) reported past self-harm, compared to 46% of Asian and 45% of black or black British participants. Education and employment were not significantly associated with self-harm history.

The age of first self-harm ranged from 4 to 25, with a mean age of 14.13 ($SD = 3.37$). Fifty percent of the participants who reported past self-harm had self-harmed within the past year (including 15% who had self-harmed in the week prior to taking the survey) and 85% had self-harmed within the past five years. One hundred and ten participants (24% of the total sample) reported that they had attempted suicide in the past. Participants were asked to estimate the number of times they had self-harmed. Estimates ranged from once to thousands of times, resulting in a highly skewed distribution with a mean of 241 and a median of 20 times (Figure 5.1).

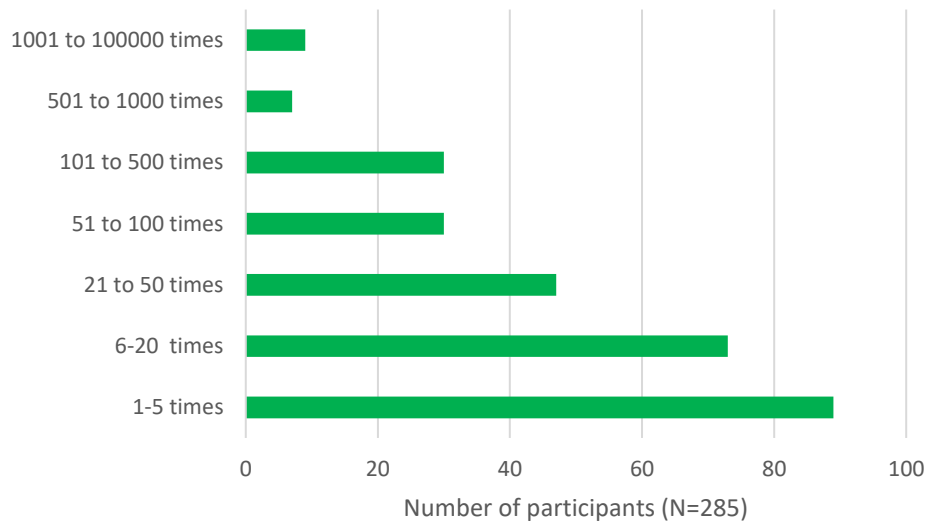
Table 5.1*Demographic Information About Participants According to Self-Harm History (Study 3)*

Variable		Self-harm		No self-harm		Total		Association between demographic criteria and self-harm
		<i>n</i>	%	<i>n</i>	%	<i>N</i>	%	
Gender	Male	49	16.7	57	32.9	106	22.7	$\chi^2(1, N = 447) = 14.17, p < .001$
	Female	227	77.2	114	65.9	341	73.0	
	Other	16	5.4	2	1.2	18	3.9	
	Prefer not to say	2	0.7	0	0	2	0.4	
Ethnicity	White	194	66.0	78	45.1	272	58.2	$\chi^2(4, N = 467) = 25.71, p < .001$
	Mixed ethnicity	26	8.8	14	8.1	40	8.6	
	Asian or Asian British	47	16.0	56	32.4	103	22.1	
	Black or Black British	14	4.8	17	9.8	31	6.6	
	Other	13	4.4	8	4.6	21	4.5	
Employment	Student	171	58.2	112	64.7	283	60.6	$\chi^2(6, N = 467) = 2.75, p = .888$
	Employed	83	28.2	43	24.9	126	27.0	
	Student and employed	9	3.1	5	2.9	14	3.0	
	Self- Employed	2	0.7	1	0.6	3	0.6	
	Unemployed	25	8.5	11	6.4	36	7.7	
	Disabled/long-term sick	3	1.0	1	0.6	4	0.9	
	Home/ Caring	1	0.3	0	0	1	0.2	
Education	No formal qualifications	41	14.1	17	9.8	58	12.5	$\chi^2(5, N = 463) = 7.11, p = .212$
	GCSEs/ O Levels	31	10.7	10	5.8	41	8.9	
	A Levels	113	39.0	73	42.2	186	40.2	
	Bachelor's Degree	75	25.9	47	27.2	122	26.3	
	MsC/prof. qualification	28	9.7	25	14.5	53	11.4	
	Doctoral Level	2	0.7	1	0.6	3	0.6	
Age		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	$t(451) = -0.27, p = .791$
		21.95	3.22	22.03	3.12	21.98	3.18	

^aChi square test calculated on the difference between men and women participants only, because of the small number of participants who identified as 'other' in this category.

Figure 5.1

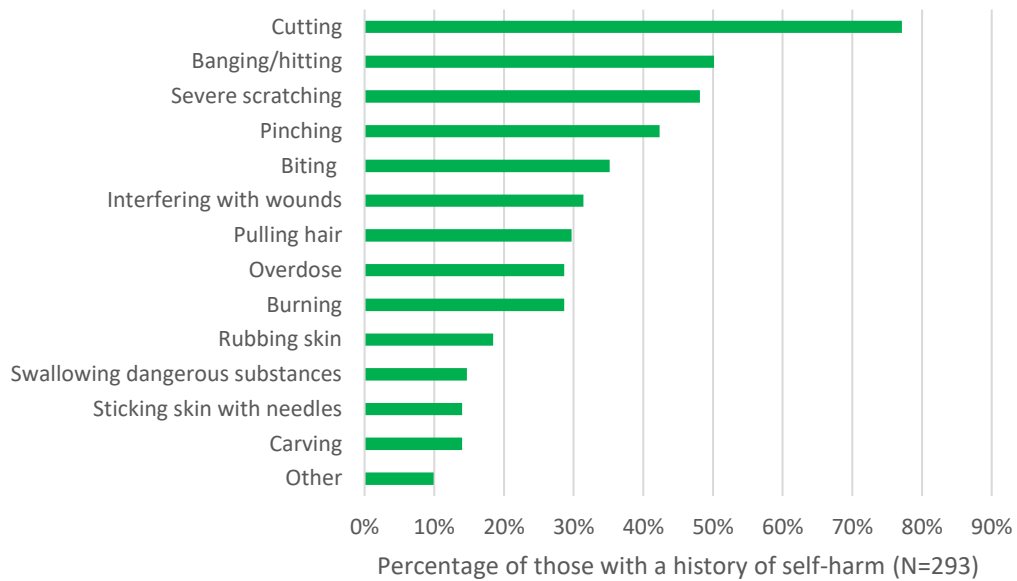
Frequency of Self-Harm (Study 3)



Most participants had used more than one method of self-harm (Figure 5.2). Cutting was the most frequently endorsed method (by 77% of participants). When asked to name their main method of self-harm, if they had one, 52% cited cutting. No other single method was cited by more than 10% of participants as their main method of self-harm.

Figure 5.2

Method of Self-Harm (Study 3)



5.4.4 Alexithymia and Demographic Variables

There was a significant, negative correlation between alexithymia (total TAS20) and age ($r = -.25, p < .001$). There was no significant difference in mean alexithymia between men ($M = 52.19, SD = 12.45$) and women ($M = 53.07, SD = 13.47, t(434) = -0.59, p = .554$). There was no significant effect of ethnicity ($F(4, 45) = 0.94, p = .436$) or employment ($F(6, 449) = 0.50, p = .805$) on alexithymia. There was a significant effect of education on alexithymia ($F(4, 447) = 8.63, p < .001$). Post hoc tests revealed that participants with no formal qualifications had significantly higher alexithymia than participants with a Bachelor's degree or higher. Conversely, participants with a master's degree or above had significantly lower alexithymia than participants with A levels or below.

5.4.5 Relationship Between Predictor Variables and Self-Harm

Table 5.2 sets out the descriptive statistics and tests of difference of the independent variables in participants with and without a history of self-harm. Total

TAS20 was significantly higher in participants with a history of self-harm than in participants with no history of self-harm ($t(454) = 8.49, p < .001$, effect size $r = .37$). Hypothesis three is therefore accepted. Overall, 29.4% of participants scored 61 or above on the TAS20, rising to 42.2% among participants with a history of self-harm (compared with 7.7% for participants with no past self-harm).

The tests of difference were carried out separately for men and women (Appendix 5.5). There was a significant difference between participants with and without a history of self-harm in men and women in all independent variables, except DERS Awareness and TAS20 EOT, and among female participants there was no significant difference in MAIA-EA. Hypothesis four, that alexithymia would be significantly higher in both men and women with a history of self-harm, is accepted.

A one way ANOVA was conducted to compare mean TAS20 scores between participants with no history of self-harm, those who had self-harmed but never attempted suicide and those who had self-harmed including with suicidal intent. There was a significant association between self-harm status and alexithymia (TAS20, $F(2, 455) = 51.11, p < .0001$). Bonferroni post-hoc tests showed that participants who never self-harmed ($M = 46.67, SD = 11.20, n = 169$) scored significantly lower on TAS20 than those who had only self-harmed without suicidal intent ($M = 54.16, SD = 12.93, n = 182$). Participants who had only self-harmed without suicidal intent scored, in turn, significantly lower on TAS20 than those who had also self-harmed with suicidal intent ($M = 61.78, SD = 12.23, n = 105$).

A hierarchical logistic regression including interaction terms was carried out to test whether the demographic variables moderated the relationship between alexithymia and self-harm. The dichotomous outcome variable was the presence or absence of self-harm. Age, gender (male or female), education, ethnicity and

employment were entered as predictors at stage one of the model. Total TAS20 was entered at stage two. Finally, the interactions between TAS20 and each of the demographic variables were entered at stage three.

The final model was statistically significant (omnibus $\chi^2(25)= 124.46, p < .001$) and predicted 75.5% of cases accurately, compared to the constant only model (66.2%; Table 5.3). Nagelkerke's pseudo R^2 , which calculates the proportion of unexplained variance that is reduced by adding variables to the constant only model, was 0.35, indicating a moderate relationship of 35% between the predictor variables and self-harm history. Gender and ethnicity predicted self-harm history at step 1, controlling for the other demographic variables (Table 5.4). Gender, ethnicity and TAS20 were significant predictor at step 2. Although adding the interactions at step 3 did not improve the overall ability of the model to predict self-harm history, the interaction between age and TAS20 was significant ($p = .016$). The odds ratio is below 1 ($\text{Exp}(B) = 0.99$) indicating the strength of the relationship between TAS20 and self-harm goes down as age increases. Hypothesis five, that the relationship between alexithymia and self-harm is moderated by age, is therefore accepted.

Analysis of the residuals showed that two cases had standardised residuals greater than 3 and one further case had Cook's distance of greater than 1, combined with leverage over the expected $(k+1)/N$ (where k is the number of predictors). The cases were examined to see if there were any clear reasons to exclude these participants from the analysis. It appeared as if they had unusual results with regard to self-harm and TAS20 in relation to their ethnicity but there was no reason to suggest that these were not valid responses. A sensitivity test was conducted by running the regression with these cases excluded. The final model was still

significant, predicting 74.3% of cases correctly and the pattern of significance across the predictor variables remained the same.

Table 5.2*Test Variables Descriptive Results, Including the Difference Between Participants With and Without a History of Self-Harm (Study 3)*

Variable ^a (range)	Self-harm				No self-harm			Test of difference		BCa 95% CI		Effect
	Cronbach's α	<i>M</i>	<i>SD</i>	N	<i>M</i>	<i>SD</i>	N	<i>t</i>	<i>p</i> ^b	Lower	Upper	<i>r</i>
Total TAS20 (20-100)	0.867	56.95	13.18	287	46.67	11.20	169	8.49	< .001	7.96	12.63	0.37
DIF (5-35)	0.886	21.39	6.72	291	14.75	5.65	169	11.33	< .001	5.49	7.89	0.49
DDF (5-25)	0.816	16.35	4.83	290	12.76	4.71	172	7.80	< .001	2.64	4.46	0.34
EOT (5-40)	0.586	19.19	4.87	290	19.10	4.38	172	0.18	.857	-0.86	0.93	0.01
GAD-7 (4-28)	0.906	17.96	5.81	286	13.37	5.23	169	8.46	< .001	3.55	5.66	0.37
PHQ-9 (4-36)	0.908	22.02	7.13	280	15.80	5.96	167	9.91	< .001	4.92	7.46	0.44
AAQ-II (7-49)	0.895	29.62	8.85	281	20.30	8.64	166	10.86	< .001	7.86	11.68	0.46
Total DERS (18-90)	0.914	53.60	13.94	273	39.56	11.92	160	11.09	< .001	11.60	16.55	0.50
Awareness (5-15)	0.801	7.53	2.88	281	7.50	3.15	163	0.08	.936	0.63	-0.61	0.00
Clarity (5-15)	0.904	8.13	3.29	282	5.51	2.54	162	9.40	< .001	2.07	3.16	0.42
Goals (5-15)	0.926	11.26	3.31	282	8.19	3.44	162	9.30	< .001	2.48	3.81	0.40
Impulse (5-15)	0.910	7.71	3.69	282	5.65	3.06	162	6.30	< .001	1.44	2.69	0.30
Non-accept (5-15)	0.854	9.56	3.56	279	6.52	3.11	162	9.39	< .001	2.50	3.80	0.44
Strategies (5-15)	0.856	9.32	3.39	279	6.27	3.05	161	9.70	< .001	2.46	3.67	0.45
SAQ (28-140)	0.933	64.14	18.67	242	47.61	12.71	109	9.67	< .001	13.19	20.08	0.49
MAIA-EA (6-30)	0.852	19.43	6.51	253	17.28	7.03	113	2.84	.005	0.43	3.48	0.15

^aDERS = Difficulties in Emotion Regulation Scale; TAS20 = Toronto Alexithymia Scale; DIF = Difficulty Identifying Feelings; DDF = Difficulty Describing Feelings; EOT = Externally Orientated Thinking; GAD-7 = General Anxiety Disorder Scale; PHQ = Patient Health Questionnaire (Depression); AAQ-II = Acceptance and Action Questionnaire; SAQ = Self-Awareness Questionnaire; MAIA-EA = Emotional Awareness subscale of the Multidimensional Assessment of Interoceptive Awareness Questionnaire.

^bThe *p* values were judged against an adjusted critical value of (0.05/11=) 0.005 to account for multiple tests.

Table 5.3*Logistic Regression to Predict the Presence or Absence of a History of Self-Harm Using Demographic Predictor Variables (Study 3)*

Steps	Hosmer and Lemeshow			Model omnibus			Improvement in model (block omnibus)			Cox & Snell	Nagelkerke	Correctly predicted outcomes
	χ^2	df	<i>p</i>	χ^2	df	<i>p</i>	χ^2	df	<i>p</i>	<i>R</i> ²	<i>R</i> ²	
Step 1	6.90	8	.548	48.06	12	< .001				.11	.15	66.2%
Step 2	5.85	8	.664	112.63	13	< .001	64.57	1	< .001	.24	.32	74.8%
Step 3	11.88	8	.157	124.46	25	< .001	11.83	12	.460	.26	.35	75.5%

Table 5.4*Logistic Regression Predictor Variables (Significant Predictors in Bold) (Study 3)*

	B	S.E.	Wald	df	p	Exp(B)	95% C.I. for Exp(B)	
							Lower	Upper
Step 1								
Constant	0.24	1.08	0.05	1	0.829	1.26		
Age	-0.01	0.05	0.08	1	0.778	0.99	0.90	1.08
Gender	1.12	0.25	19.83	1	0.000	3.08	1.88	5.04
Ethnicity [†]			22.11	4	0.000			
Mixed ethnicity	-0.35	0.38	0.85	1	0.357	0.70	0.33	1.49
Asian or Asian British	-1.16	0.28	17.88	1	0.000	0.31	0.18	0.54
Black or Black British	-1.24	0.44	7.92	1	0.005	0.29	0.12	0.69
Other	0.05	0.54	0.01	1	0.922	1.05	0.37	3.04
Employment ^{††}			1.13	2	0.568			
Employed	0.17	0.45	0.14	1	0.704	1.18	0.50	2.84
Student	-0.12	0.43	0.08	1	0.782	0.89	0.38	2.06
Education ^{†††}			6.40	4	0.171			
GCSEs	0.87	0.54	2.65	1	0.104	2.39	0.84	6.81
A levels	0.14	0.37	0.15	1	0.703	1.15	0.56	2.39
First degree	0.13	0.42	0.09	1	0.764	1.14	0.50	2.60
Higher degree	-0.47	0.50	0.88	1	0.349	0.63	0.23	1.67
Step 2								
Constant	-5.23	1.40	13.98	1	0.000	0.01		
Age	0.04	0.05	0.62	1	0.431	1.04	0.94	1.15
Gender	1.28	0.28	21.24	1	0.000	3.61	2.09	6.24
Ethnicity[†]			28.63	4	0.000			
Mixed ethnicity	-0.28	0.42	0.44	1	0.505	0.76	0.34	1.71
Asian or Asian British	-1.56	0.31	25.72	1	0.000	0.21	0.12	0.38
Black or Black British	-1.37	0.49	7.98	1	0.005	0.25	0.10	0.66
Other	-0.41	0.57	0.51	1	0.474	0.66	0.22	2.04
Employment ^{††}			0.36	2	0.835			
Education ^{†††}			4.55	4	0.337			
TAS20	0.08	0.01	51.99	1	0.000	1.08	1.06	1.10
Step 3								
Constant	-16.69	6.03	7.65	1	0.006	0.00		
Age	0.60	0.24	6.09	1	0.014	1.81	1.13	2.91
Gender	1.84	1.38	1.78	1	0.182	6.28	0.42	93.41
Ethnicity [†]			5.05	4	0.282			
Mixed ethnicity	-0.91	2.01	0.20	1	0.653	0.40	0.01	20.87
Asian or Asian British	-3.47	1.74	3.99	1	0.046	0.03	0.00	0.94
Black or Black British	-2.85	2.40	1.42	1	0.234	0.06	0.00	6.32
Other	0.98	3.24	0.09	1	0.763	2.66	0.00	1509.89
Employment ^{††}			0.13	2	0.939			
Education ^{†††}			1.10	4	0.893			
TAS20	0.31	0.11	7.05	1	0.008	1.36	1.08	1.70
TAS20*Age	-0.01	0.00	5.77	1	0.016	0.99	0.98	1.00
TAS20*Gender	-0.01	0.03	0.23	1	0.635	0.99	0.94	1.04
TAS20*Ethnicity			1.73	4	0.785			
TAS20*Employment			0.09	2	0.958			
TAS20*Education			1.04	4	0.903			

[†]Ethnicity categories are relative to the baseline 'white'.

^{††}Employment categories are relative to the baseline 'unemployed'. The number of categories has been reduced because of the small numbers.

^{†††}Education categories are relative to the baseline 'no formal qualifications'. The level 'doctoral qualification' has been combined with master's degree because of the small number of respondents in that category.

5.4.6 Difference in Alexithymia Depending on the Recency of Self-Harm

A one-way between subjects ANOVA was conducted on the recency of the last incidence of self-harm (never self-harmed, self-harmed within the past year, between one and five years ago and over five years ago). There was a significant effect of recency of self-harm on alexithymia (TAS20; $F(3, 450) = 30.43, p < .001$). Bonferroni post-hoc tests revealed that participants who had self-harmed within the past year had significantly higher alexithymia ($M = 59.85, SD = 13.11, n = 143$) than those who had never self-harmed ($M = 46.78, SD = 11.25, n = 170, p < .001$), those who had self-harmed between one and five years ago ($M = 54.99, SD = 12.92, n = 98, p = .016$) and those who self-harmed over five years ago ($M = 51.79, SD = 11.65, n = 43, p = .001$). Hypothesis six is therefore accepted. There were no significant differences in TAS20 between those who had self-harmed more than five years ago and those who had never self-harmed ($p = .102$). There was also a significant effect of recency of self-harm on age ($F(2, 447) = 6.79, p < .001$), with those who had self-harmed more than five years ago significantly older ($M = 23.35, SD = 2.94$) than those who had self-harmed within the past year ($M = 21.16, SD = 3.06, p < .001$). There was no significant difference in age between those who had self-harmed over five years ago and those who had never self-harmed ($M = 22.01, SD = 3.12, p = .076$).

5.4.7 Correlations Between Predictor Variables

Table 5.5 sets out the correlations between the independent variables for participants with and without a history of self-harm. Particularly high correlations were observed between TAS20 DDF and DERS Clarity ($r = .71$ among participants with a history of self-harm) and between AAQ-II and total DERS ($r = .74$ among participants with no history of self-harm). The interoception measure SAQ was

significantly correlated with the TAS20 DIF and DDF and all DERS subscales except Awareness. MAIA-EA, in contrast, was significantly correlated with GAD7, TAS20 EOT and DERS Awareness, and among those with a history of self-harm, correlations between MAIA-EA and DERS subscales Impulse, Strategies and Goals were also significant.

Table 5.5 *Correlations Among Predictor Variables (Study 3)*

Variable ^a	Total TAS20	DIF	DDF	EOT	GAD7	PHQ9	AAQII	Total DERS	Awareness	Clarity	Non-accept	Goals	Impulse	Strategy	SAQ	MAIA-EA
Total TAS20	1	.874**	.842**	.656**	.450**	.459**	.533**	.695**	.487**	.750**	.413**	.320**	.443**	.451**	.487**	-0.042
DIF	.852**	1	.675**	.308**	.534**	.484**	.579**	.698**	.277**	.688**	.495**	.372**	.490**	.515**	.584**	0.123
DDF	.847**	.692**	1	.349**	.370**	.385**	.430**	.576**	.405**	.710**	.342**	.269**	.297**	.382**	.334**	-0.036
EOT	.547**	0.144	.205**	1	0.098	.175**	.185**	.326**	.522**	.366**	0.073	0.075	.222**	0.100	.183**	-.256**
GAD7	.401**	.456**	.290**	0.093	1	.676**	.597**	.535**	0.101	.414**	.394**	.375**	.394**	.515**	.565**	.197**
PHQ9	.488**	.541**	.435**	0.068	.699**	1	.645**	.587**	.169**	.464**	.368**	.436**	.366**	.596**	.545**	0.062
AAQII	.493**	.508**	.505**	0.073	.634**	.654**	1	.696**	.147*	.494**	.528**	.492**	.485**	.679**	.590**	.152*
Total DERS	.620**	.595**	.553**	.244**	.554**	.621**	.735**	1	.368**	.751**	.696**	.700**	.776**	.812**	.583**	0.076
Aware	.325**	0.126	.251**	.411**	-0.071	-0.068	0.028	.269**	1	.330**	.138*	-0.055	.134*	0.074	0.054	-.363**
Clarity	.636**	.644**	.611**	.171*	.396**	.428**	.570**	.682**	.248**	1	.433**	.357**	.473**	.504**	.485**	0.042
Non-accept	.439**	.483**	.422**	0.078	.452**	.467**	.602**	.734**	0.072	.538**	1	.379**	.353**	.515**	.406**	0.092
Goals	.300**	.328**	.291**	0.019	.464**	.534**	.505**	.671**	-.249**	.226**	.430**	1	.551**	.605**	.368**	.170**
Impulse	.276**	.304**	.226**	0.101	.319**	.404**	.464**	.745**	0.047	.307**	.391**	.514**	1	.622**	.505**	.226**
Strategy	.439**	.453**	.365**	.162*	.569**	.631**	.711**	.805**	-0.027	.461**	.445**	.602**	.623**	1	.504**	.126*
SAQ	.403**	.472**	.344**	0.053	.535**	.536**	.436**	.494**	-0.018	.381**	.430**	.410**	.248**	.424**	1	.329**
MAIA-EA	-0.068	0.101	0.003	-.311**	.258**	0.138	0.159	0.065	-.321**	0.155	.192*	0.065	0.013	0.149	.398**	1

Note. Coefficients above the diagonal are for participants with a history of self-harm. Coefficients below the diagonal are for participants with no history of self-harm. ^aDERS = Difficulties in Emotion Regulation Scale; TAS20 = Toronto Alexithymia Scale; DIF = Difficulty Identifying Feelings; DDF = Difficulty Describing Feelings; EOT = Externally Orientated Thinking; GAD-7 = General Anxiety Disorder Scale; PHQ = Patient Health Questionnaire (Depression); AAQ-II = Acceptance and Action Questionnaire; SAQ = Self-Awareness Questionnaire; MAIA-EA = Emotional Awareness subscale of the Multidimensional Assessment of Interoceptive Awareness Questionnaire.

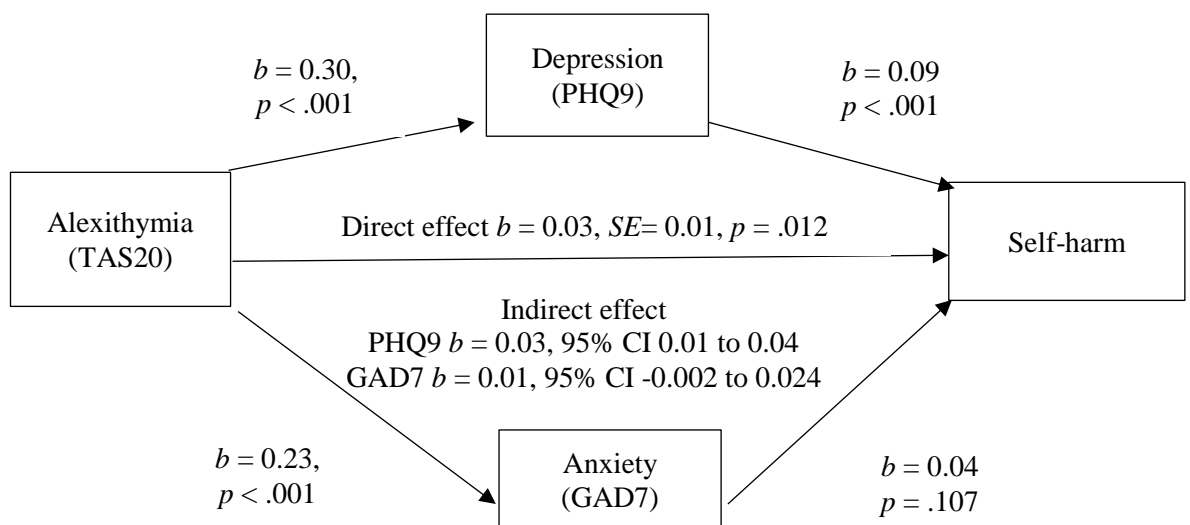
5.4.8 Mediation Analysis

A set of mediation analyses were conducted to test the remaining hypotheses.

Mediation Model 1: Depression (but not Anxiety) Mediates Between Alexithymia and Self-Harm. A mediation analysis was carried out to test whether depression (PHQ9) and anxiety (GAD7) mediated between alexithymia (TAS20) and self-harm (Figure 5.3). There was a significant direct effect of alexithymia on self-harm ($b = 0.03, p = .012$). The indirect effect of alexithymia on self-harm via depression was positive and significant ($b = 0.03, 95\% \text{ CI } 0.01 \text{ to } 0.04$). The indirect effect of alexithymia on self-harm via anxiety was not significant ($b = -0.01, 95\% \text{ CI } -0.002 \text{ to } 0.02$). Hypothesis seven is therefore accepted in part, in that depression but not anxiety mediated between alexithymia and self-harm. All further models include depression and age as covariates, as they have a significant effect on the relationship between alexithymia and self-harm in the current dataset.

Figure 5.3

Model of Alexithymia (TAS20) as a Predictor of Self-Harm, Mediated by Depression and Anxiety (BCa Bootstrapped CI Based on 5000 Samples; $N = 435$)



TAS20 = Toronto Alexithymia Scale; PHQ9 = Patient Health Questionnaire (Depression); GAD7 = General Anxiety Disorder Scale.

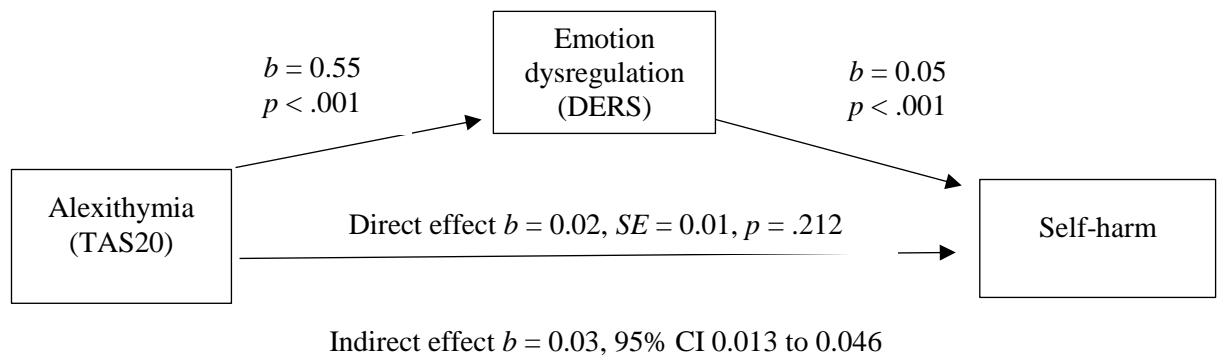
Mediation Model 2: Emotion Dysregulation Mediates Between

Alexithymia and Self-Harm, Controlling for Depression and Age.

A mediation analysis was conducted to test whether emotion dysregulation (DERS) mediated between alexithymia (TAS20) and self-harm, including depression (PHQ9) and age as covariates (Figure 5.4). The direct effect of alexithymia on self-harm was not significant ($b = 0.02, p = .212$). The indirect effect of alexithymia on self-harm via emotion dysregulation was positive and significant ($b = 0.03, 95\% \text{ CI } 0.01 \text{ to } 0.05$). Hypothesis one, that emotion dysregulation would mediate between alexithymia and self-harm, is accepted.

Figure 5.4

Model of Alexithymia (TAS20) as a Predictor of Self-Harm, Mediated by Emotion Dysregulation (Total DERS), Controlling For Depression and Age (BCa Bootstrapped CI Based on 5000 Samples; $N = 410$)



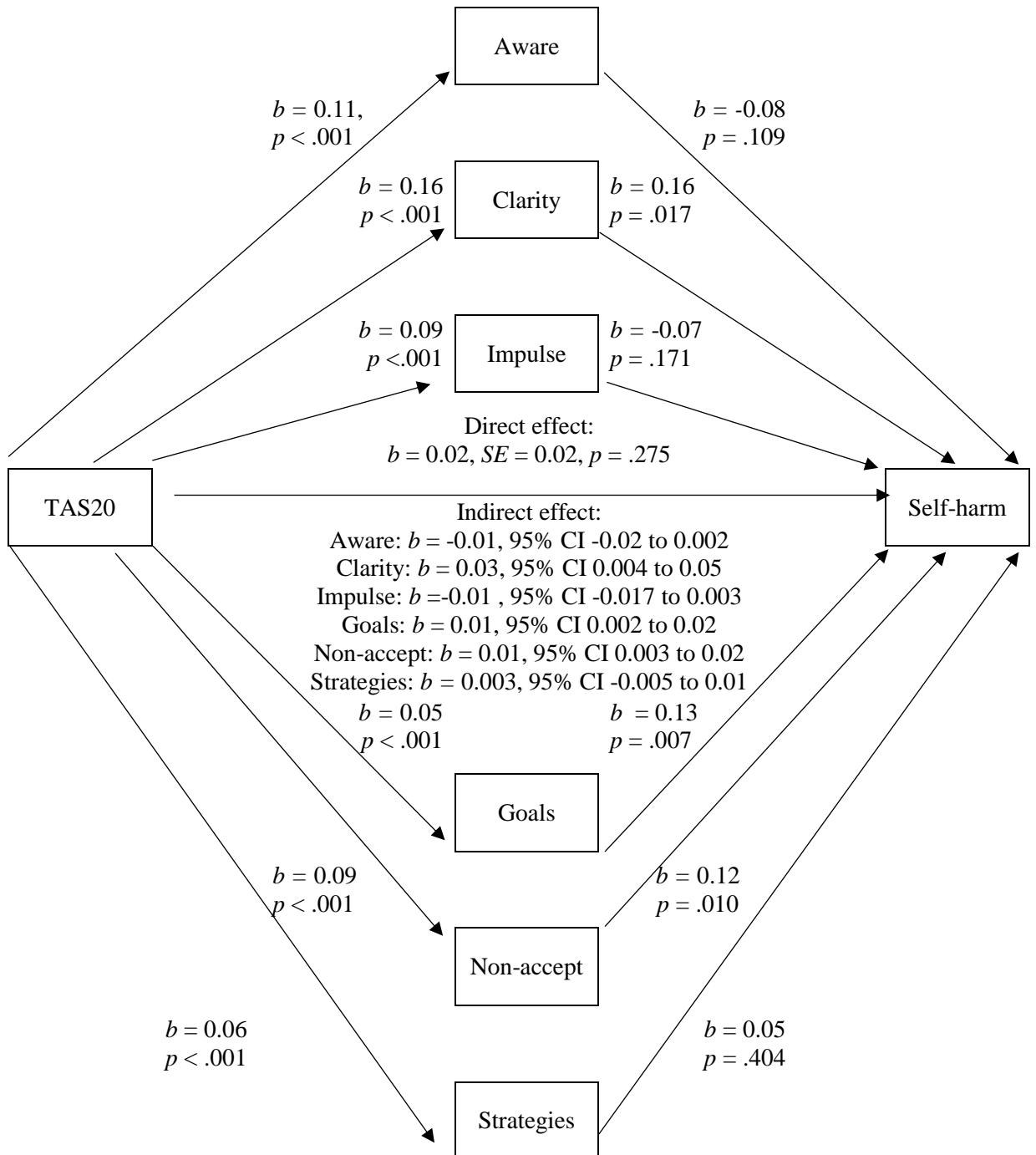
TAS20 = Toronto Alexithymia Scale; DERS = Difficulties in Emotion Regulation Scale.

Mediation Model 3: Emotion Dysregulation Facets Clarity, Non-Acceptance and Goals Mediate Between Alexithymia and Self-Harm, Controlling For Depression and Age. When the six DERS subscales were entered as multiple parallel mediators between alexithymia and self-harm, controlling for depression and age, there was a significant indirect path via the subscales Non-accept and Goals. Four outliers were identified in this model with standardised residuals of over three but since Cook's distance in each case was below one, these cases were assumed not to have a large effect on the overall regression model. However, a sensitivity analysis showed that with the outliers excluded, the indirect path between TAS20 and self-harm via Clarity became significant ($b = 0.03$, 95% CI <0.01 to 0.05). Since the aim of the analysis was to identify significant mediators rather than the predictive value of the overall model, the results presented in Figure 5.5 exclude the outliers. The direct effect of alexithymia on self-harm was not significant ($b = 0.02$, $p = .275$). The indirect effect of alexithymia on self-harm via Clarity ($b = 0.03$, 95% CI 0.004 to 0.049), Non-acceptance ($b = 0.01$, 95% CI 0.003 to 0.021) and Goals ($b = 0.01$, 95% CI 0.002 to 0.015) was positive and significant.

When experiential avoidance (AAQ-II) was included in the model as an additional mediator to the six DERS subscales, the indirect path from TAS20 to self-harm via AAQ-II was not significant ($b = 0.01$, 95% CI -0.001 to 0.02). The indirect paths via Clarity ($b = 0.02$, 95% CI 0.003 to 0.05), Non-acceptance ($b = 0.01$, 95% CI 0.001 to 0.02) and Goals ($b = 0.01$, 95% CI 0.002 to 0.02) remained significant.

Figure 5.5

Model of Alexithymia (TAS20) as a Predictor of Self-Harm, Mediated by Six Facets of Emotion Dysregulation (DERS Subscales), Controlling for Depression and Age (BCa Bootstrapped CI Based on 5000 Samples; N = 406)



TAS20 = Toronto Alexithymia Scale; Aware, Clarity, Impulse, Goals, Non-accept and Strategies are the six subscales of the Difficulties in Emotion Regulation Scale (DERS)

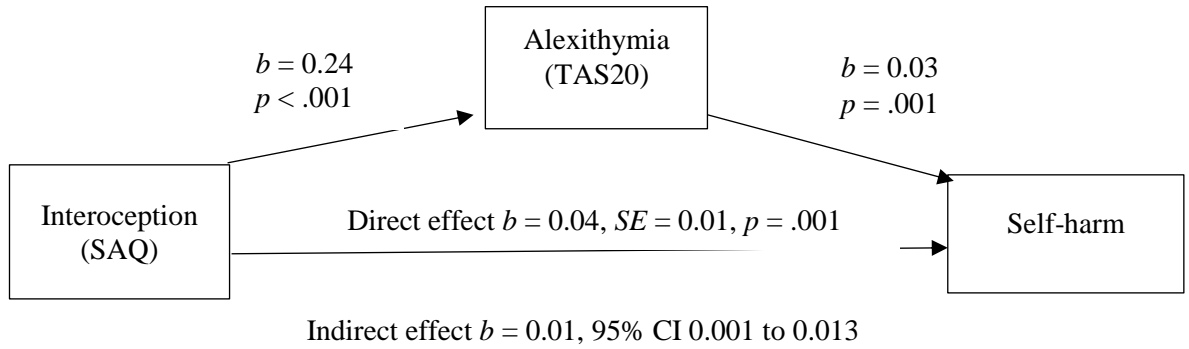
Model 4: Alexithymia Mediates Between Interoception and Self-Harm.

Based on the subset of participants who completed the interoceptive scales ($N = 335$), a logistic regression found that SAQ ($p = .008$) but not MAIA-EA ($p = .416$) significantly predicted self-harm, taking into account alexithymia, depression and age (omnibus $\chi^2(5) = 93.17, p < 0.001$, Nagelkerke $R^2 = 0.34$). Using mediation analysis, there was a positive and significant direct path from SAQ to self-harm ($b = 0.04, p = 0.001$), and a significant indirect path from SAQ to self-harm, via TAS20 ($b = 0.01, 95\% \text{ CI } 0.001 \text{ to } 0.013$; Figure 5.6). Hypothesis two, that alexithymia would mediate between interoceptive sensibility and self-harm, was therefore accepted.

Model 5: Alexithymia and Emotion Dysregulation Mediate Between Interoception And Self-Harm. Finally, in a serial mediation model there was a significant direct path ($b = 0.03, p = 0.016$) and a significant indirect path ($b = 0.01, 95\% \text{ CI } 0.002 \text{ to } 0.012$) from SAQ via TAS20 and DERS to self-harm (Figure 5.7). There was a significant indirect path from SAQ to self-harm via DERS ($b = 0.01, 95\% \text{ CI } 0.002 \text{ to } 0.016$) but, with DERS in the model, the indirect path from SAQ to self-harm via TAS20 was not significant ($b < 0.001, 95\% \text{ CI } -0.007 \text{ to } 0.009$).

Figure 5.6

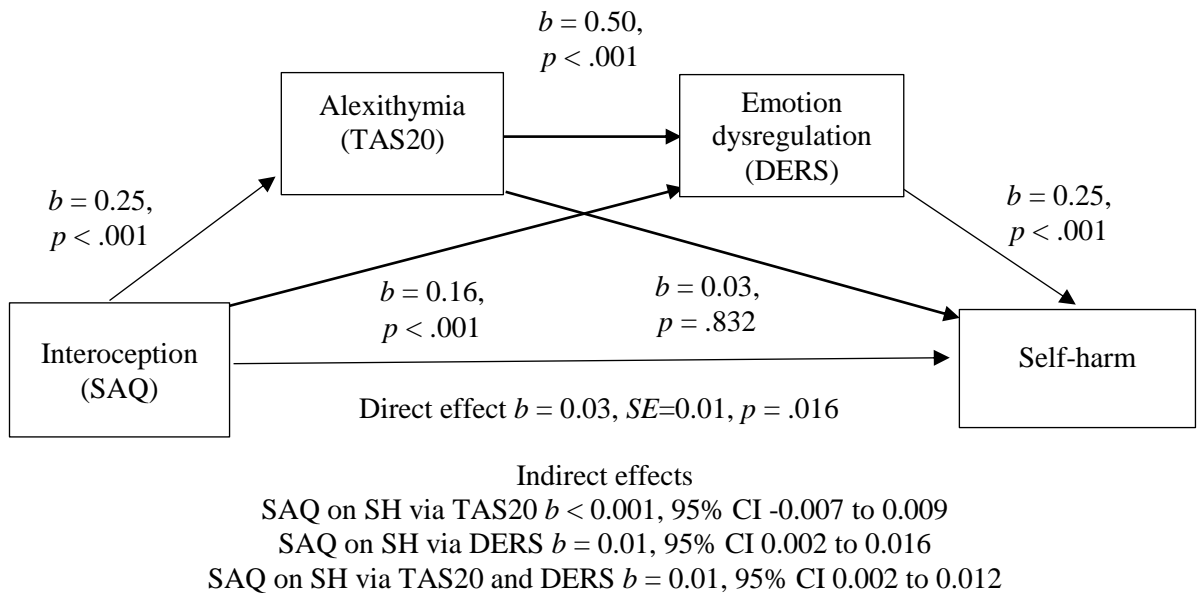
Model of Interoception (SAQ) as a Predictor of Self-Harm, Mediated by Alexithymia (TAS20), Controlling for Depression and Age (BCa Bootstrapped CI Based On 5000 Samples; N = 335)



SAQ = Self-Awareness Questionnaire; TAS20 = Toronto Alexithymia Scale

Figure 5.7

Model of Interoception (SAQ) as a Predictor of Self-Harm, Mediated by Alexithymia (TAS20) and Emotion Dysregulation (DERS), Controlling for Depression and Age (BCa bootstrapped CI based on 5000 samples; N = 330)



SAQ = Self-Awareness Questionnaire; TAS20 = Toronto Alexithymia Scale; DERS = Difficulties in Emotion Regulation Scale.

5.5 Discussion

This study had two main objectives. The first was to replicate the findings from the meta-analysis of a significant correlation between self-harm and alexithymia that was moderated by demographic characteristics. The second was to test a model in which it was hypothesised that interoceptive sensibility would predict alexithymia, which would in turn predict emotion dysregulation and thence self-harm.

In common with many other studies, and the results of the meta-analysis, a significant, positive correlation was found between alexithymia and self-harm. The significant interaction between alexithymia and age in the logistic regression indicates that the relationship between self-harm and alexithymia was stronger among younger participants, even in the current sample where the age range was restricted to between 18 and 30 years old. This finding is consistent with the meta-analysis which found a larger effect size in adolescent samples than in adult samples. There was no significant difference in age between participants with and without a history of self-harm. Age and alexithymia, however, were negatively correlated, in common with Study 2 results, and with other evidence showing that TAS20 scores tend to be higher in younger people (Honkalampi et al., 2009). The results may indicate that the prevalence of self-harm in the teenage years is associated with alexithymia because emotional awareness skills are still in development (Oskis et al., 2013). Alternatively, or in addition, it is possible that the results may be related to the recency of self-harm. As in Study 2, neither age nor TAS20 were significantly different among participants with historic self-harm compared with participants who had never self-harmed. Possible explanations for this finding were discussed in Chapter Four, section 4.5, although without longitudinal data to track the

relationship between alexithymia and self-harm over time it is not possible to draw firm conclusions. The meta-analysis found no significant difference in effect size in the relationship between alexithymia and recent self-harm versus lifetime self-harm. However, lifetime self-harm will include recent self-harm, which may disguise any effect of age or self-harm recency on the relationship between alexithymia and self-harm in those studies.

Consistent with the results of the meta-analysis, in the current study both men and women scored significantly higher on alexithymia if they had a history of self-harm and there was no significant interaction between gender and TAS20 in the logistic regression predicting self-harm. The meta-analysis (Chapter Two) noted the heterogeneous results concerning the relationship between alexithymia and self-harm in men. It may be that a gender difference in the relationship between alexithymia and self-harm is more evident in younger people. For example, Howe-Martin et al. (2012) found no significant difference in TAS20 between adolescent boys with and without a history of self-harm, drawn from a community setting. The results reported in the current study suggest that any gender difference observed in younger samples may not be replicated in adults, but more research on larger male samples is needed to confirm this.

The study found that depression, but not anxiety, was a significant mediator of the relationship between alexithymia and self-harm. Depression was identified as a mediator in two previous studies (Garisch & Wilson, 2010; Lambert & de Man, 2007) and a meta-analysis has confirmed a medium sized relationship between depression and TAS20 subscales DIF and DDF (Li et al., 2015). However, in the current study, the direct effect between alexithymia and self-harm remained significant, suggesting that the relationship between alexithymia and self-harm

cannot be entirely explained by depression. With depression in the model, anxiety was not a significant mediator, most likely due to the high correlation between the PHQ-9 (depression) and the GAD-7 (anxiety).

As hypothesised, emotion dysregulation was found to be a significant mediator between alexithymia and self-harm. This finding supports other evidence that clarity over emotional experience precedes the ability to regulate that emotional experience (da Silva et al., 2017), and that a lack of emotional clarity is a significant predictor of self-harm (Gratz & Roemer, 2008). The primary importance of identifying and understanding one's emotional experience as a precursor to improving emotional regulation skills is core to Linehan's Dialectical Behavioural Therapy (DBT, Linehan, 1993) and also to Emotion Regulation Group Therapy (Gratz & Gunderson, 2006; Gratz & Tull, 2011). Both of these therapies were developed in the context of Borderline Personality Disorder (BPD), which is associated with elevated rates of self-harm. Both therapies teach emotional awareness, including the identification and labelling of emotions, as part of a wider programme of emotion skills training designed to reduce recourse to self-harm. DBT was identified as showing promising results in a meta-analysis of trials examining the effectiveness of interventions for self-harm in adults (Hawton et al., 2016) and children and adolescents (Hawton, Witt, et al., 2015) (although the relatively poor quality of available evidence prevented firm conclusions from being drawn).

When the mediation analysis was conducted using the disaggregated DERS subscales, Clarity, Non-accept and Goals were found to be significant mediators. The subscale Clarity is very similar in concept to the TAS20 subscale DIF, and the correlations between the two measures was very high ($r=0.73$, $p<0.001$ for the

sample as a whole). When Clarity was excluded from the model, Non-accept and Goals were still significant mediators, but the direct path from TAS20 to self-harm remained significant, whereas the direct path between TAS20 and self-harm was not significant when Clarity was included as a mediator. This indicates that, without the overlap between DIF and clarity, emotion dysregulation only accounts for part of the relationship between alexithymia and self-harm. It should also be noted that the beta coefficients for the significant mediators, Non-accept and Goals, were small and the confidence intervals close to zero, indicating a small, but significant mediating effect. Non-accept measures the tendency to feel embarrassed, guilty or irritated at oneself when upset, and is similar to the FFMQ subscale Non-judge. Goals refers to the difficulty of focussing on other things when feeling upset. The model suggests that people struggling to understand their feelings may find it hard to accept and endure this confused emotional state and therefore may self-harm in order, perhaps, to distract from that experience. Such a model is consistent with evidence linking alexithymia with the avoidance of unwanted emotions (Panayiotou et al., 2015). It also accords with the Emotional Cascade model (Selby et al., 2008) in which self-harm is used as means of breaking a detrimental cycle of negative affect and increasing rumination (Selby et al., 2013).

Results from the current study also support the hypothesis that alexithymia mediates between interoception and self-harm. Two measures of interoception were used in this study. One, the emotion awareness subscale of the MAIA (MAIA-EA, Mehling et al., 2012, 2018) aims to capture how well an individual believes they associate physical sensation with emotional experience. Like Zamariola et al. (2017) this study found no significant correlation between MAIA-EA and total TAS20 or subscales DIF and DDF. A significant, negative correlation was observed in this

study and in Zamariola et al. (2017) between MAIA-EA and TAS20 EOT subscale, but given the low reliability and factor loadings of the items in the EOT scale (Appendix 5.4) it would be unwise to place much weight on this finding. MAIA-EA was found to be significantly higher among participants with a history of self-harm in the current sample. Young and Davies (2019) also found that MAIA-EA, when combined with the noticing, body listening and awareness subscales of the MAIA, significantly and positively correlated with non-suicidal self-injury in one study (although non-significant correlations were found in two subsequent studies reported in the same article). Given the fact that the MAIA was designed as a measure of adaptive, healthy interoceptive awareness, it is perhaps surprising that it should be positively associated with self-harm. It may be that, as with the Observe facet of the Five Facets of Mindfulness Questionnaire (Baer et al., 2006), the ability to notice bodily sensations is only adaptive among experienced mindfulness practitioners who are able to observe their inner experience neutrally, without judgment or reaction (Baer et al., 2006, 2008).

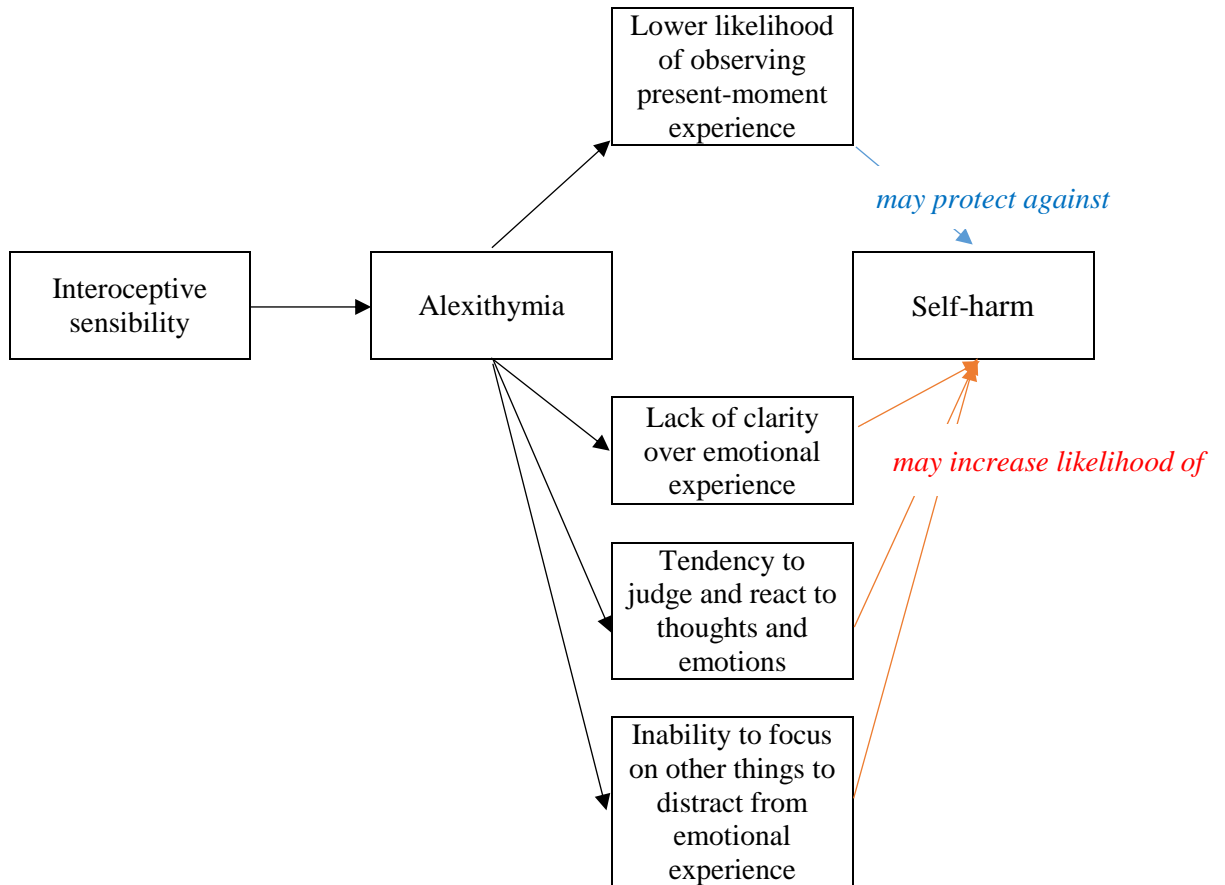
The second measure of interoception was the SAQ (Longarzo et al., 2015a). Consistent with previous studies, SAQ was found to correlate positively and significant with the TAS20, indicating that people with high levels of alexithymia report a heightened perception of bodily sensation (Hughes et al., 2018; Longarzo et al., 2015b). Scores on the SAQ were significantly higher among participants with a history of self-harm, with a large effect size. There are few precedents in the literature but the result is consistent with Kubiak and Sakson-Obada (2016) who found self-harm to be significantly related to raised (although also to lowered) sensitivity to bodily sensation. The result appears to contrast with evidence from the pain literature, in which people who self-harm appear to have elevated pain

thresholds (Franklin et al., 2012). However, there is frequently a discrepancy between objective, behavioural measures of interoceptive accuracy and self-reported, subjective measures of interoceptive sensibility, which have been found to be correlated only in people with high interoceptive accuracy (Garfinkel et al., 2015). The finding here suggests that people who self-harm have a heightened perception of bodily sensation. Furthermore the mediating role of alexithymia appears to support the notion that heightened awareness is associated with self-harm because of the difficulties in interpreting those sensations and distinguishing them from emotions.

A novel aspect of this study was the inclusion of interoceptive sensibility, alexithymia, emotion regulation and self-harm in the same model. The model was significant, and alexithymia and emotion regulation were found to mediate the relationship between interoceptive sensibility and self-harm. The findings from the current study have been added to the model of the relationship between alexithymia and self-harm (Figure 5.8). The results of Study 3 complement those of Study 2, in which facets of trait mindfulness were found to mediate between alexithymia and self-harm. In particular, they lend support to the hypothesised mechanisms proposed in the previous chapter by which mindfulness might be protective against self-harm, that is, via non-judgmental acceptance of inner experience or via a decoupling of inner experience and self-harm behaviours. The results of Study 3 are also consistent with evidence linking interoceptive awareness and psychological health (Farb et al., 2015). Mindfulness practice has been shown to improve both interoceptive accuracy and emotional awareness (Bornemann & Singer, 2017), and the results of Studies 2 and 3 (Chapters Four and Five) together indicate that this might be a fruitful means of helping people with high alexithymia who self-harm. Further implications for clinical practice are discussed in Chapter Nine.

Figure 5.8

The Relationship Between Alexithymia and Self-Harm, Based on the Findings of Studies 1, 2 and 3



5.6 Limitations

The main limitation of this study is the use of cross-sectional data and correlational analyses, which preclude any conclusions about causality. It is possible, for example, that the causal pathways between the variables might flow in the opposite direction. In contrast to the current study, Young and Davies (2019) tested a model in which interoceptive awareness (using several subscales of the MAIA) mediated between interoceptive ambivalence (including TAS20 DIF and DDF subscales) and NSSI, suggesting that the relationship between facets of alexithymia and NSSI is explained by difficulties in “*awareness of, and ability to attend to, interoceptive signals*” (Young & Davies, 2019, p.8). In parallel with other

interoceptive mediators, however, interoceptive awareness was found to be a significant mediator in only one of the three studies conducted by Young and Davies (2019). Alternatively, bi-directional pathways may exist between the variables, which are not captured in the current model. It has been shown, for example, that not only does emotion dysregulation predict future NSSI, but that also NSSI predicts future declines in emotion regulation (Robinson et al., 2019). Similarly Garisch and Wilson (2015) found that engagement in NSSI in adolescents was not only correlated with protective factors such as trait mindfulness and resilience but also predicted declines in these factors at a later period.

The current study only included one aspect of interoception in the final model which specifically captured perception of bodily sensation using the SAQ (Longarzo et al., 2015a). The emotion awareness subscale of the MAIA was not found to be a significant mediator between alexithymia and self-harm when included with SAQ. This is a limitation, in that it does not extend knowledge about the relationship between the different facets of interoception. In the absence of any objective information about interoceptive accuracy, for example, it is not possible to conclude whether people with high levels of alexithymia do experience more extreme physical sensations or whether the result signals a propensity to misinterpret bodily sensation. Use of the SAQ does, however, allow for a clear distinction to be drawn between perception of bodily sensation and alexithymia, as measured using the TAS20. Many previous studies which have purported to test the relationship between interoceptive sensibility and self-harm have used the EDI-IA, which has considerable overlap with the TAS20 (Young & Davies, 2019). There is a continued need for greater clarity in the language and measurement of interoception.

Finally, it should be noted that a relatively high proportion of potential participants (11%) were excluded because of missing data. Although these individuals did not differ significantly from the included participants on any demographic variables, it is possible that people with high alexithymia might find self-report questions about emotional experience difficult, and therefore be more likely not to complete the survey.

5.7 Conclusion

This study has corroborated the evidence from the meta-analysis of a significant relationship between alexithymia and self-harm, moderated by age. In contrast to some (but not all) previous research, it found that relationship was significant in men as well as in women. By using a measure of interoceptive sensibility, it has generated a novel finding about the positive relationship between heightened perception of physical sensation and self-harm, mediated by alexithymia and emotion dysregulation.

So far in this thesis I have examined the relationship between alexithymia and self-harm by testing the mediating effect of various aspects of emotion regulation. In the following chapter I approach the overall research question from a different and more exploratory perspective, by asking participants what function self-harm plays for them and by analysing the responses in the context of alexithymia.

Chapter Six: Study 4 - Exploring which non-suicidal functions of self-harm are associated with alexithymia.

“Feeling everything and nothing at the same time.”

ABSTRACT

Background: Affect regulation is the most frequently endorsed non-suicidal function of self-harm, but no analysis has examined whether any functions are particularly associated with alexithymia.

Method: Two studies were carried out (Studies 4a and 4b) using data from separate online surveys of community-based adults with a history of self-harm, recruited using opportunity sampling ($N=140$ and $N = 291$). In both surveys participants completed the Inventory of Statements about Self-Injury (ISAS) and the Toronto Alexithymia Scale (TAS20). In Study 4b participants were additionally asked what, if any, was their main reason for self-harming and the responses were analysed using inductive content analysis. The results of the quantitative and free text analyses were combined using a joint display.

Results: Both Studies found significantly higher alexithymia among participants who endorsed functions anti-suicide, feeling generation and self-punishment, with medium to large effect sizes. In a multiple regression in Study 4b, age, anxiety and the functions feeling generation and sensation seeking were significant predictors of alexithymia. The free text analysis found that TAS20 was significantly higher in participants who had given feeling generation as the main reason for self-harm. Qualitative analysis revealed how seemingly contradictory functions such as affect regulation and feeling generation may each be relevant at different times, but also at the same time.

Conclusion: Using both quantitative analysis and inductive content analysis, the results suggest that the function ‘feeling generation’ may be particularly relevant for people scoring highly on alexithymia, even when depression and anxiety are taken into account. This highlights the importance of the physical nature of self-harm as an intervention for people who struggle to interpret bodily sensation and emotional experience.

6.1 Introduction

The analysis presented so far has established a significant correlational association between alexithymia and self-harm. Aspects of emotion dysregulation, particularly a lack of acceptance of emotional experience, appear to mediate the relationship. In the absence of alternative, adaptive regulation skills, people with high alexithymia scores may self-harm to regulate unwanted emotional experience. One way to test this interpretation is to investigate the self-reported functions played by self-harm.

Klonsky (2007)’s seminal paper reviewed the functions of non-suicidal self-injury (NSSI), as reported in the literature. He found that affect regulation was the most commonly cited reason for NSSI, followed by self-punishment. Subsequent analysis identified a two-factor structure for the functions of NSSI, which distinguished between intrapersonal functions, that is those affecting internal processes, and social (or interpersonal) functions, involving other people (Klonsky et al., 2015). A meta-analysis found that intrapersonal functions, and particularly those relating to emotion regulation, were the most commonly reported by people engaging in NSSI (P. J. Taylor et al., 2017). In addition, intrapersonal functions have been associated with more severe self-harm (Klonsky et al., 2015). However, since most individuals endorse multiple functions of self-harm (Scoliers et al., 2009),

understanding the full spectrum of possible functions is important for clinical practice and to overcome stigma (Mitten et al., 2016). There is some evidence to suggest that the functions of self-harm may vary according to psychological characteristics (e.g. shame proneness, Mahtani et al., 2018) or life experiences (e.g. abuse, Horowitz & Stermac, 2018). Identifying whether certain functions are particularly relevant for people with identifiable experiences or traits, such as alexithymia, may therefore help in shaping treatment or preventative interventions.

The previous chapter established that alexithymia was highly correlated with difficulties in emotion regulation. In addition, since affect regulation is by far the most commonly cited function of self-harm, it is likely that it will also be endorsed by people with high levels of alexithymia, particularly if it is expressed as a relatively undifferentiated state, such as ‘feeling overwhelmed’. However, other functions may also be relevant for people with high levels of alexithymia. Self-report accounts suggest that self-harm is sometimes used either explicitly to end a dissociative state or, less specifically, to feel something, rather than nothing (Klonsky, 2007). In a study by Penn et al., (2003) 54% of participants endorsed reasons for self-harm such as *“to feel something, even if it is pain”*. As discussed in Chapter One, the evidence concerning emotional reactivity and alexithymia is mixed, with most studies reporting normal levels of physiological arousal but a large minority ($n = 24$) reporting lower reactivity (hypoarousal) in individuals with high alexithymia (Panayiotou, Panteli, et al., 2018). For example, Aaron et al. (2018) found that people with high alexithymia scores were more likely to report feeling no emotion after watching emotion-inducing film clips than people with low alexithymia. In addition, dissociation (defined in the Diagnostic and Statistical Manual of Mental Disorders [American Psychiatric Association, 2013] as a

disruption of the normal integration of a person's conscious and psychological functions) is positively correlated with alexithymia (Grabe et al., 2000; Tolmunen, Honkalampi, et al., 2010). It is possible, therefore, that using self-harm to generate feeling may be associated with alexithymia.

Self-harm can also play an interpersonal function, such as to influence someone else, to communicate or to take revenge. For people with high levels of alexithymia, who struggle to describe their feelings, self-harm might at times serve as a means of communicating distress to others. The meta-analysis (Chapter Two) and empirical analyses (Chapters Four and Five) found a significant correlation between the alexithymia subscale, difficulty describing feelings, and self-harm, which might point to the use of self-harm as a means of conveying emotional pain, but no studies have tested this hypothesis explicitly.

Alexithymia has been described as a trans-diagnostic trait correlated with many psychological disorders such as anxiety (Panிக்கா et al., 2017), depression (Honkalampi et al., 2000) and general psychopathological distress (Grabe et al., 2008). It may be, therefore, that the observed correlation between self-harm and alexithymia is at least in part a reflection of the severity of psychological distress in people who self-harm. Indeed, the evidence in the previous chapter indicated that depression mediated between alexithymia and self-harm, (consistent with Garisch & Wilson, 2010 and Lambert & de Man, 2007). In considering the functions of self-harm in people with alexithymia, therefore, it is important to take depression and anxiety into account.

6.1.1 Aims of the Study

In summary, despite the relatively large number of studies identifying a relationship between self-harm and alexithymia, and, explicitly, between suicidal

behaviour and alexithymia, no study to date has explored the association between alexithymia and the non-suicidal functions of self-harm. The literature on self-harm and, separately, alexithymia suggests that affect regulation, feeling generation and interpersonal communication functions may be associated with alexithymia. The research question addressed in this chapter is, therefore, what non-suicidal functions of self-harm are associated with alexithymia, controlling for depression and anxiety? The question was explored using data from the two surveys conducted for this thesis, described in Chapters Four and Five. The analysis of the functions data collected in the first survey was carried out post-hoc and was therefore exploratory. The analysis was repeated using the larger sample from the second survey, additionally controlling for depression and anxiety. Self-harm was defined in both surveys as “any act of self-injury, irrespective of motivation” (NICE, 2013). Suicide is, of course, one possible function served by self-harm, and the results from both surveys have already shown that alexithymia is significantly higher among people who had attempted suicide (Chapters Four and Five). As a result, this chapter focusses on the non-suicidal motivations for, and functions of, self-harm, in order to understand better the relationship with emotion regulation. Because of differences in the samples for the two surveys, the data were not combined but were analysed, and are presented, separately.

Study 4a

6.2 Method

6.2.1 Design

The data for Study 4a were collected as part of the Mindfulness and Emotion Management Survey, presented in Chapter Four. The full survey used an online questionnaire to measure self-harm history and function, alexithymia and

mindfulness. This chapter focusses only on the results relating to the functions of self-harm and their relationship to alexithymia.

6.2.2 Participants

Participants were adults over 18 years of age recruited from the general population. Details of recruitment were described in section 4.3.2. The data presented here relate only to those participants with a history of self-harm who completed part two of the Inventory of Statements About Self-Injury ($N = 140$)². The age of participants ranged from 18 to 63 ($Mdn = 24$) with a mean age of 27.01 ($SD = 9.78$). Eighty nine percent ($N = 125$) of participants were female.

6.2.3 Procedures and Ethics

The procedures and ethical considerations relating to the survey are described in Chapter Four, sections 4.3.5 and 4.3.6.

6.2.4 Measures

6.2.4.1 Demographic data. Participants were asked for demographic information including age, gender, ethnicity, level of education and employment status.

6.2.4.2 Self-harm. Participants were asked “Have you ever deliberately harmed yourself, for example by cutting, biting, scratching, burning or hitting yourself, by self-poisoning or by other methods?” If they said yes to this question they were directed to additional questions about self-harm, based on the Inventory of

² In the presentation of Study 1 in Chapter 4, the number of participants with a history of self-harm was 151. The difference is accounted for as follows: eight participants in Study 1 who responded yes to the question about suicide attempts despite having said no to the question about the history of self-harm have not been included here, because they did not complete the ISAS. In addition, three participants who did not complete the TAS20 have not been included here.

Statements about Self-injury (ISAS; Klonsky & Glenn, 2009). The ISAS is described in Chapter Four, section 4.3.4.2.

The second part of the ISAS requires participants to rate 39 items (expressed in the form “When I self-harm, I am...[for example] calming myself down.”) as not relevant, somewhat relevant or very relevant to them (0, 1 and 2 respectively). The 39 items are then combined into 13 functions, which have been found to fit within an overarching two factor structure, representing intrapersonal and interpersonal functions of self-harm (Klonsky et al., 2015). Correlations of the ISAS with clinical measures indicate good construct validity (Klonsky & Glenn, 2009) and the ISAS has been shown to have good one-year test-retest reliability (Glenn & Klonsky, 2011b).

In the current dataset, the internal consistency of the 13 functions was good ($\alpha > .70$) with the exception of Sensation Seeking ($\alpha = .52$, Table 6.2). Because of the limited range of each of the 13 functions (0-6), and because of the degree of skew observed in the current data, each function was treated as a categorical, rather than a continuous variable. Three categories per function were computed, based on the average score (indicating that the function was “never”, “sometimes” or “always” relevant). Although the functions are normally treated as continuous data (Klonsky & Glenn, 2009), one study provides a precedent for treating them as categorical data (Hamza & Willoughby, 2018). The approach was endorsed as acceptable in personal correspondence with the scale author (Klonsky, personal communication, 10 April, 2019). On the advice of the scale author, the analysis was repeated, treating the functions as continuous data, and the pattern of results was found to be identical to that reported here.

As described in section 4.3.4.2 participants were also asked a single question about whether they had every attempted suicide. In contrast to Study 2, participants who only answered yes to this question and not to the question about self-harm were not included in the current analysis, because they did not complete part 2 of the ISAS.

6.2.4.3 Alexithymia. Alexithymia was measured using the Toronto Alexithymia Scale (TAS20; Bagby et al., 1994), described in section 4.3.4.5. In the current sample the Cronbach's Alpha indicated good internal consistency for the total TAS20 score ($\alpha = .90$). Only the total TAS20 score has been used in this analysis to facilitate interpretation in a clinical context.

6.2.5 Data analysis

All analysis was conducted using SPSS v.25. In order to assess normal distributions, Shapiro Wilk tests were conducted and considered alongside graphical representations of the data. To test for univariate outliers, boxplots were examined and z-scores calculated. The data were tested for multivariate outliers using Mahalanobis D^2 . Scatterplots were examined to assess the relationship between TAS20 and the functions of self-harm. One-way ANOVAs were conducted to compare mean TAS20 scores for the three levels of each ISAS function (never, sometimes or always relevant). Levene's test was conducted to test for homogeneity of variance in the three levels.

6.2.6 Power analysis

The analysis of the functions of self-harm in the context of alexithymia was planned after the data for Study 2 had been collected, and therefore should be interpreted as exploratory. There was no direct precedent in the literature to establish the expected effect size of the relationship between the functions of self-

harm and alexithymia. Klonsky and Glenn (2009) reported correlations of a medium effect size between intrapersonal functions and depression ($r = .41$) and anxiety ($r = .38$) and between interpersonal functions and depression ($r = .25$) and anxiety ($r = .32$). In another study, the effect size of the correlation between the individual functions of self-harm and trauma severity ranged from small ($r = .13$) to medium ($r = .44$; Horowitz & Stermac, 2018). Using G*Power 3 (Faul et al., 2007), it was estimated that a medium effect size in a one-way ANOVA could be reliably identified with a sample size of 159 participants, based on parameters of $\alpha = .05$ and $1-\beta = .8$ (Field, 2013). Study 4a, therefore, with a sample of 140, was slightly underpowered. This was rectified in Study 4b.

6.3 Results

6.3.1 Data preparation

The preparation of the survey data has been described in Chapter Four section 4.4.1. In addition, the ISAS functions were examined using t-tests to check there was no significant relationship between missing data and the outcome variable, TAS20. For each of the functions, missing values accounted for below 2% of the total sample size. There was no relationship between missing data in each of the functions and TAS20.

The histograms and box plots of the ISAS functions of self-harm showed that while affect regulation and self-punishment were negatively skewed, all of the interpersonal functions were positively skewed, with a large majority of participants responding “never” to all three item statements (Appendix 6.1, Figure 6.1.1). The boxplots also indicate that there were a number of outliers on all the interpersonal function variables. The data were examined but there was no clear reason to exclude any outliers. The level of skew, however, justified the treatment of the ISAS

functions as categorical rather than continuous. It was unclear from scatterplots whether there was a monotonic relationship between the TAS20 and the individual ISAS functions (Appendix 6.1 Figures 6.1.2 and 6.1.3).

6.3.2 Descriptive statistics

Of the 140 participants in the sample, all of whom had a history of self-harm, 58% had self-harmed within the past year. Full demographic information is set out in Table 6.1.

6.3.3 Functions of Self-Harm

Affect regulation, (the reduction of overwhelming emotion) was the most highly endorsed function of self-harm, followed by self-punishment and feeling generation (Figure 6.1). Overall, all the intrapersonal functions were endorsed as more relevant than the interpersonal functions. Many of the interpersonal functions (such as peer bonding and revenge) were rated as never relevant by the majority of participants.

6.3.4 Suicide

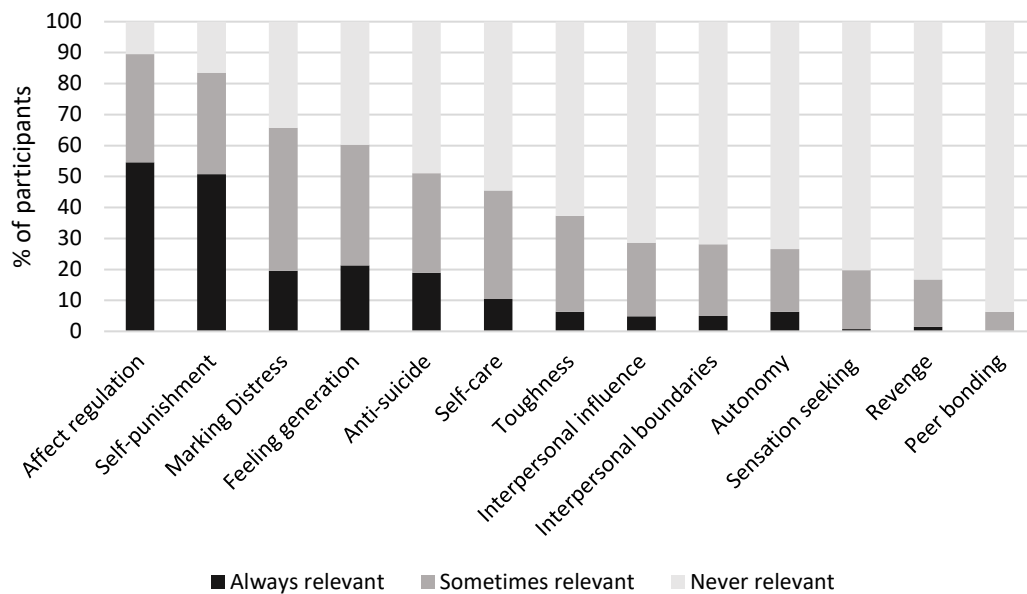
Forty-eight participants (34%) said that they had attempted suicide at some point in the past. TAS20 was significantly higher among those participants who had attempted suicide ($M = 59.06, SD = 14.82$) than those who had not ($M = 51.53, SD = 14.39, t(138) = 2.91, p = .004$). Endorsement of the ISAS function anti-suicide, (e.g. “When I self-harm I am putting a stop to suicidal thoughts”) was significantly and positively related to suicide attempt history ($\chi^2(2) = 36.55, p < .001$).

Table 6.1*Participant Demographics Study 4a*

Variable	Characteristics	<i>N</i>	%	Association with TAS20
Gender (<i>N</i> = 140)	Female	125	89.3	$F(2, 137) = .88,$ $p = .419$
	Male	11	7.9	
	Other	4	2.9	
Ethnicity (<i>N</i> = 140)	White	95	67.9	$F(4, 135) = 0.63,$ $p = .639$
	Black or black British	13	9.3	
	Asian or Asian British	13	9.3	
	Mixed ethnicity	9	6.4	
	Other	10	7.1	
Employment status (<i>N</i> = 140)	Student	65	45	$F(5, 134) = 0.75,$ $p = .591$
	Employed	53	37.9	
	Self-employed	4	2.9	
	Unemployed	17	12.1	
	Retired	1	0.7	
	Home/caring responsibilities	2	1.4	
Level of education (<i>N</i> = 140)	No formal qualifications	12	8.6	$F(5, 134) = 1.65,$ $p = .151$
	GSEs	13	9.3	
	A levels	61	43.6	
	First degree	26	18.6	
	MsC/ prof. qualification	24	17.1	
	PhD	4	2.9	
Age (<i>N</i> = 139)		<i>M</i>	<i>SD</i>	$r = -0.18, p = .037$
		27.01	9.78	
TAS20 (<i>N</i> = 140)		54.09	14.88	

Figure 6.1

Relevance of the Functions of Self-Harm (From the ISAS), Study 4a Data



ISAS = Inventory of Statements About Self-Harm

6.3.5 Association between self-harm functions and alexithymia

One-way ANOVAs were conducted to assess whether mean TAS20 differed significantly across the three different categorical levels of each self-harm function (never, sometimes and always relevant; Table 6.2). TAS20 was significantly different across the levels of self-punishment, feeling generation and anti-suicide, with medium to large effect sizes (partial eta-squared = 0.064, 0.065 and 0.108 respectively). It should be noted that for several of the functions, TAS20 did not increase monotonically across the levels of relevance.

Table 6.2*Difference in TAS20 Scores Between the Categories of Relevance for Each Self-Harm Function (Based on Study 4a Data)*

Function (Cronbach's α)	TAS20 according to the relevance of the function									One-way ANOVA		
	Never relevant			Sometimes relevant			Always relevant			<i>F</i>	<i>p</i>	Partial eta-squared
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>			
Affect regulation (.81)	51.79	12.94	14	52.84	15.99	49	55.39	14.61	76	$F(2, 136) = 0.63$	.536	.01
Self-punishment (.87)	50.55	12.48	22	50.22	12.25	45	57.96	16.13	70	$F(2, 134) = 4.80$	.010	.07
Feeling Generation (.81)	49.27	13.41	55	56.12	14.16	52	58.53	16.78	30	$F(2, 134) = 4.95$	.008	.07
Anti-suicide (.90)	49.28	13.22	69	57.62	15.39	45	61.24	14.44	25	$F(2, 136) = 8.56$	< .001	.11
Marking distress (.74)	56.54	14.29	48	52.12	14.82	64	54.59	16.15	27	$F(2, 136) = 1.22$	.298	.02
Self-care (.78)	52.79	15.20	76	55.98	13.59	48	55.00	17.8	15	$F(2, 136) = 0.70$	.500	.01
Toughness (.78)	52.52	14.88	88	57.26	14.00	42	56.25	19.75	8	$F(2, 135) = 1.52$	.223	.02
Interpersonal boundaries (.78)	52.83	14.59	100	57.13	14.73	31	56.71	19.64	7	$F(2, 135) = 1.11$	.332	.02
Sensation seeking (.52)	53.73	15.47	111	54.96	12.85	26	65		1	$F(2, 135) = 0.34$	.713	.01
Interpersonal influence (.78)	55.55	14.53	101	50.23	15.37	31	50.86	17.30	7	$F(2, 136) = 1.71$	.186	.02
Autonomy (.79)	52.94	14.92	102	58.29	12.62	28	54.67	20.48	28	$F(2, 136) = 1.76^*$	.199	.02
Revenge (.76)	54.10	15.25	116	54.62	13.84	21	50.50	12.02	2	$F(2, 136) = 0.07$	.933	< .01
Peer bonding (.70)	54.24	15.27	129	53.76	9.80	9	-	-	-	$F(1, 136) = 0.02^*$	.898	< .01

*Levene's test of homogeneity of variance was significant so Welch's *F* is reported here.**Significant effects marked in bold.**

6.4 Discussion

Consistent with previous evidence (e.g. Klonsky, 2007), affect regulation was the most frequently endorsed self-harm function in this sample. Alexithymia was found to be significantly higher in those endorsing anti-suicide, feeling generation and self-punishment functions. Of these, the largest effect was observed in anti-suicide. A meta-analysis found a significant association between alexithymia and suicidal ideation, and a smaller, significant association between alexithymia and suicidal behaviours (Hemming et al., 2019). The results from the current study suggest that self-harm may be used as a means of disrupting the link between suicidal thoughts and behaviours in people with high levels of alexithymia. Despite this apparently protective function of self-harm, there is clear evidence from the literature that self-harm is in fact a risk factor for subsequent suicide (Whitlock, Muehlenkamp, et al., 2013). Indeed, endorsement of the anti-suicide function in the current study was significantly higher in those participants who had attempted suicide at some point in their lives than among those who had not, although the survey did not ask about the sequence of events, which limits the conclusions that can be drawn.

Given the observed association between alexithymia and a range of clinical symptoms and maladaptive behaviours, it may be that it is not alexithymia per se that creates a vulnerability to suicidal ideation, but rather that the measure of alexithymia is identifying people with a higher level of general psychological distress. Replication of these results, controlling for depression and anxiety, would help to establish whether there is some unique property of alexithymia that is associated with suicidal ideation.

The aim of the second study, therefore, is twofold. First, to see whether these results are replicated in a larger sample, and second, to identify any associations between alexithymia and functions of self-harm controlling for depression and anxiety. Methodologically, Study 4b combined quantitative analysis with analysis of free text comments about self-harm.

Study 4b

6.5 Method

6.5.1 Design

Study 4b had a cross-sectional design, based on an online questionnaire. In contrast to Study 4a, Study 4b combined quantitative and qualitative responses to address the research question from two different perspectives.

6.5.2 Participants

As described in Chapter Five, section 5.3.1, participants for Study 4b were adults between the ages of 18 and 30 recruited from the general population, using opportunity sampling. The final sample for the present study, following data screening, consisted of only those participants with a history of self-harm ($N = 291$)³. According to the power analysis detailed above, this sample size was judged to be sufficient to reliably identify a medium effect size. Full demographic information is summarised in Table 6.3.

6.5.3 Procedures and Ethics

The procedures and ethical considerations relating to the survey are described in Chapter Five, sections 5.3.2 and 5.3.4.

³ As presented in Chapter 5, 294 participants with a history of self-harm took part in the survey. One of these participants had not completed the ISAS. A further two participants were excluded as outliers as a result of the analysis specific to this Chapter.

6.5.4 Measures

6.5.4.1 Demographic data. Participants were asked for demographic information about their age, gender, ethnicity, level of education and employment status.

6.5.4.2 Self-harm. Self-harm was again measured using the Inventory of Statements about Self-injury (ISAS) (Klonsky & Glenn, 2009). Compared to Study 4a, an additional behaviour (“taking an overdose of pills”) was added to the list of self-harm behaviours, in order to make it more consistent with the UK definition of self-harm as any act of self-injury. Post-hoc analysis of the data indicated that only two participants endorsed taking an overdose and no other method.

As in Study 4a, the 13 functions of the ISAS were each individually treated as categorical data, and combined into three categories, indicating whether a function was never, sometimes or always relevant. In the current dataset, Cronbach’s Alpha for each of the 13 functions exceeded .70 except Affect Regulation ($\alpha = .68$) and Sensation Seeking ($\alpha = .67$, Table 6.5).

In addition to the ISAS, participants in Study 4b were asked the open question “What would you say was your main, or most common, reason for self-harming?”. This question was included because qualitative studies have found that participants may name reasons for self-harm that are not usually included in existing measures (Edmondson et al., 2016). In addition, whilst the ISAS allows for multiple functions to be endorsed, reflecting the evidence that self-harm can serve many functions for the same individual (Scoliers et al., 2009), this additional question allowed participants to name the one they feel is most important to them, if appropriate.

Participants were additionally and specifically asked about any past suicide attempts. This was measured by a single question: have you ever attempted suicide? In contrast to Study 3, participants who only answered yes to this question and not to the question about self-harm were not included in the current analysis, because they did not complete part 2 of the ISAS.

6.5.4.3 Alexithymia. Alexithymia was measured using the 20 item Toronto Alexithymia Scale (TAS20; Bagby et al., 1994). Internal consistency in the study sample was good ($\alpha = .86$).

6.5.4.4 Anxiety. Anxiety was measured using the General Anxiety Disorder Scale (GAD-7; Spitzer et al., 2006; see section 5.3.3.4). In the current sample, Cronbach's Alpha was .90.

6.5.4.5 Depression. Depression was measured using the nine item Patient Health Questionnaire (PHQ-9; Kroenke & Spitzer, 2002; see section 5.3.3.5), in the current study, Cronbach's Alpha was .89.

6.5.5 Data analysis

All analysis was conducted using SPSS v.25. Data were checked for missing values, and predictor variables were examined using t-tests to check there was no significant relationship between missing data and the outcome variable, TAS20. In order to assess normal distributions, Shapiro Wilk tests were conducted and considered alongside graphical representations of the data (Appendix 6.2). To test for univariate outliers, boxplots were examined and z-scores calculated. The data were tested for multivariate outliers using Mahalanobis D^2 . Outliers were excluded from the dataset if there appeared to be errors in the completion of the survey, if the case was identified as a multivariate outlier across the predictor variables or if the case exerted undue influence on the regression model (using Cook's distance and

standardised DFFit statistics). The linear relationships between the outcome variable, TAS20, and the continuous predictor variables, GAD-7 and PHQ-9, were confirmed using bilateral scatterplots. Scatterplots were also examined to identify monotonic relationships between TAS20 and the functions of self-harm.

Pearson's correlation coefficients were derived to test the relationship between the outcome variable TAS20 and the continuous predictor variables GAD-7 and PHQ-9.

One-way ANOVAs were conducted to compare mean TAS20 scores for the three levels of each ISAS function (never, sometimes or always relevant). Levene's test was conducted to test for homogeneity of variance in the three levels. A hierarchical linear regression using the Enter method with listwise deletion was conducted with TAS20 as the continuous outcome variable (Field, 2005). Anxiety (GAD-7) and depression (PHQ-9) were entered as continuous predictors at Step 1. Age and recency of self-harm, which were found to be significantly associated with alexithymia, were entered at Step 2. Finally, those non-suicidal functions of self-harm in which TAS20 varied significantly between categorical levels were entered as categorical predictors at Step 3, using the category "never relevant" as the baseline for comparison. The reason for selecting only those predictor variables that were significantly associated with alexithymia was to preserve power in the regression analysis. Multi-collinearity between the variables was assessed using tolerance and VIF statistics. R^2 was calculated to indicate the proportion of variance in TAS20 explained by the model, and the improvements in the model at Steps 2 and 3 were assessed using F change. ANOVA was used to assess whether the model was a significant fit of the data. Significance was set at $p < .05$. An assessment of

residuals and influence statistics (Cook's distance, standardised DDFit) was carried out to check for bias in the model.

The free text responses to the question "What would you say was your main, or most common, reason for self-harming?" were coded inductively following the method for content analysis outlined by Elo and Kyngäs (2008). Each reason given was coded separately, so that the response from a single participant might generate a number of different codes. If participants named a reason or cause for self-harm (e.g. "I was sad.") this was coded as an emotion "sad". Where participants referred to both a reason for self-harm and the function self-harm served, these were coded separately. For example, the response "A distraction from emotional pain" was coded as "emotional pain" and "distraction". Codes were then grouped into broad categories. T-tests were used to compare mean TAS20 scores in participants who had and who had not cited a particular coded reason. Individual extracts were used to illustrate particular themes arising from the inductive categories.

The results from the quantitative and the free text analysis were then integrated using a joint display, setting out the two sets of findings and any differences and similarities between them (Creswell, 2015).

6.6 Results

6.6.1 Data preparation

6.6.1.1 Missing values. Data from participants with a history of self-harm ($N = 293$) were analysed for missing values, and predictor variables (GAD-7, PHQ-9 and the 13 ISAS functions) were examined using t-tests to check there was no significant relationship between missing data and the outcome variable, TAS20. For each of the computed variables, missing values accounted for 6% or below of the total sample size. For eight of the functions variables, missing values accounted for

between 5 and 6% of the total sample. There was no relationship between missing data in any of these variables and the independent variable TAS20.

6.6.1.2 Outliers and tests of normality. The histograms and box plots of the ISAS functions of self-harm showed that while affect regulation and self-punishment were negatively skewed, all of the interpersonal functions were positively skewed, with a large majority of participants responding “never” to all three item statements (Appendix 6.2, Figure 6.2.1). The boxplots also indicate that there were a number of outliers on all the interpersonal function variables. An analysis of the Z scores found that 23 separate participants were significant outliers on at least one variable. The data were also examined for multivariate outliers using Mahalanobis D^2 . Three participants had an unusual pattern of responses. An examination of the data revealed that one of these had responded “very relevant” to every one of the 39 ISAS items. The decision was taken to remove this participant. There was no clear reason to exclude the other participants.

There was one outlier on the TAS20, where a participant had scored 97/100. The scores were examined, but there appeared to be no reason why this did not represent a genuine response. Analysis of the residuals and influence statistics from the regression analysis did not identify this participant as having undue influence on the model. Conversely, analysis of the residuals did identify another participant with a high TAS20 score as a significant outlier influencing the model (standardised residual >3 and standardised DFFit >1) and the decision was taken to remove this case from the dataset. A sensitivity analysis was conducted to examine the impact of removing this case from the dataset. With the case included, the model was significant at each step of the regression but feeling generation was slightly above the threshold for significance ($p < .05$). In contrast, when the outlier was excluded,

the model remained significant and feeling generation was a significant predictor. The results presented here exclude this case as an outlier. Following removal of the two outliers the final sample was $N = 291$.

The linear relationships between the outcome variable, TAS20, and the continuous predictor variables, GAD-7 and PHQ-9, were confirmed using bilateral scatterplots (Appendix 6.2). Scatterplots suggested possible monotonic relationships between TAS20 and a number of the functions of self-harm, including feeling generation, anti-suicide, sensation seeking and self-care .

6.6.2 Demographic results

Participants were predominantly female ($N = 226, 77.7\%$). As defined by the eligibility criteria, participants aged between 18 and 30, with a mean age of 21.96 years ($SD = 3.23; mdn = 21$). Further demographic details are given in Table 6.3.

6.6.3 Engagement in self-harm

The age of first self-harm ranged from age 4 to age 25, with a mean age of 14.20 ($SD = 3.27$). Fifty percent of participants had self-harmed within the past year (including 15% who had self-harmed in the week prior to taking the survey) and 85% had self-harmed within the past five years. Those participants who had last self-harmed more than a year ago were asked if they believed they had stopped self-harming: 81% said they had stopped, 18% said they did not know. On the basis of this information, most recent self-harm within the past year is used for subsequent analyses as a proxy for recent self-harm, while last self-harm over a year ago is a proxy for historic self-harm. Mean age was also significantly lower in participants who had self-harmed within the past year ($M = 21.15, SD = 3.06$) than those who had self-harmed over a year ago ($M = 22.73, SD = 3.22, t(280) = -4.23, p < .001$).

Table 6.3*Demographic Characteristics of Participants, Data from Study 4b*

Variable	Characteristics	<i>N</i>	%	Association with TAS20
<i>Gender</i> (<i>N</i> = 291)	Female	226	77.7	$F(3, 280) = 1.15,$ $p = .330$
	Male	47	16.2	
	Other	16	5.5	
	Prefer not to say	2	0.7	
<i>Ethnicity</i> (<i>N</i> = 291)	White	192	66.0	$F(4, 279) = 1.60,$ $p = .176$
	Asian or Asian British	47	16.2	
	Mixed ethnic groups	25	8.6	
	Black or black British	14	4.8	
	Other	13	4.5	
<i>Education</i> (<i>N</i> = 287)	No formal qualifications	41	14.3	$F(5, 274) = 5.70,$ $p < .001$
	GCSEs / O Levels	30	10.5	
	A Levels	113	39.4	
	Bachelor's Degree	74	25.8	
	MSc / Prof. qualification	27	9.4	
	Doctoral Level	2	0.7	
<i>Employment</i> (<i>N</i> = 291)	Student	170	58.4	$F(6, 277) = 0.77,$ $p = .594$
	Employed	81	27.8	
	Unemployed	25	8.6	
	Student and employed	9	3.1	
	Disabled or long term sick	3	1.0	
	Self- Employed	2	0.7	
	Home/ Caring responsibilities	1	0.3	
<i>Age</i> (<i>N</i> = 284)		<i>M</i>	<i>SD</i>	$r = -.34, p < .001$
		21.96	3.23	

6.6.4 Suicide

One hundred and seven participants (37%) had attempted suicide at some point in their lifetime. TAS20 ($t(280) = 4.59, p < .001$), PHQ-9 ($t(276) = 5.78, p < .001$) and GAD-7 ($t(281) = 4.43, p < .001$) were significantly higher among those participants who had attempted suicide than those who had not.

6.6.5 Test variables

Means and standard deviations and bivariate correlations for the measures of alexithymia, anxiety, depression and age are set out in Table 6.4. There was a significant difference in TAS20 between those participants who had self-harmed within the past year ($M = 59.50, SD = 12.85$) and those who had self-harmed more than a year ago ($M = 54.01, SD = 12.59, t(280) = 3.62, p < .001$). Mean age was also significant lower in participants who had self-harmed within the past year ($M = 21.15, SD = 3.06$) than those who had self-harmed over a year ago ($M = 22.73, SD = 3.22, t(280) = -4.23, p < .001$).

Table 6.4

Descriptive Statistics and Pearson's Correlations between TAS20 and the continuous predictor variables (Study 4b)

Variable	<i>M</i>	<i>SD</i>	Age	TAS20	GAD-7	PHQ-9
Age	21.96	3.23	1			
TAS20	56.73	13.03	-.341**	1		
GAD-7	17.98	5.83	-.229**	.458**	1	
PHQ-9	22.03	7.15	-.322**	.469**	.676**	1

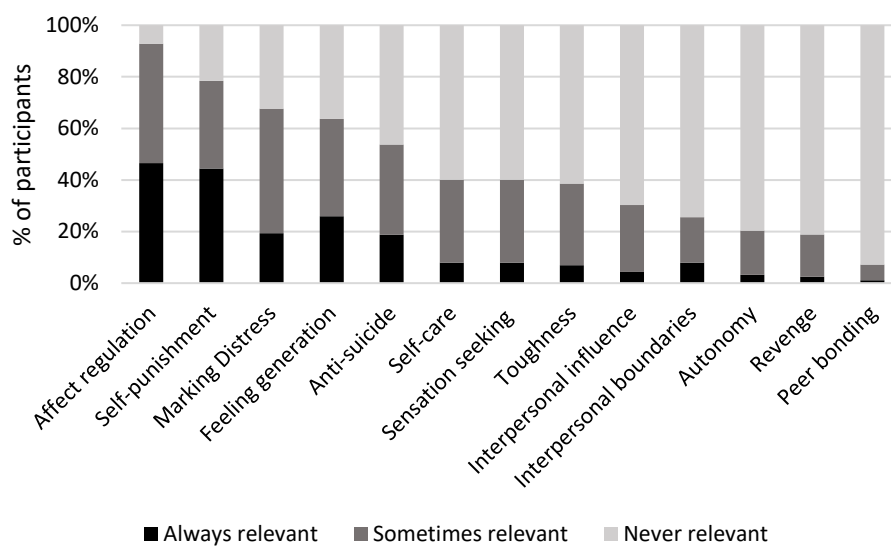
6.6.6 Non-suicidal functions of self-harm (ISAS)

Figure 6.2 displays the percentage of participants endorsing each of the functions of self-harm as never, sometimes or always relevant. Affect regulation was endorsed as always relevant by 47% of participants, followed by self-punishment (44%), feeling generation (26%) and marking distress (19%). Each function was rated independently so that individual participants might rate several functions as always relevant. Intrapersonal functions were endorsed more frequently

(scaled median = 2.67, variance = 10.07) than interpersonal functions (scaled median = 0.43, variance = 6.35). The pattern of responses was not affected by gender. Of the functions, affect regulation was endorsed most frequently as always relevant by both men and women. Chi-squared tests found no significant differences in the level of endorsement for each function by men and women.

Figure 6.2

Relevance of the Functions of Self-Harm (ISAS), Study 4b Data



ISAS = Inventory of Statements About Self-Injury

6.6.7 Differences in TAS20 according to the relevance of each self-harm function

One-way ANOVAs were conducted to assess whether mean TAS20 differed significantly across the three different categorical levels of each self-harm function (never, sometimes and always relevant, Table 6.5). TAS20 was significantly different across the levels of each of the following functions: affect regulation, self-punishment, feeling generation, anti-suicide, interpersonal boundaries, toughness, self-care, sensation seeking and autonomy. The largest effect sizes were observed for feeling generation (partial $\eta^2 = 0.105$) and anti-suicide (partial $\eta^2 = 0.096$).

6.6.8 Regression Analysis to Predict Alexithymia

A hierarchical regression using the Enter method was conducted with TAS20 as the outcome variable, and GAD-7 and PHQ-9 entered as predictors at Step 1. Because TAS20 varied significantly according to both age and recency of self-harm (within the past year versus over a year ago), these were added as predictors at Step 2. Finally, the functions of self-harm that showed significant differences in TAS20 in the bilateral analyses were entered as predictors at Step 3. For each function, two categorical variables were included comparing ‘never relevant’ with, first, ‘sometimes relevant’ and, second, ‘always relevant’. Because the TAS20 scores for those participants who rated the function affect regulation as ‘sometimes’ and ‘always relevant’ were almost identical, multi-collinearity was observed between those variables in the model. These were replaced with a single function in which ‘never relevant’ was compared with ‘sometimes or always relevant’. Tolerance statistics indicated that there was no other substantial multi-collinearity. The model summary is set out in Table 6.6. The model, based on 250 cases, was significant at Step 1 ($F(2, 247) = 44.14, p < .001$) with GAD-7 and PHQ-9 accounting for 26% of the variance in TAS20 ($R^2 = 0.26$). Adding age and the dichotomous measure of the recency of self-harm at Step 2 resulted in a significant improvement in the model (F Change (2, 245) = 7.15, $p = .001$, $R^2 = 0.30$, R^2 change = 0.04). When the self-harm functions were added at Step 3, the model improved again significantly ($R^2 = 0.39$, R^2 change = .08, F Change (17, 228) = 1.80, $p = .029$). At Step 3 GAD-7, age, sensation seeking (‘never versus always relevant’, $p = .018$) and feeling generation (‘never versus always relevant’, $p = .044$) were significant predictors of TAS20. PHQ-9, which had been a significant predictor at Steps 1 and 2, became non-significant at Step 3 ($p = .055$).

The regression analysis was repeated using data from women participants only. The model was again significant at each stage, although when the self-harm functions were added at Step 3, there was no significant improvement in the model ($R^2 = 0.428$, R^2 change = 0.07, F Change (17, 176) = 1.25, $p = .231$). Anxiety ($p = .004$), age ($p < .001$) and feeling generation (never versus sometimes, $p = .049$ and never versus always, $p = .038$) were significant predictors of TAS20 at Step 3. There were too few male participants to repeat the regression for men only.

Table 6.5*Difference in TAS20 Scores Between the Categories of Relevance for Each Self-Harm Function (Based on Study 4b Data)*

Function (Cronbach's α)	TAS20 according to the relevance of the function									One-way ANOVA		
	Never relevant			Sometimes relevant			Always relevant			<i>F</i>	<i>p</i>	Partial eta-squared
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>			
Affect regulation (.68)	49.30	10.29	20	57.02	12.50	125	57.56	13.47	128	<i>F</i> (2, 270) = 3.65	.026	0.03
Self-punishment (.86)	52.44	13.09	59	55.86	11.60	92	59.18	13.40	122	<i>F</i> (2, 270) = 5.79	.003	0.04
Feeling Generation (.85)	52.26	12.60	99	56.50	12.71	102	63.03	11.23	71	<i>F</i> (2, 269) = 15.85	< .001	0.11
Anti-suicide (.87)	52.68	12.71	126	58.49	11.82	95	63.04	12.59	50	<i>F</i> (2, 268) = 14.18	< .001	0.10
Marking distress (.77)	55.23	13.34	88	57.62	13.35	131	56.68	11.22	53	<i>F</i> (2, 269) = 0.90	.410	0.01
Self-care (.72)	54.18	12.71	163	61.09	12.73	87	57.33	11.51	21	<i>F</i> (2, 268) = 8.52	< .001	0.06
Toughness (.78)	54.63	13.33	166	60.55	12.29	85	56.32	8.87	19	<i>F</i> (2, 267) = 6.08	.003	0.04
Interpersonal boundaries (.84)	55.53	12.81	203	58.50	13.71	46	62.77	11.00	22	<i>F</i> (2, 268) = 3.75	.025	0.03
Sensation seeking (.67)	54.87	13.03	205	61.32	10.24	56	67.22	14.67	9	<i>F</i> (2, 267) = 9.12	< .001	0.064
Interpersonal influence (.74)	56.37	13.55	191	57.33	11.79	69	56.82	10.34	11	<i>F</i> (2, 268) = 0.14	.868	0.001
Autonomy (.80)	55.74	12.68	217	60.04	12.91	45	63.50	18.31	8	<i>F</i> (2, 267) = 3.23	.041	0.02
Revenge (.84)	55.99	13.08	220	59.55	12.22	44	54.50	10.15	6	<i>F</i> (2, 267) = 1.47	.231	0.01
Peer bonding (.80)	56.31	13.06	253	60.75	11.30	16	61.00	7.07	2	<i>F</i> (2, 268) = 1.00	.370	0.01

Significant effects marked in bold

Table 6.6

Linear Regression Model of the Predictive Value of the Functions of Self-Harm on Alexithymia (TAS20), Controlling for Depression (PHQ-9) and Anxiety (GAD-7), Age and Recency Of Self-Harm, with 95% Confidence Intervals.

Predictor variables	B	95% Confidence Interval for B		Std. Error (B)	Beta (β)	P
		Lower Bound	Upper Bound			
Step 1						
GAD-7	0.582	0.256	0.909	0.166	0.259	.001
PHQ-9	0.557	0.290	0.824	0.136	0.302	< .001
Step 2						
GAD-7	0.587	0.268	0.906	0.162	0.261	< .001
PHQ-9	0.430	0.157	0.704	0.139	0.233	.002
Age	-0.847	-1.300	-0.394	0.230	-0.211	< .001
Self-harm within or over the past year	-0.112	-3.132	2.907	1.533	-0.004	.942
Step 3						
GAD-7	0.536	0.210	0.861	0.165	0.238	.001
PHQ-9	0.285	-0.006	0.577	0.148	0.155	.055
Age	-0.887	-1.354	-0.421	0.237	-0.221	.000
Self-harm within or over the past year	0.439	-2.624	3.503	1.555	0.017	.778
Affect regulation never vs ever	0.881	-4.474	6.235	2.717	0.018	.746
Interpersonal boundaries never vs sometimes relevant	-2.575	-6.630	1.480	2.058	-0.073	.212
Interpersonal boundaries never vs always relevant	-2.062	-8.522	4.399	3.279	-0.041	.530
Self-punishment never vs sometimes relevant	1.268	-2.571	5.108	1.948	0.045	.516
Self-punishment never vs always relevant	1.806	-2.018	5.630	1.941	0.069	.353
Self-care never vs sometimes relevant	1.768	-1.689	5.224	1.754	0.062	.315
Self-care never vs always relevant	-2.308	-8.790	4.174	3.290	-0.047	.484
Feeling generation never vs sometimes relevant	2.968	-0.566	6.501	1.793	0.109	.099
Feeling generation never vs always relevant	4.556	0.114	8.998	2.254	0.153	.044
Anti-suicide never vs sometimes relevant	-0.270	-3.781	3.242	1.782	-0.010	.880
Anti-suicide never vs always relevant	1.164	-3.491	5.819	2.362	0.034	.623
Sensation seeking never vs sometimes relevant	3.382	-0.561	7.324	2.001	0.102	.092

	B	95% Confidence Interval for B		Std. Error (B)	Beta (β)	P
		Lower Bound	Upper Bound			
Sensation seeking never vs always relevant	11.770	2.035	21.505	4.941	0.148	.018
Toughness never vs sometimes relevant	-0.289	-3.774	3.196	1.769	-0.010	.870
Toughness never vs always relevant	-4.540	-10.996	1.916	3.277	-0.087	.167
Autonomy never versus sometimes relevant	1.993	-2.604	6.589	2.333	0.056	.394
Autonomy never versus always relevant	4.628	-4.783	14.039	4.776	0.058	.334

$R^2 = 0.26$, $p < .001$ for Step 1.

$R^2 = 0.30$, R^2 change = 0.04, F change = 7.15, $p = .001$ at Step 2.

$R^2 = 0.39$, R^2 change = 0.08, F change = 1.80, $p = .029$ at Step 3.

6.6.9 Analysis of free text comments

A total of 279 participants responded to the question “What would you say was your main, or most common, reason for self-harming?”. Of these, five participants had not completed the TAS20. The results of the free text analysis are therefore based on 274 participants. The full set of coded responses can be found in Appendix 6.3.

Table 6.7 provides a summary of the codes identified through the inductive content analysis. The results point to the role self-harm plays in managing emotions. Most responses referred to specific emotional antecedents of self-harm or to the role of self-harm in regulating emotions in some way. Anger, stress and worthlessness were the most common emotions cited by respondents.

Two of the coded categories were significantly associated with alexithymia. Mean TAS20 scores were significantly lower among participants giving a generic reason relating to emotion as their main reason for self-harm (e.g. “*overwhelming emotion*”, “*emotional pain*”, “*emotions*”) than among participants who did not give this as their reason ($t(272) = 2.03, p = .044$). Conversely, mean TAS20 was significantly higher among participants who gave reasons to do with generating feeling, for example that self-harm grounded them or helped them to feel something when they were feeling numb ($t(272) = -2.98, p = .003$).

Although the numbers are small, it is interesting to analyse in more depth the free text responses which correspond to the ISAS category feeling generation or anti-dissociation. Overall, 25 participants gave reasons relating to feeling generation. Some participants referred to feeling numb or empty (e.g. “*Emptiness*”) which was hard to bear (“*I'd rather feel pain than feel nothing*”). Others cited feeling dissociated or disconnected and described how the physical act of self-harm helped

them reconnect to their bodies or to reality (e.g. *“To stimulate myself back to reality when I dissociate”*). Self-harm was used to prove to the participant that they were living beings with a physical presence (*“It also gives me a sense of that I am actually alive and can experience physical pain.”*). There was a difference in the way participants described the experience of feeling numb. For some, numbness was equivalent to feeling nothing (*“There are times when I felt numb in the sense of emotion, or rather emotionless. It was a way to feel something.”*). For others, however, it appears that feeling numb is still a feeling, rather than an absence of feeling (*“Needing to get rid of the 'numb' emotion.”*).

While a small number of participants referred only to feeling nothing, or to using self-harm solely as a way to generate feeling, more often the responses suggest that self-harm serves different functions at different times. Sometimes self-harm was used to help get rid of the numb feeling, while at other times it was used to manage strong, unwelcome emotions (e.g. *“I need to either let out emotions that are stuck inside of me or I need to feel cause I'm numb on the inside.”*). In the following example, the numbness is associated with periods of depression, and is contrasted with times when emotions are felt more intensely.

“To make the pain or distress I felt more tolerable. It gave me a little bit of relief. It felt good to convert the intangible distress into wounds that were physical and that healed. Sometimes, during times of depression, I felt no emotion, I felt nothing, and pain and the euphoria after broke the numbness.”

This illustrates how self-harm can have different functions for the same individual. It helps to explain why seemingly contradictory functions, such as feeling generation and affect regulation, can be endorsed by the same participant on scales such as the ISAS.

Furthermore, for some participants, it appears that the feelings of having no emotions and having too many emotions can occur concurrently. One participant gave as their main reason for self-harm:

“Feeling nothing and everything at the same time.”

This experience of feeling nothing and something simultaneously is hard to interpret from these short extracts. Perhaps the difficulty of putting words to emotional experience faced by those with high alexithymia may contribute to the sense of feeling something and nothing, as indicated by this extract:

“Feelings of emptiness, the self-harm generally provides a 'reason' for my feelings that I can't fully explain without a reason.”

Another participant goes further, stating that the experience of feeling specific emotions at the same time as feeling numb was impossible to communicate to other people, except through the physical act of self-harm.

“Feelings of frustration and anger, but also of numbness, that could not be placed / explained to others and self-harm was a form of showing that something was going on - both to myself and others”

These extracts give an additional insight into the reasons for self-harm expressed by the participants in this sample. Despite their brevity, they provide some explanation for why respondents to the ISAS might endorse both feeling generation and affect generation as highly relevant. To understand in more depth how the simultaneous absence and surfeit of feelings can lead to engagement in self-harm, and to increase understanding of what it means to ‘feel numb’, more in-depth qualitative research is required.

6.6.10 Integrating the quantitative and free text analyses

Table 6.8 provides a summary of the findings from the analysis and of the ways in which the free text responses both corroborate and expand on the results of the ISAS analysis.

Table 6.7*Summary of the Coded Free Text Responses About the Main Reason for Self-Harm (See Also Appendix 6.3)*

Coded reason for self-harm	Participants giving reason		Mean TAS20 (SD)		<i>t</i>	<i>p</i>
	<i>N</i>	%	<i>No</i>	<i>Yes</i>		
Specific emotion	146	53	57.74 (12.56)	55.72 (13.56)	1.28	.203
Emotion regulation	64	23	57.14 (12.97)	55.11 (13.56)	1.08	.279
Overwhelming emotion / no control/ emotional pain	49	18	57.41 (12.86)	53.24 (13.82)	2.03	.044
Mental health challenges	47	17	57.11 (13.15)	54.53 (12.83)	1.23	.221
Interpersonal issues	29	11	56.47 (13.44)	58.31 (9.99)	-0.71	.476
Feeling generation	25	9	55.93 (12.86)	64.00 (13.53)	-2.976	.003
Life stresses	17	7	56.71 (13.24)	55.94 (11.35)	0.23	.815
Punishment	15	6	56.68 (13.15)	56.47 (12.96)	0.06	.952
Body image / eating disorder	10	4	56.52 (13.11)	60.60 (12.94)	-0.07	.334
Sensation seeking	8	3	56.76 (12.97)	53.63 (18.10)	0.67	.507
Difficulty describing feelings	8	3	56.43 (13.13)	64.50 (10.27)	-1.72	.086
Suicidal feelings	6	2	56.59 (13.11)	60.17 (14.12)	-0.66	.509
Difficulty identifying feelings	5	2	56.64 (13.13)	58.00 (13.23)	-0.23	.819
Boredom or habit	5	2	56.58 (13.11)	61.40 (12.34)	-0.82	.416
Interpersonal influence	5	2	56.82 (13.10)	48.40 (11.70)	1.43	.155
Marking distress	4	2	56.79 (13.12)	48.25 (10.66)	1.30	.197

Table 6.8*Integration of Results From Quantitative Data and Free Text Responses*

Quantitative results	Content analysis of free text responses	Qualitative analysis of free text responses	Using the free text responses to explain and expand on the quantitative results
Affect regulation was the most highly endorsed function of self-harm.	Reasons for self-harm relating to emotions or emotion regulation were the most commonly cited.	Participants described how self-harm could have different functions at different times.	The results indicate that, while affect regulation is the most common reason given for self-harm, feeling generation may be particularly relevant for people scoring highly for alexithymia.
Anxiety, age, feeling generation and sensation seeking were significant predictors of TAS20 in a linear regression.	TAS20 was significantly lower in participants who had given a generic reason relating to emotion as the main reason for self-harm. TAS20 was significantly higher in participants who had given feeling generation as the main reason for self-harm.	Feeling nothing or numb can occur at the same time as feeling overwhelmed.	Sensation seeking was also associated with alexithymia, but was rarely cited as the main reason for self-harm. Intrapersonal functions such as affect regulation, feeling generation and self-punishment may each be relevant at different times, but also at the same time.

6.7 Discussion

Using the ISAS, Studies 4a and 4b investigated the non-suicidal functions of self-harm, and their associations with alexithymia. Like Study 4a, Study 4b found that intrapersonal functions, particularly affect regulation and self-punishment, were the most commonly endorsed functions of self-harm. This is consistent both with theories of self-harm (Bentley et al., 2014; Chapman et al., 2006; Klonsky, 2007) and also with empirical evidence (Taylor et al., 2018), including from studies using the ISAS (Klonsky & Glenn, 2009; Kortge et al., 2013). Both studies found significant differences in alexithymia across the levels of relevance for the functions anti-suicide, feeling generation and self-punishment, with medium to large effect sizes. In addition, in Study 4b there were significant differences in several other functions, including self-care, toughness, autonomy, affect regulation, interpersonal boundaries and sensation seeking. The differences between the studies may be attributable to differences in the samples. The age range of participants in Study 4b was much narrower than in Study 4a and the mean age was younger. Although a similar percentage of participants had self-harmed within the past year, there may have been a greater proportion of participants in Study 4a whose engagement in self-harm was a long time in the past, which may affect recall of the reasons for self-harm. A third explanation could lie in the larger sample for Study 4b which might have facilitated the identification of genuinely significant population differences.

Study 4b extended the findings of Study 4a by indicating that using self-harm to generate feeling may be particularly associated with alexithymia, controlling for depression and anxiety. The free text comments provide some explanation of why the same participants might endorse the apparently contradictory functions of affect regulation and feeling generation.

One of the strengths of Study 4b lies in the use of different methods within the same survey to explore the same subject. Table 6.8 displays the way in which the free text responses corroborate, contradict or expand on the results from the ISAS. The main difference in the findings is that, in the free text responses, ‘sensation seeking’ was not a prominent theme and was not significantly related to alexithymia. In contrast, sensation seeking using the ISAS data was a significant predictor of alexithymia, over and above the other variables in the regression. In the ISAS, the items from which the sensation seeking function are derived assess the relevance of using self-harm to push against one’s limits and to generate thrills or excitement. The mean score for sensation seeking across all participants was only 0.93 (from a possible range of 0-6) and only nine participants scored it as always relevant. It is therefore not surprising that it was not listed as a ‘main reason’ in the free text question. Nevertheless, although the numbers are small, those participants who rated sensation seeking as always relevant had a mean TAS20 score of 67.22 (well above the level of 61 which has been proposed as a clinical cut-off for alexithymia, G. J. Taylor et al., 1997). This accords with other evidence linking alexithymia with risk-taking in the context of sport (Bonnet et al., 2017), academic work (Panno et al., 2019) and health-related behaviours (Kealy et al., 2018). Sensation seeking could be seen as a type of feeling generation, albeit one associated with risk and adrenalin. However, as set out in Table 6.5, a much higher proportion of participants rated feeling generation as always relevant (71 or 24%) than the proportion rating sensation seeking as always relevant (9.3%). When the regression was conducted using data from women participants only, sensation seeking was no longer a significant predictor of alexithymia. However, the univariate analysis did

not suggest that sensation- seeking was more relevant for men than for women, and given the small number of male participants, no firm conclusions can be drawn.

Where the Study 4b quantitative and free text results converge is in the finding of an association between alexithymia and ‘feeling generation’ reasons for self-harm. In the regression analysis, feeling generation predicted alexithymia, over and above depression and anxiety, age, recency of self-harm and the other functions of self-harm. These findings should be taken as indicative, given the sensitivity of the results to outliers. They were, however, consistent with the analysis of the free text comments, in which alexithymia was significantly higher in people giving reasons relating to feeling generation. Conversely, alexithymia was significantly lower among participants who gave a generic emotion-related reason for self-harm, such as overwhelming emotion or emotional pain (although not among those who named specific emotions). The use of self-harm to feel something has been recorded in many self-report accounts in the literature. A systematic review of the functions of non-suicidal self-harm found that 48% of quantitative studies and 38% of qualitative studies supported an association between self-harm and dissociative feelings, although this included using self-harm both to achieve, as well as to end, a dissociate state (Edmondson et al., 2016). Participants from included studies reported using self-harm *“to stop feeling numb or dead”* (M. Z. Brown et al., 2002) or as *“a way of getting myself awake again, kind of to wake up to what's going on around me because it is a wakening experience”* (Himber, 1994) – accounts which find an echo in the free text responses in the current study. People with dissociative disorder have been found to be at risk of both self-harm and suicide (Calati et al., 2017), particularly when associated with childhood trauma (Nobakht & Dale, 2017). It seems that the physicality of self-harm, as a body-based intervention, provides a

way of reconnecting with reality, and with the body, which stops the feeling of disconnection. As one participant in the current study said, *“It gives me a sense of that I am actually alive and can experience physical pain”*. The importance of seeing one’s blood, expressed by one participant in the current study, has been well evidenced in the literature (Glenn & Klonsky, 2010) and is thought to contribute to a short-term reduction in arousal (Naoum et al., 2016). It may be that the physicality of self-harm is particularly important to people with high levels of alexithymia, who tend to misinterpret bodily signals (Herbert et al., 2011) or to place excessive attention on somatic symptoms over internal, emotional symptoms (Lumley et al., 2007). This may explain the current finding that the desire to feel something physically is particularly relevant for people with high levels of alexithymia.

Emotional numbness can be a symptom of depression (Kerig et al., 2016). It is therefore of particular interest that feeling generation remained a predictor of alexithymia, even taking depression into account. It suggests that a lack of feeling may be a feature of alexithymia, independent of depression, which leads to recourse to self-harm. The results may be affected by the cross-sectional nature of this research. The PHQ-9 measures current depression, while engagement in self-harm may have occurred at any time in the past. Participants who were suffering from depression at the time of their engagement in self-harm but who have since recovered would not score highly on the PHQ-9, but might still endorse feeling generation as the main reason for their past self-harm. Including recency of self-harm as a predictor in the regression goes some way to mitigate this inconsistency. However, research using real time, or ecological momentary assessment, methods would help to confirm the finding that people with high alexithymia are more likely to self-harm in order to generate feeling, irrespective of depression.

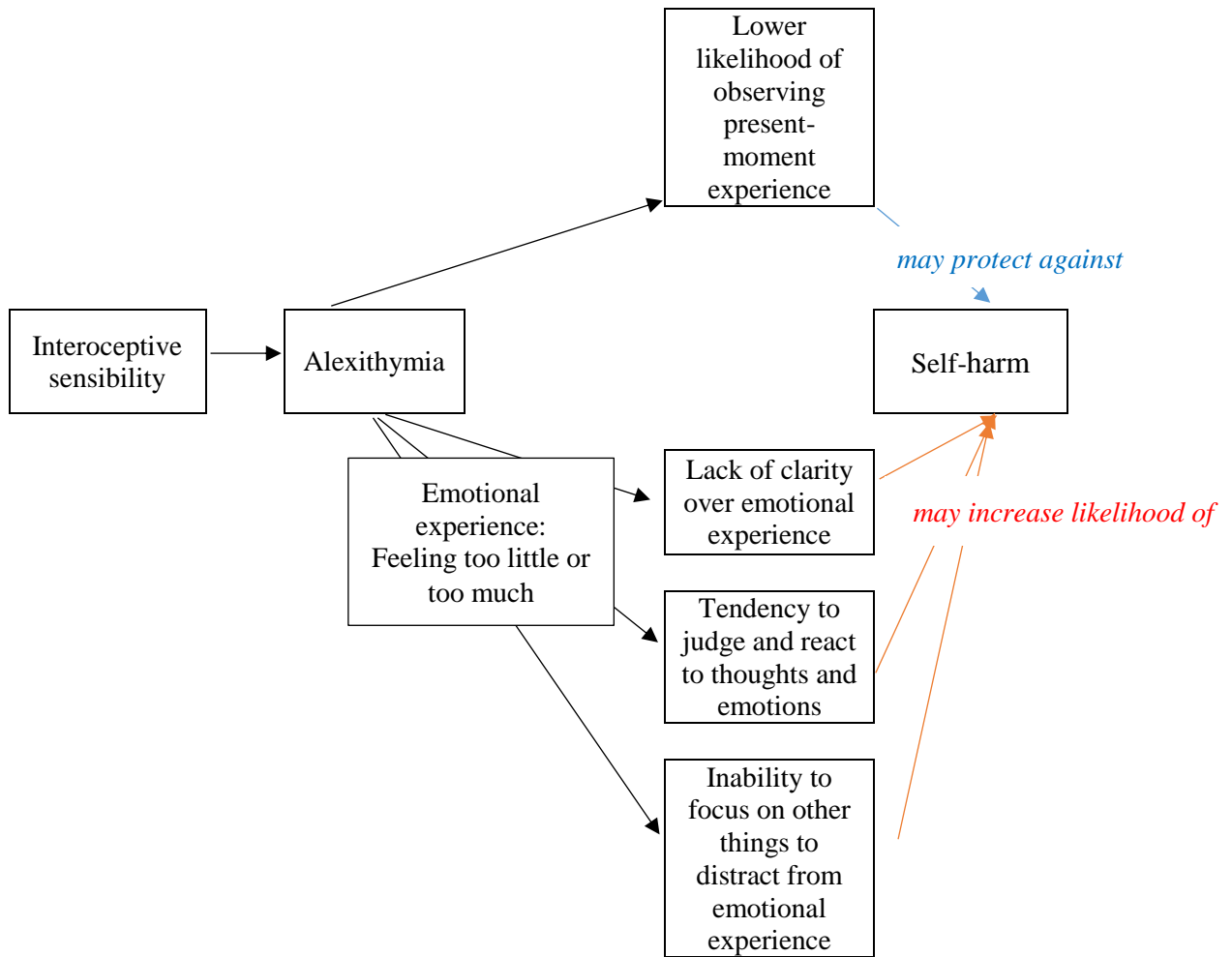
The results from both the ISAS scale and the free text comments also point to the complexity of reasons for self-harm and the way in which individuals can self-harm for different reasons at different times, and even for multiple reasons at the same time. This is consistent with an overarching two-factor structure in which the functions of self-harm can be categorised as either intrapersonal or interpersonal (Klonsky et al., 2015), with functions such as affect regulation, self-punishment and feeling generation all loading onto the intrapersonal factor (Kortge et al., 2013). Distinguishing between the individual functions may be difficult, particularly for people with high alexithymia scores. The free text comments in the current study indicate that self-harm is used for different reasons at different times, but also that the experience of feeling something and feeling nothing can occur concurrently. This apparent paradox was explored in an interview study with participants who had indicated that they self-harmed both when they felt too much, and when they felt too little (Horne & Csipke, 2009). The authors identified a theme of emotional awareness which comprised both the experience of feeling no emotion, or detached from emotion, and also feeling so overwhelmed that it was impossible to distinguish or understand what they were feeling emotionally or physically. Both these states were at times described as ‘feeling numb’, mirroring the differences of meaning ascribed to that phrase in the current study. The authors derived a theory from their findings in which self-harm, as a body-based intervention, serves to resolve both these states, by restoring sensation or by providing some clarity or focus for the confused mind (Horne & Csipke, 2009).

The results of the current study have been added to the model of the relationship between alexithymia and self-harm (Figure 6.3). They build on the findings from Studies 1, 2 and 3 by providing an indication of the nature of the

emotional experience that self-harm is used to regulate, in the absence of more adaptive regulatory techniques.

Figure 6.3

The Relationship Between Alexithymia and Self-Harm, Based on the Findings of Studies 1, 2 3 and 4.



6.8 Limitations

The strengths of these studies lie in the use of established and validated scales to explore a novel research topic. Confidence in the results is strengthened by the convergent use of both quantitative and free text data. There are, however, also limitations. In Study 4b, the fact that it is a cross-sectional survey assessing lifetime (and therefore potentially historic) self-harm against current depression and anxiety

has already been discussed. The coding of the free text responses was carried out by a single researcher, and may therefore reflect their subjective biases. In addition, although inductive coding was used, it was carried out after the analysis of the ISAS data, which may have influenced the coding categories for the free text comments.

Another factor which may limit generalisability of the findings lies in the definition of self-harm. Both studies used the ISAS which is designed to measure the functions of non-suicidal self-injury. However, in line with the UK definition of self-harm (NICE, 2013), the motivation for self-harm was not made explicit in the definition of self-harm given to participants. It is possible therefore that some participants had only ever engaged in self-harm with suicidal intent, although this seems unlikely given the fact that all participants endorsed at least one of the ISAS functions as relevant.

A further limitation to this study is the use of self-report measures in the context of alexithymia. People with high alexithymia scores who find it difficult to identify and describe their feelings, might also struggle to articulate their reasons for self-harming. The responses to the free text question, however, suggests that people with high alexithymia are still able to talk about their reasons for self-harm and further qualitative research might increase insight into their experiences.

6.9 Conclusion

This chapter has presented a novel exploration of the possible reasons behind the relationship between alexithymia and self-harm. Using both quantitative analysis and inductive content analysis, the results suggest that the function ‘feeling generation’ may be particularly relevant for people scoring highly on a measure of alexithymia, even when depression and anxiety are taken into account. The findings

also confirm that self-harm can serve multiple functions concurrently, addressing the experience of ‘feeling nothing and everything at the same time’.

The insights provided by the qualitative aspect of Study 4b indicated that further, and more in-depth, qualitative research with people with high alexithymia could be a very valuable addition to the current research programme. The following two chapters present the final Study of this thesis, Study 5: an Interpretative Phenomenological Analysis of interviews with eight young women with high alexithymia scores and recent experience of self-harm.

Chapter Seven: Study 5 - The experience of self-harm in young adults who report difficulties identifying and describing their feelings: a qualitative study.

Rationale and Method

ABSTRACT

Background: Research in this thesis and elsewhere has confirmed a significant relationship between alexithymia and self-harm. This has clinical implications because alexithymia has been found to be a barrier to psychological treatment. To date, little qualitative research has been carried out about alexithymia and none concerning the relationship with self-harm. This article explores the experience of self-harm among eight young adults who reported difficulties identifying and describing their feelings.

Method: Semi-structured interviews were conducted, with the optional use of photographs as visual stimuli for discussion. Transcripts were analysed using Interpretative Phenomenological Analysis.

7.1 Introduction

The motivation for the research presented in this thesis is to investigate the potential reasons behind the observed correlational relationship between alexithymia and self-harm. Quantitative analysis has suggested that the relationship may be partly due to the absence of protective traits, such as mindfulness and acceptance of emotional experience. In addition, the interoceptive deficits associated with alexithymia may explain the use of self-harm, as a physical, body-based intervention, to regulate unwanted emotional states. These findings extend the current knowledge about the relationship between alexithymia and self-harm, and may help to inform clinical practice with people who struggle to identify and talk about their feelings.

Clinical practice, however, also benefits from insight into the subjective meaning given to the act of self-harm by the people who engage in it. For this reason, a qualitative study was included in the design of the current research programme, to explore the experience of self-harm in people who score highly on alexithymia. The rationale and method for this study are set out in this chapter. In order to give justice to the rich accounts provided by participants, the results and discussion are presented in a separate chapter (Chapter Eight).

7.2 Study Rationale

Qualitative research has provided a counter-balance to the prevailing medical and social discourses around self-harm, which, as Adams et al. (2005) suggest, have tended to focus more on the “harm” than on the “self”. This focus can perpetuate negative attitudes towards those who self-harm and lead to a preoccupation with the behaviour rather than the underlying distress. These attitudes can discourage help-seeking. For example, in an interpretative phenomenological analysis of self-harm among young adults, Wadman et al. (2017) found that self-harm was a functional means of coping which had become habitual. Self-harm was a private activity, in part because of a fear that any intervention would focus on eradicating the behaviour, rather than introducing different coping skills. Furthermore, negative attitudes to self-harm do not acknowledge the benefits experienced by those who engage in it. A systematic review of self-reported reasons for self-harm found that, as expected, dealing with distress and interpersonal influence were the most common reasons given (Edmondson et al., 2016). However, the authors also identified additional, positive reasons for self-harm, which they saw as often missing from the medical discourse. They found evidence that self-harm can be associated with a feeling of self-validation or personal mastery, or was a means of defining the self. For those

who engage in it, therefore, self-harm ‘works’ (at least in part), and may be associated with positive outcomes. These insights into the meaning and function of self-harm provided by qualitative research are vital to shaping effective outreach and treatment.

In contrast to self-harm, there are very few qualitative studies about alexithymia. One recent exception is an interpretative phenomenological analysis of the experience of joy and sadness in people with high alexithymia (Dupont-Leclerc & Lecours, 2018). This study found that the participants attributed both positive and negative affective states to external causes. A theme of avoidance was identified in relation to sadness, but not to joy. Although not the subject of the study, self-harm was mentioned by one participant as a means of avoiding the experience of sadness:

P4: I repress it, I think about other things. [...] but, if it's not that, I'll either... um, either, um... It's either self-mutilate, or... to let it pass. [...] I repress it, I listen to music. So that's it, I disconnect myself a little to let it pass. (Dupont-Leclerc & Lecours, 2018, p. 69).

This finding appears to support the evidence presented in previous chapters in which the relationship between alexithymia and self-harm is partly explained by low levels of acceptance of emotional distress.

This short extract from Dupont-Leclerc and Lecours (2018) illustrates the potential value of qualitative research into the relationship between alexithymia and self-harm. Although to date there have been no qualitative research on this specific subject, the difficulty of knowing and describing how you feel is a theme that has emerged from studies of self-harm. In a study of patient experience of hospital care following self-harm, one participant described the difficulty in talking to staff about how they felt: “*there's no words in the English language to describe it.*” (Horrocks

et al., 2005, p.21). Horne and Csipke (2009) explored the phenomenon of ‘feeling too little’ in relation to self-harm, characterised variously as an absence of feeling (“*I tend to hit a point where I will be numb, anything could happen but at that time emotionally I just won’t feel it.*”) or as an inability to distinguish between feelings (“*Sometimes when I’m really low I don’t actually know how I feel.*” (Horne & Csipke, 2009, p. 658). Although alexithymia was not the explicit focus of these studies, the extracts indicate the importance of the connection between understanding and describing feelings and self-harm, and also the benefit of exploring the association through qualitative research.

It may be that the relative lack of qualitative research on alexithymia reflects a concern that people who struggle to identify their feelings, and in particular to talk about them, would not be able to participate in research which requires them to be reflective about their inner experiences. Clinical case studies of patients with alexithymia illustrate this difficulty. For example, R. Smith et al. (2019) describe a woman who, at one point in the interview, appeared to have tears in her eyes, although she said she did not feel upset.

“She explained that her eyes simply “do this” sometimes.” (Smith et al., 2019, p. 37).

This limitation is not restricted to participants with high alexithymia, however. It has been suggested that men may find the traditional semi-structured interview uncondusive to talking about emotional experiences (Affleck et al., 2013) and alternative methodologies have also been proposed for studies involving children (Nelson & Quintana, 2005) or people with intellectual disabilities (Llewellyn, 1995). One such method is photo elicitation, first used in anthropological research as a means of engaging individuals in the research process and eliciting emotional

responses (Heider et al., 1988). Frith and Harcourt (2007) defined photo elicitation as “*a method in which photographs (taken by the researcher or by research participants) are used as a stimulus or guide to elicit rich accounts of psychosocial phenomena in subsequent interviews*” (Frith & Harcourt, 2007, p. 1340). Using photographs in qualitative research can stimulate imagination and memory and give access to insights that participants might not otherwise think to bring up in answer to questions, and which researchers might not ask about (Reavey, 2012). This method has been used in qualitative studies on sensitive subjects such as domestic violence (Frohmann, 2005), breast cancer treatment (Frith & Harcourt, 2007) and self-harm (Edmondson et al., 2018).

7.3 Aim of the Study

The current study addressed the research question, what is the experience of self-harm in young adults who report difficulties identifying and describing how they feel? Self-harm was defined as any act of self-injury, irrespective of motivation (NICE, 2013). Because self-harm tends to be most prevalent in adolescents and early adulthood (Moran et al., 2012) the age of participants was restricted to between 18 and 30 years old.

7.4 Method

7.4.1 Design and Epistemological Perspective

A qualitative design was chosen based on a phenomenological epistemology. Phenomenology originated in the philosophy of Husserl (1913/1982) and Heidegger (Heidegger, 1927/1962), and is concerned with the way the world is experienced by individuals within the context of their particular lives. It assumes that objects are only given meaning through our intentional perception of them, which is shaped by our own beliefs, judgments, purposes and emotions (Willig, 2013). Thus the

subjective experience of the world as expressed by the participant is the focus of phenomenological research. The aim of the current study was to understand how self-harm was experienced in the participants' lives, and also how they made sense of that experience. To focus on sense-making acknowledges that the act of describing lived experience involves the interpretation of that experience. For this reason, an interpretative methodology, Interpretative Phenomenological Analysis (IPA, J. A. Smith et al., 2009), was adopted for this study. Central to IPA is the idea of the "double hermeneutic", in which "*the researcher is trying to make sense of the participant trying to make sense of what is happening to them*" (Smith et al., 2009, p.3). This seemed to be of particular relevance in the current study, in which participants were chosen in part because they reported difficulty identifying how they felt, which might affect the first stage of the hermeneutic process. The way in which participants made sense of their experiences would be of particular interest in the context of alexithymia, but their capacity to do so might be limited. As a result, for reasons of both ethics and analytical rigour, it was important that the researcher did not over-compensate for this potential limitation during the second stage of the hermeneutic process. To this end, particular care was taken to ensure the process of analysis was transparent and any interpretation well evidenced. In addition, photo elicitation was used in order to elicit a rich an account as possible from the participants themselves (Frith & Harcourt, 2007).

Photo elicitation was chosen as a method for this study for two reasons. First, consistent with an phenomenological approach, photos can be used to gain a richer understanding of the participant's experience (Burton et al., 2017). Photo elicitation can help the participant, as well as the researcher, distance themselves from, and reflect on, their experiences (Radley & Taylor, 2003). The method

therefore can lend itself to interpretative phenomenological analysis because it allows the participant and researcher to engage jointly in the interpretation of the participant's experience (Bates et al., 2017). Second, using photographs to stimulate responses has been used to improve the quality and depth of data when working with participants who might otherwise be difficult to engage or limited in their responses to questions, such as children (White et al., 2010) or people with learning difficulties (Whitehurst, 2007). Using photo elicitation may improve the quality of the data obtained from interviews with people with alexithymia who, by definition, may struggle to describe their emotional experiences. Although it is unlikely that using photographs will in itself improve the ability to identify and describe their feelings, it may provide a stimulus for reflection on their experiences of self-harm, resulting in a richer, phenomenological account.

A precedent for the use of photo elicitation in a study of self-harm is found in Edmondson et al. (2018). Participants reported that using photos helped them feel in control of the interview and also helped them express themselves better than words alone. However, the requirement to take photographs prior to the interview added an additional burden on participants. This may have affected recruitment and possibly biased the sample towards people who saw themselves as visual or creative (Edmondson et al., 2013). Based on this experience the decision was taken to make the use of photos optional for participants in the current study. In the event only two out of eight participants opted to bring photographs to the interview and one further participant used song lyrics to represent their experiences in a similar way.

7.4.2 Recruitment and Sampling

Purposive sampling was used for this study. Participants were recruited from within Middlesex University and the general public. Most were recruited through

the second online survey described in Chapter Five. At the end of the online questionnaire, all participants who had indicated that they had previously self-harmed were asked if they would like to take part in a follow up interview. The study was also advertised independently of the online survey via posters and advertisements placed on online fora (e.g. <http://www.alexithymia.us/> and <http://nshn.co.uk/>), with the permission of the forum administrators.

Any participant that expressed interest was assessed against the eligibility criteria for the current study. To be eligible for interview, participants needed to be aged between 18 and 30 and to have engaged in self-harm within the past five years. These criteria were set because of the prevalence of self-harm in teenagers and young adults (Moran et al., 2012) and to capture sense-making in relation to relatively recent self-harm. In addition, participants needed to score above 51 on the Toronto Alexithymia Scale (TAS20, Bagby, Parker, et al., 1994). Although alexithymia is generally viewed as a continuous rather than a dichotomous phenomenon, a threshold for ‘borderline’ alexithymia was set at 51 by the TAS20 authors (G. J. Taylor et al., 1997). (The eligibility criterion was set at ‘borderline’ rather than ‘high’ or ‘clinical’ alexithymia (a score of 61 or above) to maintain a balance between focusing on the research question and ensuring we found enough participants. In the event, only one participant scored below 61.) The TAS20 was used to indicate difficulty identifying and describing feelings. Finally, eligible participants needed to be fluent in English.

One hundred and eight people expressed an interest in the study. Fifty-nine people did not meet the eligibility criteria, either because they scored below 51 on the TAS20 or because their last engagement in self-harm had occurred over five years ago. They were thanked by email, with an explanation as to why they were not

being asked to participate. The remaining 49 people who did meet the eligibility criteria were sent the briefing information (Appendix 7.1) and consent form (Appendix 7.2), attached to an email in which the researcher introduced herself and the study (Appendix 7.3). Ten people responded positively of whom eight took part in an interview. (Of the two remaining people, one cancelled the interview because of personal reasons and, in the other case, it was not possible to find a mutually convenient time.) No incentive was offered for participation, except for the Middlesex University psychology student interviewees who received course credits. Interpretative Phenomenological Analysis is a ideographic method, concerned with the complexity of individual human experience (J. A. Smith et al., 2009). It is common, therefore, for IPA studies to be based on a small number of participants, to allow an in depth analysis of each individual case, which is enhanced by an assessment of the similarities and differences between cases.

7.4.3 Participants

The eight participants were all female by biological sex, and two identified their gender as 'other'. They were aged between 18 and 29 ($M = 22.38$, $SD = 4.14$). Two participants identified as white (British or American), one as black British, one as Asian and two as having mixed ethnicity. The remaining two participants did not identify their ethnicity. Three participants lived in the United States and their interviews were conducted over Skype. The other participants were resident in the UK. TAS20 scores ranged between 53 and 84 ($M = 67.75$, $SD = 9.80$), with only one participant scoring below 61 (which is widely taken as a clinical threshold for alexithymia, Taylor et al., 1997). Three participants had self-harmed within the past year (one within the past week), and the remaining participants had self-harmed within the past five years.

7.4.4. Briefing and Interview Procedure

7.4.4.1 Briefing. The briefing information (Appendix 7.1) made clear to potential participants that their participation was entirely voluntary and that they were free to choose not to answer any question or to withdraw from the study at any point during the interview. Consent was sought for the interview to be recorded. Interview participants were told they could withdraw from the research within four weeks of the interview date.

The briefing document also explained that sometimes photos are used in research of this type to stimulate discussion. Potential participants were given the option to bring up to ten photographs to the interview which they felt represented what self-harm meant to them, and to note down their thoughts and feelings about each photograph. Participants could choose their own or publically available existing photographs, or they could take new photographs using their own equipment (e.g. smart phone, digital camera, disposable camera). The briefing document explained that taking the photographs should not cause harm to the participants or other people and the photographs should not show anything illegal. To avoid the need for third party consent, participants were asked not to take photographs of other people. It was explained that the photographs would be used only to stimulate discussion and would not be analysed as part of the study. The photographs would only be seen by the researcher and her supervisors, and not be made public in any way. Ownership of the photographs would remain with the participants. It was made clear that bringing photographs to the interview was optional and that participation in the interviews was possible without the photographs. Participants were asked to give their consent to this aspect of the study separately.

7.4.4.2 Interviews. All the interviews were conducted by the author. No personal information about the author was disclosed to participants, other than the fact that she was conducting research for a psychology PhD at Middlesex University. Two interviews took place on the Hendon campus of Middlesex University and two interviews took place at Samaritans' branches, with the permission of the respective branch Directors. Three interviews were conducted over Skype and one was conducted over Skype messenger (i.e. in writing) at the participant's request. Written or oral (recorded) consent was obtained at the start of each interview (Appendix 7.2). The researcher and the participant then completed the personalised safety plan (Appendix 7.4) which is described under Ethics below. A Visual Analogue Scale (Wewers & Lowe, 1990) was used at the beginning and end of the interview to assess the impact of the interview on mood (Appendix 7.5).

The interviews followed a prepared schedule, according to whether the participant had chosen to use photographs or not (Appendices 7.6a and 7.6b). Interviews were recorded using the researcher's iPhone and mini-disc player; those conducted over Skype were recorded using Amolto Call Recorder software.

7.4.4.2.1 Interviews Using Photographs. Only two out of the eight participants elected to use photographs, and both of these were face-to-face interviews. Participants chose the order in which they wanted to talk about the photos and the interview followed the direction they set. The full interview schedule is attached in Appendix 7.6a.

7.4.4.2.2 Interviews Without Photographs. A more traditional semi-structured interview format was used in the interviews with participants who elected not to bring photographs, based on questions set out in the schedule (Appendix 7.6b).

In both cases, the focus of the interview was self-harm and not, explicitly, alexithymia. Towards the end of the interview, however, participants were asked “*We’ve been talking a lot about feelings. On the survey you filled in, you said you sometimes find it hard to know how you feel. Can you tell me about that?*” The participant was not asked explicitly to discuss their experience of, or thoughts about, the association between understanding and describing feelings and self-harm, in order not to influence their responses.

At the end of both types of interview, participants were asked explicitly about their experience of being interviewed and, if relevant, how they found using the photographs. If they had chosen not to bring photographs, they were asked why they had chosen not to, in order to identify potential barriers or limitations to this method. Finally, they were given the opportunity to ask any questions about the research. An evaluation form was given to participants to complete at or after the interview (Appendix 7.7). Before concluding the interview, the researcher checked whether the participant felt distressed in any way, and reviewed the safety plan which contained details of the participant’s own support network and other relevant sources of help. An analysis of the Visual Analogue Scale and evaluation data is included in Appendix 7.8.

The spoken interviews ranged in duration from 49 minutes to 1 hour 40 minutes (average 71 minutes) and were transcribed verbatim by the author. The interview conducted via Skype messenger took 4 hours, 13 minutes, due to connection problems and the time needed to type messages.

7.4.5 Ethics

The study was granted ethical approval by Middlesex University Ethics Committee (reference 4083). In preparing this study, the researcher benefited from

the advice of a researcher with lived experience of self-harm. In addition, counsellors in the Middlesex University Counselling Service reviewed all the materials and changes were made in the light of their advice. The Counselling Service provided a letter of support (Appendix 7.9) and advertised the study with a poster displayed on their premises. One example of the way in which the process of consultation shaped the design is the decision not to exclude participants with current suicidal ideation, as is common in research of this type (e.g. Edmondson et al., 2018). The researcher with lived experience, however, advised that to do so was potentially disempowering to the individual concerned. Instead, I made clear in the briefing documents that participation was not recommended for people currently going through a difficult or stressful life event or experiencing suicidal thoughts, but the decision whether or not to participate in these circumstances was left to the person themselves.

The interviews were conducted by the author, who is a trained Samaritan listening volunteer with five years' experience. A research sensitivity protocol was developed (Appendix 7.10), which clarified that the participant had the right to pause or stop the interview at any time. If they decided not to continue, the researcher would offer to reschedule the interview or give the participant the opportunity to withdraw from the study. Participants were not asked in interview about suicidal thoughts or history of suicide attempts unless it was first raised by the participants themselves.

Participants were told that the information they provided would be treated confidentially, with the only exception being if they disclosed that they or someone else was at risk of serious harm. A personalised safety plan was drawn up before the start of the interview, with input from participants themselves about their own

support network (Appendix 7.4). Participants were also asked for the name and contact details of a person (such as a GP, a key worker, and/or a trusted family member or friend) who the researcher should alert, if she had serious concerns over the participant's safety, or the safety of another person. The safety plan also included a list of useful contacts (e.g., details of free and low-cost counselling options, adapted according to the country of residence of the participant) and was used in place of standard debriefing letters.

The Visual Analogue Scale was reviewed immediately at the end of the interview to assess whether there has been a large reduction in mood over the course of the interview. If this had been the case, participants would have been asked if they would like the researcher to contact someone, and the researcher would have stayed with the participant until they were less distressed, if that is what the participant wanted. In the event, no participant reported a worsening of mood on the VAS, and four participants gave improved scores relative to their pre-interview rating (Appendix 7.8).

7.4.6 Researcher Safety

Mitigating measures were also put in place to protect my wellbeing, as the researcher exposed to the participants' sensitive and personal disclosures. In addition to my supervising team, the University also made available a named person to provide confidential support to psychology PhD students. Conscious also of my own physical safety, interviews were always conducted either on campus or in Samaritans' branches where other people were present, and a protocol put in place whereby I would contact my supervisor at the end of the interview.

7.4.7 Analysis

The interviews were analysed using IPA (J. A. Smith et al., 2009). In preparation for this study, the author attended a course on IPA data collection and analysis. Each interview was analysed separately and in turn, using the following steps. First, the transcript was read and reread, both to get a sense of the interview as a whole and also immerse the researcher in the detail of the narrative. Second, the transcript was annotated using the method suggested by J. A. Smith et al. (2009). A distinction was made between descriptive comments, which summarised the content of what was said, linguistic comments, which captured observations about the language used by participants to describe their experiences and finally, conceptual comments, which began to interpret and question the meaning underlying the descriptive content⁴.

The third stage of analysis involved the development of emergent themes from the participant's interview. The aim of this process is to encapsulate the meaning of the descriptive, linguistic and conceptual comments in a single phrase. For example, P1 opened her interview by making a distinction between the different types of self-harming behaviour that she had engaged in, some of which she classed as "*proper self-harm*", based on a childhood memory seeing scars on the arms of a classmate. The theme "external orientation" was used to encapsulate both the descriptive content, reflecting the importance placed on visual evidence, and also the language used, which, in contrast, implied a potential difficulty in understanding her own internal thinking processes ("*for some strange reason*"). Although this is an inductive method of analysis, which allows the themes to emerge from the interview, IPA acknowledges that the analyst comes to the data with their own assumptions,

⁴ An example of an annotated transcript has been made confidentially available to the examiners.

knowledge and life experience, which play an active role in the interpretation. This is illustrated here by the choice of thematic label which reflected the researcher's own knowledge of and interest in alexithymia, of which one of the facets is 'externally-orientated thinking'.

During the fourth stage of analysis the emergent themes were grouped into subthemes and finally into one super-ordinate theme (see Figures 7.11.1 and 7.11.2 and Table 7.11.1 in Appendix 7.11). The analytic stages were repeated for each participant in turn. The individual thematic maps were then compared, to identify where the themes were overlapping, conflicting or suggestive of higher-order concepts. This process is illustrated in Figures 7.11.3 in Appendix 7.11. The analysis was conducted by the author, with one transcript independently reviewed by her supervisor, Dr Marzano, in order to compare and discuss emergent themes. No specialist software was used. Final identification of themes was based on consensus discussion between the author and Dr Marzano. Figure 8.1 (Chapter Eight) sets out the final four themes identified through the analysis.

An important feature of IPA is that it retains a focus on the individual participant experience, while at the same time looking for patterns across the dataset. Having identified the four super-ordinate themes, therefore, the analyst returned to review the transcripts in order to understand how each theme related to the individual participants. Tables 8.1 to 8.4 present, for the four themes in turn, a case summary and illustrative extract for each participant.

Chapter Eight: The experience of self-harm in young adults who report difficulties identifying and describing their feelings: a qualitative study.

Results and Discussion

“I can’t describe it and they can’t see the rain.”

ABSTRACT

Results. Four themes emerged. In *Control and Compulsion* self-harm provided a feeling of control, but could also become controlling. *Is Self-Harm Bad* explores the way in which participants both acknowledged and resisted the social construct of self-harm as bad. *The Obscure Self* describes participants’ struggle to grasp a coherent sense of self, and how self-harm provided a means of physically reconnecting with their bodies. *Words Fail Me* concerns participants’ difficulties communicating their subjective experience, which increased feelings of isolation and recourse to self-harm.

Conclusions. The lack of interpersonal connection, arising from difficulties understanding feelings and communicating them to others, may create or exacerbate the context for self-harm. The findings have relevance for the treatment of self-harm, given the high, but often unacknowledged, prevalence of alexithymia in clinical populations.

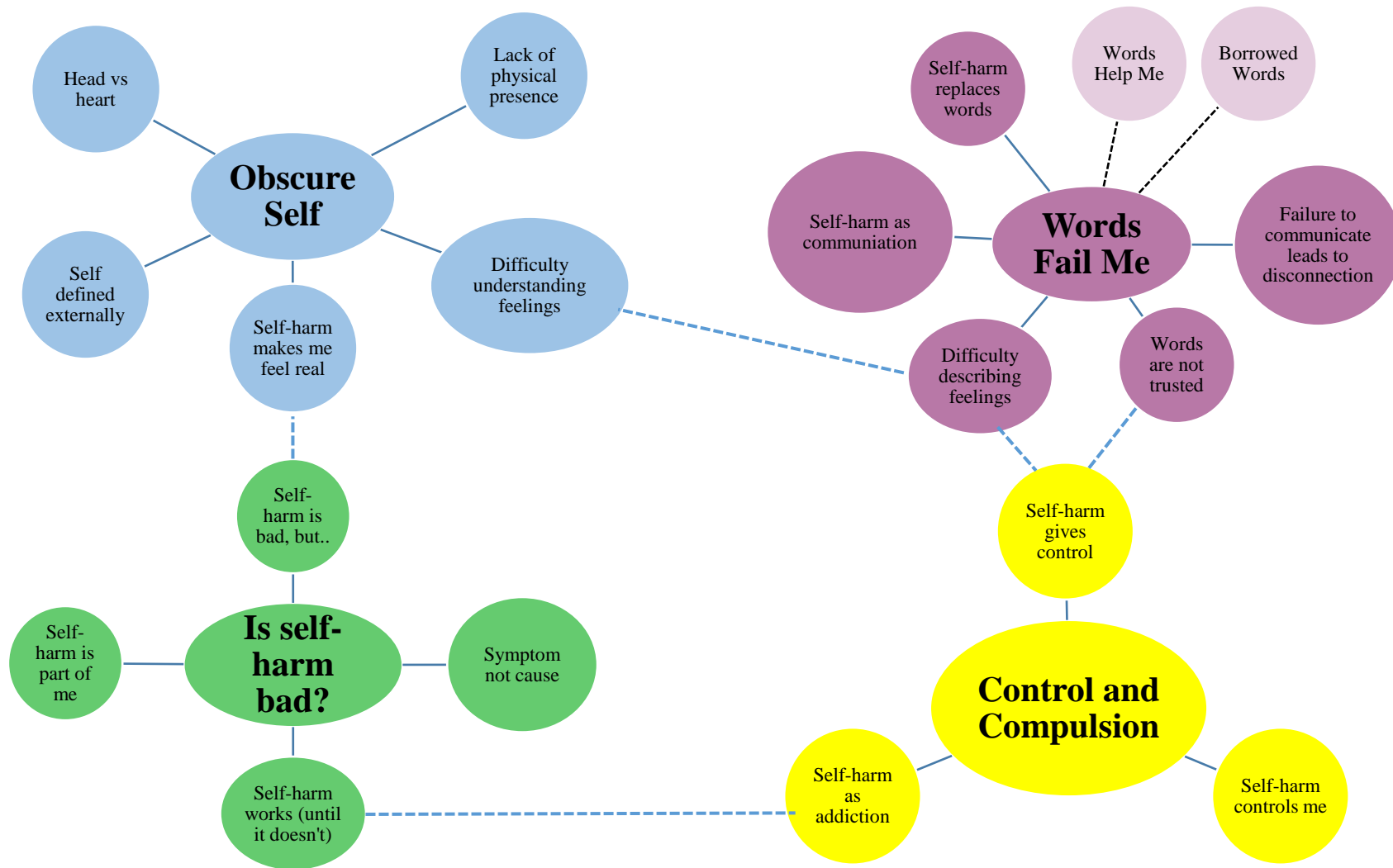
8.1 Results

Chapter Seven set out the rationale and method for the qualitative study on the experiences of self-harm in young adults who report difficulties identifying and describing their feelings. This chapter presents the results of the analysis and the discussion, including reflections on the strengths and limitations of the research.

Four superordinate themes were identified through the analysis: Control and compulsion, Is self-harm bad?, the Obscure self and Words fail me (Figure 8.1).

Figure 8.1

Final Map of Themes



8.1.1 Theme 1: Control and Compulsion

The theme of control and compulsion was identified in all the participants' accounts, albeit in different ways, as an antecedent to self-harm, as a function of self-harm and finally as a consequence of self-harm. Table 8.1 sets out how the theme applies to each participant individually.

8.1.1.1 Self-Harm Gives Control. Seven out of eight participants referred to a loss of control as a trigger for self-harm. In some cases this was a loss of control in their lives, for example over other people's behaviour. P7 associated her worsening engagement in self-harm with a feeling of being left behind.

P7: "I went to therapy for two years and in between that we figured out that I have abandonment issues for multiple reasons that lead back to when I was younger, and when I was [...] in high school that's when my cutting got really bad and um, that was because everybody was leaving me and I had no control over that, so the only thing I had control over was cutting and I would cut and when they would start to disappear I would cut more and sometimes I would cut over my already, um my scabs. And um, it was just something that I had control over in my life at the time, because I felt I had no other control on anything else."

P7 mapped a clear path of cause and effect between other people's actions, over which she had no control, and her response in self-harm. Through therapy she had located in her childhood experiences the roots of her need for control and the reason for her engagement in self-harm. Cutting was something she could control. Like the people in her life, the cuts "disappear". However, she had the power to bring the scars back, by cutting more, giving her visible proof of her capacity to control at least her body and how it appeared.

Chaotic and confusing life experiences may lead to, or combine with, confusing inner experiences. Five of the participants described the sensation of being overwhelmed by thoughts that they were unable to control, as in this particularly visual account given by P8:

P8: "In those times, a lot of the time it feels like my thoughts are going too quickly. And something about doing that just puts all your focus on the pain, your thoughts disappear. It's quite like a relief, sometimes my head feels heavy I feel like there's traffic in there. Like a million cars all going in the wrong direction. And they're all crashing and I can't stop them. And then I can like just cut it away almost. Cos then I have to focus on stopping the blood and tidying up and making sure I don't make a mess and something else to think about."

For P8 in those moments, her thoughts were out of control. They were moving too fast and in the wrong direction, so that eventually there was a crash, a moment when they become too much for her to deal with. The effect was physical, there were so many thoughts that her head felt "heavy". Similarly, her response was physical. She was able to 'cut away' the thoughts and regain a sense of control. The practical consequences of self-harm provided her with a focus that not only distracted her from the thoughts but also appeared to make the thoughts themselves go away.

These extracts illustrate how self-harm was used to give participants a sense of control over their lives or their thoughts. Critically, it was a method of coping that involved no one else, which enabled participants to keep their distress private (P2: "*I didn't want to feel like I needed help. I wanted to feel like I was handling it by myself.*"). Indeed, there were several examples in the accounts where intervention was viewed, and experienced, negatively, often leading to increased engagement in

self-harm. This was particularly true of the three participants who had experience of hospitalisation. Measures designed to be protective, such as removal of all personal belongings (P1) or tube-feeding (P5), took away any sense of control over themselves, which could only be regained through different and more extreme methods of self-harm (see P1's quotation in Table 8.1). Intervention was explicitly feared or resisted by five of the participants because it was seen as disruptive, as this extract from P6's interview indicates:

P6: "I guess if my head is an archive room, the box holds all of the objects related to cutting. If it is only me in the archive I can choose to look in it or not. But I guess to begin with it felt a lot like someone had broken the lock on the door to the room, taken the box out moved all the objects around, attached tags to them and put them back however they wanted. Even if they didn't put objects in the box, the handling, recording and labelling of the items can't be undone."

P6 felt that cutting was something that she was able to manage on her own terms, she had control over it, and could "choose" whether or not to engage in it. The image of a box suggests that self-harm was contained: it was a part of her life that could be accessed when needed but also that did not spill into the rest of her life when not. The door to the room was locked, indicating that this was a very private coping mechanism that was worth protecting from others. Just knowing that it was there may have been sufficient to help P6 cope. The extract goes on to describe the effect of interference by others. The language is invasive and violent. The lock has been broken, indicating that the intervention has occurred against her will, and she has no control over what is done to the contents of the box. Like precious artefacts in a museum, the items are permanently damaged by the 'handling' and also by the

‘labelling’ of outsiders who do not understand their meaning and significance. For P6, the consequence of people finding out about her engagement in self-harm was a significant increase in the severity of cutting, frequently requiring hospitalisation.

8.1.1.2. Self-Harm as Addiction. Thus self-harm provided a feeling of control, when other aspects of life felt out of control. The control provided by self-harm may be disrupted by well-meaning but ill-conceived intervention. However, even in the absence of intervention, the idea that self-harm provides control, and can be itself controlled, appeared to be undermined by the participants’ own accounts. Five participants explicitly used the term addiction to describe their experience of self-harm. What started as a coping mechanism had become habitual, routine and necessary, as expressed in this extract from P4’s account:

P4: *“I just never thought about like what would happen after, more like in the moment and then afterwards I would feel like oh no why did I do it you know, obviously it doesn’t help, but then like you just fall back into that same cycle of, you get the feeling to do it, you do it and then you feel like oh no why did I do it. And then back into the same thing. It’s just really difficult to break, it became almost like a routine. Almost like you just kind of expected it to happen and it just kind of happened, like a, almost like an addiction, like waking up and brushing your teeth is a routine, you do it every single day without like fail, or without thinking, it’s just like a natural thing you’re going to do, that was almost like how it was for me.”*

Self-harm appears to be something that was not in P4’s control. It happened without thought, “in the moment”, and afterwards there was regret and remorse, and self-questioning over why she had acted in that way. The negative post-hoc evaluation was not enough, however, to prevent future episodes of self-harm; she was in thrall

to strong forces outside her control and which kept her trapped in a cycle of behaviour. In this extract there appears to be a contrast between rational thought, which argues against self-harm (“*obviously it doesn’t help*”) and instinct, which dictates the daily routine (“*it just kind of happened*”). Although at other points in her interview, P4 described the functions that self-harm played, here there is no indication of what it is that self-harm was doing for her in these moments, only a sense that this was what she had to do.

8.1.1.3. Self-Harm Controls Me. Like any addiction, self-harm became something that P4 and others felt was necessary to their lives. It may still have been their means of controlling their thoughts and feelings, but it also had control over them. At the extreme, this loss of control to addiction can have fatal consequences. Two participants in particular talked explicitly about the way self-harm helped them cope with suicidal feelings, and prevented them from taking their own lives. However, in the following extract, P5 admitted that the effect for her may only be temporary:

P5: “*I don’t know because there’s sort of masking over feelings and emotions and suicidal thoughts, they only last for a certain period of time, and it will come to a point and this I’ve learnt over many times, that it will come to a point when my mind set turn to I’ll do whatever to myself and I don’t care whether that will kill me or not. And that sort of mind set is what ends me up to be sectioned to be put in a hospital and yeah. It does work to a point that it doesn’t.*”

For P5, self-harm was a rare source of control in her life. She credited it for keeping her alive and functioning. However, as this extract shows, she was also aware that at times, she had lost control to a different “mind set”, one which was ambivalent about

dying. Her account exemplified the idea that self-harm can be both a source of control and a loss of control.

Interestingly, for those participants who no longer self-harmed at the time of the interview, the process of stopping was associated sometimes with a conscious choice to take back control and sometimes with a letting go of control. Several participants spoke about taking a decision to stop, even if self-harm was still playing the same function in their lives.

P7: “*I do think that self-harm still gave me the same feeling of control, but I wanted, I didn’t want that to be my, my source of control anymore.*”

In contrast, P2 described how her recovery began when her parents “sat her down” and took responsibility for helping her. She was able to let go of the need to control her own feelings on her own (see Table 8.1). For P4, taking explicit control of her treatment against her mother’s wishes was an important step. However, her recovery also benefited from a growing acceptance that she was not able to control everything in her life.

P4: “*There is bad days, and you can’t necessarily control those bad days, but they happen and they are going to happen if you know if you’re not we’re not always alright, it’s not something we kind of just like choose.*”

Table 8.1*Theme 1 - Control and Compulsion*

P1	P2	P3	P4	P5	P6	P7	P8
P1 was hospitalised several times and experienced significant loss of control, at one point having all clothes and personal belongings taken away from her. She talked about self-harm in that context as a means of beating the system and re-establishing some sense of control. She described self-harm as a means of taking "controlled risks", of testing her limits and those of the people around her.	The theme of control was present, though not prominent, in P2's account. P2 wanted to show that she was in control, and that she could cope without help. As a result she hid her scars and chose not to confide in anyone. The point at which her parents intervened and effectively took some control away from her was described as a positive turning point in her engagement with self-harm.	P3 did not use the word 'control' in her account. However, she did express the importance of her personal coping mechanisms, such as "venting" on social media and access to razor blades, and she feared that if her parents found out about her engagement in self-harm, those mechanisms would be removed. She described self-harm as an addiction.	P4's felt strongly that mental health is not something that you can control. Self-harm gave her a means of controlling the thoughts and feelings that she did not understand. It became routine, like a habit. Her recovery involved taking control over decisions about her treatment, against her mother's wishes, as well as learning to accept, rather than control, negative emotion.	P5 described self-harm as a way of feeling in control in an otherwise chaotic life. Hospitalised for anorexia, the loss of control associated with force-feeding led to increased engagement in self-harm. She vividly described the addictive nature of self-harm, and reflected on its roots in adverse childhood experiences.	For P6, having control over her own behaviours, including self-harm was very important. She described how her problems escalated as a result of unsolicited intervention from others. This first occurred as a result of her scars being revealed during an operation, when she was under general anaesthetic and therefore had, quite literally, no control or even consciousness of what was being done to her.	P7 described self-harm as a response to a lack of control over, first, upsetting thoughts, and later the actions of other people. In contrast, the process and timing of self-harm was something she could deliberately control. However, like an addiction, self-harm became normalised in her life.	For P8 self-harm was a means of controlling chaotic thoughts. The process of cutting and caring for the wounds was easier than the messy business of relationships and life stresses and gave her a feeling of control. She described self-harm as an addiction, and said there are times when she can't resist it because she knew it would have the desired effect.

<p>"Well you've taken away all this stuff, I'm going to show you that I can still do it even though you've taken away everything [...] I mean that certainly wasn't suicidal it was almost like not not to piss them off, but well kind of like they've taken away everything so I want to see what you do now."</p>	<p>"My parents came in and they sat me down and they were just they, they just kind of told me like hey like, I know that you're in a bad place right now but we're here for you and we don't want you to do something that hurts yourself, we want to be here for you, we want to make more of an effort to talk to you, and we want you to make more of an effort to talk to us instead of just keeping everything just bottled up."</p>	<p>"It also like stressed me out to be like OK we're going to get rid of razor blades. Because then when I would get triggered again I would start obsessing and be like oh I don't have any now I gotta get some now I gotta go to the store and get some and take them apart and all this, and I would obsess about it. Whereas if I had them accessible, I could be like ok we have that as an option, we don't have to do it right now. And I could ride the wave out."</p>	<p>"Like that was one kind of time when I could almost bring on an emotion, like control- in a controlled way by doing it, cos it would make me feel something, which I don't actually know how, I don't know how to describe like the feeling you got. It's quite like confusing to be honest. I don't really understand how it made me feel, but like it was just a feeling, but it was something I could bring on myself, by doing that."</p>	<p>"And especially for people that come from difficult childhood, difficult backgrounds feeling absolutely shit about themselves to have that high and to have that feeling of freedom and to have that rush and a feeling of I'm all over the top, I'm in control of everything, obviously people crave that."</p>	<p>I: "How did that make you feel about self-harming?" P6: "I don't know. I think I was quite protective of it until very recently. I think I put a lot of energy into making it difficult for people to be able to get anywhere. I kicked back against the lack of control over that situation a lot."</p>	<p>"Even though I was self-harming I didn't want to let it take too much control over my life, like I still wanted to wear the things I wanted to wear, and I didn't want to feel like I had to put so much effort in hiding it, while I was at school, because I didn't want my friends to confront me on it, or ask me questions, ask me why, they were just questions that even sometimes I didn't know and I couldn't answer myself, so that's another reason I was so strategic about where and when."</p>	<p>"It's just practical things I've always been better at. [Laughs] I think I can do that, you know. I can clean a cut, I can bandage, you know, that's nice and easy. I can't make friends, I can't keep friends, I can't make my mum happy but I can wrap a bandage [laughs]. Some things are just easier aren't they? Cutting and fixing is a lot easier than trying to fix a really broken relationship. Does that make sense? Dunno."</p>
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8.1.2 Theme 2: Is Self-Harm Bad?

This theme explores the participants' feelings towards self-harm, in particular the way in which participants both acknowledged and resisted the social construct of self-harm as bad. Individual case studies relating to this theme are set out in Table 8.2.

8.1.2.1 Self-Harm is Bad But... All the participants expressed, either explicitly or implicitly, the view that self-harm is an unhealthy, negative behaviour. At the start of each interview, participants were asked a very general question about their experiences of self-harm.

P3: *“Well I think I started self-harming when I was 17 in high school and [pause] I it got it was real bad for about two years and I would do the whole you know we’re gonna we’re gonna stop doing this because it’s bad and my best friend hates that I do it, and then keep doing it.”*

The word ‘bad’ is used twice in this short extract, first to describe the seriousness of her engagement in self-harm and second as a reason why she felt she ought to stop. The perception of self-harm as bad was endorsed, or even formed, by the reaction of her best friend, whose judgment she presumably valued. However, although P3 tried to convince herself to stop self-harming, it sounds almost as if she were going through the motions of the argument (*“I would do the whole...”*). Although she knew that self-harm was seen as a bad thing, this was not enough to stop her.

Across the interviews, friends, parents and health practitioners invariably responded negatively to self-harm, creating a negative social construct against or within which participants had to position themselves. Six participants described having to manage other people's reactions to their scars. In the following extract

from P1's interview, she remembered going to a pub quiz with her boyfriend and two friends.

P1: *"I was wearing a sleeveless dress and I wore like a cardigan over it like a long sleeved one and when I got to the pub I sat at the table and I started taking it off and my boyfriend was "no you can't take that off"."*

I: *"How did you feel about that?"*

P1: *"And I was just sort of I don't know it was like a punch in the stomach. Um cos then you're then sort of like not only me feeling really embarrassed and inadequate but thinking oh my god he feels embarrassed about me, like he's embarrassed to be with this person who's got these scars so and so and I sort of immediately went back into my shell and did my not talking to anyone kind of face and I think a few minutes later he sort of I think he realised that what he said wasn't appropriate and he apologised and he was like no no no you can do whatever you want"*

Her boyfriend's instinctive reaction to P1 revealing her scars in public, and in front of friends, indicated that he saw the scars as in some way embarrassing or even shameful. Self-harm was something that needed to be hidden and covered up. For P1, his was a shocking reaction which had a physical effect on her (*"like a punch in the stomach"*). She inferred that he was ashamed, not only of the scars, but of her as a person. Her first reaction was to hide both her scars and also her own feelings (*"back into my shell"*). However, this withdrawal was intended to imply not acceptance but rather rebellion. Clearly, P1 believed her boyfriend was wrong, his view was *"not appropriate"*. This extract begins to shed light on the tension in this theme. If they were to acknowledge the social construct of self-harm as bad,

participants would in effect be accepting that they, as people who have self-harmed, were therefore also bad. In P1's case and others', this interpretation is resisted.

8.1.2.2. Self-Harm is Part of Me. For those participants who considered that they had stopped engaging in self-harm, reflecting on their experiences revealed a complex mix of feelings, as illustrated in this extract from P2's interview:

I: *"So, how would you say self-harm, if you would, has self-harm affected your life, did it affect your life?"*

P2: *"I thought about that, and I still don't know. All I know is it was a big part of my life and who I was for a really long time and it shaped me into the person that I am today but at the same time that I'm glad that I don't do it anymore, and I hope that I never do do it again, um but I think ultimately considering the end product, where I am now, I think it was, [sigh] I can't say that, I want to say that it was a good thing because it kind of ended up in me getting help from my parents and talking to them about it and I don't know what the alternative would have been if I never, if I never did it. So I'm hesitant to say that I think it was a good thing because it brought me closer to my friends and my family."*

P2 (like P3, P4 and P7) explicitly articulated her belief that self-harm had shaped the person she had become. This person (the "end product") was someone P2 was proud to be and therefore she could not write off self-harm as wholly negative. In this extract, P2 focussed on the benefit self-harm brought to her which was ultimately to make her closer to the people around her. Similarly, P4 argued that self-harm had enabled her to become more empathetic, particularly with people going through similar experiences. At the same time, P2 acknowledged that she was glad that she no longer self-harmed, and she was reluctant fully to endorse self-harm as a positive

experience (“*I’m hesitant to say..*”). This extract illustrates P2’s attempts to create a narrative which gives meaning to her own story whilst acknowledging the accepted view of self-harm as an unhealthy behaviour.

8.1.2.3. Symptom not Cause. Another potential explanation for the resistance to the view of self-harm as a bad thing is expressed by P4 and, in the following extract, by P8. Here, self-harm is a symptom of mental health difficulties or life stresses. As such, to judge it as ‘bad’ implies that it is the fault of the person who has self-harmed, rather than a signal of their distress.

P8: “*Like I wrote a song, like and it was just like, like “you say I should stop, I shouldn’t do this to myself. You say you’ve had enough. You can’t help if I don’t want the help. Do you not see I just don’t need it. Really, my heart and my brain is what’s bleeding, these these these are just cuts.” Like. Sorry it seemed like the thing to explain it.*”

I: “*Yeah, that’s a really strong image. That actually the cuts are .. a symptom?*”

P8: “*Yeah. Like they’re not the problem. And the problem isn’t that I’m cutting myself, the problem is why I’m cutting myself. And they’re almost unrelated. Like the actual act isn’t the cause.*”

I: “*Right.*”

P8: “*And so the cuts aren’t really what people need to be concerned about. The scars aren’t really the f*ing problem. It’s the way I feel that’s the problem.*”

Through her song P8 expressed her frustration that people appeared unable to see past her cuts to the pain underneath. She herself downplayed the significance of the cuts themselves. To her they were at most an external manifestation of the internal

'bleeding' and even, possibly, an irrelevant distraction (*"they're almost unrelated"*). Constructing self-harm as the problem appeared to give other people permission to absolve themselves of any responsibility for her distress. They blamed her for choosing to self-harm and placed the onus for her recovery onto her (*"You can't help if I don't want the help"*). In this extract P8 was asking for help for her feelings, irrespective of the fact that she was self-harming in order to cope. For her, self-harm was not 'bad', and thinking of it in this way only serves to blame the individual who self-harms, rather than help them address their underlying problems.

8.1.2.4. Self-Harm Works (Until it Doesn't). The third reason why participants appeared to resist the construction of self-harm as bad is because it worked for them. All described how self-harm was a means of coping and, to a varying extent, necessary to them at certain times in their lives. At the extreme, two participants (P5 and P8) explicitly described how they felt it saved them from taking their own lives.

P5: *"It keeps me alive to a certain degree and I remember going through a few things at a time, and if I have to decide between self-harm and suicide, um self-harm is the lesser of two evils, and I have to say, when I'm not psychotic and when I can actually think things through rationally, self-harm is a good way to calm down suicidal thoughts, it's a compensation, and if I can self-harm and not kill myself and I don't know any other way not to kill myself then in my mind, like self-harm is better than me trying to kill myself in a way."*

For P5 self-harm was bad but not as bad as killing herself (*"lesser of two evils"*). She credited self-harm for suppressing suicidal thoughts and thereby keeping her alive. This was described as a rational choice, and a logical response to the extremely difficult circumstances she had to deal with (underplayed here as *"a few*

things at a time”). As discussed in the previous theme, however, this logic would at times break down and self-harm would not be sufficient to protect her from potentially lethal actions. Later in the interview P5 admitted that sometimes she would realise how far her perception of self-harm differed from other people’s.

P5: *“And yeah, that was just, that’s kind of, I don’t know, like for me it’s kind of a bit hard to comprehend how people get shock when they hear about sort of my self-harm and the sort of things I did in the past, for me still that was kind of like nothing, and still at many points I still don’t believe I was ever that bad, or ever that ill in terms of self-harm.”*

This extract serves to illustrate how subjective constructs of self-harm can be. In the moment, self-harm felt to P5 like a rational choice, a way of coping that to her was almost “nothing”. In contrast, to other people P5’s engagement in self-harm was shocking and abnormal. This, and all the extracts in this theme, illustrates the gulf between how self-harm is experienced by those who engage in it, and how it is viewed from the outside by those who do not. Labelling self-harm as bad may alienate those for whom it has become a necessary means of coping with difficult feelings or life events and a part of their self-identity.

Table 8.2*Theme 2 - Is Self-Harm Bad?*

P1	P2	P3	P4	P5	P6	P7	P8
P1 did not explicitly describe self-harm as bad. She was aware of other people's perceptions and pushed back against any suggestion that her scars, for example, were shameful. She disliked the way in which self-harm had affected her self-image, for example she was no longer able to give blood which she had previously taken as evidence that she was a good person.	P2 was very reflective about her experience of self-harm. She acknowledged that self-harm is seen as something she "shouldn't do" and that can have fatal consequences. However, she felt that it was an integral part of her life experience and had shaped the person she had become, so was reluctant to say that it was altogether bad.	Although at one point P3 acknowledged that her self-harm had been an unhealthy means of coping, she mainly appeared to view it in a non-judgmental, almost factual way. Self-harm had been a function of a more general psychological distress and a part of her history that she could not change.	P4 admitted to having conflicting feelings about self-harm. She talked about feelings of guilt at the time and regret with hindsight. At the same time, she was passionate that mental health, including self-harm, should be seen as an illness for which the person should not be blamed. She felt that her experiences had shaped her in positive ways.	More than the other participants, P5 talked about self-harm as a punishment. At times it felt to her a justifiable act that she, as a bad person, deserved. She also saw self-harm as preferable to hurting others and described it as "the lesser of two evils" compared with suicide. On the other hand, she was very aware of other people's negative perceptions of self-harm.	P6's account differed from the other participants. Self-harm was a coping behaviour for her, in part in response to critical thoughts. Since her diagnosis of autism she had not felt the same need to self-harm. For her then, it seemed that self-harm was neither bad nor good, but necessary in order to help her function.	P7 voiced mixed feelings about self-harm. At times she felt guilt, that she "should be doing better" for herself. Looking back she described the habitual recourse to self-harm as "bad". However, like P2, P3 and P4, she felt that this was part of her story and had shaped the person she was today.	P8 acknowledged the normative view of self-harm as bad but struggled to accept it into her own way of thinking. She felt that for her it served a useful purpose, to manage overwhelming, and at times suicidal, thoughts. Self-harm was merely the symptom of more general psychological distress. She compared self-harm to other coping mechanisms that she felt were worse.

<p>"And in my head I'm kind of like, OK so I've done this and now because of it I've ruined my veins and I can't go and give blood and help other people. So it just kind of feels a bit selfish or makes me feel I was a bit selfish because like when I went to give blood, well it made me feel good about myself which I think is absolutely fine, that was like I might be a really horrible person otherwise, but at least I've done something nice, and then that was taken away from me."</p>	<p>"I mean there are young kids who commit suicide every day and I think it's really upsetting, especially knowing that I was in that situation, it could have been me. It's really sad. But at the same time like I said I think that it, I don't know, I think without, well I don't know. I don't know if without having that experience I would have been able, if I would be who I am"</p>	<p>"It's kind of hard for me to separate it from my overall like mental health. As least as far as like I kind of look at my life in a before and after kind of sense and... trying to think where I was going with this. Right now I kind of look at it as something that was part of who I am who I was and I just look at it very matter of factly."</p>	<p>"You can't, I can't go back and be like, like some people ask me oh do you wish you never did it? And it's kind of a mixed answer, like obviously I wish that I could have not done it, but I did and again like it's made me this person now like which isn't a terrible one I guess."</p>	<p>"And the imagination of going to college without covering it all is still unimaginable, like what would people think, what would people ask, would people think I'm evil, would they think I'm crazy, or would people look at me like I'm broken, damaged or whatever, I don't know."</p>	<p>"Then, I could only tell you what the differences were [following self-harm], so I could sleep, I could concentrate on other things. Now I would say it gave me the space to take stock a bit and often I would end up being able to do things that managed the overload rather than make it worse."</p>	<p>"There are times when I think I should have never done it but I rarely think about that because I think that me going through that kind of made me the person that I am today. "</p>	<p>P8: "I don't get the problem with it. I don't really get the point of it either. [Laughs.] But I don't I don't get what the issue is. You do it or you don't. If it helps it helps. Like we're all trying to find something to help, and some people are lucky and they find positive things like love and careers and whatever. And some people are unlucky and they get addicted to drugs and whatever. Like, I almost see self-harming as the middle ground."</p>
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8.1.3 Theme 3: The Obscure Self

The third superordinate theme concerns the way in which participants found it hard to understand themselves and how, in this context, self-harm was a means of confirming their own physical reality. Table 8.3 sets out the way in which the theme applies to each participant.

8.1.3.1 The Intangible Self. All participants indicated that, to some degree, their thoughts, feelings or motives were mysterious to them and this led to a poor, or fragmented, sense of self. This theme is encapsulated in the metaphor of the Obscurus, used by P4. In the film *Fantastic Beasts and Where to Find Them* (Heyman et al., 2016), the Obscurus is a magical parasite that forms when a witch or wizard suppresses their magical powers. It looks like an amorphous cloud of black smoke with tendrils. It can change form and appears to be intangible.

P4: Like I saw myself, but I didn't really get it. Like sometimes I would look at myself and think oh your eye makeup looks good, like your eyes look nice, but then the rest of it would be quite negative. The way I describe it, I don't know if you understand it, basically in Fantastic Beasts and Where to Find Them...

I: Yeah

P4: there's Obscurus the, this, like one, like a bad thing, and it's like a-, I can show you. [P4 searches online for an image.]

I: I have seen it, I've forgotten what that was.

P4: Like that thing. Oh come on. Like a very hazy ...[...] here we go. This thing.

I: Oh right, so like a blob of air, or of smoke.

P4: Yeah, so it's quite hazy like, it's kind of there, but still it's kind of not there. Kind of confusing. Confuses me.

The defining feature of the Obscurus for P4 was its lack of tangible, physical presence. It was ‘hazy’ and therefore hard both to grasp and to define. The Obscurus symbolised a lack of a solid, coherent sense of self. It was a state P4 described as confusing because she knew that, like the Obscurus, she was ‘there’, she did exist, but sometimes it felt as if she was not. Looking in the mirror, P4 was able to appreciate the parts of her physical self, but not the whole person (“*I didn’t really get it*”). A second notable aspect of the Obscurus as described by P4 is that it was a ‘*bad thing*’. In the film, the Obscurus is dark, destructive force. This almost throw-away remark concurs with P4’s perception of herself as “*quite negative*” and, as she expresses later in the interview, at times deserving of the punishment and pain of self-harm.

8.1.3.2. Difficulty Understanding Feelings. Part of the difficulty of ‘grasping’ a sense of self seems to come from difficulties in understanding and interpreting one’s own feelings. Six participants described either an absence of feeling (P5: “*It’s like I felt a lot but not a lot*”) or, more commonly, an inability to distinguish between emotional states, as in the following example from P2:

P2: “*Usually, well mostly I can chalk it down to a positive emotion or a negative emotion. Past that I have problems determining is this anger, is this shame, is this sadness? All I know that it’s negative, and I don’t know how to distinguish between those.*”

P2 differentiated here between feeling good or bad, but was unable to describe her feelings in any more detail. The emotion words (anger, shame, sadness) sound like a check list with which to narrow down the meaning of the negative feeling. Even context was not always a reliable way of interpreting vague and undifferentiated emotional states, as expressed by P8:

P8: *“I don’t know what the bad feeling is or what the good feeling is. Or what causes it, so I might be really happy and I’ve no idea, and I’d be like this is weird why am I happy? [laughs] Like you know. Like I might just have a really bad day and feel really dark but have no idea why. Just like didn’t do anything bad today or yesterday why do I feel like jumping off a cliff?”*

P8, like P2, could not pinpoint her emotions beyond feeling bad or good, nor could she always identify their cause. This extract gives a sense of how much her inner life is a mystery to her, she had ‘no idea’ why she might feel a certain way. Again, the self is obscure, in the sense of hidden. The repetition of the question ‘why’ appears to contrast with the light-hearted tone, and gives a sense of her searching for answers to help her understand and give meaning to her emotional experience. Her words also imply an expectation that feelings will logically follow from events: that it is ‘weird’ to feel either happy or dark in the absence of an appropriate external trigger.

8.1.3.3. Head Versus Heart. P8 was not alone in trying to use logic to understand why she felt the way she did. Six of the participants used language which either explicitly or implicitly contrasted their logical, cognitive or rational selves, located in their head or brain, with their irrational (or perhaps ‘real’) selves.

P4: *“Obviously I’ve got a boyfriend so there’s like some rational side to myself that is like well obviously someone finds you attractive. Even that I still doubt sometimes”*

This short extract from P4’s interview illustrates this tendency to describe two sides of oneself, often in dialogue or conflict. In this case, the rational self draws on evidence (the boyfriend) as visible proof (“*obviously*”) of her attractiveness. The person she was trying to convince, however, was not the interviewer but the other

side of herself, who continued to doubt. A similar example of internal debate is found in P7's interview.

P7: *“I still sometimes don't understand why I feel that like that at random times but I just think um I don't know I would like to think that maybe it's just um some sort of chemical imbalance or something because a lot of the time you know that can be the reason why people have depression, or maybe lack of vitamins, I don't really know um, but I guess I just came to terms with this is how I'm going to feel for a while, because I've been feeling like this for such a long time, and um I can't really say that the doctors have told me it's because of this because I haven't want to go figure all that out um so I guess yeah I've just come to terms with this is how I'm going to feel for a while until I really figure out if it is something on the inside or with my brain or is it just, is it just me?”*

P7 put forward credible and logical reasons for her continued experience of depression, drawing on a medical model (*'chemical imbalance'*) and the experience of others (*'people'*). However, she indicated that she was not entirely convinced, both in her language (*“I don't really know”*) and also in her behaviour: she has chosen not to pin down the doctors on the potential causes. The last sentence of the extract illustrated her continued search for self. She seemed to draw a distinction between her brain and her core self (*“is it just me?”*). For P7, as for many of the participants, undifferentiated feelings with ill-defined root causes provided poor road maps to understanding the mysterious self.

8.1.3.4. Self Defined Externally. Another way in which participants tried to make sense of their own experience is in reference to other people. Several sought self-knowledge by consulting with experts such as therapists or medical

professionals. Diagnoses (P4, P6) and therapeutic narratives (P7, P8) provided explanations for feelings and behaviours that were otherwise difficult to understand. Immediately prior to the following extract, P8 reflected that she was unsure about her gender.

I: *“Is gender something that you think.. how does it affect your life now, that issue?”*

P8: *“So, I was speaking to a psychologist about this. And I just have no sense of self, I think. I think that was our conclusion. Is that, because I strongly listen to other people I suppose because I’ve never trusted my own thoughts, because I’m always told I’m wrong, so I’m probably thinking wrong, so I’m probably wrong, type thing. And so I don’t know like I don’t know, cos I feel like I should be a boy but I don’t know if I can trust that feeling.”*

Here P8 stated that she did not trust her own thoughts, even (or especially) in regards to interpreting her own experiences. She attributed this to the effect of being constantly told she was wrong, which resulted in her doubting herself. This process is enacted even in this extract, in which, rather than answering the question with her own reflections, she referred immediately to an external source of expertise and reported their ‘official’ opinion. However, her language gives a sense that the psychologist’s analysis was not accepted unquestioningly. Although she indicated that the interpretation was co-created by the psychologist and her together (*‘our conclusion’*), the repetition of ‘I think, I think’ might suggest that she was not wholly bought into the narrative.

Participants also tried to understand their experience by comparing themselves with others. Several participants questioned whether their experience

was normal. P1 described how she went looking for explicit violent images online, because she believed it would put her off hurting herself.

P1: *“And it was sort of like I guess it was a bit like self-harm because the more I watched it the worse I felt about myself. I was like, oh technically I was like well this is not actually illegal to watch this stuff, but I shouldn’t be watching it this is horrible blah blah blah and then I would read the comments on the videos and I’d be like..these people are even worse than I am, some of the comments were even more messed up than the videos, which then kind of gave me a false sense of reassurance, I was like, well I’m OK compared to these guys.”*

Interestingly, in this extract, P1 was clear that looking at the pictures was harmful and made her feel worse. Yet she still looked outside herself to decide how she should be feeling. First, she reassured herself that it was not illegal to view such images, which legitimised it as an activity in spite of the way it made her feel. Second, she compared herself to the people who had written comments under the images, and judged that she was in fact “OK”. In that moment, her own feelings appeared to carry less weight than the evidence of how her behaviour might be assessed against social norms and other people’s actions, although, with hindsight, this analysis is seen as faulty (*“a false sense of reassurance”*).

8.1.3.5. Self-Harm Makes me Feel Real. Elsewhere in her interview, P1 was explicit that self-harm had for her been a means of testing her limits, physically and mentally. At one point she described a feeling of elation when she realises she has survived an overdose and “cheated death” (*“This is really cool!”*). Because she did not appear to trust her feelings, or to understanding the motives behind her behaviour, self-harm became a way of experimenting on her physical self, perhaps to

understand herself better. In this extract she describes one incident of self-harm with the dispassion of a surgeon (WARNING: this extract contains a graphic description of self-harm).

P1: *“It wasn’t like super deep, like it hadn’t cut down to the nerves or anything, but it was reasonably deep and I was like, oh my god, this is like um seeing someone on the operating table, and I was like you can actually see the layers of [laughs] of like skin and fatty tissue and I can feel where the muscle starts, so it’s just like, it was really weird.”*

P1, who had had medical training, likened the experience of seeing her own wound to that of looking at someone else’s inanimate body. The constituent parts of the body were revealed and dissected, but they did not appear to add up to a coherent whole. It was as if she had sought to understand herself by literally uncovering what lies beneath, but the outcome is inconclusive (*‘weird’*) rather than illuminating. Although P1’s account was unusual in the way it objectified the body, several other participants describe how reconnecting with their bodies through self-harm allowed them to feel real. In some cases (P2, P3, P4, P5), and at some times, self-harm was preceded by a feeling of numbness or dissociation (P3: *“like I was in a bubble, like the world was going on around me but I wasn’t really in it”*). In these circumstances self-harm appeared to function in two ways, either by inducing visceral pain or through the visual impact of seeing blood flow out of the body.

P3: *“I remember I actually really vividly remember that first day that I did it. I was kind of having like some dissociation and not really feeling like I was real or like I had to like prove physically that I was real and I didn’t know that I was depressed but I definitely didn’t feel right and... I remember sitting in*

class and like just staring out the window and thinking that I needed to hurt myself to like feel and prove that I was real, like prove it to myself.”

P3 clearly had a very clear and strong memory of how she felt on that day. It is the memory of feeling something without being able to explain that feeling, before she had learnt to give it labels (‘dissociation’, ‘depression’). When asked, P3 explained that not feeling real felt like being in a bubble, disconnected from the world. In this extract she remembered staring out of the window, perhaps as if the glass were separating her from reality. She felt that the only way to reconnect and escape from her bubble was to hurt herself. This would provide the proof that she was real and a physical part of the world around her. This experienced was echoed by P4, who described how seeing blood could provide evidence that she existed.

P4: “It kind of reminded you you’re still human almost cos if you draw blood for example and you can see it like you still see that your body is there like you don’t just feel like a nothingness ball of air almost.”

In summary, P4’s metaphor of the Obscurus provides a strong visual image of the lack of a sense of self, expressed in different ways by all the participants. The self is hard to ‘grasp’, both because of the difficulty of distinguishing and understanding their thoughts and feelings, and even, at times, because of a feeling of disconnection from their own physical body. In these circumstances, self-harm provides a means of reconnecting with their body and proving that they are real.

Table 8.3: Theme 3 - The Obscure Self

<i>Self as mysterious</i> P1	P2	P3	P4	P5	P6	P7	P8
<p>P1 talked frequently about the part of herself which was logical and rational. Twenty four times in her account P1 used the phrase "in my head" in a way that suggested that her head was the source of logical thought. Her logical self struggled to understand why she behaved in a certain way. Feelings were mostly absent from P1's interview.</p>	<p>This theme was present, but not prominent, in P2's interview. She expressed difficulty in distinguishing between feelings, and in interpreting why she felt the way she did.</p>	<p>Recalling the first time she self-harmed, P3 described how she did not feel real. She remembered feeling disconnected from the world, using the metaphor of being inside a bubble. It felt like she was invisible and the world was carrying on around her as if she were not there.</p>	<p>P4 experienced depression and anxiety as a teenager. She used the metaphor of the Obscure to describe the difficulty she felt grasping a sense of self. She tried to articulate the confusion of thoughts and feelings she experienced, in particular the way in which she could feel overwhelmed and also numb at the same time.</p>	<p>P5 had episodes of dissociation of which she has no memories: those parts of history have been completely obscured in her own mind. She came to the country alone as a child, unable to speak the language, and has retained a feeling of being an outsider, and not normal, compared to others.</p>	<p>P6 described how her own needs and motives for her behaviour were a mystery to her until she received her diagnosis of autism. She had difficulty knowing not only how she felt, but also in interpreting bodily sensation. She used logic and context to work out what her body might be telling her.</p>	<p>P7 found it hard to remember why she started to self-harm at the age of 10. Through her teenage years, and with the help of therapy, she grew to understand herself better. Part of this process was an acceptance that feelings were not always logical or explicable.</p>	<p>P8 said that she thought she had a poor sense of self. She often could not understand what she felt, and why. She felt as if she was not normal, always out of step with other people and struggling to understand 'normal' rules of behaviour.</p>
<p>"So, yeah it's just really strange, and I mean because the other thing I guess with self-harm is that most of the people I'd seen that had done it had either well most of them have sort of started in their teens um well I've just turned 29 so I was 28 when I had that episode and I was like in my logical brain was like this is atypical way this is happening."</p>	<p>"Usually, well mostly I can chalk it down to a positive emotion or a negative emotion. Past that I have problems determining is this anger, is this shame, is this sadness. All I know that it's negative, and I don't know how to distinguish between those."</p>	<p>I: "What did it feel like inside the bubble?" P3: "I don't know it felt like things were kind of like distorted. Like I was like really just inside my own like, not necessarily my own little world but like, it felt very disconnected from anything else. Like sensory input would be kind of distorted "</p>	<p>"The actual feeling was just numb it just wasn't anything if that makes sense, kind of. [...], and then the self-harm like... see it's not like nothing nothing, it's like a numb nothing it's like a numb nothing feeling. You see it's just really difficult because it's not a nothing- like you feel sad so that's something, but it's like a numb sad, it's like a nothing sad."</p>	<p>P5: "Um. It's kind of I don't know, it's like looking over a movie of how did it happen." I: "Looking at a movie?" P5: "Yeah. Because I genuinely have no such memory of what really happened." I: "Right." P5: "Just a bunch of notes on what happened."</p>	<p>"I don't have good descriptions of physical sensations either...I can not realise I haven't eaten all day at bed time, but not have known what was wrong all day, so I'm not sure I understand either. Now my partner and I run through a mental checklist of everything that could be wrong."</p>	<p>"I was 10 years old I didn't even know why I was feeling the way I was feeling, or um why I was doing the things I was doing." [...] "It was very I guess overwhelming because you do this to have more control over your life, and then [...] someone asks you questions about it, and you don't even know why or you don't know how to answer the questions"</p>	<p>"I'm really not in touch with my emotions, I'm aware of that. I don't know how to become. I don't get what they are. If that makes sense. Cos emotions are really complicated."</p>

<i>Self-harm helps me feel real</i>							
P1's accounts of self-harm focussed on the practical and physical experience, as if it were happening to someone else and she were observing from the outside.	P2 articulated how, for her, one of the important factors of self-harm was to see her blood flowing out and the physical sensation of the wound under her clothes.	For P3, it was the visual aspect of seeing the blood that was important, rather than any visceral feeling of pain. Seeing the blood gave her satisfaction, perhaps as proof of existence.	P4 described how self-harm provided a physical focus which helped combat the confusion in her mind. Sometimes it gave her a sense of reassurance, by offering physical proof of existence.	P5 described using self-harm to feel something when she otherwise felt numb.	The theme of self-harm as a means of feeling real was not present in P6's interview. For her, self-harm was a means of coping and staying in control.	P7 did not describe self-harm as a means of helping her feel more real or understand herself better.	P8 did not talk about using self-harm in order to make herself feel real.
"And then I don't know why but I enjoyed seeing the blood, um flowing out, I can't really give a logical explanation for that but for example when I did it in the bathtub [...] I sort of made sure I filled it up with hot water and then when there was a bit in my arm that was sort of bleeding quite a lot I kept my arm under water where it was hot so sort of so the flow would continue and then the water started cooling down and I was like oh crap it's going to stop.." I: so something about the blood flowing. P1: yeah, I don't know why it's kind of like being in a movie."	"I can't really explain why, but I think it helped to maybe ease some tension and if that sounds weird I don't know but um I the thing that, I mean if this is morbid I'm sorry, but the thing that I found gratifying about cutting myself was seeing blood. Like coming out of my skin and I don't know it just, it was kind of comforting, even though like the places where I cut hurt the next couple of days, few weeks, it felt still felt gratifying somehow. And that I had released like tension that had built up since the last time that I did it."	P3L "I've never cut like very deep so it's more about like seeing something than it is about feeling it." I: "Right. What what do you mean about the seeing something?" P3: "Like like seeing blood. [...] I think I got more satisfaction from it, than I like I didn't really ever care about how deep I went or how or how it felt, it just kind of you know, as soon as I saw like a little drop of red it like was very satisfying. "	"And then the self-harm I think it just kind of like, again the focus that it gave, the attention that it gave, the feeling that it gave afterwards whether that be release, or I know that like some people and personally it was only sometimes, when it can't, actually this came to me it kind of reminded you you're still human almost cos if you draw blood for example and you can see it like you still see that your body is there like you don't just feel like a nothingness ball of air almost."	"Probably that was at points that probably that was what made my self-harm worse because at points I wanted to self-harm just so I could physically feel something, and so that made me cut deeper, that made me sort of sort of in just bigger wounds, doing even worse things, because I have to feel something, and in order for me to feel something I have to harm myself more in order to feel even that tiny bit of pain."			

8.1.4 Theme 4: Words Fail Me

The participants were selected in part because they reported having difficulty describing feelings. It is not surprising, therefore, that one of the main themes identified concerned the participants' ability to express themselves. This theme is concerned with the lived experience and consequences of having no words for emotion (Table 8.4).

8.4.1.1. Difficulty Describing Feelings. Seven out of eight of the participants expressed either implicitly or explicitly a difficulty finding words to describe their inner experiences. Sometimes the difficulty expressing feeling was demonstrated directly through their use of language (P1: "*I was tha- in my head I was like phzeu and shortly after that I think is when the first episode [of self-harm] happened*"). In other cases participants talked explicitly about having no words to describe their feelings.

P2:" *Well I don't know, um I don't know if I ever know what I want to say. I know for sure what I'm feeling, and how I'm feeling inside and how I want to feel but I don't know how to, I don't know how to say it, like I don't know how to find the words to use. And so I just don't try.*"

Here, P2 described the frustration of not being able to put her internal experience into words. Even within this short passage, she struggled to explain what it is like to have no words, and the repetition of "*I don't know*" gives a sense of how hard it is for her. Her feelings were clear to her, but they lacked labels. This made communication difficult and effortful, and resulted in her not even attempting to describe to others how she feels. Her account therefore illustrates the consequences of having no words for emotion, which is at the heart of this theme. Without words,

it appears that participants found it hard to communicate their subjective experience, leaving them feeling disconnected from others, misunderstood and unacknowledged.

8.1.4.2. Failure to Communicate Leads to Disconnection. This subtheme was powerfully illustrated in the following extract from P6's interview. Here P6 was describing the experience of trying to communicate how she felt to others before she had received a diagnosis of autism. The coat and wellies are a metaphor representing the actions she took to cope with her feelings, which she later described as stimming behaviours.

P6: *"If you put on a full length rain coat and wellies to go out into a storm. In autism the coat and wellies make the environment manageable. but in general conversations with mental health people...there isn't a storm, I only think that there is a storm so I shouldn't need the coat and wellies and I can't complain I got drenched because I can't describe it and they can't see the rain."*

For her, the storm was real: so real, in fact, that she needed serious, "full length" protection against it. For others, however, it was invisible – "they can't see the rain". Furthermore her experience was negated by the mental health people who told her that there is no storm. Her inability to describe her experience resulted in, not merely a misunderstanding, but a complete denial of her reality. Moreover it seems as if even her right to appeal was denied her. She "can't complain" that she felt the way she did because it was her fault that she could not communicate effectively. Later P6 described how she internalised the feeling that she was at fault, and that this exacerbated her engagement in self-harm.

"P6: *"I also think it is very difficult to explain a sensation to someone when their experience of that is probably different to mine."*

I: *"I understand that, and I'm grateful to you for trying!"*

P6: *“I think before that often felt like my fault. I’d try to explain and people wouldn’t understand so they didn’t get what I was saying and I was bad. I think that often lead to more fuel for self-harming”.*

8.1.4.3. Words are not Trusted. Throughout the accounts, words were not trusted as a means of communicating experience. Participants had learnt from experience that words could be misinterpreted and have undesirable consequences.

P8: *“I mean year 7 was also around the time that I’d given up on telling my mum that I was a boy as well. Like I have no idea what my gender is anymore, but from the age of 3 to 11 I insisted I was a boy. And that was sort of just beaten out of me at the time, you know. Plimsolls, slippers. [Laughs] So I stopped arguing at that point.”*

Over a long and formative period of her childhood, P8 remembered being sure that she was a boy and trying determinedly to communicate this to her mother. Her attempt to express her inner experience, however, was met with denial and physical punishment. As a result she learnt not to try to communicate her feelings through words. Furthermore, even the certainty she felt as a child about her gender appeared to have been *“beaten out of her”* and she now felt much less certain about her gender. In this extract, P8 was attempting to give her own feelings a verbal label (*“boy”*) but found that it was a barrier to being heard and understood. Similarly, two participants described how being given a diagnostic ‘label’ by a health practitioner undermined their attempts to communicate their own individual experience. The label was taken at face value and the actual symptoms ignored.

P6: *“I guess I was angry that at 17 one psychiatrist suggested I may have BPD, everyone involved from that point on took this as a given, despite all agreeing that it didn’t really fit properly and being perfectly happy to record this in my*

notes repeatedly. But that as a diagnosis has a lot of connotations for people and makes it very difficult to get to a point where they can hear you rather than ticking a checklist in their head and misinterpreting information to fit that.”

While for P6, a subsequent, correct diagnosis (of autism) was transformative and liberating, the mislabelling of her symptoms as Borderline Personality Disorder resulted in the reality of her experience being overlooked. P6’s interpretation was that the label of a diagnosis brings with it a set of assumptions (“*connotations*”), based perhaps on medical discourse as well as past experience, which distracts the practitioner from the lived experience of the person in front of them. The result is their senses are distorted. They are unable to hear what the person is saying or see any behaviour that does not fit with their expectations of the diagnosis. Faced with experiences of this type, therefore, participants were reticent to ask for help or to talk to others, often fearing judgment, unhelpful intervention or even having to face up to something they were denying themselves (P2: “*I didn’t really want to [bring it up with them] for fear of like the confirmation of that being true.*”).

Several participants were clear that understanding came not from verbal communication but from shared experience. It was not possible for someone to understand what they were going through unless they had lived it themselves.

P4: “Like, like I do see that the good of me coming out of it is like that I will be able to, I will actually be able to understand people when they say what they are going through, like it won’t just be one of those, cos I really did, it was something where I really didn’t like when people would tell me that they understand, because then they would tell me, then they would outright say well, oh yeah but I could never ever put myself in your position, I don’t really,

and I was like you don't understand then do you? Don't tell me you understand when you don't."

A strong theme from P4's interview was the frustration of feeling that no one was listening to her. The extract above expresses how much she disliked people telling her they understood what she was going through, while at the same time stating that they could not imagine what it was like to be her. Words in this extract are seen as superficial and insufficient, compared to the mutual and unspoken understanding that comes through shared experience. The last sentence of the extract seems angry and defensive: the failure to communicate her experience using words appears to have left P4 feeling more isolated and separate from other people than ever.

8.1.4.4. Self-Harm Replaces Words. Six participants connected feelings of isolation and loneliness with their engagement in self-harm. Here, P2 explicitly connected self-harm with not being able to talk to her family.

P2: "I think it started because of the way someone in my life made me feel and then from then it kind of spiralled because I didn't feel that I could talk to my family and that, I was becoming an adolescent so I was, as adolescents do I think, kind of distancing myself from my family and felt really closed off from them, in that I couldn't really talk to them or anyone else, so I turned to hurting myself."

P2 generalised her unwillingness to talk to her family as an experience common to many adolescents. The language she used implied a physical separation between her and her family; in addition to the distance she described, she felt 'closed off' as if there were a barrier between them which words could not penetrate. To people with no experience of self-harm, the "so" in the last sentence of this extract, directly connecting problems talking to family with subsequent self-harm, might be hard to

understand. To P2, however, there appeared to be a logic that connected the two. Self-harm was seen as an alternative to talking, a different method of relieving pent up feelings of distress. Furthermore, it may be that resorting to self-harm instead of talking becomes self-reinforcing. P5 articulated her belief that her almost life-long engagement in self-harm had prevented her from learning to talk about her feelings.

P5: *“Because I found that mechanism that was so useful that I didn’t even need to learn about how to talk about my feelings and emotions, then I automatically just don’t learn it. Because there isn’t that need in there that I need to know it and still there isn’t so much people that actually teach me how to identify or how to know it.”*

Like many of the other participants, P5 felt isolated during her childhood and adolescence. In this extract, she cited the absence of a caring attachment figure to model and teach effective emotional regulation skills as a reason for her difficulties in understanding and expressing her feelings. Left to herself, self-harm became her habitual means of managing her own feelings which removed the need not only to talk about them, but also to learn *how* to talk about them.

The difficulty experienced by participants in finding words to express their feelings, therefore, results in their inability to communicate their experience to those around them. This contributes to their isolation and distress, and may result in recourse to self-harm as a means of coping with feelings they cannot express. The effectiveness of self-harm as a means of relieving those feelings may in turn remove the incentive to find a way to voice their distress.

8.1.4.5. Self-Harm as Communication. It might be assumed that, where words fail, self-harm is used as means of communication. In fact only one

participant (P1) explicitly talked about self-harm in that way. In the following extract, her actions carried a message that she was unable to communicate in words.

P1: *“I think a part of it is well you’ve upset me look at what I’ve done er this is all your fault, I wouldn’t actually say it, but it’s what would be inferred, and the other part of it is thinking, well if I start self-harming um because it’s not something I really did in the past or that I do like regularly as such, when it happens people get very worried, because they know oh god this is going to be like that episode again, so in my head I was like one I’ll show you, not I’ll show you what I can do, but that kind of along those lines.”*

In contrast to all the other participants, who were often concerned to keep self-harm a secret, P1 described self-harming in order that other people might understand how much they had upset her (*“this is all your fault”*). The act of self-harm was used as a direct replacement for words (*“I wouldn’t actually say it”*). Judging from past experience, she knew that it would have the effect of worrying those around her, of triggering a reaction. Self-harm was a means of saying, both, you have upset me, but also, look at what I am capable of. It was a way of asking to be heard, to be seen and to be understood, where words had failed.

8.1.4.6. Words Help Me. While the failure of words to express feelings was associated with self-harm, finding the right words played an important role in recovery for those participants who said they had stopped self-harming. In two cases (P4 and P6), receiving a correct diagnosis had been transformative: having a word to describe and explain their inner experience helped them both understand themselves and also communicate better with others using a shared vocabulary.

P4: *“Because I always say like, I know people call it when you get diagnosed being labelled, I actually liked that, I wanted to be diagnosed because it gave*

me an answer, like it wasn't just oh I'm feeling this way because oh I don't know, it's like I'm feeling this way because I have this or I have that, like there's a reason for it. It was able to like, I was then, by putting a name on it I was able to understand like the rest of it, I was able to actually read more about it and the symptoms about it and how you feel and. It was a lot easier for me to understand myself after."

In this extract, P4 described how having a label gave her a reason for her feelings, an 'answer' to the mystery of her obscure self. The diagnosis appeared to legitimise her experience and give her permission to treat it objectively, as an issue to research and study. More generally, P4 and other participants were speaking with the benefit of hindsight, and, in some cases, through the lens of therapy, which had given them words for experiences which at the time they had none.

P6: "Now I would consider it to be overload. Then, I didn't really know what it was except a place I got to before I did something I would later have to deal with."

Even for those participants who did not receive a specific diagnosis, recovery appeared to coincide with, or even in some cases be facilitated by, improved connection with partners, friends or parents which enabled them to feel heard.

8.1.4.7. Borrowed Words. The paradox of this theme is that participants were, of course, mainly reliant on words to describe their experiences during the interview. Where participants found that their own words failed them, they were sometimes able to borrow words from others. Poetry, song lyrics, internet memes and metaphors were all used at various times as a means of expressing what they felt. For example, P8 chose to illustrate her feelings by quoting song lyrics.

P8: *“I guess like I struggle quite a lot to put my feelings into words and music’s almost a replacement for that, like I can listen to a song and be like exactly, damn it, that’s bang on, that’s exactly how I feel. Like, I don’t know.”*

P8 acknowledged in this extract the difficulty she had finding the right words to express how she felt and yet she was able to recognise the feeling when expressed by someone else. The force of that recognition was expressed through the language used (*“damn it, that’s bang on”*). In contrast the expression of doubt with which the extract ends suggests perhaps an uncertainty as to how the process works. An example of this process of recognition occurred earlier in the interview when she cited a song by Icon for Hire.

P8: *“I see them at my shows, covered head to toe, like there’s no point in even trying not to let it show. Cos we all know emo kids like to cut themselves. Too many feeling and not enough self-control.”*

I: *“Do you.. and you relate to that?”*

P8: *“Yeah.”*

I: *“What about the self-control bit?”*

P8: [Laughs.] *“Yeah. Like I said I describe it as an addiction don’t I? So too many feelings not enough self-control, like yeah completely. Love that lyric. Not going to lie. Like there’s no point in even trying not to let it show. You know, I’m damaged. What am I, why am I hiding it?”*

P8 picked out two elements of the song lyrics which she felt spoke to her own experience, concerning self-harm as an addiction and also the futility of trying to hide who she is and what she is going through. Perhaps, like P4’s diagnosis, hearing one’s own experience verbalised by someone else gives it shape and meaning, and legitimises the feelings as nothing to be ashamed of (*“why am I hiding it?”*). Other

participants cited poetry (P3) or referred to online memes or verbal images (P4) as serving a similar purpose in their lives. Although listening to music and reading poetry are often solitary experiences, hearing or seeing one's own feelings expressed by someone else may give a sense that one's experience is shared and lessen the feelings of isolation.

In summary therefore this theme explores the implications of finding it hard to put feelings into words. Without words, participants were unable to make themselves understood to others which exacerbated feelings of isolation and increased recourse to self-harm. However, in some cases, words could be borrowed or labels found which helped the participants understand their own experience and convey it to others.

Table 8.4: Theme 4 – Words Fail Me

Words fail me P1	P2	P3	P4	P5	P6	P7	P8
<p>P1 did not explicitly articulate difficulty finding words for feelings, but communication with people close to her was difficult and the antecedent to episodes of self-harm. Communication was inferred, unspoken, and often conducted through action rather than words, including through self-harm.</p>	<p>P2's engagement with self-harm occurred during her teenage years. She described being very withdrawn and distanced from her family. Communication had been, and still was, effortful, and she described how she found it hard to find the right words to use. She explicitly connected self-harm with the inability to talk to her family.</p>	<p>P3 also engaged in self-harm from her early teens. In her case, this was discovered quite early on by her parents who sent her to a therapist. Although P3 talked about therapy as helpful, she also described the difficulties of answering questions about how she was feeling, both to her parents and to the therapist.</p>	<p>Although P4 did mention finding it hard to describe her feelings, the overwhelming sense from her account was of how isolated and misunderstood she felt through her teenage years. She was unable to use words to communicate her feelings, and this lay behind her view that real understanding comes only through shared experience.</p>	<p>P5 described how she came to boarding school from abroad at a young age where she felt isolated and unable to make herself understood. She attributed her inability to express herself with the lack of a caregiver to model emotion in her early years, and felt her long engagement in self-harm had prevented her from learning how to talk about feelings.</p>	<p>P6 described how her inability to describe her experiences led to her feeling misunderstood and cut-off, before she was eventually diagnosed as having autism. She used means other than words to communicate feeling, such as gesture and sound.</p>	<p>Participant 7 did not talk about having no words for feelings. However, she acknowledged the active, and potentially damaging, power of words: she described the influence of one friend, with whom she would “talk all night”, and whose more extreme suicidal behaviour reinforced her own engagement in self-harm.</p>	<p>For P8, difficulty describing feelings was a function of the difficulty of knowing what she felt and distinguishing between feelings. Communication was often effortful as she struggled to understand what was implied in other people's actions.</p>
<p>"Then he came home and he can see from my posture or where I am if I'm in bed blah blah he can see that there is something that's not right and he's like talk to me talk to me and I'm like I'm just like nope, not going to happen."</p>	<p>"I know for sure what I'm feeling, and how I'm feeling inside and how I want to feel but I don't know how to, I don't know how to say it, like I don't know how to find the words to use. And so I just don't try."</p>	<p>"I mean like you know sometimes like you go to a therapist and OK, what are you feeling right now, and I would never be able to like put a name to an emotion. I could like describe it in a very very roundabout way but not um I couldn't always put like exact words to it and that, and I find that sometimes makes communicating my feelings difficult"</p>	<p>"It was something where I really didn't like when people would tell me that they understand, because then they would tell me, then they would outright say well, oh yeah but I could never ever put myself in your position, I don't really, and I was like you don't understand then do you? Don't tell me you understand when you don't."</p>	<p>" Like. I don't know I don't I actually don't even know whether I felt sad. I felt shame, I felt whatever I don't know it was just more like there was a bunch of feelings, can't name them, but I have to do something about it, and the something about it that I would do is self-harm."</p>	<p>"I still hunt for emotion words....so with embarrassed -> I physically move, that is described as squirming by lots of people, usually that is embarrassed....rather than it being the word I find straight away."</p>	<p>"I feel like a lot of um the majority of my friends didn't self-harm so they couldn't really relate or really understand why I did it, so I kind of pushed them away, and didn't talk to them about it because I knew that they wouldn't really understand what I was going through because they weren't going through it themselves"</p>	<p>P8: "I think she's [her mother] said I love you to me about twice. [Laughs] [...] she shows it through money [...] And when I was younger I really didn't get that. Now I get it, I don't like it but I get it. But when I was younger I didn't understand that her way of saying sorry was buying me that DS or buying me that play station"</p>

Words helped me							
<p>This was not a strong theme in P1's account, although she described having a good connection with one particular doctor which had helped her. At one point she acknowledged that talking or writing could help, for example to protect her from herself, which appears to be the flip-side to keeping thoughts secret in order to retain control.</p>	<p>For P2, reconnecting with her family was a major part in her recovery. Now, several years later, she appeared to have a team of people around her who support her, in contrast to the years in which she felt so withdrawn and disconnected.</p>	<p>P3 talked about using social media as a means of "venting". Instead of using her own words, she would repost images and words which she felt reflected how she was feeling. She felt this was a vital coping mechanism and was particularly concerned that her parents, who she felt did not understand, might limit her access.</p>	<p>There were three ways in which words helped P4. First, she explicitly linked her recovery to starting a relationship with her boyfriend, who made her feel heard and acknowledged for the first time. Second, she received a diagnosis which she felt enabled her to understand and put words to her experiences. Third, she took a decision to engage in therapy which she described as hard but necessary.</p>	<p>P5's engagement in self-harm was still current and the theme of words assisting in recovery was not present.</p>	<p>For P6, receiving a diagnosis which chimed with her experience was transformative. She started the interview by stating that her engagement in self-harm stopped at that point. She found that having a label that made sense to her also enabled her to explain how she felt to others in a way that made her feel understood.</p>	<p>This was not a central theme in P7's interview.</p>	<p>P8 chose to use song lyrics (her own or other people's) as part of the interview as a way of illustrating her experiences.</p>
<p>"I find it helpful talking about it as well, not as much as writing I think, but it's like once you've verbalised something it's not as scary as it is when it's in your head kind of thing. And also it's like well once you've told someone you've told someone and they know so you can't sort of sneakily do stuff, like in a hospital context for example."</p>	<p>"Now when I feel that way I'll let someone know, I'll let my partner know, I'll let my mum know, I'll let my roommate know, which I guess is a good thing."</p>	<p>"It was kind of like, I didn't have, I never have been really good at like putting my emotions and my thoughts into words that make sense. So I look at other things that can communicate what I'm feeling, whether that be images or songs or art that I think is like communicates what I'm feeling, and so the blog was a way for me to do that."</p>	<p>"And even like even though it was the most awkward thing first going in, I knew that I needed to try to talk. Because I want-, like I didn't want to feel that way anymore. ""</p>		<p>"Instead of being bullying myself into trying harder to do things, the explanation of what was happening provided by the phrase "do you think you might be autistic?" meant that I had a different perspective on the situation."</p>		<p>"Like at the time when I was self-harming almost every day it was very Eminem. [Laughs] Very Eminem. Like Stan by Eminem. Um. Or Beautiful by Eminem. That's depressing. Like it's literally "I'm just so f*ing depressed I just can't seem to get out of this slump. If I could just get over this hump but I need someone to pull me out of this dump"</p>

8.1.5 Reflections on the Use of Photo Elicitation and Symbolic Imagery

The six participants who elected not to use photographs were asked why they chose not to do so. Two main reasons emerged from their answers. Three participants said that they wanted to avoid triggering unpleasant memories or emotions.

P2: “After thinking about it for a little while I realised that the photographs I would have used would have been pictures of me with romantic partners that I had in the past, I had the two that were pretty toxic and I’d just, I’d rather not, think about them.”

These three participants gave examples of the photographs they had thought about using. Interestingly, all were descriptive or literal, rather than symbolic (e.g. pictures of a scar, of people in their lives, or, in one case, images of suicide from the internet that the participant had previously used to try to desensitise herself).

Other participants said that found it hard to think in terms of visual images, or imagine a visual representation of their experience of self-harm.

P6: “I can create a picture in my head, but I can’t put that into a physical reality. I couldn’t find anything that fitted exactly what I wanted or compose it.”

One participant asked instead to use song lyrics which expressed, rather than represented, her feelings.

P8: Sometimes to explain my emotions when I don’t know how I feel I use like words in a song that explain it for me.”

Two participants did use photographs. P5 brought a series of her own photographs which documented her experiences chronologically (for example, a

boarding pass, a hospital bed, a picture of herself wearing thick clothes despite the summer heat). She reflected that it had helped her to order and prepare her narrative in advance. One of the purposes of photo elicitation is to give the participant more control over the course of the interview than is normally the case with traditional semi-structured questioning (Heisley & Levy, 1991); this appeared to be the case here. P4 had also used the process of choosing photographs as an opportunity to prepare what she wanted to say. In contrast to P5 she used only one of her own photographs, which showed her scars, and for the rest had chosen internet images or memes, often with words or phrases which she felt reflected her own feelings. These had the effect of allowing her to locate her own experience within a broader mental health narrative, as in the following example:

I: *“So that’s a lovely photos of trees and rainbow colours and it says HOPE hold on pain ends. Hold On Pain Ends. So what does that represent to you?”*

P4: *“Um my progress. Because like it was actually [unclear] when I was younger people would tell me things would get better and I’d be like nope it doesn’t feel like it’s ever going to get better. You’re just all liars and it’s never going to get better and I’m going to be like this for the rest of my life. And then now I realise that even if things aren’t 100% better they’re still a lot better than they were.”*

It seems that P4 was the exception among the participants in selecting or thinking about symbolic representations of her experiences. The other participants had used, or thought about using, pictures of actual events, around which they could shape their narrative. This contrasts with Edmondson et al.'s (2018) photo elicitation study of self-harm, in which participants took new, highly symbolic photographs, which

were analysed as data alongside the verbal narratives. This difference between the studies might reflect differences in the instructions given to participants (the use of photos was, for example, optional in the current study, but compulsory in Edmondson et al., 2018). It might also reflect differences in participant characteristics. As well as being younger and exclusively female, the participants in the current study were all selected because they reported difficulties in identifying and describing feelings. The choice of descriptive pictures might therefore reflect the association between alexithymia and a concrete thinking style and paucity of fantasy (G. J. Taylor et al., 1997). Indeed, the difficulty of translating sensory emotional experience into *symbolic* representations such as words or images that is at the heart of the alexithymia concept (G. J. Taylor, 2018). In some clinical case studies of alexithymia, this difficulty is clearly evidenced (e.g. R. Smith et al., 2019). However, the interviews in the current study did contain imagery and metaphor, which is not normally evident among people scoring highly on measures of alexithymia (Kreitler, 2002). Some of the visual imagery was based on external sources, and literal, rather than symbolic. For example, P1 described how she had fantasised about cutting herself in the bath, based on a film she had seen.

P1: *“Yeah, I don’t know why it’s kind of like being in a movie.”*

I: *“What do you mean by that?”*

P1: *“I don’t know it’s kind of like fantasy life, whenever it just reminds me of this horror movie that I watched vaguely years and years and years ago and this woman that like cut herself in the bath and for some reason in my head I was always, oh yes that would be a nice way to go”.*

Elsewhere, symbolic metaphors were used, which were also based on externally generated concepts, such as the Obscurus (P4). Perhaps this example of incorporating an external image into one's own self-concept is similar to the use of 'borrowed' words to express feelings, observed elsewhere. However, in a few cases, participants used metaphors which appeared to be both self-generated, and reflective of inner experience, and this runs counter to what might be expected in people scoring highly on measures of alexithymia. A particularly striking example is the metaphor of the cars given by P8:

P8: *"It's quite like a relief, sometimes my head feels heavy. I feel like there's traffic in there. Like a million cars all going in the wrong direction. And they're all crashing and I can't stop them."*

Several of the participants had had therapy, which may have given them words or images with which to understand their experiences. Alternatively, it may be that, alexithymia, as a dimensional, rather than a categorical, trait (J. D. A. Parker et al., 2008), presents in different ways in different people. In selecting the participants, the total Toronto Alexithymia Scale was used, and no reference was made to the distribution of their scores across the three alexithymia subscales. It may be that some aspects of alexithymia were more pronounced in some participants than others, which is reflected in the variety of depth of metaphorical language and imagery used.

8.2 Discussion of Themes

This study set out to explore the experiences of self-harm in people who expressed difficulty identifying and reporting their feelings. Many studies, including those presented in the preceding chapters of this thesis, have observed the correlational relationship between alexithymia and self-harm; this study explores that relationship as it is lived. In that sense it is not seeking to provide definitive explanations, but to increase understanding of lived experience, through the in-depth examination of particular, individual narratives.

Four superordinate themes were identified: the Obscure self, Words fail me, Control and compulsion and Is self-harm bad? The first two of these, the Obscure self and Words fail me, have the most relevance to the research question and, as such, will be the main focus of this discussion. The other two themes, Control and compulsion and Is self-harm bad, were also identified as important to the participants, so, for completeness, they will be discussed briefly first.

8.2.1 Control and Compulsion

Of the four themes, one in particular, Control and compulsion, has many precedents in the literature on self-harm. Accounts highlight the absence of control in participants' lives as an important antecedent for self-harm (Sinclair & Green, 2005; Wadman et al., 2018) and the way in which self-harm provides a feeling of control (Edmondson et al., 2018). As in the current study, Chandler (2014) found that the practice of self-harm was associated with a need for control, but also a loss of control, as the need to cut led to more severe injuries, resulting in bigger scars that were harder to hide. Several of the participants in the current study described self-harm as an addiction, echoing previous qualitative accounts (Brown & Kimball,

2013; Wadman et al., 2017). Parallels have been drawn between self-harm and substance addiction, such as the compulsion to repeat the behaviour and the pattern of “tension and release” (Faye, 1995, p. 39). The empirical evidence for an addiction model of self-harm is limited, however. Although Nixon et al. (2002) observed several addictive features of self-harm in a sample of adolescent psychiatric inpatients, Victor et al. (2012) found that cravings for self-harm were weaker than for substances, and were experienced almost exclusively in the context of negative affect. Instead Victor et al. (2012) conclude that the self-perpetuating cycle, in which self-harm becomes the default method of emotion regulation through negative reinforcement, aligns better with an affect regulation model of self-harm (Chapman et al., 2006; Klonsky, 2007; Ogden & Bennett, 2015). Nevertheless, the language of addiction still appears to serve a useful purpose in the participants’ discourse. Wadman et al. (2017) suggest that it may be a means for their participants to explain, in familiar terms, why they find it hard to stop self-harming. The same may be true of the participants in the current study: the metaphor of addiction may provide a short-hand to explain, and even perhaps excuse, the continued engagement in self-harm. By invoking a medicalised model of addiction, which is perhaps more widely understood to be beyond the person’s control, participants may hope to generate sympathy, rather than judgment, in others (T. B. Brown & Kimball, 2013).

8.2.2 Is Self-Harm Bad?

The theme *Is self-harm bad?* encapsulated the tension between acknowledging and resisting the idea of self-harm as ‘bad’ or ‘unhealthy’. It is worth considering the basis for this construction of self-harm. There is considerable evidence that self-harm is one of the highest risk factors for subsequent completed

suicide (Andover et al., 2012; Chan et al., 2016; Hawton et al., 2003). This lies behind the medical imperative to eradicate, or at least reduce, the behaviour and, as P3 said, replace it with “better” coping mechanisms. By referring to self-harm as ‘bad’ participants appear to be acknowledging these risks. The realisation of the potential for serious, and possibly lasting, physical damage was identified as a motivation to cease self-harming in a study of recovery without medical intervention (Buser et al., 2014). However, it may also be that over-emphasising the risk of self-harm has little impact on those who are ambivalent about the outcome. Most of the participants in the current study were able to distinguish occasions when they had self-harmed with the intent to die, but a minority described occasions when they did not care what happened - an ambivalence which has been observed in other studies (Hawton et al., 1982). It was also clear from some of the participants’ accounts in the current study that they did not entirely accept the idea of self-harm as risky; rather, it played a useful role in their lives. The need to acknowledge the effectiveness of self-harm as a means of regulating emotion has been identified elsewhere (Chandler, 2014; Edmondson et al., 2016). An understanding of the meaning of self-harm to the individual can encourage help-seeking (Wadman et al., 2018) and may be essential in the process of stopping (Shaw, 2006).

This study, like other qualitative accounts, highlighted the way some participants had absorbed self-harm into their personal narrative as a formative experience (Chandler, 2014; Lewis & Mehrabkhani, 2016). This was particularly true of four participants who had stopped self-harming, which may indicate that an attitude of acceptance and self-compassion is helpful in the process of recovery (Sutherland et al., 2014).

8.2.3 *The Obscure Self*

The remaining two themes, the Obscure self and Words fail me are most relevant to the research objectives of the current study. In some ways they mirror the alexithymia facets Difficulty Identifying Feelings (DIF) and Difficulty Describing Feelings (DDF), which is not surprising, given the selection criteria for the study included high scores on the Toronto Alexithymia Scale (TAS20). However, both themes go beyond a simple admission of a difficulty identifying and describing feelings to examine the lived experience and consequences of struggling to know and describe how you feel. In addition, they provide some insight into the function played by self-harm in these circumstances. Like the TAS20 factors DIF and DDF, which are often highly correlated (Erni et al., 1997; Franz et al., 2001), the two themes are in some ways interdependent: it is difficult to talk about something you cannot identify, but also, perhaps, it is hard to understand feelings which you cannot name.

In the theme of the Obscure self, participants' experience went beyond a difficulty understanding feelings to a lack of a clear sense of the self as a coherent, physical whole (P4: "*a nothingness ball of air*"). Aspects of this theme echoed the findings of another Interpretative Phenomenological Analysis of the experience of the self in users of online self-harm discussion fora (Adams et al., 2005). As in the current study, Adams et al. (2005) identified their participants' need for external validation (such as an official diagnosis), which was given more weight than subjective, predominantly negative, feelings about the self. The authors suggest that the conflict between the internal and external selves meant that participants "*lacked a sense of coherency, resulting in a fragmented, torn sense of self*" (Adams et al.,

2005, p. 1305). However, unlike participants in the current study, Adams et al. (2005)'s participants did appear to have a sense of their 'real' selves, which they felt they needed to hide in order to be accepted and validated by others. This sense of a 'real' self, which participants could identify but chose to hide, contrasts with the findings of the current study. Here, the predominant theme was a search for the self, whose feelings, thoughts and motivations were not understood. This distinction most likely reflects the selection, in the current study, of participants who scored highly on the Toronto Alexithymia Scale. Alexithymia comprises difficulties identifying feelings, but also an externally-focussed thinking style (G. J. Taylor et al., 1997), which may preclude the kind of introspection required fully to understand the self. Alexithymia has been associated with measures of low self-awareness (Panayiotou, Leonidou, et al., 2018) and the same team of researchers have suggested that alexithymia may in itself be a functional means of avoiding difficult emotional experiences (Panayiotou et al., 2015). Alexithymia is more commonly conceived of as a deficit in cognitive processing, rather than a defence mechanism (such as avoidance; Nemiah, 1977; Sifneos, 1994; Taylor et al., 1997), although Taylor and Bagby (2013) point out that both conceptions may have a similar aetiology in adverse childhood experience. It is not possible to conclude whether the apparent lack of a clear sense of self among participants in the current study arises from a cognitive deficit or a learned behaviour to avoid difficult feelings, nor was it the objective of the analysis to look for 'causes'. Instead, the study gives voice to the lived experience of the 'Obscure self', and, in doing so, provide insight into the function of self-harm for these participants.

The central metaphor of the theme was the Obscurus, from the film *Fantastic Beasts and Where to Find Them* (Heyman et al., 2016), and in particular its amorphous intangible nature. Five of the participants described in different ways the sense of feeling disconnected from their bodies. As discussed in the previous chapter, alexithymia is associated with impairments in interoception, or bodily awareness, including the misinterpretation of bodily signals (Brewer et al., 2016; Herbert et al., 2011). Drawing on James, (1890), Damasio (1999) and Craig (2009), Herbert and Pollatos (2012) pointed to the importance of embodied sensation in shaping consciousness of the self. The interoceptive deficits inherent in alexithymia, therefore, may contribute to the poor sense of self among the current participants. Similar accounts of physical disconnection can be found in other studies of self-harm (Himber, 1994; Schoppmann et al., 2007). In other cases, self-harm was used to end a state in which there was no feeling (*"If I cut I'll start feeling and working again. My body will start and my brain can function."*; Horne & Csipke, 2009, p. 660). Klonsky (2007), in a review of the functions of self-harm, found evidence for an anti-dissociation or feeling generation function, in which self-harm is used in order to feel real and to prove they are alive (e.g. Ogden & Bennett, 2015). Feeling generation was less commonly cited than some other functions, in particular affect regulation and self-punishment. As discussed in Chapter Six, however, it may be that this is a function that is particularly relevant for people with high alexithymia, exacerbated by deficits in interoceptive awareness. For people who find it hard to grasp a coherent sense of self, self-harm appears to provide a way of reconnecting with the physical body and proving that they are alive. Thus the current study provides support for the theory proposed by Horne and Csipke (2009) that self-harm

“resolves a state of psychosomatic suspension” by integrating the physical and emotional experience of emotion (Horne & Csipke, 2009, p. 655). Furthermore, it suggests that this theory may be particularly relevant for people with high levels of alexithymia.

8.2.4 Words Fail Me

The final theme was Words fail me. This theme explored how not having the right words led to an inability to communicate participants’ subjective experience, which exacerbated feelings of isolation and increased recourse to self-harm.

Previous qualitative analyses of self-harm have similarly identified difficulty talking about feelings (T. B. Brown & Kimball, 2013; Edmondson et al., 2018). As Wadman et al. (2018) noted, it is not always possible to distinguish between an inability to talk (perhaps because of past trauma, or, as in the current study, a cognitive deficit such as alexithymia) and an unwillingness to talk, for example because of a fear of damaging intervention (see Control and compulsion above). Although both aspects were identified in the current study, it is the former that is the focus of this theme, and, in particular, the association between having no words to communicate experience and self-harm.

Only one participant (P1) clearly described using self-harm as a means of communication in place of words. This case seemed to exemplify the interpersonal (Klonsky, 2007) or social reinforcement (Nock & Prinstein, 2004) function, in which self-harm is used to elicit a response in other people. The fact that only one participant described her engagement in self-harm in this way is consistent with the evidence that interpersonal functions are endorsed less frequently than intrapersonal functions (Klonsky & Glenn, 2009; Nock & Prinstein, 2004; Rasmussen et al.,

2016). It is worth noting that, contrary to common (but false) perceptions that socially-motivated self-harm is less serious than self-harm for intrapersonal motives (Knowles et al., 2013), this participant had self-harmed with suicidal intent several times and had spent time in hospital. Her use of self-harm, apparently to get attention and action from others, does not imply that it was ‘attention-seeking’, in the pejorative sense of that phrase (Long et al., 2013). Instead it may be that the external-orientation inherent in alexithymia lies behind the search for both an external cause (“*this is your fault*”) and an external solution (“*now deal with it*”) to her distress. The reduced capacity for self-reflection among people with high levels of alexithymia has been found to be associated with an externalised locus of control, causing them to attribute health problems to external factors over which they have less influence (Hung et al., 2016).

In the case of P1, therefore, the link between the theme Words fail me and self-harm was direct and unmediated. Self-harm replaced words as a means of communication. Among the other participants in the study, however, the route from Words fail me to self-harm appeared to be indirect, via the failure of words to communicate experience to others. Consistent with other accounts of self-harm (Adams et al., 2005; Edmondson et al., 2018; Wadman et al., 2018), attempts to communicate experience were met with invalidating and unhelpful responses. Such responses may increase the feeling of social isolation which has been associated with self-harm (Endo et al., 2017; Hall-Lande et al., 2007; Wu et al., 2013) and suicide (Joiner, 2005; Van Orden et al., 2010). This association may be exacerbated in people with high alexithymia, which is correlated with interpersonal problems

(Grynberg et al., 2010, 2018; Jordan & Smith, 2017; Schuetz & Multon, 2017) and social isolation (Gerber et al., 2019; Vanheule et al., 2010).

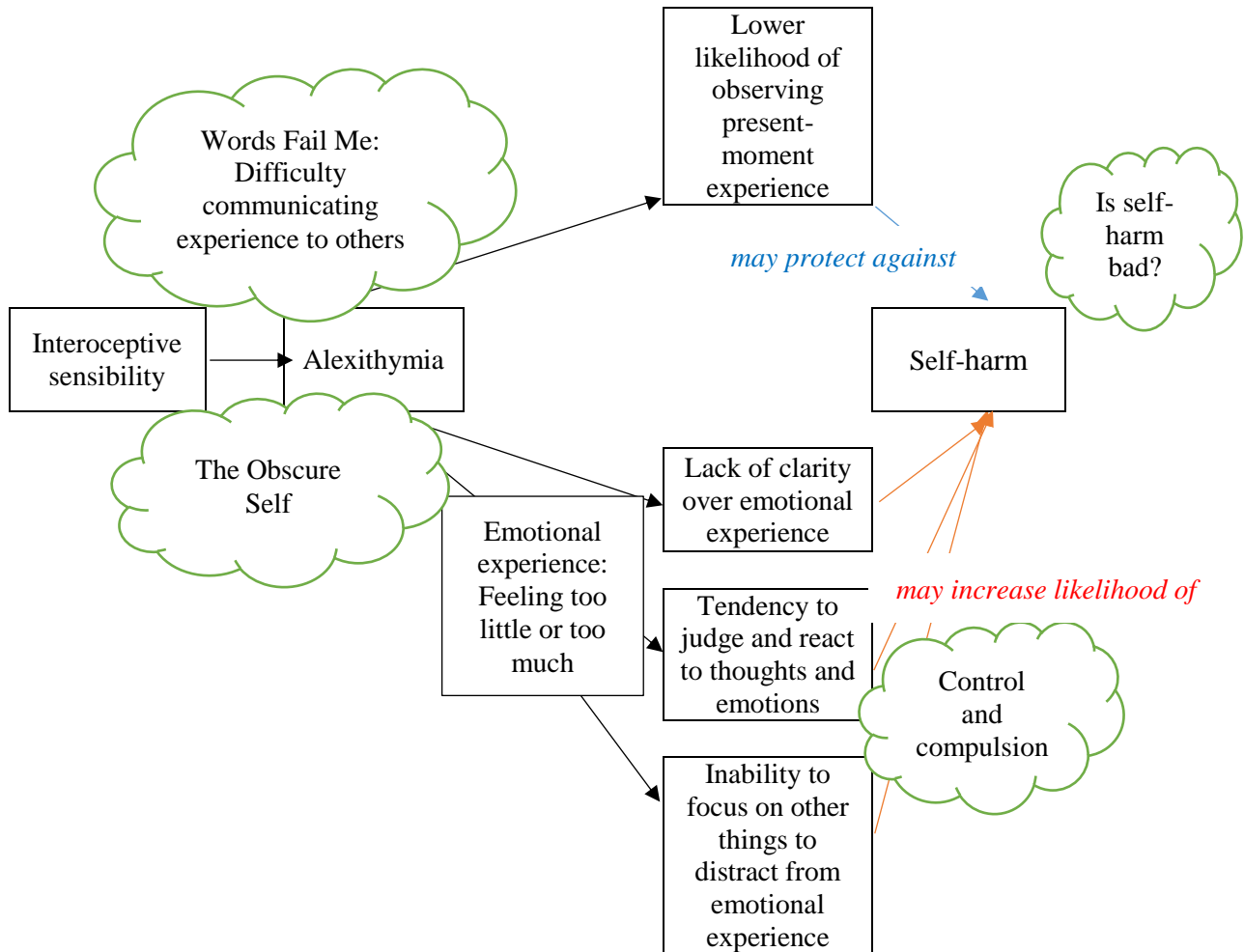
For the majority of participants in the current study, self-harm was described as an alternative to talking. The implication appeared to be that self-harm replaced talking as a means of alleviating negative feelings. Talking to others about feelings is not only integral to many therapeutic interventions but can play an emotion regulation function in everyday life (J. Zaki & Williams, 2013). This has also been demonstrated experimentally: Mendolia and Kleck (1993) found that participants who talked about their emotional response to a stressful visual stimulus showed lower levels of arousal at a second viewing than those who only talked about the factual content. In fact, the benefits of talking about feelings may not be dependent on interpersonal interaction. Merely labelling feelings has been shown to have a similar emotion regulation effect as, for example, reappraisal (Torre & Lieberman, 2018) and writing about personal experiences, particularly about negative emotions, is associated with positive health benefits (Pennebaker, 1993). Without words to describe their feelings, people with alexithymia may be less able to make use of interpersonal or labelling emotion regulation strategies (G. J. Taylor & Bagby, 2004). There was, however, an indication in the current study that participants were able to use ‘borrowed’ words to express feelings, when their own words failed them. Song lyrics, poetry and word-based internet memes were all used either in the interview, or at other times, to encapsulate and communicate their inner experience. In a recent review Luminet and Zamariola (2018) found that, although the majority of studies showed that people with high alexithymia were less able to label emotions than people with low alexithymia, no differences were found in a study where

participants were required to choose an emotion label from a given set, rather than think of it themselves (Constantinou et al., 2014).

The results of Study 5 have been added to the model of the relationship between alexithymia and self-harm (Figure 8.2). The themes identified through the qualitative analysis provide context to the results of the previous studies, in particular the impact of finding it hard to understand one's inner experience and communicate it to others. Self-harm was a means of controlling unwanted emotional experience, and its effectiveness in doing so made it hard for participants to see it as unequivocally bad.

Figure 8.2

The Relationship Between Alexithymia and Self-Harm, Based on the Findings of Studies 1, 2, 3, 4 and 5.



8.3 Strengths and Limitations

This study shows that phenomenological analysis is possible and fruitful, even with participants who were known to have difficulties talking about their feelings. The use of photo elicitation was an attempt to enhance the richness of the participants' accounts and, although only two participants chose to use photos, the method was effective, particularly in giving participants control over their narrative. It also inadvertently signalled a potential alternative to the use of visual imagery: the use of 'borrowed words' by participants to express themselves suggests that verbal prompts such as song lyrics or poetry might be a more effective stimulus in participants with high alexithymia scores.

Yardley (2000)'s criteria for assessing validity in qualitative research provide a framework against which to judge the current study. First, the study has shown sensitivity to context. The participants' accounts have been considered in the light of existing evidence and theory about alexithymia and self-harm. The themes were derived inductively, through a close and detailed ideographic analysis of each individual interview. Care was taken to provide enough context for each illustrative extract, in order that the participants' own sense and meaning was not lost in the process of creating superordinate themes. Secondly, commitment and rigour was demonstrated through the application of the IPA method, which requires a constant revisiting of the individual accounts in the context of the whole analysis and vice versa: a process expressed in the concept of the hermeneutic circle (J. A. Smith et al., 2009). This process is illustrated in the results tables, in which the relevance of each theme to the individual participants is discussed and illustrated. The third criterion is transparency and coherence. Each stage of the study has been documented and the

process described transparently in the method section. The purpose of the study and the selection criteria were made clear to participants, who also had the opportunity to ask the interviewer about the study at the end of the interview. Coherence refers to the way in which the themes relate to each other and to the research question. In this study, two of the themes appeared to relate more coherently to the research question than the other two themes. However, since the themes emerged inductively from the data, it was important that they should be presented here and considered in the context of relevant theory and empirical evidence. The final criterion is importance and impact. The study is a rare example of qualitative research with participants who score highly on measures of alexithymia. As such, it both highlights novel findings in relation to self-harm and also provides proof of concept that such research is possible. Importantly, it provided the participant an opportunity to tell their story, which some found to be a beneficial process in itself, and others expressed the hope that it would help other people in the future (Appendix 7.8).

Nevertheless, the study has its limitations. Like all qualitative research its findings cannot be generalised; instead they provide a picture of lived experience which may have relevance to others in similar situations. Similarly, the analysis is subjective and presents only one possible interpretation of the participants' accounts of their experiences of self-harm. A further limitation lies in the different methods used for the interviews. The interviews involving photographs took a different, and less structured form than the other interviews. This may have influenced what the participants chose or were prompted to talk about. In addition, three of the interviews took place over Skype, and another via Skype messenger. Skype has been shown to be a useful and effective way of enlarging the pool of potential

interviewees for qualitative studies (Lo Iacono et al., 2016). Lo Iacono et al. (2016) discuss how the detail of non-verbal communication cues may be lost using Skype, but also how participants may feel more at ease in their chosen environment and more inclined to open up, compared with a face to face interview. However, using both Skype and face to face in the same study may have resulted in differences in the data gathered. The Skype interviews (although not the Skype messenger interview) were shorter in length than the face to face interviews, indicating perhaps that it was easier to establish rapport in person, or that, having travelled to the interview, participants and researcher were more invested in the process. From my perspective, I was conscious that I found it harder to remain engaged in the Skype interviews, sitting in my own kitchen, than when I was face to face with the participant.

8.4 Reflexivity

As a relatively inexperienced qualitative researcher I have found this study to be both fascinating and humbling. In particular, I was struck each time by the privilege of hearing participants' descriptions of their personal experiences. I found the hermeneutic circle a useful and grounding principle: each time I became perhaps too interested in my interpretation or the implications of a certain theme, I found returning to the individual accounts to be an important reminder that these were real stories, concerning real people, living real lives.

I have no personal experience of self-harm and can recognise in myself some of the barriers which stop many people engaging in it, in particular an aversion to pain and blood (Hooley & Franklin, 2018). I noted in myself a visceral reaction during one interview to the participant's graphic description of self-harm, which I sought not to disclose. On the other hand, I have a high awareness of self-harm

through my volunteer work on a suicide prevention helpline (Samaritans) and the years I have spent researching the subject, which I hope made me able to create a warm and non-judgmental atmosphere during the interviews. There is a fine balance to be struck: on occasion I found myself expressing sympathy in response to something a participant said, which I noted in retrospect felt out of place in the interview setting and did not provoke any reaction in the participant. Although at least one participant said after the interview that they had found it positively beneficial to talk about and reflect on their experiences of self-harm, it was important to remember that my role was to be an interviewer, not a therapist (which I am not), or even a sympathetic listener (which I hope, in other circumstances, I am). The experiences I found most hard to listen to and to reread in transcript concerned two participants' accounts of their childhoods, which were at times traumatic and invalidating. As a parent, I recognise that I was particularly affected by these accounts of poor or abusive treatment of vulnerable children, told so dispassionately. One strength of qualitative research is the way it portrays the messiness of life and the complexity of one person's lived experience. While it was not my role to look for causal explanations of self-harm, the participants themselves were constructing narratives which, for some, had their roots in childhood experience. This thesis has not empirically examined the developmental causes of self-harm or alexithymia and this study provided a useful reminder that a person's behaviour is often influenced by what they have experienced in their lives to that point.

8.5 Conclusion

This study explored the experience of self-harm in people who struggle to identify and describe their feelings. It highlighted how self-harm can be used to

communicate when words fail, to regulate emotions when talking is impossible and to generate feeling when the sense of a coherent self is lost. The findings have relevance for the treatment of self-harm (discussed further in Chapter Nine), given the high, but often unacknowledged, prevalence of alexithymia in clinical populations. Like other qualitative research, this study highlighted the importance of acknowledging and working with the subjective meaning of self-harm to those engaging in it. In addition, the surprising use of song lyrics, poetry and quotations by participants in the study suggests that it may be possible to give individuals the words that they lack to describe their own experience, in the context of both treatment and research.

The results of each empirical study have been added to the diagrammatic model of the relationship between alexithymia and self-harm (Figure 8.2). This model served to retain a focus on the overall research question, and to begin to show, visually, how the results of the different studies relate to each other. However, the systematic integration process, described in Chapter Three, was not carried out until all the individual studies were completed. This results of this process are the subject of the next chapter.

Chapter Nine General Discussion

The aim of this chapter is to review the results of the empirical studies in light of the overall research question, why is there a relationship between alexithymia and self-harm. Following a brief summary of the individual study findings, the results are compared and integrated, according to the method set out in Chapter Three. The main areas of convergence and divergence are discussed. In the subsequent section, I review the overall findings in the context of the prevailing theoretical models of self-harm. The relevance of the results to clinical practice is then considered. The chapter concludes with a review of the strengths and limitations of the research presented in this thesis, and outlines the priorities for future research.

9.1 Study Findings

The systematic review and meta-analysis presented in Chapter Two (Study 1) found a significant, positive association between alexithymia and self-harm, with a medium effect size. The association was significant across all demographic subsamples tested, but was stronger in women compared with men, in adolescent compared with adult samples and in community compared with clinical samples.

Study 2 (Chapter Four) investigated the mediating role of mindfulness and found that mindfulness, particularly facets Non-judge and Non-react, mediated between alexithymia and self-harm. The facet Observe suppressed the relationship, suggesting that the tendency to be overly focussed on thoughts, feelings and sensations may increase the likelihood of self-harm. As expected, difficulties in emotion regulation, in particular a lack of clarity, non-acceptance and difficulty in setting goals, were also significant mediators between alexithymia and self-harm in

Study 3, described in Chapter Five. Together these chapters indicate that the relationship between alexithymia and self-harm can be explained at least in part by a lack of effective regulatory skills. Study 3 also found that perception of bodily sensation (interoceptive sensibility) was significantly higher in people with a history of self-harm and positively correlated with alexithymia. Alexithymia mediated between interoceptive sensibility and self-harm, suggesting that self-harm may be a means of dealing with enhanced perception of physical sensation which people with high alexithymia struggle to interpret.

Studies 4a and 4b, presented in Chapter Six, confirmed that affect regulation was the most commonly endorsed function of self-harm among all participants. In addition, using self-harm to generate feeling was significantly associated with alexithymia, controlling for depression, anxiety and age.

Finally, Study 5 identified four themes, two of which had particular relevance to the research question about alexithymia and self-harm. ‘The Obscure Self’ explored how the difficulty identifying and understanding feelings contributed to a fragmented sense of self. ‘Words Fail Me’ described the consequences of being unable to use words to communicate subjective experience to others.

9.2 Merging the Results

The method used for integrating the results of the different studies was set out in Chapter Three, section 3.4. The results from each study were considered in the light of each research question, not merely the research questions or hypotheses for that particular study (Teddlie & Tashakkori, 2009). The outcome of this process is summarised in a joint display (Table 9.1; Creswell & Plano Clark, 2017). The purpose was to identify where the results converged and where they diverged, as

well as to build an overall picture of how the combined results answer the question of why is there a relationship between alexithymia and self-harm.

Table 9.1*Joint Display for the Planned Integration of Research Findings Concerning the Relationship Between Alexithymia and Self-Harm*

Research hypothesis/ question	Study 2 QUAN Mindfulness	Study 3 QUAN Emotion regulation and interoception	Study 4a and 4b QUAN + free text Functions	Study 5 QUAL Lived experience	Commentary
General results	<p>Alexithymia was significantly higher in people who self-harm (facets DIF and DDF).</p> <p>But there was no difference in alexithymia between those who self-harmed over a year ago and those who have never self-harmed.</p>	<p>Alexithymia (DIF and DDF) was significantly higher in people who self-harm.</p> <p>There was no difference in alexithymia between those who self-harmed over 5 years ago and those who have never self-harmed.</p>		<p>Participants expressed themselves through borrowed words, rather than visual imagery.</p>	<p>Alexithymia was only associated with recent and not historic self-harm. This could suggest alexithymia has decreased over time, or that people with lower alexithymia were more able to stop self-harming.</p>
Mindfulness mediates the relationship between alexithymia and self-harm.	<p>Mindfulness mediates the relationship between alexithymia and self-harm.</p> <p>Facets non-judge and non-react are significant mediators, but observe suppresses the relationship between alexithymia and self-harm.</p> <p>All mindfulness facets are lower in people who self-harm except observe which is significantly higher.</p>	<p>Non-accept is a significant mediator between alexithymia and self-harm.</p>		<p>Self-harm is a means of control among participants who struggle to identify and describe feelings.</p>	<p>Together these results suggest that people with high alexithymia are less able to accept their feelings without reacting to them. Self-harm is a means of controlling the feelings.</p>

Research hypothesis/ question	Study 2 QUAN Mindfulness	Study 3 QUAN Emotion regulation and interoception	Study 4a and 4b QUAN + free text Functions	Study 5 QUAL Lived experience	Commentary
Emotion dysregulation mediates the relationship between alexithymia and self- harm.	Mindfulness (a positive ER skill) is protective.	Emotion dysregulation mediates between alexithymia and self- harm. The facets clarity, non- accept and goals are significant mediators, controlling for age and depression.	Self-harm is most frequently used as a means of changing the affective state (by calming emotions or generating feeling).	Difficulties in communicating or even labelling feelings take away a means of regulating emotions.	People with high alexithymia lack the skills to regulate emotions, such as acceptance, goal setting, and communicating with others. In the absence of these skills, self-harm is used to regulate emotion.
Alexithymia mediates between interoceptive sensibility and self-harm.	People with a history of self-harm are <i>more</i> likely to observe present-moment sensations.	Measures of interoceptive sensibility were higher in people with a history of self-harm. Alexithymia mediated between interoceptive sensibility and self- harm.	Self-harm can help the person reconnect with their body to feel real, or alive. The use of self-harm to <i>generate</i> feeling is significantly associated with alexithymia.	Sometimes self-harm is used to end a state of dissociation or to reconnect with the body.	These results appear to be contradictory. Alexithymia is associated with higher interoceptive sensibility but also with the use of self- harm to feel something.

Research hypothesis/ question	Study 2 QUAN Mindfulness	Study 3 QUAN Emotion regulation and interoception	Study 4a and 4b QUAN + free text Functions	Study 5 QUAL Lived experience	Commentary
What non-suicidal functions of self-harm are associated with alexithymia, controlling for depression and anxiety?			<p>Affect regulation is the most common reason given for self-harm.</p> <p>Feeling generation was significantly associated with alexithymia, controlling for depression and anxiety.</p>	<p>Self-harm is used for both affect regulation and feeling generation.</p> <p>Overwhelming ‘affect’ may be experienced as overwhelming thoughts.</p>	The results provide strong support for intrapersonal functions of self-harm.
What is the experience of self-harm in young adults who report difficulties identifying and describing how they feel?			Intrapersonal functions such as affect regulation, feeling generation and self-punishment may each be relevant at different times, but also at the same time.	<p>Control and compulsion.</p> <p>Is self-harm bad?</p> <p>Words fail me</p> <p>The Obscure self.</p>	The qualitative results show the impact of being confused about feelings and also of being unable to communicate experience to others.

9.3 Convergent Results

9.3.1 In Support of an Affect Regulation Model of Self-Harm

All the studies, in different ways, support the hypothesis that people with high levels of alexithymia use self-harm in order to regulate an emotional experience that is poorly understood. The most commonly endorsed function of self-harm was affect regulation (Chapter Six). The mediation analyses (Chapters Four and Five) suggest that people with high alexithymia may resort to self-harm because they lack more adaptive regulatory skills. These results can only be taken as indicative as in all cases the beta coefficients were very small. However, some confidence can be taken from the similar results obtained in two different studies using two different sample populations. Study 2 (Chapter Four) found that the mindfulness facets non-reactivity to inner experience (Non-react) and non-judging of experience (Non-judge) were significant mediators. In Study 3 (Chapter Five), the facets non-acceptance of emotional responses (Non-accept) and difficulties engaging in goal-directed behaviour (Goals) from the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) were significant mediators, alongside lack of emotional clarity (Clarity). Together these results suggest that, for people with high levels of alexithymia, self-harm is used to regulate an emotional experience that is intolerable and otherwise unavoidable. This is consistent with the affect regulation model of self-harm which dominates the theoretical and empirical literature (Chapman et al., 2006; Klonsky, 2007; McKenzie & Gross, 2014; Nock et al., 2004).

9.3.2 Feelings are Controlled, not Accepted

Corroborating evidence for these results was found in the qualitative study (Chapter Eight). One of the four themes to emerge from the participant interviews was 'Control and Compulsion'. This theme described the use of self-harm as a

means of feeling in control in the face of spiralling thoughts or external events which the participants could not influence. This need to control feelings is consistent with the finding from Study 2 that the ability not to react to inner experience (non-react) was significantly lower in participants with a history of self-harm, and significantly mediated between alexithymia and self-harm. In addition, for two participants in the qualitative study, the process of stopping self-harming was associated with a letting go of control and an acceptance that bad feeling would come and go.

9.3.3 Poorly Understood Feelings are Interpreted as Wrong

Thoughts and feelings may be experienced as intolerable if they are evaluated as wrong or unacceptable. FFMQ facet non-judge (e.g. “I tell myself I shouldn’t be feeling the way I’m feeling”) and DERS facet non-accept (e.g. “When I’m upset I feel guilty for feeling that way”) were significantly associated with both self-harm and alexithymia, and mediated between the two variables. Of all the mindfulness facets, the ability to accept one’s thoughts and feelings without judgment has been shown to be the most strongly associated with psychological health (Prazak et al., 2012). Learning acceptance is the basis of many mindfulness-based therapies such as Acceptance and Commitment Therapy (S. C. Hayes et al., 1999). It may be that people with high alexithymia are more prone to self-criticism (Speranza et al., 2004) or perfectionism (Lundh et al., 2002), both tendencies that have also been associated with self-harm (O’Connor, 2007; O’Connor et al., 2010; Zelkowitz & Cole, 2019). Interestingly, the qualitative study offers an alternative or additional explanation. Rather than being ‘wrong’ in the sense of ‘bad’, feelings may be rejected as ‘wrong’ because they cannot be attributed to a rational cause. The theme ‘The Obscure Self’ described the participants’ difficulties in understanding their feelings, which undermined their sense of a coherent self. At times, this caused them to doubt their

feelings, particularly when there appeared to be no external, logical explanation for them. The rational brain was thus in conflict with the illogical self, leading perhaps to a lack of tolerance for negative feelings which had no justification.

9.3.4 Emotional Awareness is a Precursor to Adaptive Emotional Regulation

The relationship between alexithymia and self-harm can thus be explained by deficiencies in emotion regulation skills, in particular the ability to accept negative feelings without judgment and without reacting to them. Viewed from a different angle, the results also highlight how the ability to understand and interpret feelings, which is impaired in alexithymia, is a necessary precursor to effective emotion regulation (Gross & Jazaieri, 2014). As Gilbert et al. (2012) put it:

“The ability to understand emotions, in contrast to feeling them to be incomprehensible or overwhelming and to be avoided, is central to a number of recent models of psychopathology.” (Gilbert et al., 2012, p. 376)

For example, Gross and Jazaieri (2014) describe how awareness of emotions “*facilitates*” (p. 393) two other core factors involved in effective emotion regulation: the ability to specify a desired outcome of the regulatory action (‘goals’) and the means by which the outcome can be achieved (‘strategies’). They illustrate the importance of awareness in the emotion regulation process by referencing the high prevalence of alexithymia among people with eating disorders (Westwood et al., 2017). Similarly, the significant association between alexithymia and self-harm evidenced in the literature and confirmed in the empirical work set out in the current thesis suggests that addressing deficits in the understanding and awareness of emotions may be a necessary preliminary step before more adaptive regulatory strategies can be introduced.

9.4 Divergent Results

9.4.1. Is Alexithymia Associated with Feeling Too Much or Too Little?

As Table 9.1 shows, some of the results did appear, if not directly to contradict each other, then to diverge, requiring further interpretation. This was particularly the case in regard to the way in which participants reported experiencing physical sensation. Study 3 found that alexithymia was significantly, positively correlated with a measure of how frequently participants reported feeling a range of bodily sensations (termed interoceptive sensibility). Participants with a history of self-harm also scored more highly on interoceptive sensibility than participants who had never self-harmed. These results need to be considered alongside the finding that alexithymia was significantly associated with feeling generation as a function of self-harm (see Chapter Six). Feeling generation refers to the use of self-harm to end a dissociative or ‘numb’ state or to feel alive, and is well evidenced in the literature (Klonsky, 2007; Penn et al., 2003). In addition, some (although not all) of the participants in the qualitative study explicitly talked about self-harming when they felt disconnected from their physical selves; this was interpreted as a response to the lack of a coherent sense of self encapsulated in the theme ‘The Obscure Self’.

The evidence therefore indicates that elevated perception of bodily sensation is associated with both alexithymia and self-harm, but also that a lack of physical sensation may be an antecedent to self-harm for people with high alexithymia. In considering divergent findings, it is worth assessing the risk of a Type I error in one or both studies. Both studies were adequately powered for the univariate analyses and large effect sizes were observed in the bilateral relationships between variables. However, when the functions of self-harm were regressed onto alexithymia, the function feeling generation only just reached the threshold of significance as a predictor of alexithymia. In addition, the regression analysis was sensitive to

outliers. This study was exploratory in nature, since no previous analysis of the functions of self-harm among people with high alexithymia had been conducted. Although the results appeared consistent with studies linking alexithymia with dissociation (e.g. Tolmunen et al., 2010), they would benefit from replication.

If, with these caveats, it is assumed that the results of both studies are reliable, it is necessary to look for possible explanations for the difference between them. The finding that alexithymia was associated with both more frequent self-reported physical sensation and also feeling nothing prior to self-harm mirrors the inconsistent evidence in the literature regarding alexithymia and physical arousal. As discussed in Chapter One, alexithymia has been associated with both above average (Luminet et al., 2004) and below average (Peasley-Miklus et al., 2016) levels of physiological reactivity in response to emotional challenge tasks, although a review found the majority of studies reported normal levels of arousal (Panayiotou, Panteli, et al., 2018). It may be, as suggested by R. Smith et al. (2019), that alexithymia presents differently in different people. Although this may be the case, it cannot be assumed to explain the current results, since the studies in this thesis did not assess objective arousal, but rather the self-reported *perception* of feelings and bodily sensations.

The different results might be attributable to differences in what is being measured. As discussed in Chapter Five, the Self-Awareness Questionnaire (SAQ, Longarzo et al., 2015a) measures how frequently participants perceive bodily sensation in general (e.g. “I feel my stomach tightening.”), rather than at specific moments of stress. In contrast the Inventory of Statements about Self-Injury (ISAS, Klonsky & Glenn, 2009) asks participants to recall how they were feeling prior to self-harming (e.g. “When I self-harm I am causing pain so I will stop feeling

numb”). Studies have suggested that interoceptive awareness may be impaired at times of stress (Schulz & Vögele, 2015), which could explain the perception of ‘feeling numb’ or ‘nothing’ directly before an incidence of self-harm. The relationship between alexithymia and dissociation has also been found to be mediated by current stress (Elzinga et al., 2002). It may be that, for people with high alexithymia, dissociation is a defence against unpleasant feelings brought on by stressful circumstances. The difference in the results could, therefore, be explained by changes in interoceptive perception during times of stress.

It should be noted, however, that alexithymia was not only related to self-harming in order to generate feeling. Instead, the results of both the quantitative and qualitative analyses in Chapter Six suggested that people with high alexithymia may also self-harm in order to regulate overwhelming affect (“*feeling everything and nothing*”). As mentioned in Chapter Six, psychometric analysis shows that the functions affect regulation and feeling generation are not opposed, but instead both load on the higher order factor of intrapersonal functions (Klonsky & Glenn, 2009). Although alexithymia was not measured, a study by Kubiak and Sakson-Obada (2016) found that participants who self-harmed scored significantly higher on both raised and lowered self-reported sensitivity to body sensations than a control group. In addition, the raised and lowered sensation variables were highly, positively correlated, suggesting that the same individuals reported experiencing both enhanced and dulled sensations. This finding, though based on a small sample, mirrors the apparent discrepancy observed in the results presented in this thesis and suggest that perceived sensitivity to bodily sensation may be consistent with, rather than contradictory to, the perceived absence of feeling. Furthermore, the perception of both heightened and lowered sensation may be reported particularly by people with

high levels of alexithymia, who, it has been observed, tend to focus on bodily sensations and symptoms (De Gucht & Heiser, 2003; Jyväsjarvi et al., 1999; Lumley et al., 2007).

In summary, the relationship between alexithymia, arousal and interoception is complex and still requires further elucidation. The current thesis contains evidence linking alexithymia to the frequent perception of bodily signals as well as to a state of feeling nothing. This may be due to changes in interoceptive awareness at times of stress. Alternatively, the tendency to focus on bodily symptomology, characteristic of alexithymia, may explain the sensitivity to extremes of physical and emotional sensation, both feeling too little and feeling too much.

9.5 Expansionary Results

9.5.1 Difficulty Describing Feelings

When comparing findings across studies, some results do not directly corroborate or contradict each other, but instead, when taken together, provide a richer and more complete answer to the overall research question (Creswell & Plano Clark, 2017). The meta-analysis (Chapter Two) found that the relationship between alexithymia and self-harm was primarily driven by the facet Difficulty Identifying Feelings (DIF; $g = .61$), but a significant relationship was also found between self-harm and Difficulty Describing Feelings (DDF; $g = .41$). The alexithymia literature also often appears to consider DDF as a secondary consequence of DIF, despite the literal translation of alexithymia as ‘no words for emotion’. Writing in a recent history of alexithymia, one of the authors of the Toronto Alexithymia Scale noted:

“The most striking characteristic that Sifneos observed was a difficulty many of the patients had in finding words to describe how they feel, almost as though they did not understand the word “feeling”.” (Taylor, 2018, p.1)

The ability to describe feelings is thus seen as a symptom of a deeper failure of understanding of emotional experience (Lane et al., 2015). This conception appears to be borne out in psychometric analyses of the TAS20 in which DIF and DDF are highly correlated: some analyses have found that they map onto a single factor (Erni et al., 1997; Franz et al., 2001).

Despite the close association between DIF and DDF, the qualitative study highlighted the additional impact of a difficulty describing feelings. The theme ‘Words Fail Me’ described how, without words, participants found it difficult to communicate their subjective experience to others. This had two important consequences. First, talking to others about feelings is an adaptive emotion regulation strategy (L. F. Zaki et al., 2013). Without it, participants turned to other means of coping with unwanted emotions, including self-harm. (“*I couldn’t really talk to them or anyone else, so I turned to hurting myself*”). Interestingly, in Study 3 (Chapter Five), the Difficulty in Emotion Regulation Scale (DERS) facet ‘describe’ was not a significant mediator of the relationship between alexithymia and self-harm. This result can most likely be explained by the high correlation between the TAS20 and the DERS describe facet; in other words, the inability to describe feelings aspect of emotion dysregulation is already integrated in the alexithymia concept.

The second consequence of having no words to describe their internal experiences was that participants were left feeling isolated and misunderstood, which increased their distress (“*more fuel for self-harming*”). Alexithymia is associated with interpersonal problems (Jordan & Smith, 2017), perhaps because of a lack of empathy (Grynberg et al., 2010), and one study found that alexithymia and interpersonal problems were both significant predictors of psychological distress (Schuetz & Multon, 2017). As discussed in Chapter Eight, therefore, the *functions*

of self-harm described by participants are most commonly intrapersonal, but the causes and context for self-harm may be, in part, interpersonal. Given the dominance of the affect regulation model of self-harm, this finding is an important reminder of the interpersonal context in which self-harm occurs and the particular interpersonal difficulties experienced by people with high alexithymia.

Thus far we have assumed that the difficulties describing feelings aspect of alexithymia is a function of underlying difficulties in identifying feelings. However, a recent theoretical review proposed that the relationship might flow the other way and that language difficulties might themselves cause alexithymia (Hobson et al., 2019). Among other evidence, the authors cite studies linking alexithymia and emotion difficulties with language impairment following brain injuries or strokes. Theories of emotion vary as to whether they consider emotions to be innate (Tracy & Randles, 2011) or constructed (Lindquist et al., 2015) but all to some degree see a role for language in the development of emotional schema (Hobson et al., 2019). For example, as outlined in the introduction (Chapter One), in Bucci's multiple code theory a referential process transforms the meanings contained in subsymbolic (e.g. body-based) components into verbal language, necessary both for communication but also self-understanding (Bucci, 1997; G. J. Taylor, 2018). In alexithymia, it is the failure to translate the subsymbolic experiences into verbal symbols that precludes "*access to the internal world*" (Welding & Samur, 2018, p. 90). The cross-sectional nature of the studies in the current thesis preclude any conclusions about causality, and the language development theory of alexithymia is very new and requires further empirical investigation (Hobson et al., 2019). However, it does suggest that interventions designed to improve affect labelling and use of complex emotional language might be beneficial as a means not only of improving emotion

regulation skills but also, potentially, of better understanding one's own internal state.

9.5.2 Mental Imagery

A further example of the way in which the qualitative results expand on the quantitative findings is in the role of mental imagery. In recent years there has been a growth in interest in mental imagery in the context of self-harm and suicide. In one study, over 80% of young adult participants with current engagement in NSSI reported NSSI-related imagery, most commonly related to the act of cutting (Cloos et al., 2020). Described as “flash-forwards” by the authors, detailed mental images of suicidal acts were found to be common among a small sample of people with depression (Holmes et al., 2007). The frequency and vividness of images has also been found to be positively correlated with self-harming behaviours (Holaday & Brausch, 2015). In the Integrated Motivational Volitional Model of Suicide, O'Connor and Kirtley (2018) suggest that suicide-related mental imagery may act as a volitional motivator, distinguishing people who carry out suicidal behaviours from those who have suicidal ideation, by acting as a “cognitive rehearsal” for the act itself (O'Connor & Kirtley, 2018, p.4).

It might be expected that the external orientation of alexithymia would ‘protect’ against mental imagery that is internally generated. Campos et al. (2000) found that participants with high alexithymia had significantly lower visual imaging capacity than those with low alexithymia scores. A lack of fantasy and imagination was part of the original, clinical conception of alexithymia (G. J. Taylor et al., 1997), although subsequent factor analyses have tended to find this aspect unrelated to an overall latent alexithymia construct (Preece, Becerra, Robinson, et al., 2020) and it

was left out of the revised version of the Toronto Alexithymia Scale (Bagby, Parker, et al., 1994; G. J. Taylor et al., 1985).

Participants in the qualitative study were not asked explicitly about mental imagery in the context of self-harm, so it is not possible to draw any definitive conclusions on the basis of the current research. Certainly, participants did not talk about experiencing self-generated images of the type described in other studies (e.g. Cloos et al., 2020; Holmes et al., 2007) but, again, this may be because they were not asked. Alternatively, as discussed in Section 8.1.5, it may be that such visual imagery was not a feature of their experience, perhaps as a result of high alexithymia. This might explain why only two participants chose to use photographs in the interviews. As P8 said, “*Images don’t do anything for me, they don’t mean anything to me*”. However, it should be noted that some participants who chose not to use photographs said that they did not want to trigger unpleasant emotions. This points to a possible distinction between self-generated mental imagery based on autobiographical memory or fantasy and the impact of self-harm-related images seen externally, for example on the internet or other media. For example, one participant described how a scene from a horror film in which a woman had cut herself in the bath had been an inspiration for her own subsequent suicide attempt (“*that would be a nice way to go*”). A recent study found that exposure to graphic images of self-harm on Instagram was significantly associated with subsequent suicidal ideation and self-harm behaviours (Arendt et al., 2019). Perhaps the external orientation of alexithymia, whilst protecting against imaginative mental images of self-harm, might make people more vulnerable to the effect of seeing images of self-harm or suicide in others. However, the evidence to support this hypothesis in the current research is limited.

9.6 General Discussion

9.6.1 *The Relationship Between Alexithymia and Self-Harm*

Stepping back, what do the combined results tell us about the relationship between alexithymia and self-harm? The findings from the current studies, interpreted in light of existing theory and evidence, can be summarised as follows:

- Alexithymia is associated with a heightened perception of bodily sensations that are poorly understood.
- The interoceptive and affective confusion characteristic of alexithymia may contribute to the lack of a coherent sense of self.
- The failure of words to communicate experience exacerbates the feeling of isolation and contributes to increased distress.
- This distress is hard to tolerate or accept without judgment.
- In the absence of more adaptive regulatory skills such as acceptance, talking to others or goal-setting, self-harm is used primarily to regulate emotion, by generating feeling or calming overwhelming feeling. Sometimes it may be used to communicate in the absence of words.
- Self-harm, as a body-based intervention, may serve to reconnect the affective and interoceptive dimensions of emotional experience in people with high levels of alexithymia.

The combined findings were also summarised in diagrammatic form in Figure 8.2.

Many previous studies had identified that alexithymia was significantly higher in people with a history of self-harm, but, to our knowledge, there had been no investigation of the mechanisms involved. The current research has tested and confirmed the assumption made in the literature that the relationship between alexithymia and self-harm is mediated by deficits in emotion regulation skills. In

addition, it has extended knowledge by combining in one model interoceptive sensibility, alexithymia, emotion dysregulation and self-harm. Furthermore, the qualitative analysis has raised some new perspectives on the relationship, in particular relating to the impact of the difficulty describing and identifying feelings on a sense of self and on the interpersonal context for self-harm.

9.6.2 Alexithymia and Models of Self-Harm

Alexithymia does not often explicitly feature in theoretical models of self-harm. One exception is Jacobson and Batejan's adapted version of Nock (2009), in which alexithymia is listed as a proximal, intrapersonal risk factor. It is widely acknowledged that self-harm is a complex phenomenon associated with multiple interacting factors (Hasking et al., 2017; Townsend et al., 2016) and the results of the current programme of research suggest ways in which alexithymia may combine with, and increase the likelihood of, other factors in predicting self-harm. Thus, the current results suggest alexithymia may co-occur with other intrapersonal risk factors listed by Jacobson and Batejan/Nock, such as poor distress tolerance, as well as with interpersonal risk factors such as poor communication skills. As their model indicates, these interpersonal and intrapersonal risk factors contribute to over or under arousal in response to stress, both of which the current results suggest may be characteristic of alexithymia.

9.6.3 Is the Relationship Between Alexithymia and Self-Harm Unique?

The idea that alexithymia, alongside or in combination with other factors, may increase vulnerability to self-harm is summed up by the term 'equifinality'; a concept from biology in which one outcome can be reached by many potential means. Its inverse is 'multifinality', in which one set of conditions can result in multiple outcomes. Hasking et al. (2017) discuss this distinction in regard to the

‘choice’ made to self-harm over other behaviours that might have similar emotion regulatory effects. The research in this thesis has focussed on the relationship between alexithymia and one specific outcome, self-harm. However, it should be acknowledged that alexithymia is a transdiagnostic trait, which has been associated with a range of adverse outcomes. These include, for example, interpersonal difficulties (Jordan & Smith, 2017), psychological illnesses (Honkalampi et al., 2000) and other risky behaviours such as alcohol use (Pedersen et al., 2016) and eating disorders (Speranza et al., 2007; Westwood et al., 2017). Few studies make a direct comparison between different behavioural outcomes in the context of alexithymia, but D. Greene, Boyes, et al. (2020) compared the relationship between alexithymia and both NSSI and risky drinking. They found alexithymia to be significantly related to both behaviours, although the association was stronger for NSSI than for risky drinking. These studies suggest multifinality, in which alexithymia, via the mechanism of difficulties in emotion regulation, may lead to a range of adverse behavioural outcomes.

Is it, therefore, the case that alexithymia alone is not a differentiating factor in the ‘choice’ of self-harm over other behaviours? Or does the direct comparison between NSSI and risky drinking in Greene et al. (2020) provide a tentative indication that alexithymia may have a particular relevance for self-harm? The current research has highlighted the importance of bodily perception and sensation in relation to both alexithymia and self-harm. Specifically, the heightened perception of physical sensation was found to be associated with both alexithymia and self-harm, corroborating clinical case studies in which alexithymia is associated with a dominant focus on physical symptomology (Lumley et al., 2007; Smith et al., 2019). The functions analysis highlighted the particular relevance of using self-harm to

generate feeling. Finally, the qualitative study illustrated how self-harm can be used to ‘feel real’, by reconnecting with the body (Table 8.3). While other behaviours, particularly disordered eating, are also enacted on or through the body, there is evidence that interoceptive deficits are more severe in people with co-occurring eating disorders and self-harm, than eating disorders alone (A. Smith et al., 2018). Perhaps there is something about the direct and unmediated action on the body that makes self-harm an apparently ‘logical’ choice for people with high alexithymia. As argued by Horne and Csipke (2009):

“Self-harm resolves a state of psychosomatic suspension and increases the extent to which the body is involved in the experience of emotion.” (Horne & Csipke, 2009, p. 655)

Self-harm, viewed in this way, has been described as “embodied emotion work”, in which emotional states are altered through action on the body (Chandler, 2012). Chandler (2012) noted that her participants rationalised their engagement in self-harm using medical or biological language, referring, for example, to the release of endorphins. Biological models of, specifically, non-suicidal self-harm, apparently internalised by Chandler’s participants, suggest that self-harm ‘works’ by bringing about physiological changes, such as the release of endogenous opioids, although the hypothesis requires further empirical investigation (Bresin & Gordon, 2013; Kirtley et al., 2015). In addition, it may be that *beliefs* in the biological effect of self-harm may be more prevalent among people with alexithymia who tend to focus on physical symptomology. Hasking et al. (2017) propose that such NSSI-specific cognitions, relating to outcome expectations and self-efficacy, may differentiate between engagement in self-harm rather than other behaviours. Such beliefs were evidenced in the qualitative study (Chapter Eight), when participants described their

confidence in their ability to carry out the practical, physical work of self-harm (e.g. Table 8.1, P8), as well as their belief, based on experience, that self-harm would make them feel better (e.g. Table 8.2, P6). It may be that people with high alexithymia hold particularly strong beliefs about the efficacy of self-harm precisely because of its physical nature. This conjecture is based on, but extends beyond, the evidence presented in this thesis. Further research is required to investigate the differential relationships between alexithymia and a range of behavioural outcomes, as well as the interoceptive and cognitive mechanisms which lead to the adoption of one behaviour over another.

9.7 Clinical Implications

One of the main justifications for investigating alexithymia in relation to self-harm was the evidence that it was not a fixed trait, but could be modified through treatment (Cameron et al., 2014; Ogrodniczuk et al., 2018). As yet, there is not sufficient evidence to support the use of any one treatment over another. However, interventions which specifically targeted alexithymia symptoms appear to have a more consistent reductive effect on alexithymia (Cameron et al., 2014; Ogrodniczuk et al., 2018). For example, one intervention, in which participants were trained to identify and differentiate between feelings and associated physical sensations and to put words to those feelings, led to a significant pre/post reduction in total TAS20 and the facets difficulty identifying and describing feelings (Melin et al., 2010). The evidence for the clinical utility of reductions in alexithymia, however, is still limited, and no studies have yet tested whether a reduction in alexithymia is associated with concurrent reduction in self-harm. Unfortunately, the current research programme did not include an intervention study and so cannot enhance knowledge on this important point.

The evidence presented here has, however, shed light on the possible mechanisms underpinning the relationship between alexithymia and self-harm. Such knowledge is helpful in the design or choice of intervention. Overall, the results point to three main areas on which interventions might focus. First, the evidence indicates a need to focus on identifying and distinguishing between feelings, including their manifestation in physical sensation. Second, the results of the mediation analysis suggest that interventions designed to encourage individuals to accept, rather than avoid, negative emotions could be effective. Third, the qualitative analysis in particular highlights the impact of having no words to describe feelings, and calls for interventions designed to help individual label their feelings and convey their internal experience to others.

Some of these elements are core to mindfulness-based training courses such as Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, Lipworth, & Burney, 1985) and Mindfulness-Based Cognitive Therapy (MBCT; Teasdale et al., 2000). In these therapies, participants are taught to pay attention to whatever is happening in the present moment, through exercises designed to increase awareness of bodily sensation and non-judgmental observation of thoughts and feelings. Mindfulness-based training has been found to be effective against depression, anxiety and stress in clinical samples (Gotink et al., 2015; Khoury et al., 2013) and against psychological distress in community samples (Galante et al., 2018). A meta-analysis conducted as part of this research programme found that alexithymia was significantly reduced following mindfulness-based interventions (Norman et al., 2019). Mindfulness-based techniques also form part of other therapies such as Dialectical Behavioural Therapy (DBT; Linehan, 1993), which was found to have promising results among adolescents who self-harm (Hawton, Witt, et al., 2015). The results of Study 2

(Chapter Four) in the current thesis suggest that mindfulness skills, particularly the ability to accept negative feelings without reacting to them, may be protective against self-harm among people with high alexithymia.

In addition to its inclusion in specific therapeutic interventions for self-harm (such as DBT; Linehan, 1993), mindfulness is becoming increasingly popular in non-clinical populations, through taught classes or self-help apps. This is of particular interest, first because alexithymia per se is unlikely to be the explicit reason someone might be seeking treatment but is rather a comorbid, and potentially causal, feature of other presenting behaviours or psychological features (G. J. Taylor et al., 1997) and, second, because it is known that a large proportion of people who self-harm do not seek help (Hawton et al., 2012). Universal, community-based mindfulness training, such as that tested in a randomised controlled trial (Galante et al., 2018), might be an effective way of accessing at-risk populations, and increasing resilience against self-harm, particularly among those who struggle to understand their feelings.

One mechanism through which mindfulness is purported to improve emotion regulation is through the labelling of negative affect (J. D. Creswell et al., 2007). Affect labelling has been identified empirically as an implicit emotion regulation strategy (Kircanski et al., 2012; Lieberman et al., 2011; Torre & Lieberman, 2018). The inability to label feelings is, of course, one of the defining characteristics of alexithymia and therefore this may be a further way in which mindfulness-based skills training might help people with alexithymia who self-harm. It was an interesting feature of the qualitative study that participants were often able to recognise their experience when it was expressed in ‘borrowed’ words, such as song lyrics or poetry. This accords with evidence that indicates people with high

alexithymia are better able to identify emotion labels than generate them themselves (Constantinou et al., 2014). Furthermore, this might explain why some evidence suggests a preference for group therapy among people with high alexithymia (Ogrodniczuk et al., 2009). In a group setting, participants have the opportunity to learn to label emotions through observing and receiving feedback from others (Ogrodniczuk et al., 2018). The use of “borrowed words” is a novel finding of the current research, which could be incorporated into future research or clinical interventions for alexithymia.

The findings from the qualitative study in particular are a reminder that self-harm is often viewed as a useful coping mechanism by those who engage in it. The theme ‘Is self-harm bad?’ highlighted the disparity between the medical discourse of self-harm as a maladaptive and highly risky behaviour and the lived experience of self-harm as a functional means of emotion regulation. This study is not the first to identify this conflict and, indeed, it has been cited elsewhere as a barrier to help-seeking and effective treatment (Chandler, 2012; Wadman et al., 2017). In a recent qualitative study, participants criticised the outcome measures conventionally used in trials of treatments for self-harm, such as a reduction in the frequency of self-harm or lower engagement with services (Owens et al., 2020). Such measures were resisted in part because they dealt only with the symptom of self-harm rather than the underlying psychological or contextual issues, and because they failed to recognise the role played by self-harm in helping them cope. A barriers and benefits model of self-harm, proposed by Hooley and Franklin (2018), might be useful in this context. This model acknowledges that (non-suicidal) self-harm has many benefits. Most people could access these benefits but choose not to because of a number of barriers, ranging from aversion to pain to the influence of social norms. The authors suggest

that interventions focussed on increasing the barriers to self-harm may be effective alternatives to traditional treatments, which work on reducing (or replacing) the benefits. They have trialled interventions ranging from shock treatment (Franklin, 2014) to a mobile app (Franklin et al., 2016) which aim to increase aversion to self-harm and decrease negative self-image, with tentatively promising results. Future research could consider whether such interventions focussed on increasing aversion to self-harm might be more effective than traditional therapies for people with high alexithymia who struggle to talk about their feelings. However, increasing aversion to self-harm needs to be accompanied by the introduction of more adaptive coping mechanisms, to avoid self-harm merely being replaced by other dangerous behaviours such as disordered eating or substance misuse (Owens et al., 2020).

Thus the current research provides some useful insights to help shape clinical interventions for people with high alexithymia who self-harm. To implement such interventions, however, the clinician needs to be aware that the patient scores highly on alexithymia. Over ten years ago, Lumley et al. (2007) noted that

“Knowing a patient’s level of alexithymia guides our understanding of health status, clinical presentation, behaviour and responses to treatment.”

(Lumley et al., 2007, p. 242).

Although a recent article claimed that mental health clinicians were becoming increasingly aware of the concept of alexithymia (G. J. Taylor et al., 2018), there is no routine screening in clinical contexts. This is in part due to debate over the measurement of alexithymia and, in particular, the limitations of the TAS20, which are discussed below. Although greater awareness of alexithymia among clinicians might be sufficient to allow alexithymia to be recognised and treatment adapted accordingly, it would not, in itself, allow for any systematic analysis of presenting

symptoms and treatment efficacy. There remains a need, therefore, for developing and embedding a clinically robust means of screening for alexithymia (Lumley et al., 2007).

An alternative use of the results in the current research programme is to inform knowledge of self-harm more generally. The prevalence of (high) alexithymia in clinical samples (McGillivray et al., 2017) and among people with a history of self-harm is high (42% in Study 3) and therefore it is likely that many people engaging in self-harm struggle to identify and describe their feelings. Indeed, some of the experiences of the participants in the qualitative study (Chapter Eight) echoed those from previous qualitative accounts of self-harm, and will be familiar to clinicians, in particular a difficulty in communicating their experience to others. The results presented here highlight how such difficulties may arise not only from a fear of the consequences of disclosure but also or instead from a cognitive deficit in the processing of emotions. It reminds us that the barriers to help-seeking may not be limited to fear of stigma (Nearchou et al., 2018) or unhelpful responses (Wadman et al., 2018) but may also include an inability to find the right words.

9.8 Validity

Each study within the current research programme has been designed and evaluated against criteria appropriate for the respective quantitative and qualitative methods used. In addition, mixed methods research requires an additional level of quality assessment to judge the extent to which inference drawn from the combined results are reliable and credible. Teddlie and Tashakkori (2009) categorises two main criteria for evaluating mixed method research: design quality and interpretive rigour. A good quality design is one in which the appropriate methods are chosen to answer each research question, and are rigorously implemented, including at the

integration stage. In addition, the design should be consistent with the stated reason for using different methodologies within the same programme of research. In the current programme, the overall research question, why is there a relationship between alexithymia and self-harm, was a broad one. A set of more specific research questions were developed to address either hypotheses generated from the literature on alexithymia and self-harm (e.g. the mediating role of emotional dysregulation) or gaps in the empirical evidence (e.g. the experience of self-harm for people with high alexithymia). The most appropriate method for each question was adopted, resulting in a programme containing both quantitative and qualitative methods. As acknowledged in Chapter Three, however, the whole research programme was not designed as one integrated study. Instead, there was a sequential element to the research. Study 2 was designed as a single piece of research and data were collected and analysed before the other Studies (based on the second online survey and the qualitative interviews) were designed and carried out. The results of Study 2, in combination with further reading of the literature and new empirical developments, therefore informed the development of the succeeding studies. One consequence of this iterative design was the inclusion of a measure of interoceptive sensibility in the second survey, in response to a consideration of the mechanisms by which mindfulness skills might be protective against self-harm. In addition, the interview schedule for the qualitative study included questions about bodily sensation as well as emotional experience, although these were not strictly adhered to if it did not feel that they fitted with the way in which the participants recounted their own experiences. The advantage of the partly iterative nature of the design, therefore, was the opportunity to use the second survey to build on the findings of the first. While this was beneficial in developing hypotheses that could be tested in

Study 3, it was important that, in the qualitative study, the themes were allowed to emerge inductively from the participant accounts, rather than be influenced by the previous findings. This was achieved through rigorous and transparent adherence to the IPA method, although, inevitably, my attention may have been drawn to aspects of the participants' experiences which fit or contrasted with previous findings.

Interpretative rigour describes the extent to which the inferences drawn at each stage of the research are credible and well evidenced. This includes the effectiveness with which the integration of results is carried out, irrespective of whether the results are corroborative across studies or divergent. It also requires a final assessment of whether the research has fulfilled the original purpose of using a mixed methods design. As planned, the integration in the current thesis was carried out using a joint display approach (J. W. Creswell & Plano Clark, 2017), which facilitated consideration of the extent to which the results converged, diverged or expanded on each other. This method ensured that the results were not just compared, but also combined. An example is found in the way in which the results of the qualitative study helped interpret the finding from Study 3 that non-acceptance of inner experience mediated between alexithymia and self-harm.

Reviewing over 200 social science articles in which qualitative and quantitative methods were combined, Bryman (2006) found that the stated intention for using mixed methods often did not match what was done in practice. In the case of the current research, the intention was, in the language of J. C. Greene et al.'s (1989) typology, complementarity and expansion. Complementarity was achieved through the analysis of the way in which the results converged or diverged. Expansion occurred largely as a result of the qualitative study. Here, the inductive analysis allowed themes to emerge which had not been part of the hypothesis testing

of the quantitative studies. For example, the impact of not being able to describe feelings on participants' ability to connect with others, and consequently on their wellbeing, provided additional context to the quantitative results.

9.9 Strengths and Limitations

9.9.1 Strengths

The main strength of the current research programme is the fact that it went beyond the headline correlational statistic which summarises the size of the relationship between alexithymia and self-harm. Many studies have observed this relationship to be significant; very few have attempted to address why that might be the case. Furthermore, the question has been approached from several different perspectives, using a range of appropriate research methods to answer different, specific research questions. Each method was carried out rigorously, and assessed according to the appropriate evaluative frameworks for qualitative, quantitative and, additionally, mixed method research. Although the purpose of using a mixed method design was not explicitly triangulation, in which different methods are used to corroborate results, confidence can be taken from the similar findings across both studies, particularly with relation to the mediation analyses.

The current research programme broke new ground by proving that alexithymia need not be a barrier to participation in qualitative research, even on subjects relating to emotional experience. The intention had been to use photo elicitation to help generate richer data; however, in the event, only two participants used photographs. Their experience, plus feedback from the other participants, provided some interesting insights, in particular how 'borrowed words' might be a more effective means of stimulating discussion than visual imagery for people with high alexithymia.

9.9.2 Limitations

Limitations specific to the individual studies have been discussed in the respective chapters. However, there are five main limitations which cut across several studies and which have implications for the generalisability and interpretation of the results.

9.9.2.1 Cross-Sectional Research. The first limitation is that all the studies in this research programme are cross-sectional. This precludes definitive interpretation of the finding that alexithymia is associated with recent self-harm (up to five years in Study 3) but not historic self-harm, discussed in section 4.5. In addition, a causal relationship between alexithymia and self-harm cannot be inferred from these results. Based on theory, the co-occurrence of high alexithymia and self-harm has been interpreted to mean that alexithymia increases vulnerability to self-harm via the mechanism of emotional dysregulation. In support of this conclusion, a rare example of a longitudinal study found that high alexithymia scores significantly predicted self-harm three months later in a community sample of adolescents (Garisch & Wilson, 2015). These results suggest that alexithymia may be a significant risk factor for self-harm. However, the cross-sectional design of the studies presented in this thesis precluded any testing of this hypothesis. Similar variables, such as difficulties in emotion regulation (Buckholdt et al., 2015), emotion reactivity (Nock et al., 2008) and negative affect (Victor & Klonsky, 2014) are also significant correlates of self-harm, but meta-analyses have not identified them as significant risk factors of either NSSI (Fox et al., 2015) or suicide (Franklin et al., 2017). In considering the disparity in the results between cross-sectional and longitudinal studies, Fox et al. (2015) hypothesised that emotion dysregulation, though not a significant risk factor on its own, may combine with other risk factors

to increase vulnerability to self-harm, and the same may be true of alexithymia. In addition, it is possible that a causal relationship might exist in the other direction. One participant in the qualitative study described how she believed using self-harm to manage her emotional experience from an early age removed the need for her to learn how to verbalise her feelings and communicate with others. Further longitudinal research is needed to test these hypotheses.

9.9.2.2. Convenience Sampling. The second limitation lies in the fact that both quantitative studies used convenience sampling. The use of convenience sampling is common in cross-sectional studies of this kind (e.g. Nielsen et al., 2016). It has the advantage of being relatively quick and easy to conduct and can generate large numbers of responses. However, it clearly comes with limitations. There is a risk of bias through the way in which the survey is advertised and communicated by the researcher. In this case, some responses were, for example, generated through word of mouth within the researcher's own networks. In addition, bias can occur because the participants themselves are self-selecting. People who seek out opportunities to take part in surveys may share certain characteristics that are not representative of the general population. Another limiting factor is that data collection was carried out online, meaning that anyone could, in theory, take the survey. It was therefore not possible or meaningful to think about the response rate (as is normally conducted when the population of interest is more defined) or the characteristics of non-responders. This is a significant limitation of the data collection and sampling techniques used in this survey. Wright (2006) suggests that the best defence against this limitation is replication, which was built into the design of the current research programme. Although different research questions were

explored in the first and second studies, the baseline results from each study about the relationship between alexithymia and self-harm can be compared.

9.9.2.3 Limitations of the Toronto Alexithymia Scale. The third limitation concerns the measurement of alexithymia. All the analysis presented in this thesis is based on one measure, the Toronto Alexithymia Scale (TAS20; Bagby et al., 1994). The TAS20 is by far the most widely used measure of alexithymia. However, it is not without its critics, who point to problems with both its construct and criterion validity. The issues relating to construct validity were discussed in Chapter Five and investigated via factor analysis of the data collected in Study 3 (Appendix 5.4). The main problem related to the third factor, Externally Orientated Thinking (EOT), which had low reliability, in common with many other studies. As a result, the decision was taken to base the main analyses in this thesis on the total TAS20 score, rather than the subscales. The lack of reliability of the EOT factor means that it is difficult to know whether the finding of a non-significant relationship between EOT and self-harm in the meta-analysis (Chapter Two) is due to problems with the measure, rather than a ‘true’ reflection of how externally-orientated thinking affects propensity to self-harm. The difficulties with EOT have been addressed in a new measure of alexithymia, the Perth Alexithymia Questionnaire (PAQ), based on the attention-appraisal model described in section 1.2.3 of this thesis (Preece et al., 2017). Some of the differences between the TAS20 and the PAQ are methodological, such as the removal of reverse-scored items. Other differences are, however, conceptual. For example, the PAQ reconceptualises the EOT subscale as a tendency *not* to focus attention on *emotions* in particular, rather than (as in the TAS20) a tendency *to* focus excessively on *external events* (Preece, Becerra, Robinson, Dandy, et al., 2018). A recent study comparing the TAS20 and the PAQ

found that the relationship between the respective EOT subscales and risky drinking differed according to the measure used, and the authors concluded the two scales might be capturing different constructs (D. Greene, Hasking, et al., 2020). In sum, the PAQ is an interesting development which addresses some of the criticisms of the TAS20 and the initial tests of its psychometric properties are promising (D. Greene, Hasking, et al., 2020; Preece, Becerra, Robinson, Dandy, et al., 2018). However, it has not yet been widely tested, particularly in clinical samples. In addition, and particularly in its reconfiguration of the EOT subscale, it presents a challenge to the underlying construct of alexithymia as measured, conventionally, by the TAS20.

As far as criterion validity is concerned, the TAS0 is so widely used in the literature that it has become synonymous with the concept of alexithymia itself. As discussed in section 1.2.3 of the introduction, some argue that the TAS20 fails to capture aspects of alexithymia relating to deficiencies in fantasising and emotional reactivity (Vorst & Bermond, 2001), although factor analysis indicates that these tendencies do not form part of the same latent ‘alexithymia’ construct as difficulty identifying and describing feelings and externally-orientated thinking (Preece et al., 2017; Preece, Becerra, Robinson, et al., 2020). Another long-standing debate in the literature concerns the ability of the TAS20 to measure alexithymia, rather than general distress. A recent study by Preece, Becerra, Boyes, et al. (2020) found that the TAS20, particularly the factor DIF, demonstrated poor discriminant validity against a general measure of current distress. Other analyses, however, have found the TAS20 and depression to be separate constructs, albeit significantly correlated (Marchesi et al., 2000; J. D. A. Parker et al., 1991), and this was the conclusion reached by a recent review of the literature (Honkalampi et al., 2018) This potential limitation of the TAS20 was mitigated in the current research programme, by

controlling for depression and anxiety in the mediation analysis in Chapter Five and the functions analysis in Chapter Six.

A third aspect of criterion validity concerns the self-report nature of the TAS20. Many authors have commented on the inherent paradox of asking participants to assess their own ability to identify and describe their feelings. Even the authors of the TAS20 suggest that “*a self-report measures alone may not adequately assess affective and cognitive capacities that alexithymic individuals may not know they lack.*” (Taylor et al., 1997, p. 64). The evidence concerning the extent to which the TAS20 correlates with performance measures of emotion-related tasks is mixed. For example, Lundh et al. (2002) found no association between the TAS20 and latency of retrieval of emotional memories and concluded that the TAS20 does not measure how well an individual can identify or describe feelings, but rather how well they believe they do so – their “*beliefs about their meta-emotional functioning*” (Lundh et al., 2002, p.374). However, a recent review concluded that all studies since Lundh et al. (2002) *had* shown an association between alexithymia and deficits in memory functioning for emotional content (Vermeulen et al., 2018). This debate mirrors, to some extent, the difference between interoceptive awareness and interoceptive sensibility discussed in Chapter Five, which have also been found to be uncorrelated (Garfinkel et al., 2015). However, unlike interoceptive awareness, which can be measured objectively, using, for example, heartbeat detection tasks, alexithymia as a concept has no objective means of measurement. Other types of measure exist, including observer-rated measures (e.g. the Observer Alexithymia Scale, OAS, Haviland et al., 2000), interview-based measures (e.g. the Toronto Structured Interview for Alexithymia, TSIA, Bagby et al., 2006) and performance-based measures (e.g. the Levels of Emotional Awareness Scale, LEAS, Lane et al.,

1990) but they tend to correlate only weakly with each other, and sometimes in the unexpected direction (Lumley et al., 2005). It would certainly be interesting to test the results of the current thesis using a different type of measure of alexithymia. Using the Toronto Structured Interview (Bagby et al., 2006), for example, would address the criticisms of the self-report aspect of the TAS20, while measuring the same conceptual construct as the TAS20, from which it was derived. However, in the current research, the self-report aspect of the TAS20 is at least consistent with the self-report scales used to measure interoceptive sensibility, emotion regulation and mindfulness. Arguably, with regard to concepts such as emotion regulation or depression, subjective experience is what matters to the individual and is therefore the appropriate focus of enquiry. It also enables the results of the quantitative analysis to be compared with the phenomenological enquiry of the qualitative study.

9.9.2.4 Measurement of Self-Harm. While the TAS20 is almost universally used as the measure of alexithymia, the opposite problem is encountered in the measurement of self-harm. The systematic review (Chapter Two) found considerable diversity in the methods used to measure self-harm, reflecting the proliferation of measures and also a lack of consensus in the definition of self-harm. This matters, not only for reasons of clarity of definition, but also because different measurement methods can affect response rates. Swannell et al. (2014) found that prevalence rates of self-harm were higher in studies which provided a checklist of methods of self-harm, rather than a single yes/no question and also in studies where participants remained anonymous. For the purposes of the current research programme, the Inventory of Statements about Self-Injury (Klonsky & Glenn, 2009) was chosen as the measure of self-harm, because it had been validated on a similar population and also because it included questions relating to the function of self-

harm, and not only the behavioural aspects. However, the ISAS was adapted for the purposes of this research, which may limit the comparability of the results with other research. The adaptations were made in part, to limit the reporting burden on participants. For example, questions 4 to 6 of the ISAS were not put to participants in either study. These cover whether the participant feels pain during self-harm, whether they self-harm alone and the length of time between the urge to self-harm and acting on the urge. These questions were omitted because they did not relate to the research hypotheses, although, on reflection, the question about pain would have been a useful one to consider in relation to the measure of interoception used in Study 3. Other adaptations were made to make the analysis of the results more straightforward, such as asking participants for a single estimate of how often they had self-harmed, rather than one estimate per method. In addition, the first question put to participants included a full list of possible self-harm behaviours, to avoid screening participants out on the basis of a single yes/no question (Swannell et al., 2014).

More fundamentally, the ISAS was adapted in order to be consistent with the UK definition of self-harm. The ISAS was designed to measure non-suicidal self-injury, and the instructions to participants ask whether they have ever engaged in the list of methods, “*without suicidal intent*”. In order to be consistent with the NICE (2013) definition, this phrase was omitted from the instructions to participants of both the online surveys in the current programme. However, an additional, separate question was included in both surveys which asked participants if they had ever attempted suicide. This question was put to all participants, whether or not they had indicated earlier in the survey that they had a history of self-harm, and in both cases, the few participants who responded yes only to the question about suicide were

treated for the purpose of the analysis as having engaged in past self-harm. Like Mars et al. (2014), asking separately about suicide allowed us to assess whether alexithymia was differentially related to non-suicidal and suicidal self-harm, and both Studies 2 and 3 confirmed that the highest TAS20 scores were found among participants who had self-harmed, including with suicidal intent.

Using the NICE (2013) definition of self-harm, while also asking about suicide attempts, treads a perhaps uneasy tightrope between the UK and US's definitions of self-harm. It lacks the clarity of either, distinct approach, and it asks participants to respond to questions about motivation, despite acknowledging that motivation may sometimes be hard to define (Grandclerc et al., 2016). In addition, in asking separately about suicidal self-harm it implies a distinction that, in removing the reference to suicidal motivation, we had hoped to avoid. Taking a more positive view, the approach arguably reflects the full spectrum of self-harming behaviours, which in practice is not neat and clearly defined (Kapur et al., 2013). Indeed, several participants in the qualitative study (Chapter Eight) had self-harmed for both suicidal and non-suicidal reasons, and sometimes the distinction between the two was ambiguous, even to them. Furthermore, participants who had attempted suicide were significantly more likely also to endorse self-harm as a means of *avoiding* suicide (Chapter Six). These findings underline the complexity of self-harming behaviour. Overall, the fact that alexithymia was found to be significantly higher in participants who had self-harmed with, but also without, suicidal intent, than in participants with no history of self-harm, supports the decision to build a model which does not distinguish behaviour according to motivation.

9.9.2.5 Contextual and Confounding Factors. The samples for Studies 1 and 2 were predominantly female, white and drawn from a Western cultural context

(mainly the UK and US). This limits the generalisability of the results to other demographic populations. A review of cultural differences in alexithymia concluded that the externally-orientated thinking facet may be particularly influenced by culture, based on evidence that Chinese people tend to emphasise somatic symptoms (Ryder et al., 2018). Regarding self-harm, Gholamrezaei et al. (2017) pointed to a potential cultural difference in the function of non-suicidal self-injury, based on a small number of studies conducted in Asian countries in which interpersonal functions were more highly endorsed than emotion regulatory functions. Although such evidence is limited, it highlights the need to test the findings of the current research programme using samples drawn from different cultures.

The current research programme has explored the relationship between alexithymia and self-harm in the context of the affect regulation model of self-harm. This guided the choice of possible mediating variables, in particular mindfulness, emotion dysregulation, depression and anxiety. However, it is possible that the relationship is in fact driven by one or more other confounding factors which have not been considered as part of this thesis. The qualitative study was a useful reminder of the context in which self-harm occurs, and in particular the interpersonal causes and functions of self-harm. Some of the participants described adverse childhood experiences and insecure attachment relationships of the type that have been linked to both self-harm (Bifulco et al., 2014; Cleare et al., 2018; Hu et al., 2017; Kaess et al., 2013; Shenkman et al., 2019) and alexithymia (Barbasio & Granieri, 2013; Frewen, Lanius, et al., 2008; Oskis et al., 2013). An anxious attachment style has been associated with self-harm via interpersonal difficulties (Stepp et al., 2008). More recently, Zortea et al. (2020) mapped a path from attachment styles to suicidal ideation, via defeat and entrapment, based on the

Integrated Motivational Volitional Model of Suicidal Behaviour (IMV; O'Connor, 2011; O'Connor & Kirtley, 2018). Furthermore, alexithymia has been shown to mediate between childhood experiences or poor attachment and adverse psychological outcomes or behaviours in adulthood (e.g. Carpenter & Chung, 2011) including self-harm (Paivio & McCulloch, 2004). The role of adverse childhood experiences in the development of alexithymia, and the interaction between insecure attachment styles and alexithymia in the context of self-harm has not been explored in the current thesis and might shed further light on the intrapersonal and interpersonal difficulties experienced by the participants in the qualitative study.

9.10 Future Research

Although the current research gives rise to many interesting questions which could be explored in future research, two issues in particular seem to be the most pressing.

9.10.1 The Longitudinal Trajectory of the Association Between Alexithymia and Self-Harm

The first priority for future research is a large-scale, longitudinal study, ideally over the lifespan, to increase knowledge about the importance of alexithymia in the initiation, maintenance and cessation of self-harm, relative to other risk factors. The current research programme has added further weight to the already considerable evidence supporting a significant correlational association between alexithymia and self-harm. Where it extends existing knowledge is in distinguishing between recent and historic self-harm. In both Study 2 and Study 3, there was no significant difference in TAS20 between participants with no history of self-harm and participants with historic self-harm. As discussed in Chapter Four, this may indicate that people with low levels of alexithymia are better able to stop self-harm

than people with high alexithymia. Alternatively, it could mean that alexithymia and self-harm have both declined as a result of a concurrent fall in a third factor, such as depression, or as a result of treatment. A third possible explanation is that self-harm occurred during the teenage years, and that both alexithymia (Säkkinen et al., 2007) and self-harm (Moran et al., 2012) have followed a normal developmental decline during adolescence into adulthood. It has been suggested that the declining trajectory of alexithymia through adolescence may reflect the normal development of emotion regulation skills, including the ability to identify and verbalise emotions (Karukivi, 2014). Without longitudinal data, it is not possible to test these different hypotheses. Future research should therefore prioritise gathering longitudinal data of the developmental trajectory of self-harm and alexithymia through adolescence and into adulthood. Once alexithymia reaches (relative) stability in adulthood (Karukivi et al., 2014; Porcelli et al., 2011), longitudinal research could investigate whether ceasing self-harm is always associated with a concurrent decline in alexithymia, or whether some individuals are able to stop self-harming despite elevated alexithymia scores, perhaps because of an increase in social support or adoption of more adaptive emotion coping skills.

9.10.2 Intervention Study to Reduce Self-Harm

The second priority for future research is to translate the current findings into an application with clinical utility. Alexithymia research has been criticised for its relatively slow progress in turning the growing evidence base into a practical resource to help people with high alexithymia (Samur et al., 2013). In the field of self-harm, the need for evidence-based interventions remains high, and there is still no gold standard for effective treatment (Saunders & Smith, 2016). The existing evidence indicated that group-based therapy, with structured tasks and specific

training to address deficits in identifying and verbalising emotions can be effective in reducing alexithymia (Cameron et al., 2014; Ogrodniczuk et al., 2018). The current research programme has contributed the following additional knowledge in the context of self-harm. First, interventions could usefully focus on increasing non-judgmental acceptance of difficult emotional experiences. Second, increasing awareness and interpretation of interoceptive sensation in the context of emotional experience could benefit people with high alexithymia who self-harm. These aspects of emotional regulation are both incorporated within mindfulness-based therapies, which have been shown to be effective in reducing alexithymia (Norman et al., 2019). No trial has yet tested whether mindfulness-based therapy results in a reduction in self-harm via a reduction in alexithymia and therefore this would be a useful and important priority for future research.

In addition to a randomised trial designed to help people who were currently engaged in self-harm, future research could also usefully include a population-based intervention designed to increase resilience among communities at risk of self-harm, such as school-based adolescents. The importance of trying to build resilience among young people before they begin to engage in self-harm was shown in the qualitative study, in which one participant articulated her belief that once self-harm became her means of coping, she did not have to learn to regulate her emotions in any other way, for example by talking to others. Galante et al. (2017) found that university students randomly assigned to a mindfulness-based course reported lower levels of stress during the exam period than students who had access to normal mental health support. A similar intervention in a school-based setting could test the hypothesis that mindfulness training leads to a decrease in alexithymia and lower

rates of self-harm, compared with a matched cohort (who would receive the intervention at a later date).

9.10.3 Borrowed Words

While the longitudinal and intervention studies proposed above represent the priority for future research in this area, one relatively small finding to emerge from the qualitative study raises intriguing questions which it would be exciting to explore in more depth. Contrary to what might be expected in people with high levels of alexithymia, some of the participants appeared to recognise their own emotional experience in other people's words, expressed in song lyrics or poetry, or, more prosaically, in the articulation of a correct diagnosis (Chapter Eight). There are few precedents in the literature to corroborate these findings. As described in Chapter Eight, Constantinou et al. (2014) found no difference in emotion labelling between participants with high and low alexithymia, when participants chose labels from a pre-ordained list, rather than generating the emotion words themselves. Krentzman et al. (2015) described the unexpected, secondary therapeutic benefit of using the Positive and Negative Affect Schedule (PANAS, Watson et al., 1988) as a daily measure of mood in a wider study on alcohol use disorder. Participants showing alexithymic characteristics reported that using the PANAS to rate the degree to which they felt each of a list of emotions led them to identify, and subsequently interpret, previously hidden feelings. In the psychoanalytical literature, there are sometimes indications that patients respond positively to possible interpretations of their situation, as voiced by the therapist.

“In the earliest sessions I learned that Catherine found it helpful when I “thought out loud” – that is, when I shared with her how I got to a particular idea or concept.” (Barth, 2016, p. 42)

The number of participants in the qualitative study who demonstrated this tendency to recognise their emotional experience in other people's words is too small to draw any firm conclusions. It could usefully be tested in an experimental study in which participants are asked to match verbal, figurative descriptions of emotional experiences with emotion labels, or with their own, induced emotional state. Alternatively, a larger qualitative study could be conducted using song lyrics or poetry rather than photographs as a means of reflecting emotional experience. Ultimately, if borne out by further investigation, the finding could have therapeutic benefits, allowing participants to find new ways to express their subjective experience to others.

9.11 Concluding Thoughts

It was the objective of this programme of research to look beneath the frequently observed correlational relationship between alexithymia and self-harm, to test potential explanations, and to examine the consequences. The results are in some ways unsurprising to anyone familiar to the literature on self-harm. The use of self-harm to regulate unwanted and poorly understood emotional experience is consistent with the empirical and theoretical evidence supporting an affect regulation model. However, in focussing in particular on alexithymia, a number of novel findings have emerged, which could affect the way in which self-harm is viewed and treated. First, it is hard to regulate emotions that are not clearly identified and understood and that may be confused with physical sensations. Increasing emotional clarity, therefore, may be a necessary precursor to improving emotional regulation skills, particularly the ability to accept emotional experience without reaction or judgement. Second, self-harm may be associated with a range of different functions, including generating feeling, particularly among people who score highly on

alexithymia. Third, an apparent reluctance to talk about feelings, or to seek help, may be due to fear of unwanted intervention, but may also be due to difficulties describing subjective experience. Finally, the qualitative study introduced the idea of ‘borrowed words’: the idea that people with high alexithymia might be able to recognise and communicate their own experience using other people’s words.

Why do these findings matter? To answer this question, I find it helpful to return to my original motivation for undertaking the research. So often in therapy, on a help-line such as Samaritans or even in conversation, we rely on our ability to use words to describe our inner experience. Furthermore, it is increasingly accepted that talking about feelings is necessary for emotional health and to overcome stigma. The current findings highlight the fact that understanding inner experience and describing it to others is harder for some people than for others. For people with high alexithymia, self-harm may provide a means of dealing with an excess or absence of emotion, which is not understood and not tolerated.

In Chapter Nine I considered the implications of the results from the current research programme for clinical practice. I am not a clinician, but I have asked myself how the findings might affect my own volunteer work as a listening volunteer for people in emotional distress. Importantly, I believe that an awareness of alexithymia has lessened the frustrations I might feel towards a caller who seems unable to talk about their feelings. In terms of changing the way I might respond to a caller, I am mindful that the current research programme did not test any particular intervention and therefore it would be inappropriate to imply that the findings provide a roadmap to a different way of helping people in distress. Studies 2 and 3 found that the relationship between alexithymia and self-harm was mediated by difficulties in accepting, or not-reacting to, emotional experience. The very act of

calling a support line, although an action in its own right, implies a desire to avoid recourse to self-harm by talking to someone else. By listening to them, I am hopefully providing them with a space to pause and reflect, rather than act. In terms of more active support, the findings of the qualitative study tentatively suggest that people who struggle to talk about their feelings might respond to emotion labels which are given to them. Thus, “I wonder if it makes you feel x or y?” might be a better question than the more open “How does that make you feel?” However, these findings need replication and testing before firm conclusions can be reached.

Self-harm is a phenomenon which is hard to understand for people who have never engaged in it. I hope that the findings presented in this thesis may contribute to greater understanding of this behaviour, as well as giving voice to the participants who have shared their experiences and their stories with me.

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Appendices

Appendix 1.1: Effects of Mindfulness-Based Interventions on Alexithymia: A Systematic Review

Systematic Review and Meta-Analysis of the Effect of Mindfulness-Based Interventions on Alexithymia, as published in Evidence Based Mental Health
(Norman et al., 2019) doi: 10.1136/ebmental-2018-300029

ABSTRACT

Question: Alexithymia has been found to be modifiable through treatment, with associated clinical benefits. Recent studies have begun to test the potential of mindfulness-based interventions to reduce alexithymia, using skills-based, group training to improve non-judgmental, present moment awareness. The objective of this review therefore was to conduct a systematic synthesis to assess the current state of knowledge about the effect of mindfulness-based interventions on alexithymia to inform clinical practice.

Study Selection and Analysis: We carried out a systematic review of the literature and found four randomised controlled trials of the effect of mindfulness-based interventions on alexithymia, with a combined total of 460 participants.

Findings: A random effects meta-analysis, combining study endpoint data, showed a statistically significant effect of mindfulness-based treatment on alexithymia, (Toronto Alexithymia Scale [TAS20]) compared with the control group (mean difference = -5.28, 95% CI -9.28 to -1.28, $p=0.010$). Subgroup analysis was conducted to investigate sources of heterogeneity ($I^2=52%$). Heterogeneity was reduced when the meta-analysis was restricted to interventions of a similar duration (three months or less).

Conclusions: Findings from our study should be replicated in further research with larger samples; however, the results indicate that mindfulness-based interventions may be an effective treatment in reducing alexithymia.

Summary Box

What is already known about this subject?

- People with alexithymia are more likely to suffer from depression and anxiety.
- Alexithymia is modifiable through treatment.
- Individual trials have indicated that mindfulness-based training may be effective in reducing alexithymia.

What are the new findings?

Effects of mindfulness-based interventions on alexithymia:

A systematic review

BACKGROUND

Alexithymia is a trait characterised by difficulties in identifying and communicating emotions, and by an externally-orientated thinking style (Bagby et al., 1994), arising from a deficiency in the neural processing of emotions (Van der Velde et al., 2015). Prevalence rates range from 7-13% in community samples, but can be several times higher in clinical samples.(McGillivray et al., 2017).

Alexithymia has been found to be associated with psychological disorders, such as anxiety (Paniccia et al., 2017), depression (Honkalampi et al., 2000; Son et al., 2013) and general psychopathological distress (Grabe et al., 2008), and with maladaptive behaviours including alcohol dependence (Thorberg et al., 2016), eating disorders (Westwood et al., 2017) and self-harm (Norman & Borrill, 2015). The presence of alexithymia can present a barrier to psychotherapeutic treatment (Lumley et al., 2007), because the inability of the patient to communicate emotions may induce a negative reaction in the therapist (Ogrodniczuk et al., 2011).

There has been a debate as to whether alexithymia is a state-dependent response to trauma or depression (Honkalampi et al., 2001; Söndergaard & Theorell, 2004) or a stable personality trait (Salminen et al., 1994; Tolmunen et al., 2011).

The growing consensus is that alexithymia is a trait with relative, rather than absolute, stability, which means that it can be modified through treatment, but that differences between individuals remain largely the same over time (Porcelli et al., 2011). A further consideration is whether any reduction in alexithymia as a result of treatment has any effect on the individual's health or wellbeing. There is some, indicative evidence that decreases in alexithymia may be beneficial: one study found

that reduced alexithymia following therapy was significantly associated with a reduction in cardiac events in coronary heart disease patients (Beresnevaite, 2000) and a second study reported an association between reduced alexithymia and improvements in interpersonal problems (Ogrodniczuk et al., 2012). Taken together, this evidence suggests both that it is possible to reduce alexithymia through treatment and also that a reduction in alexithymia may be of positive benefit to the individual. Identifying effective treatment for alexithymia is therefore an important area for further investigation.

A systematic review assessing changes in alexithymia found that studies involving psychological interventions that targeted alexithymic symptoms directly were more likely to report significant reductions in alexithymia than those studies where the intervention was not specifically designed for alexithymia (Cameron et al., 2014). The interventions that resulted in significant falls in alexithymia tended to use skills-based training designed to increase awareness of bodily sensations and associated emotions. In addition, they often involved group therapy, which may allow alexithymic participants to observe and mirror the way others describe their feelings and experiences (Lumley et al., 2007). These elements are core to mindfulness-based training courses such as Mindfulness-Based Stress Reduction (MBSR, Kabat-Zinn et al., 1985) and Mindfulness-Based Cognitive Therapy (MBCT, Teasdale et al., 2000) in which participants are taught to pay attention to whatever is happening in the present moment, through exercises designed to increase awareness of bodily sensation and non-judgmental observation of thoughts and feelings. Mindfulness-based training has been found to be effective against depression, anxiety and stress in clinical samples (Gotink et al., 2015; Khoury et al., 2013) and against psychological distress in community samples (Galante et al.,

2018). Although mindfulness and alexithymia have been shown to be related constructs, with high alexithymia significantly correlated with low levels of mindfulness (Baer et al., 2006; Teixeira & Pereira, 2013) Cameron et al.'s (2014) review did not identify any study that explicitly tested mindfulness-based interventions on alexithymia. However, a small number of studies published since Cameron et al.'s (2014) review in 2014 indicate that mindfulness-based training might be also effective in reducing alexithymia (Byrne et al., 2016; Haase et al., 2015) possibly through the mechanism of enhanced neural processing associated with the identification of bodily sensations, termed interoception (Ernst et al., 2013; Fessler et al., 2016).

OBJECTIVE

We therefore aimed to carry out a systematic review and meta-analysis of randomised controlled trials (RCTs) of mindfulness-based interventions to provide a quantitative assessment of the effect of mindfulness-based training on alexithymia.

STUDY SELECTION AND ANALYSIS

The protocol for this systematic review was registered on PROSPERO (CRD42017071924).

Search strategy

Electronic databases (PsycINFO, Medline, Web of Science and Cochrane CENTRAL) were searched from inception until September 25th 2017, using the following terms: “affective symptoms” [MeSH] OR “alexithymi*” AND mindful* AND (intervention* OR random* OR “clinical trial*” OR training*). No restrictions were applied regarding language or date of publication, but we considered only articles published in peer-reviewed journals to increase the quality of the included

studies. Abstracts were screened independently by two reviewers and disagreements were solved via discussion with a third member of the review team. The same two reviewers independently extracted the data from the included studies.

Study selection

We included only RCTs of any duration comparing mindfulness-based interventions with any control condition (pharmacological or psychological intervention, wait-list, treatment as usual), in which alexithymia was measured in both the experimental and control groups, using a validated measure. To be included mindfulness training had to be a component or the whole of the intervention. No exclusion criteria were set regarding age, diagnosis or other participant demographics.

Outcomes

The primary outcome was the severity of alexithymia symptoms at study endpoint. We also carried out secondary analyses of severity of alexithymia symptoms within three months. We decided to choose this time point because it is common to the included studies and is closest to the standard length of an MBSR programme (Kabat-Zinn et al., 1985). Additional analyses at other time points were conducted where the study period exceeded three months.

Data extraction

Data from the studies were extracted using a standardised form. Extracted information included study sample characteristics, details of the intervention (such as duration, activities undertaken and method of delivery and number), severity of symptoms and timings of measurement.

Risk of bias assessment

The risk of bias was assessed using the Cochrane tool as reported in the Cochrane handbook (Higgins & Green, 2011). This enables researchers to assess as high, low or unclear seven different types of risk that might cause the effect of treatment in individual studies to be over or under estimated. Risk of bias assessment was carried out independently by two reviewers and any disagreement resolved through consensus or by discussion with another member of the review team.

Statistical analysis

As our outcomes were continuous, we calculated the pooled mean difference (MD) with corresponding 95% confidence intervals (CIs), as appropriate. We considered a P value of less than 0.05 and a 95% CI that does not cross the line of no effect as statistically significant. The standardised mean difference (SMD) was also calculated as a measure of the effect size. In accordance with the study protocol we used a random-effects model because it has the highest generalisability for empirical examination of summary effect measures in meta-analyses (Furukawa et al., 2002). However, as recommended by the Cochrane Handbook for Systematic Reviews of Interventions (Higgins & Green, 2011, 10.4.4.1) when concerned about the influence of small study effects on the results of a meta-analysis with between-study heterogeneity, we examined the robustness by comparing the fixed-effect model and the random-effects model. We reported any material differences between the models. In the case that a study included multiple intervention cohorts, we decided to combine the outcome data from all the intervention cohorts, using the method recommended by Higgins and Green (Higgins & Green, 2011). We planned to conduct subgroup analyses if there were large differences between the interventions or between participant characteristics. All analyses were carried out using RevMan Version 5.3 (The Cochrane Collaboration, 2014).

FINDINGS

In total 116 articles were retrieved from the database search, which resulted in 59 individual studies after duplicates were removed (Figure 1). After screening, a total of four studies met the criteria, all published since 2010, with a combined total sample of 460 participants (Bornemann & Singer, 2017; de la Fuente Arias et al., 2010; Santarnecchi et al., 2014; Vinding et al., 2015). A full description of the four studies is given in Table 1.

Figure 1 Flow chart of the study selection process

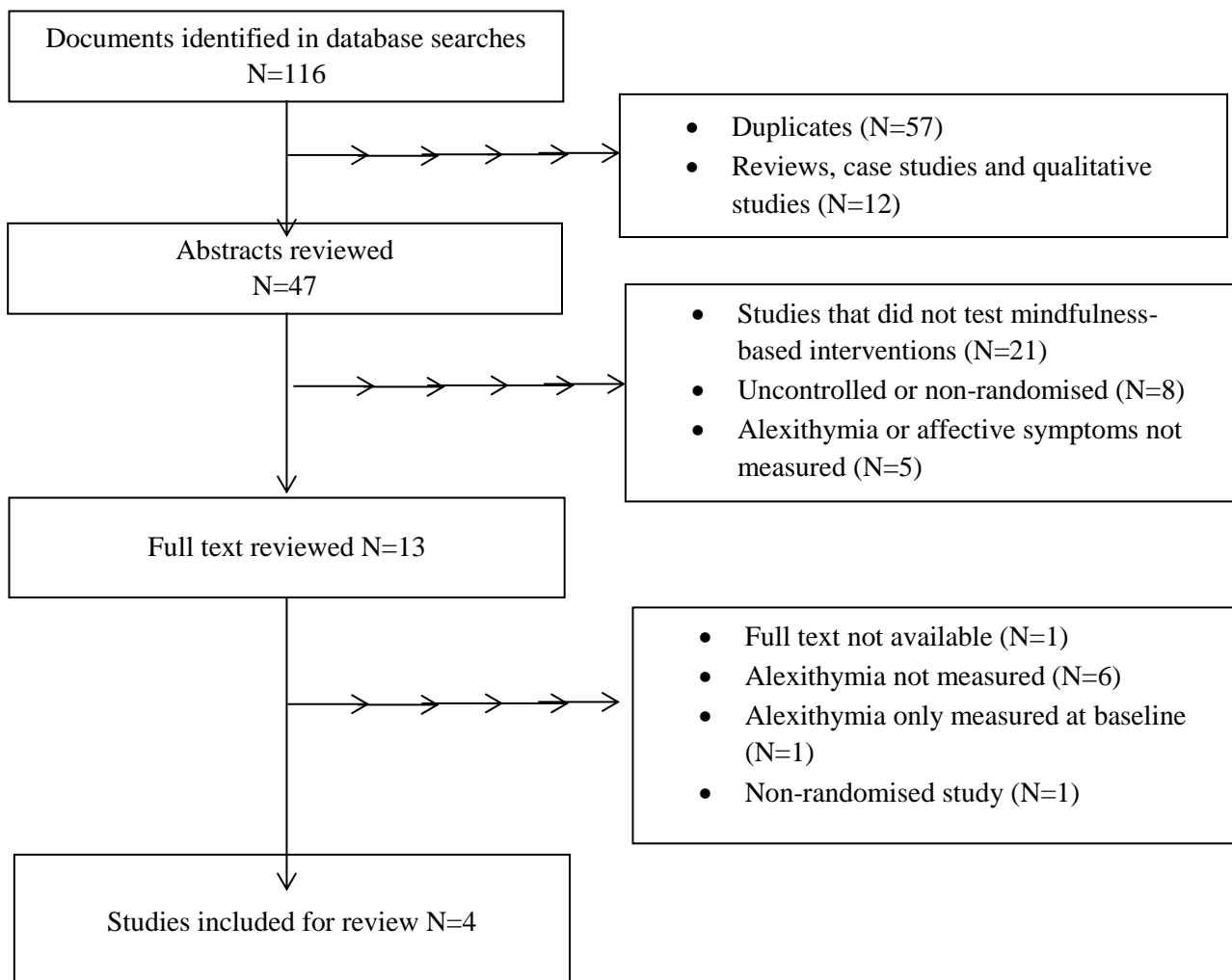


Table 1: Results of systematic review of literature on the effect of mindfulness-based interventions on alexithymia

Author	Study type	Population (N)	Age and Sex	Intervention	Control	Measures	Time measurements taken	Results
Bornemann & Singer (2017)	RCT	Volunteers from the general public in Germany in good health and with no prior meditation experience. People with TAS20 scores of > 60 were excluded. N=318	Mean=40.8 (9.3) 59% Female	3 mental training modules, each 3 months long, involving a 3 day silent retreat, 13 weeks of weekly 2 hour group sessions and 30 minutes of daily practice. The Presence module was about directing attention to the present moment, the Affect module about approaching difficult emotions with acceptance and the Perspective module about metacognition, observing thoughts and reframing experiences. There were 3 intervention groups: groups 1 and 2 did all three modules over 9 months but in a different order, group 3 did just the Affect module for 3 months	No training.	TAS20 and subscales (Bagby et al., 1994) Heartbeat perception task and ECG	Before the intervention and at 3, 6 and 9 months (after each module).	Alexithymia decreased more in the intervention groups than the control group from T ₀ to T ₃ (p<.001, d=-.331) and T ₀ to T ₂ (p=0.026, d=-.155) but not T ₀ to T ₁ (p=.143, d=-.166). The effect at T ₃ was significant for all TAS subscales. Post hoc tests showed that the decreases in TAS scores were caused by the Presence and Affect modules but not the Perspective module. Heartbeat perception accuracy increased more in the intervention groups than the control group from T ₀ to T ₃ (p=0.017, d=.273) and T ₀ to T ₂ (p=0.020, d=.173) but not T ₀ to T ₁ (p=.220, d=.111). Change in heartbeat perception accuracy between T ₀ and T ₁ were negatively correlated with changes in TAS20 (p=.002). The correlation was significant for those who had taken the Presence training but not for those who had taken the Affect training.
de la Fuente Arias, Franco Justo & Salvador Granados (2010)	RCT	Students from the University of Almeria with no experience of meditation or yoga. N=46	M=23.47 (6.34) 85% F	10 weekly 1.5 hour mindfulness/meditation training sessions adapted from the MBSR programme,(Kabat-Zinn et al., 1985) combined with individual practice.	Wait-list.	TAS20 and subscales (Bagby et al., 1994) Social skills scale (Gismero, 2000)	Before and after the intervention	Pre/post tests show significant changes in TAS20 in the intervention group (DIF p<.001, DDF, EOT and Total TAS p<.01). The size of the change was 20% decrease in DIF (d=.32) and DDF (d=.39), 22.2% in EOT (d=.55) and 20.60% in total TAS (d=.47). The control group's TAS20 did not change significantly. The difference in TAS20 scores between the groups was not significant at baseline (p=.321) or post intervention (t=0.600, p=.552). There were no significant differences in social skills in the experimental and control groups at baseline, but post intervention social skills were significantly higher (p≤.001) in the experimental group and there was a significant pre/post increase in social skills in the experimental group (total social skills, p≤.001).

Author	Study type	Population	Age and Sex	Intervention	Control	Measures	Time measures taken	Results
Santarneccchi, D'Arista, Egiziano, Gardi, Petrosino, Vatti, Reda & Rossi (2014)	RCT and MRI study	Right handed members of the public in Italy, with no prior meditation or mindfulness experience and in good physical and mental health. N=48	Intervention group: 31 (± 4). Control group: 30 (± 4) 52% F	8 week MBSR programme (Kabat-Zinn et al., 1985) involving weekly 2.5 hour group sessions and daily individual practice.	Wait-list	TAS20 (Bagby et al., 1994) Penn State Worry Questionnaire (Meyer et al., 1990) State-Trait Anxiety Inventory (Vigneau & Cormier, 2008) Beck Depression Inventory II (Beck et al., 1996) Mindfulness Attention Awareness Scale (K. W. Brown & Ryan, 2003) MRI scans measured grey matter volume and cortical thickness	Before and after the intervention.	There was a significant reduction in TAS20 in the intervention group ($p=0.004$) and no significant change in the control group. There was no significant change in MAAS in either group. There was a significant negative correlation between alexithymia level and insula cluster thickness values ($r=-0.712$, $p<0.01$) in the intervention group post training. There were significant reductions in the intervention group in worry ($p=.012$), state anxiety ($p=.031$) and depression ($p=.046$) but not in the control group.
Viding, Osika, Theorell, Kowalski, Hallqvist & Horwitz (2015)	RCT	Adult women attending any of 4 health care centres in Sweden with burnout/exhaustion symptoms, excluding individuals with drug or alcohol abuse or severe depression. N=48	M=53.8 (8.15) 100% F	A package of six cultural activities, including mindfulness (focussed on breathing, body awareness and awareness of thoughts and feelings), dance, theatre, film and drawing, each delivered in two 90 minute sessions.	Standard care involving physiotherapy	TAS20 and subscales (Bagby et al., 1994) Karolinska Exhaustion Disorder Scale (Besèr et al., 2014) Sense of Coherence (Langius & Lind, 1995) Single item measure of self-rated health.	Baseline, 3 months (the length of the programme) and 6 months (follow up).	There was a significantly greater decrease in the intervention group compared to the control group in total TAS ($p=0.007$), DDF ($p=0.004$) and DIF ($p=0.051$) at 6 months relative to baseline. There was a significant decrease in exhaustion and self-reported health ($p\leq 0.001$) in the intervention group compared to the control group, but not in sense of coherence.

Sixty-five percent of the total sample was female. The mean age ranged from 23.5 to 53.8, with one study restricting the age range of eligible participants to between 20 and 55 (Bornemann & Singer, 2017). Three studies were drawn from non-clinical samples (Bornemann & Singer, 2017; de la Fuente Arias et al., 2010; Santarnecci et al., 2014) and two studies (Bornemann & Singer, 2017; Santarnecci et al., 2014) additionally excluded individuals in poor psychological health. Participants in the fourth study were women with symptoms of burnout or exhaustion (Vinding et al., 2015). Three of the studies explicitly excluded people with prior experience of meditation (Bornemann & Singer, 2017; de la Fuente Arias et al., 2010; Santarnecci et al., 2014).

Two studies compared mindfulness-based interventions based on the MBSR programme, delivered over eight weeks (Santarnecci et al., 2014) and ten weeks, (de la Fuente Arias et al., 2010) with wait-list. A third study tested a bespoke mindfulness-based programme of contemplative mental training delivered in three, different three-month modules (Bornemann & Singer, 2017). In this study, two intervention cohorts participated in all three modules in a different order, one intervention cohort only took one, three month module and a control group had no training. Finally, the fourth study tested a three-month package of six different cultural activities (including mindfulness training, and also dance, theatre and art; Vinding et al., 2015). This was compared with standard care, consisting of physiotherapy and light physical exercise. This was the only study to include a follow-up assessment at six months, three months after the end of the intervention (Vinding et al., 2015). All four studies measured alexithymia using the Toronto Alexithymia Scale (TAS20; Bagby et al., 1994) In one study, (Bornemann & Singer, 2017) individuals with a TAS20 score of over 60 were excluded. Other variables

measured are described in Table 1. Only one study (Santarnecchi et al., 2014) measured mindfulness, using the Mindful Attention Awareness Scale (MAAS, Brown & Ryan, 2003).

The assessment of risk of bias is set out in Figure 2. The main risk of bias was considered to be in the blinding of outcome assessment, which is difficult to achieve with a self-report outcome measure.

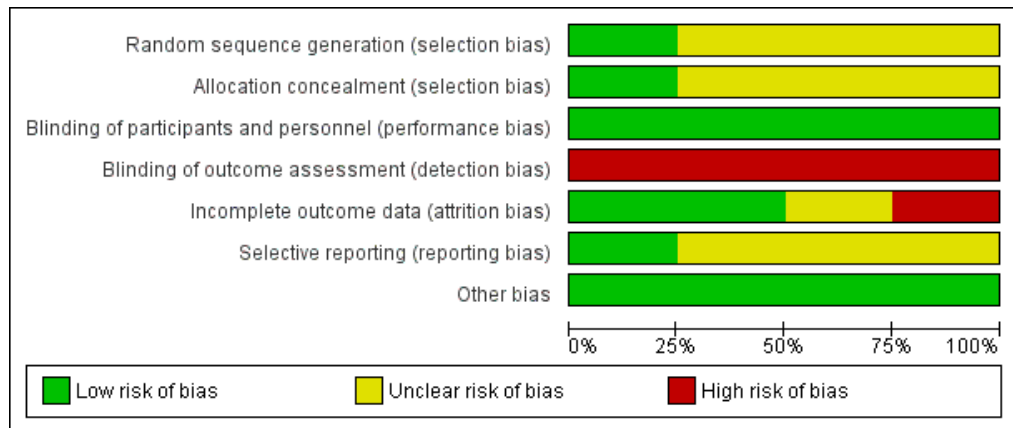
Figure 2(a)

Risk of bias summary: review authors' judgements about each risk of bias item for each included study.

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Bornemann 2017	?	?	+	-	+	+	+
de la Fuente Arias 2010	?	?	+	-	+	?	+
Santarnecchi 2014	?	?	+	-	?	?	+
Viding 2015	+	+	+	-	-	?	+

Figure 2(b)

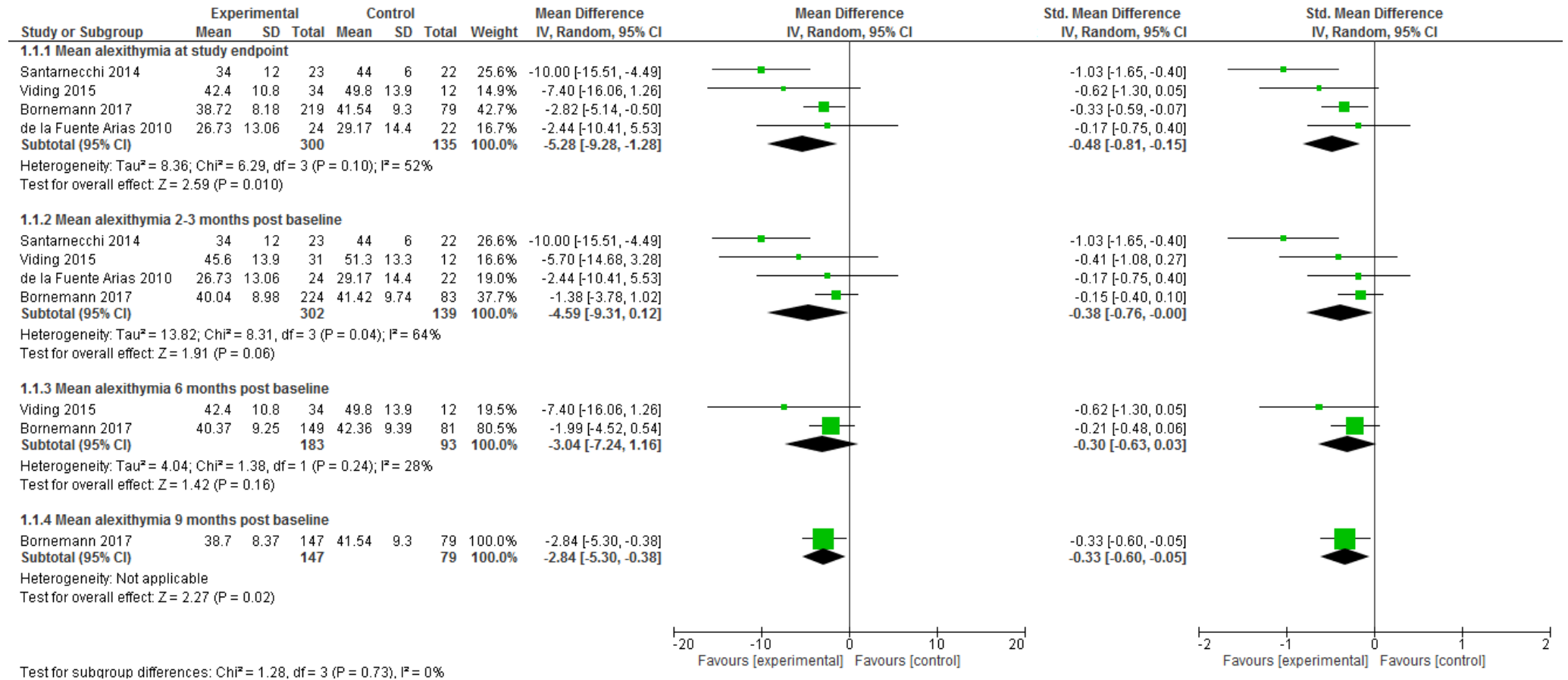
Risk of bias graph: review authors' judgements about each risk of bias item presented as percentages across all included studies.



A random effects meta-analysis was carried out to assess mean difference in TAS20 scores between the experimental and control groups at study endpoint. Study endpoint was interpreted as the final data collection. In two studies the study endpoint coincided with the end of treatment for all participants (de la Fuente Arias et al., 2010; Santarnecchi et al., 2014). In Bornemann and Singer (Bornemann & Singer, 2017) data from the three experimental cohorts at the end of their respective treatment periods were combined. In the case of Viding et al. (2015) the study endpoint occurred at the six month follow-up assessment. In order to make use of all the available evidence, subgroup analyses were carried out to assess mean difference in TAS20 scores between the experimental and control groups at different time points post baseline: at T₁ (within three months post-baseline), T₂ (six months post baseline) and T₃ (nine months post baseline). The results are set out in Figure 3.

Figure 3

Random Effects Meta-Analysis of Mean and Standardised Mean Difference in Alexithymia at Study End and at Different Time Points



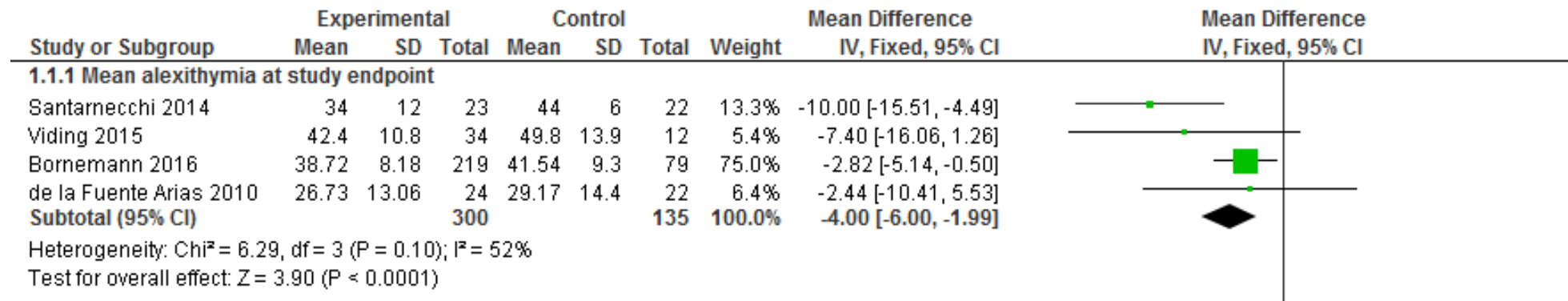
Combining the results from all studies at study endpoint resulted in a significant model (mean difference (MD)=-5.28, 95% CI -9.28 to -1.28, $p=0.010$, 435 participants). This difference corresponded to a SMD of -0.48, indicating a moderate effect size (Figure 3), but the heterogeneity between the studies was moderate to high ($I^2=52\%$). At T₁, the results from the four studies show that, although alexithymia levels were lower in the experimental group than the control group, the overall effect of treatment was not significant, with significant heterogeneity (MD = -4.59, 95% CI -9.31 to 0.12, $p=0.06$; $I^2=64\%$, 441 participants). Excluding Bornemann and Singer (2017) on the grounds that the intervention was not complete for most participants at T₁, produced a significant model, (MD = -6.91, 95% CI -11.52 to -2.30, $p=0.003$, 134 participants), and reduced heterogeneity to $I^2=19\%$. The difference between experimental and control groups at T₂, based on two studies, was not significant (MD = -3.04, 95% CI -7.24 to 1.16, $p=0.16$, 276 participants). Finally, Bornemann and Singer (2017) the only study to take measurements at T₃, reported a significant difference between the experimental and control groups at that time point (MD = -2.84, 95% CI -5.30 to -0.38, $p=0.02$, 226 participants).

One possible cause of heterogeneity is the difference between the interventions. Whilst three of the interventions tested centred on mindfulness-based training, in Viding et al. (2015) the mindfulness element accounted for only one sixth of the total intervention. A sensitivity analysis was conducted on the primary outcome of mean alexithymia at study endpoint, excluding Viding et al. (2015). This exclusion increased the heterogeneity of the model but it remained significant ($I^2=65\%$, MD=-4.99, 95% CI -9.84 to -0.13, $p=0.04$, 343 participants).

Finally, for comparison purposes, a fixed effects meta-analysis was carried out on the primary outcome of the mean difference in TAS20 scores between the experimental and control groups at study endpoint (Figure 4). This resulted in a significant model (MD=-4.00, 95% CI -6.00 to -1.99, $p < 0.0001$, $I^2 = 52\%$, 435 participants).

Figure 4

Fixed Effects Meta-Analysis of Mean Difference of Alexithymia at Study Endpoint



CONCLUSIONS AND CLINICAL IMPLICATIONS

This systematic review and meta-analysis examined the effect of mindfulness-based interventions on alexithymia. The combined results from the four RCTs found in the literature indicate that mindfulness-based interventions significantly reduce alexithymia, compared with a control condition, at the end of the study period. It is not clear if the observed effect can last beyond nine months (i.e. the length of the longest intervention in the included trials).

Nature of the intervention

The studies differed in the length of the intervention offered, with Bornemann and Singer's (2017) nine-month programme considerably longer than the interventions tested in the other studies and also the conventional length of a MBSR programme. However, excluding Bornemann and Singer (2017) from the meta-analysis of outcomes at three months, on the grounds that the intervention was not complete for most participants at that point, produced a significant effect of mindfulness-based training, suggesting that it is the content of the intervention, rather than its length that is important for alexithymia. This is in line with non-randomised evidence, which suggests that even a short intervention can have a positive effect. Byrne et al. (2016) tested a two-week mindfulness-based intervention on a group of sex offenders in prison and found that alexithymia decreased significantly in the intervention group compared to the control group over the short period of the intervention.

Mechanisms

The intervention tested by Bornemann and Singer (2017) gives an opportunity to deconstruct the elements of a mindfulness-based intervention, since it was explicitly divided into three modules covering awareness of the present moment

and particularly of bodily sensations (Presence), accepting difficult emotions with loving kindness (Affect) and observing thoughts and learning reappraisal skills (Perspective). The authors found that a significant decrease in alexithymia was attributable only to the Presence and Affect modules, and not to the Perspective module. The mindfulness-based class that formed part of the intervention tested in Viding et al. (2015) would appear to be similar in content to the Presence module in Bornemann and Singer (2017)'s study, as it was focussed on breathing and awareness of the body, thoughts and feelings. Taken together these studies may indicate that increased awareness of present experience, particularly awareness of bodily sensations, may be one mechanism by which alexithymia is reduced. Alexithymia (awareness of emotional experience) has been found to be strongly related to interoception (awareness of bodily experience, Murphy et al., 2017) and improvement in alexithymia symptoms has been associated with increased heartbeat perception accuracy (Bornemann & Singer, 2017). Furthermore Santarnecchi et al. (2014) reported a significant correlation between the decrease in alexithymia and an increase in right insula thickness, an area of the brain, which is involved in both emotional and bodily awareness (Craig, 2009). Interestingly, however, Bornemann and Singer (2017) found that the significant correlation between the decrease in alexithymia and increased heart beat awareness was only observed among those that had taken part in the Presence training module, and not among those that had taken the Affect training module. The authors conclude that the significant decrease in alexithymia observed among participants in the Presence module may be attributable to an increase in interoception, but that reduction in alexithymia in participants in the Affect module, which focussed on the acceptance of difficult emotions, may be attributable to a different mechanism.

It might be assumed that another mechanism by which alexithymia is reduced following mindfulness-based training is an increase in trait mindfulness. In fact, the only one of the four studies included in this review to measure trait mindfulness (Santarneccchi et al., 2014) reported no significant change in mindfulness as a result of the intervention, a surprising finding that runs counter to other evidence (Khoury et al., 2013). The authors attribute this result to the use of the MAAS (K. W. Brown & Ryan, 2003). The items in the MAAS focus on the respondent's ability to pay attention to what is happening in the present moment (e.g. "I drive places on automatic pilot and then wonder why I went there") rather than the emotional and non-judgmental aspect of mindfulness captured in other measures (Sauer et al., 2013). This conception of mindfulness, which places little emphasis on identifying or describing feelings, might explain the lower correlations between the MAAS and the TAS20 than between the TAS20 and other measures of mindfulness, such as the Kentucky Inventory of Mindfulness Skills and the Five Facet Mindfulness Questionnaire (Baer et al., 2006; Stasiewicz et al., 2012). Santarneccchi et al.'s (2014) findings might imply that the mechanism of change through which mindfulness-based interventions operate on trait mindfulness and alexithymia is not based on the attentional aspect of mindfulness, but more research and larger study samples are needed to test this hypothesis further.

Comparison with other interventions

One question that arises from the results of this review is how a combined mean difference of five points on the TAS20 scale between intervention and control groups post mindfulness-based training compares with the effect of other types of intervention on alexithymia. There is some evidence from uncontrolled pre-post studies to support the use of other therapies in treating alexithymia, including

Cognitive Behavioural Therapy (CBT, Rufer et al., 2010; Spek et al., 2008), psychodynamic group therapy (Grabe et al., 2008) and Voice Movement Therapy (Martin et al., 2013). An RCT comparing the effect of a psychoeducation and cognitive restructuring programme for cancer patients with standard medical care resulted in a much greater difference in mean TAS20 between the groups after treatment than found in the current meta-analysis (MD = -17.29, CI -22.52 to -12.06. Porcelli et al., 2011). However, the difference was due in large part to a significant increase in TAS20 in the control group, which may be a specific feature of the oncological population or, as the authors suggest, may have been a secondary effect of the increase in anxiety associated with illness.

Clinical implications

This review has identified a statistically significant effect of mindfulness-based interventions on alexithymia. It is worth noting that in all the studies the baseline level of alexithymia was relatively low, and below the clinical threshold (Taylor et al., 1997) It is possible that the effect of a mindfulness-based intervention might be still greater in clinical populations where baseline alexithymia may be higher (McGillivray et al., 2017). Bornemann and Singer (2017) observed larger falls in TAS20 scores among those who had higher alexithymia at baseline (above 51) than those with low alexithymia.

Alexithymia has been described as a trans-diagnostic factor associated with a range of disorders (Valdespino et al., 2017). Using mindfulness-based training to reduce alexithymia might therefore be a means of improving the efficacy of subsequent condition-specific treatments. An increased awareness of, and ability to talk about, emotions might, for example, enable better engagement with psychotherapy (Ogrodniczuk et al., 2011). More evidence is needed to establish

whether a reduction in alexithymia is directly and causally related to improvements in health. The studies reviewed here reported significant improvements post intervention in some measures of psychological health (e.g. worry, anxiety and depression (Santarnecchi et al., 2014); exhaustion and self-reported health (Vinding et al., 2015)) but not others (e.g. sense of coherence, Vinding et al., 2015). Where improvements were observed it is not possible to say whether they are related to the changes in alexithymia or merely concurrent. Further research is needed, particularly to test the implications of a decrease in alexithymia on psychological health.

As far as non-clinical populations are concerned, mindfulness-based interventions may be effective in reducing alexithymia as a preventative measure. One advantage of mindfulness-based interventions is that they can be delivered in community settings and are becoming increasingly popular as a means of reducing non-clinical levels of stress (Galante et al., 2018). High alexithymia per se is unlikely to be an explicit reason someone might seek treatment but is rather a comorbid, and potentially causal, feature of many other presenting behaviours or psychological features (Taylor et al., 1997). Community-based, universal interventions, therefore, may be a means of preventing future problems by improving alexithymic symptoms.

Limitations

There were several limitations in this review. First, the conclusions are based on a combined sample size of just 460 participants. We focussed only on RCTs, excluding other, non-randomised (Byrne et al., 2016) and uncontrolled (Bouvet et al., 2015; Haase et al., 2015) trials of the effect of mindfulness-based interventions on alexithymia. Although this limited the number of included studies to four, it meant that the conclusions were based on the highest quality evidence available.

Second, the heterogeneity between the studies was found to be moderate to high. We conducted sensitivity analysis to assess whether this was due to the differences in either the content or the length of the interventions. The results showed that heterogeneity was higher when studies with interventions of different lengths were combined. It should be noted, however, that the only study that tested an intervention of over three months' duration (Bornemann & Singer, 2017) accounted for nearly 70% of the combined sample. The observed heterogeneity, therefore, may be due to the inclusion of studies with small sample sizes in the meta-analysis (Turner et al., 2013). Future RCTs with larger samples could usefully explore further whether the content or the duration of an intervention affects the outcome.

A third limitation is the absence of an active control group. A meta-analysis of mindfulness-based therapy found no significant difference in outcomes between mindfulness therapy and other therapeutic interventions such as CBT (Khoury et al., 2013). None of the studies in the current review included an active control group which would have allowed the effect of mindfulness-based interventions to be compared with other types of active treatment. However, Bornemann and Singer (2017) found that two of their training modules resulted in reduced alexithymia, whilst the third, which focussed on observing thoughts and learning reappraisal skills, did not. This finding appears to suggest the reduction in alexithymia is attributable to the content of that particular training module, rather than other aspects of the intervention such as the method of delivery.

Finally, whilst two of the interventions were based on the MBSR programme (de la Fuente Arias et al., 2010; Santarnecchi et al., 2014) two tested bespoke interventions (Bornemann & Singer, 2017; Vinding et al., 2015) which may limit the conclusions that can be drawn for clinical practice. In one of these studies (Vinding

et al., 2015) mindfulness training comprised only one sixth of the intervention, and therefore it is not possible to attribute the effect of the intervention to the mindfulness component with any certainty. To address this limitation we conducted subgroup analysis excluding this study and found that the model remained significant, although the heterogeneity increased.

Conclusions

Participation in mindfulness-based interventions led to significantly lower alexithymia at the study end compared to a control group. The literature on which these conclusions are based is limited, and further RCTs with larger clinical and non-clinical samples and longer follow up are required. However, the findings indicate that mindfulness-based interventions may be an effective means of reducing alexithymia.

Compliance with Ethical Standards

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Conflict of Interest: The authors declare that they have no conflict of interest.

Research involving human or animal participants: This article does not contain any studies with human participants or animals performed by any of the authors.

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Appendix 2.1: Calculations for Meta-Analysis of the Relationship Between Alexithymia and Self-Harm

Due to the variation in the type of statistics reported in the individual studies, a common effect size of Hedge's g was chosen to allow the results to be combined in a meta-analysis (Borenstein et al., 2009).

Calculation of Hedges g

Where studies reported the mean TAS20 score and standard deviations of those participants with a history of self-harm and those without, the following equations were used to calculate Hedges' g .

Standardised mean difference, d :

$$d = \frac{X1 - X2}{\text{pooled } SD}$$

Where $\text{Pooled } SD = \sqrt{\frac{(n1-1)SD1^2 + (n2-1)SD2^2}{n1+n2-2}}$:

Variance of d :

$$Vd = \frac{(n1 + n2)}{(n1n2)} + \frac{d^2}{2(n1 + n2)}$$

Standard error of d :

$$SEd = \sqrt{V}$$

Hedges' g :

$$g = Jxd$$

Where

$$J = 1 - \frac{3}{4df - 1}$$

Where $df = n1+n2-2$

Variance of g :

$$Vg = J^2 \times Vd$$

The following worked example is from (Bedi et al., 2014) who reported TAS20 means (SDs) for their participants who had self-harmed (n=67) and had never self-harmed (n=100) respectively as 62.69 (12.45) and 55.52 (10.87).

$$Pooled\ SD = \sqrt{\frac{(67 - 1) \times 12.45^2 + (100 - 1) \times 10.87^2}{(67 + 100 - 2)}} = \sqrt{\frac{21927.7}{165}} = \sqrt{132.9} \\ = 11.53$$

$$d = \frac{62.69 - 55.52}{11.53} = 0.62$$

$$Vd = \frac{67 + 100}{67 \times 100} + \frac{0.62^2}{2 \times (67 + 100)} = 0.02 + 0.001 = 0.03$$

$$SDd = \sqrt{0.03} = 0.16$$

$$J = 1 - \frac{3}{4 \times (67 + 100 - 2) - 1} = 0.995$$

$$g = 0.995 \times 0.62 = 0.62$$

$$Vg = 0.995^2 \times 0.03 = 0.026$$

$$SEg = \sqrt{0.026} = 0.161$$

Calculation of Hedges' g from correlational data

In a small number of studies the correlation between self-harm and TAS20 was reported.

In such cases the following equations were used to convert r into g:

$$Variance\ of\ r\ (Vr) = \frac{(1 - r^2)^2}{n - 1}$$

$$Standardised\ mean\ difference\ d = \frac{2r}{\sqrt{(1 - r^2)}}$$

$$Variance\ of\ d\ (Vd) = \frac{4Vr}{(1 - r^2)^3}$$

The following worked example is taken from Garisch and Wilson (2015) who reported a correlation of r=0.37 in a total sample of n=1162.

$$Vr = \frac{(1 - 0.37^2)^2}{1162 - 1} = \frac{0.745}{1161} = 0.001$$

$$d = \frac{(2 \times 0.37)}{\sqrt{(1 - 0.37^2)}} = \frac{0.74}{0.929} = 0.797$$

$$Vd = \frac{4 \times 0.001}{(1 - 0.37^2)^3} = \frac{0.003}{0.643} = 0.004$$

$$J = 1 - \frac{3}{4 \times (1162 - 2) - 1} = 0.999$$

$$g = 0.999 \times 0.797 = 0.796$$

$$Vg = 0.999^2 \times 0.004 = 0.004$$

$$SEg = \sqrt{0.004} = 0.063$$

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Appendix 2.2: Definitions of Self-Harm Across All Studies Included in the Systematic Review

Author (year)	Self-harm as defined in the introduction	Measure of self-harm	Briefing given to participants	Suicide attempts measured separately?	Categorisation
Anderson & Crowther (2012)	"The deliberate, direct destruction or alteration of body tissue without conscious suicidal intent" (Favazza, 1998; Pattison & Kahan, 1983)	Deliberate Self-Harm Inventory (DSHI; Gratz, 2001)	"Have you ever intentionally (ie.e on purpose) engaged in each of 16 types of] NSSI behaviour?" Of the behaviours, the first, cutting, is described as "without intending to kill yourself".	No	NSSI
Bedi et al. (2014)	"Deliberate self-harm (DSH), also commonly referred to as self-injury, non-suicidal self-injury (NSSI) and self-mutilation, can be defined as intentional self-inflicted injury to the body without suicidal intent (Favazza, 2011)"	Bespoke structured interview based on the Dissociative Disorders Interview Schedule (DDIS; Ross et al., 1989)	"Participants were asked questions assessing for the presence and lifetime history suicide attempts and self-harming behaviours. ...If self-harm was endorsed, participants were further probed regarding the types and/or methods used."	Yes	Self-harm measured separately from suicide attempts
Bolognini et al. (2003)	"Favazza and Rosenthal (1993) proposed a Repetitive Self-Mutilation Syndrome. The essential feature of Repetitive Self-Mutilation Syndrome is the recurrent failure to resist impulses to harm one's own body physically without conscious suicidal intent."	Semi-structured interview based on the Mini Neuropsychiatric Interview (Sheehan et al., 1998).	"Detailed questions were asked regarding the occurrence of suicide attempts (lifetime) as well as on self-mutilation. These included information on the type and severity of the acts, and when they had occurred."	Yes	Self-mutilation measured separately from suicide attempts.
Borrill et al. (2009)	Refers to "individuals who have self-harmed, either with suicidal or non-suicidal intent" and acknowledges the debate.	Bespoke questionnaire.	Participants asked whether they had ever carried out any of a list of methods of self-harm, including overdose. No reference was made to the motivation for self-harm.	No	Motivation not specified.
Cerutti et al. (2014)	"Non-suicidal self-injury (NSSI) refers to the deliberate self-inflicted destruction of body tissue resulting in immediate damage, without suicidal intent, for purposes not socially sanctioned: it is distinguished from suicidal behaviours involving an intent to die (Walsh, 2006, Nock, 2010)."	DSHI (Gratz, 2001)	"The DSHI asks participants whether and how often they were engaged in a variety of behaviours "intentionally (i.e. on purpose)"."	No	NSSI

Author (year)	Self-harm as defined in the introduction	Measure of self-harm	Briefing given to participants	Suicide attempts measured separately?	Categorisation
Cerutti et al. (2018)	"Non-suicidal self-injury is defined as the intentional injuring of one's body without apparent suicidal intent and for reasons not socially acceptable within one's culture (Muehlenkamp et al., 2012)."	DSHI (Gratz, 2001)	"The DSHI is a 17-item self-report measure that assesses lifetime history of NSSI (defined as the deliberate, direct destruction of body tissue without suicidal intent), including frequency, duration and type of NSSI behaviour."	No, but suicidal ideation was measured Children's Depression Inventory-2 (CDI-2, Kovacs, 2015).	NSSI
Evren & Evren (2005)	"Self-mutilation (SM) has been defined as intentional self-injury without the direct intent to commit suicide (Briere and Gil, 1998)."	Clinical interview and Childhood Abuse and Neglect Questionnaire (CANQ; Yargic et al., 1994)	"The questionnaire included questions about...suicide attempt history and self-mutilating behaviour."	Yes	Self-harm measured separately from suicide attempts
Garisch & Wilson (2010)	"In this study, Deliberate Self-Harm (DSH) is defined as deliberate (but non-fatal) behaviours, including one or more of initiated behaviour (for example, self-cutting, jumping from a height), which they intended to cause self-harm; Ingested a substance in excess of the prescribed or generally recognised therapeutic dose; Ingested a recreational or illicit drug that was an act that the person regarded as self-harm; or Ingested a non-ingestible substance or object." (DeLeo & Heller, 2004)"	Self report self harm questions (DeLeo & Heller, 2004).	"DeLeo and Heller's (2004) questions about DSH were used - whether participants had ever engaged in DSH, with follow-up questions about most recent DSH episode."	No	Motivation not specified.
Garisch & Wilson (2015)	"Non-Suicidal Self-Injury (NSSI) is defined here as the intentional, culturally unacceptable, self-performed, immediate and direct destruction of bodily tissue that is of low-lethality and absent of overdose, self-poisoning and suicidal intent."	DSHI (Gratz, 2001)	"DSHI behaviours are low-lethality, behaviourally precluding suicidal intent, and completed on a 5 point scale from "Never" to "Many times" engaging in the specified NSSI behaviour."	No	NSSI
Gatta, Rago, et al. (2016)	"Non-Suicidal Self-Injury (NSSI) is defined as "the deliberate, self-inflicted destruction of body tissue resulting in immediate damage, without suicidal intent and for purposes not culturally sanctioned" (Nixon et al., 2008)."	Single question	"Participants were asked a dichotomous yes/no question about self-harming ("Have you ever admittedly self-harmed yourself?") and some other questions about frequency and social support pursued after the NSSI event."	No	Unclear whether motivation is specified in question to participants

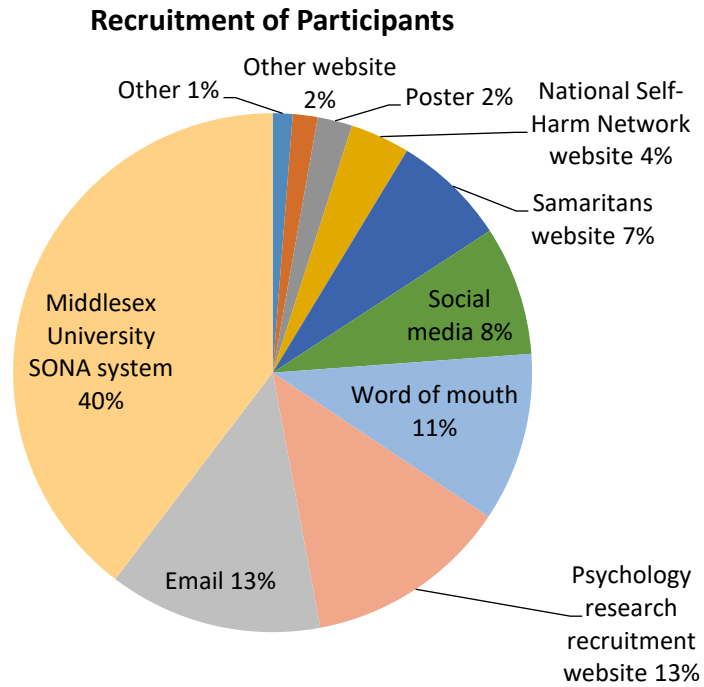
Author (year)	Self-harm as defined in the introduction	Measure of self-harm	Briefing given to participants	Suicide attempts measured separately?	Categorisation
Gatta, Dal Santo, et al. (2016)	"Nonsuicidal self-injury (NSSI) refers to the socially unacceptable, intentional, and direct injuring of one's own body tissue without suicidal intent (Nock,, 2010)."	Clinical assessment: Young people attending a neuropsychiatry clinic "who presented...episodes of NSSI."	"During interviews with patients, we recorded their clinical history, the clinical aspects of their self-harming behaviour, their reason for seeking our clinical service, and their diagnosis."	No	NSSI
Greene et al. (2019)	"Nonsuicidal self-injury (NSSI) is the intentional damage to one's body tissue, without suicidal ideation, for reasons not socially or culturally endorsed (International Society for the Study of Self-Injury, 2018)."	Inventory of Statements about Self-Injury (ISAS) (Klonsky & Glenn, 2009)	NSSI was described to participants as "the deliberate physical self-damage or self-harm that is not accompanied by suicidal intent or ideation. Although cutting is one of the most well-known non-suicidal self-injury behaviours, it can take many forms including but not limited to biting, burning, scratching, self-bruising or swallowing dangerous substances if undertaken with intent to injure oneself."	No	NSSI
Hasking & Claes (2019)	Study focus is non-suicidal self-injury (NSSI) but this is not defined in the introduction.	ISAS (Klonsky & Glenn, 2009)	NSSI is defined to participants as follows: "self-injury refers to directly and intentionally hurting yourself, such as by cutting, burning, excessively scratching etc, without the intention of killing yourself."	No	NSSI
Howe-Martin et al. (2012)	Repetitive nonsuicidal self-injury (RNSSI) defined as "direct, broadly socially unacceptable, repetitive behaviour that causes mild to moderate physical injury and lacks suicidal intent. To be considered repetitive, nonsuicidal self-injury (NSSI) in any form or combination must occur a minimum of five times."	Self report adapted version of DSHI (Gratz, 2001)	"Instructions explicitly state that the [self-harming] behaviours must be conducted intentionally and without suicidal intent."	No	NSSI (reported data refer to NSSI not RNSSI)
Hsu et al. (2013)	Deliberate self-harm is not specifically defined in the introduction except in contrast to suicide attempt. E.g. "Although substantial overlaps exists between suicidal and non-suicidal self-harm, the motivations behind deliberate self-harm (DSH) and intention to suicide (ITS) are distinctly different."	Presented at casualty as deliberate self-harm or intention to suicide patients assessed through clinical interview.	No details given about the nature of the clinical assessment.	Yes	Deliberate self-harm with no suicidal intent (as distinguished from group with suicidal intent)

Author (year)	Self-harm as defined in the introduction	Measure of self-harm	Briefing given to participants	Suicide attempts measured separately?	Categorisation
Lambert & de Man (2007)	"Self-mutilation may be defined as "a volitional act to harm one's own body without intention to cause death" (Yaryura-Tobias, Neziroglu & Kaplan, 1995)...The present study... focused on adolescent girls showing self-cutting behaviour."	Self-reported engagement in self-mutilation (defined as cutting) plus observed physical evidence	"Participants were asked for information concerning ...the method used to cut themselves.. And whether or not they had ever made an attempt to commit suicide."	Yes	Self-mutilation is measured separately from suicide attempts.
Laukkanen et al. (2013)	"In 2010 Nock defined non-suicidal self-injury as a direct and deliberate bodily harm in the absence of suicidal intent." "This study focused on the location of self-cutting."	Self-report questionnaire (Rissanen, Kylmä & Laukkanen, 2008) in which participants provide "written descriptions in their own words of their self-cutting."	"We would now like to know, have you ever engaged in any kind of deliberate self-harming behaviour? (Yes/No). Have you ever cut yourself?"	No	Motivation not specified.
Lee (2016)	"Self-injury refers to deliberate, direct self-destruction of body tissue (Nock and Favazza, 2009). Self-injury is contrasted with suicide."	Self-harm Questionnaire (Ougin & Boege, 2013)	Questionnaire includes three screening questions including "Have you ever thought about harming yourself on purpose?"	No	Motivation not specified.
Lin et al. (2017)	"Nonsuicidal self-injury (NSSI)...refers to direct, deliberate destruction of one's own body tissue with the lack of an intention to die (Nock, 2009).	Multiple item questionnaire (You et al., 2012)	"Participants were asked "In the past year, have you ever engaged in the following behaviors to deliberately injure yourself but without suicidal intent?"	Yes (but only to exclude participants who had attempted suicide from the sample)	NSSI
Lüdtke et al. (2016)	"Nonsuicidal self-injury (NSSI) is defined as the repetitive, deliberate, direct and socially unaccepted destruction or alteration of one's own body tissue without the intent to die (American Psychiatric Association, 2013)."	Interview to assess NSSI disorder according to DSM-5 criteria	No details given about the nature of the clinical assessment.	No	NSSI
Mojahed et al. (2018)	"Non-suicidal self-injury behaviours refer to a class of direct and intentional damage to a part of body tissue, causing bleeding, bruising or pain without the purpose of suicide, and are not socially acceptable (American Psychiatric Association, 2013)	DSHI (Gratz, 2001)	"Subjects are asked to answer a series of questions about types of self-harm behaviors in form of yes or no."	No	NSSI

Author (year)	Self-harm as defined in the introduction	Measure of self-harm	Briefing given to participants	Suicide attempts measured separately?	Categorisation
Moseley et al. (2019)	"Non-suicidal self-injury (NSSI), also known as self-mutilation or self-harm, describes acts of purposeful, physical, sometimes painful damage to the body without suicidal intent (Nock et al., 2010)."	Non-suicidal self-injury assessment tool (NSSI-AT) (Whitlock, Exner-Cortens & Purington, 2014)	"Participants who indicated that they engaged in NSSI only as a means of practicing or attempting suicide were excluded from analysis, though participants who included this as one reason alongside having engaged in NSSI for other reasons were included."	No	NSSI
Oskis & Borrill (2019)	"Non-suicidal self-injury (NSSI)...is defined as the deliberate, self-inflicted destruction of body tissue without suicidal intent and for purposes not socially sanctioned (Nock, 2010)."	DSHI (Gratz, 2001)	"The DSHI ...assesses deliberate, direct destruction or alteration of body tissue without conscious suicidal intent, but resulting in injury severe enough for tissue damage to occur." Unclear what specific instructions were given to participants about motivation, if any.	No	NSSI
Osuch et al. (2014)	No specific definition given, but introduction refers to non-suicidal self-injury.	Clinical interview to screen for NSSI involving the epidermis (cutting, scratching or burning).	No details given about the nature of the clinical assessment.	No	NSSI
Oyefeso et al., (2008)	"Self-injurious behaviour (SIB) has been described as the direct and deliberate destruction of own body tissue without suicidal intent (Herpertz, 1995, Claes & Vandereycken, 2007)."	Two items from the Schedule for Nonadaptive and Adaptive Personality (Clark, 1996) assessed through interview	Participants were asked "When you get very tense, does hurting yourself physically somehow calm you down?" and "Have you hurt yourself on purpose several times/ in the past 12 months?"	No	Motivation not specified.
Paivio & McCulloch (2004)	"Intentional non-lethal self-injury...includes behaviors such as head banging, hair pulling, scratching, burning and cutting self."	Self report Self-Injurious Behaviors Questionnaire developed for this study	Participants were asked about lifetime frequency of engagement in a list of methods of superficial self-injury. There is no indication that motivation for self-injury was a criteria.	No	Motivation not specified (although behaviours are viewed as having low-lethality).
Polk & Liss (2007)	"Self-injury can be characterized as a behaviour in which a person causes deliberate harm to his or her body without suicidal intent."	Participants were asked whether they had self-harmed according to a definition from Winchel and Stanley (1991).	Definition given to participants: "The commission of deliberate harm to one's own body. The injury is done to oneself, without the aid of another person, and the injury is severe enough for tissue damage...to result. Acts that are committed with conscious suicidal intent or are associated with sexual arousal are excluded."	No	NSSI

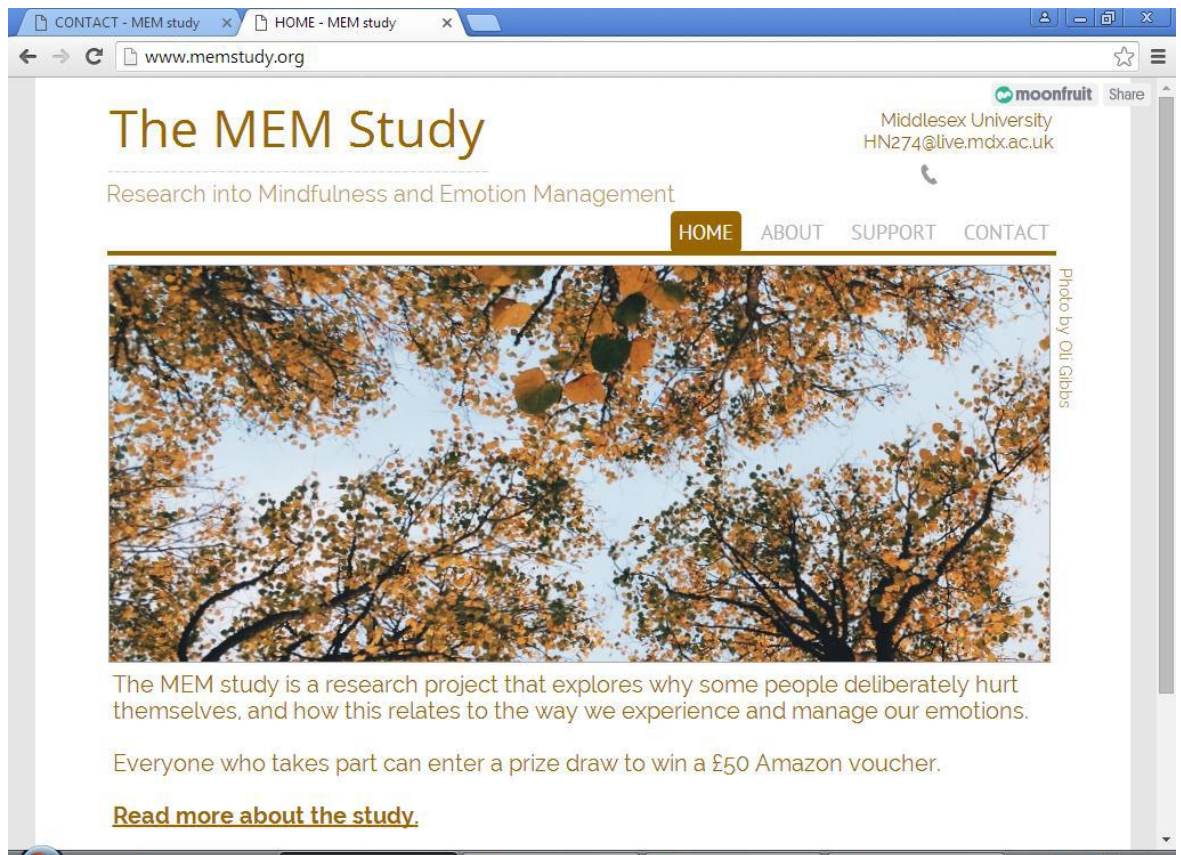
Author (year)	Self-harm as defined in the introduction	Measure of self-harm	Briefing given to participants	Suicide attempts measured separately?	Categorisation
Sleuwaegen et al. (2017)	"NSSI is defined as the repetitive, deliberate, direct and socially unaccepted destruction or alternation of one's own body tissue without the intent to die (APA, 2013)."	Self-Injury Questionnaire-Treatment Related (SIQ-TR; Claes& Vandereycken, 2007)	"Participants were asked whether they had ever engaged in self-injury without suicidal intention."	No	NSSI
Verrocchio et al. (2010)	"Deliberate self-harm (DSH) is defined as the intentional injuring of one's own body without apparent suicidal intent."	DSHI (Gratz, 2001)	"The DSHI is based on Gratz's definition of self-harm as "the deliberate, direct destruction or alteration of body tissue without conscious suicidal intent, but resulting in injury severe enough for tissue damage to occur."	No	NSSI
Wester & King (2019)	"Nonsuicidal self-injury (NSSI) is the deliberate self-infliction of immediate tissue damage without the intent to die (APA, 2013)."	Deliberate Self-Harm Inventory - Adapted (Murray, Wester & Paladino, 2008)	Assume that the instructions to participants were consistent with the definition on which the DSHI is based (see above).	No	NSSI
Zlotnick et al. (1996)	Self-mutilation was defined as "direct, deliberate harm to one's body without a conscious intent to die (Favazza & Rosenthal., 1993)."	Self-Injury Inventory devised by the authors.	Measure uses definition of self-mutilation as being without a conscious intent to die.	No	NSSI

Appendix 4.1: Methods of Participant Recruitment in Study 2



Appendix 4.2: The Mindfulness and Emotion Management (MEM) Website –

Study 2



The screenshot shows a web browser window with two tabs: 'CONTACT - MEM study' and 'HOME - MEM study'. The address bar displays 'www.memstudy.org'. The website header includes the 'moonfruit' logo, 'Share' button, and contact information for Middlesex University: 'Middlesex University' and 'HN274@live.mdx.ac.uk'. The main heading is 'The MEM Study' in a large, bold, brown font, followed by the subtitle 'Research into Mindfulness and Emotion Management'. A navigation menu contains 'HOME', 'ABOUT', 'SUPPORT', and 'CONTACT', with 'HOME' highlighted. Below the menu is a large photograph of trees with yellow and orange autumn leaves against a blue sky. A vertical credit line on the right side of the photo reads 'Photo by Oli Gibbs'. Underneath the photo, the text states: 'The MEM study is a research project that explores why some people deliberately hurt themselves, and how this relates to the way we experience and manage our emotions.' Below this, it says: 'Everyone who takes part can enter a prize draw to win a £50 Amazon voucher.' At the bottom, there is a link: '[Read more about the study.](#)'

CONTACT - MEM study x ABOUT - MEM study x

www.memstudy.org/about/4591485599

moonfruit Share

Middlesex University
HN274@live.mdx.ac.uk

The MEM Study

Research into Mindfulness and Emotion Management

HOME ABOUT SUPPORT CONTACT

About the study

The aim of the MEM study is to see whether people who self-harm experience and deal with their emotions differently from people who have never self-harmed. It will also examine whether people who self-harm have a different level of 'mindfulness' - that is, the awareness of what is going on in the present moment without making judgements.

We are looking for a range of people to take part in the study, including those who have self-harmed as well as those who have never self-harmed. If you would like to support the research, please consider completing a short, anonymous online questionnaire. The survey contains questions about the way you experience emotions as well as about previous self-harm.

The research is being conducted as part of a Phd at Middlesex University. The results will be used to find possible new ways to help those who struggle to manage their emotions in a healthy way.

By taking part you will have the chance to enter a draw to win £50 in Amazon vouchers.

Take Part

CONTACT - MEM study x SUPPORT - MEM study x

www.memstudy.org/support/4591523793

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Middlesex University
HN274@live.mdx.ac.uk

The MEM Study

Research into Mindfulness and Emotion Management

HOME ABOUT SUPPORT CONTACT

Support

If you feel that you are in need of immediate support, please contact **Samaritans (116 123)** or **NHS Choices (111)**.

Both are available 24 hours a day, 365 days a year and are free.

Alternatively, please go to, or call, your nearest **accident and emergency (A&E)** department and tell the staff how you are feeling.

Please **click here** for a more comprehensive list of support organisations

CONTACT - MEM study x CONTACT - MEM study x

www.memstudy.org/contact/4591485600

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The MEM Study

Middlesex University
HN274@live.mdx.ac.uk

Research into Mindfulness and Emotion Management

HOME ABOUT SUPPORT CONTACT

Contact

If you have any further questions about the study please contact:

Hilary Norman	Dr. Lisa Marzano
Department of Psychology, Middlesex University	Department of Psychology, Middlesex University
Email: HN274@live.mdx.ac.uk	Email: Lmarzano@mdx.ac.uk
Tel:	Tel: 0208 411 6998

www.moonfruit.com

Appendix 4.3: Mindfulness and Emotion Management Study (Study 2)

Participant Briefing and Survey

Participant Information

You are being invited to take part in a research study on mindfulness and emotion management aimed at increasing understanding of self-harming behaviours. The survey is open to everyone over the age of 18, whether or not you have ever engaged in self harm. This will enable us to compare the experiences of those who have self-harmed with those who have not. Before you decide to participate, it is important for you to understand why the research is being done and what it will involve. Please take your time to read the following information carefully, and discuss it with others if you wish. Please ask if there is anything that is not clear or if you would like more information. Take your time to decide whether or not you wish to take part.

What is the purpose of the research?

The aim of this study is to explore why some people deliberately hurt themselves, and whether it relates to how mindful we are and how we experience and manage our emotions. There are various ways of defining self harm. For the purposes of this study, self-harm is used to mean the act of deliberately injuring yourself, for example by cutting, scratching, burning or self-poisoning. Mindfulness is the term used to describe how much attention someone pays to whatever is happening in the present moment, without being judgmental. Some research has suggested that people who self harm may have lower levels of mindfulness. Understanding this

better could help improve treatment. With this in mind, this survey also includes questions on how mindfulness training might best be structured and delivered.

What will happen to me if I take part?

If you agree to take part you will be asked to complete an online questionnaire. This consists of questions relating to how mindful you are, how you experience and manage your emotions and about whether you have ever engaged in self harm. The survey should take 15-20 minutes to complete. Your answers would be combined with all other responses to be analysed and would remain completely confidential and anonymous. Participation in this research is entirely voluntary. You do not have to take part if you do not want to. If you decide to take part you may withdraw at any time without giving a reason. If after completing the survey you decide you do not want your responses to be included in the analysis, you can ask for your data to be withdrawn by contacting me (HN274@live.mdx.ac.uk) by [date to coincide with the end of the survey period] and quoting a reference number which can be generated at the end of the survey. This reference number can also be used if you would like to gain university participation credits for taking part in the study.

How can I win the £50 Amazon voucher?

Everyone who takes part in the survey will have the chance to enter the prize draw to win a £50 Amazon voucher. You will be asked to give your email address and this will be collated and stored separately from the rest of your responses so that anonymity is maintained.

What are the possible disadvantages to taking part?

The survey includes personal and potentially sensitive questions about your own experiences, including past engagement in self harm. Previous research suggests

that most people are not negatively affected by these sorts of questions (even when personally affected by these issues) though some may find them difficult and potentially upsetting. Before deciding if you want to take part in this study, please consider carefully if you are likely to find this distressing.

What will happen to the results of this research study?

All responses will be anonymous and combined for analysis so that no one participant's data will be examined individually or identifiable in any report. The study is being conducted as part of a PhD and will be written up as part of a thesis for examination. The results may be published in an academic journal. We will also produce a summary of the results which will be available to you once we have finished collecting and analysing the data.

Who has reviewed the study?

This study is being organised by researchers at Middlesex University. All proposals for research using human participants are reviewed by an Ethics Committee before they can proceed. The Middlesex Psychology Department's Ethics Committee has reviewed this proposal.

Thank you for taking the time to read this information sheet. If reading it has caused you any distress, please consider contacting Harmless, a user-led support organisation for people who self-harm (www.harmless.org.uk) or Samaritans, which provides a 24-hour service offering confidential emotional support to anyone who is in crisis. (www.samaritans.org). If you are a student at Middlesex University you can also access the University's counselling and mental health services (counselling@mdx.ac.uk).

Contact for further information If you have any further questions about the study, please contact:

Researcher: Hilary Norman, Psychology Department, School of Science and Technology Middlesex University, Town Hall, The Burroughs, Hendon, London, NW4 4BT, Email: HN274@live.mdx.ac.uk

Supervisor: Dr Lisa Marzano, Psychology Department, School of Science and Technology Middlesex University, Town Hall, The Burroughs, Hendon, London, NW4 4BT, Email: l.marzano@mdx.ac.uk Tel: 020 8411 6998

You can download a copy of this participant information sheet by pasting the following link into your browser. [Link.]

Consent If you would like to take part in the survey and you agree with the following statement, please click on the link below.

The nature and purpose of this research have been sufficiently explained and I agree to participate in this study. I understand that I am free to withdraw at any time without incurring any penalty.

- YES, I would like to continue and take part in the study (1)
- NO, I would not like to continue and take part in the study (2)

If NO, I would not like to con... Is Selected, Then Skip To End of Survey

Q2 How would you describe your gender?

- Male (1)
- Female (2)
- Other (please specify) (3) _____
- Prefer not to say (4)

Q3 How old are you? (Please give age.)

Q4 What is your ethnic group?

- White (1)
- Mixed/multiple ethnic group (2)
- Asian/Asian British (3)
- Black/African/Caribbean/Black British (4)
- Other (please specify) (5) _____

Q5 Which of the following describes your current status?

- Employed (1)
- Self-employed (2)
- Unemployed (3)
- Retired (4)
- Home/caring responsibilities (5)
- Student (6)
- Other (please specify) (7) _____

Answer If Which of the following describes your current status? Student Is Selected

Q6 Which subject are you studying?

- Psychology (1)
- Other (please specify) (2) _____

Q7 What is the highest level of education you have achieved?

- No formal qualifications (1)
- GCSEs/O Levels (2)
- A Levels or equivalent (e.g. International Baccalaureate) (3)
- Bachelor's Degree (4)
- Master's Degree/Professional qualification (5)
- Doctoral level (6)

Q8 Please rate each of the following statements using the scale provided. Give the answer that best describes your own experience.	Never or very rarely true (1)	Sometimes true (2)	Often true (3)	Very often true (4)	Always true (5)
When I'm walking, I deliberately notice the sensations of my body moving. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm good at finding words to describe my feelings. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I criticize myself for having irrational or inappropriate emotions. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I perceive my feelings and emotions without having to react to them. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I do things, my mind wanders off and I'm easily distracted. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I take a shower or bath, I stay alert to the sensations of water on my body. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can easily put my beliefs, opinions and expectations into words. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I don't pay attention to what I'm doing because I'm daydreaming, worrying or otherwise distracted. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Q9 Please rate each of the following statements using the scale provided. Give the answer that best describes your own experience.	Never or very rarely true (1)	Sometimes true (2)	Often true (3)	Very often true (4)	Always true (5)
I watch my feelings without getting lost in them. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tell myself I shouldn't be feeling the way I'm feeling. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I notice how foods and drinks affect my thoughts, bodily sensations and emotions. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It's hard for me to find the words to describe what I'm thinking. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am easily distracted. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe some of my thoughts are abnormal or bad and I shouldn't think that way. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I pay attention to sensations, such as the wind in my hair or sun on my face. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have trouble thinking of the right words to express how I feel about things. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q10 Please rate each of the following statements using the scale provided. Give the answer that best describes your own experience.	Never or very rarely true (1)	Sometimes true (2)	Often true (3)	Very often true (4)	Always true (5)
I make judgments about whether my thoughts are good or bad. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find it difficult to stay focused on what's happening in the present. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I pay attention to sounds, such as clocks ticking, birds chirping or cars passing. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In difficult situations, I can pause without immediately reacting. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<p>It seems I am "running on automatic" without much awareness of what I'm doing. (7)</p> <p>When I have distressing thoughts or images, I feel calm soon after. (8)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Q11 Please rate each of the following statements using the scale provided. Give the answer that best describes your own experience.	Never or very rarely true (1)	Sometimes true (2)	Often true (3)	Very often true (4)	Always true (5)
I tell myself that I shouldn't be thinking the way I'm thinking. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I notice the smells and aromas of things. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Even when I'm feeling terribly upset, I can find a way to put it into words. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I rush through activities without being really attentive to them. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I have distressing thoughts or images I am able just to notice them without reacting. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think some of my emotions are bad or inappropriate and I shouldn't feel them. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I notice visual elements in art or nature, such as colours, shapes, textures or patterns of light and shadow. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

My natural tendency is to put my experiences into words. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Q12 Please rate each of the following statements using the scale provided. Give the answer that best describes your own experience.	Never or very rarely true (1)	Sometimes true (2)	Often true (3)	Very often true (4)	Always true (5)
When I have distressing thoughts or images, I just notice them and let them go. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do jobs or tasks automatically without being aware of what I'm doing. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I pay attention to how my emotions affect my thoughts and behaviour. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can usually describe how I feel at the moment in considerable detail. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find myself doing things without paying attention. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I disapprove of myself when I have irrational ideas. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q13 Using the scale provided as a guide, please indicate how much you agree or disagree with each of the following statements.

	Strongly disagree (1)	Moderately disagree (2)	Neither agree nor disagree (3)	Moderately agree (4)	Strongly agree (5)
I am often confused about what emotion I am feeling. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is difficult for me to find the right words for my feelings. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have physical sensations that even doctors don't understand. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am able to describe my feelings easily. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to analyse problems rather than just describe them. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am upset, I don't know if I am sad, frightened or angry. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am often puzzled by sensations in my body. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q14 Using the scale provided as a guide, please indicate how much you agree or disagree with each of the following statements.

	Strongly disagree (1)	Moderately disagree (2)	Neither agree nor disagree (3)	Moderately agree (4)	Strongly agree (5)
I prefer to just let things happen than to understand why they turned out that way. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have feelings that I can't quite identify. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being in touch with emotions is essential. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find it hard to describe how I feel about people. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People tell me to describe my feelings more. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't know what's going on inside me. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often don't know why I am angry. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q15 Using the scale provided as a guide, please indicate how much you agree or disagree with each of the following statements.	Strongly disagree (1)	Moderately disagree (2)	Neither agree nor disagree (3)	Moderately agree (4)	Strongly agree (5)
I prefer talking to people about their daily activities rather than their feelings. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to watch light entertainment shows rather than psychological dramas. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is difficult for me to reveal my innermost feelings, even to close friends. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can feel close to someone, even in moments of silence. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find examination of my feelings useful in solving personal problems. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Looking for hidden meanings in films or plays distracts from their enjoyment. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q16 Please indicate how you feel about each of the following items by selecting either "TRUE" or "FALSE". If an item is neither entirely true nor false, choose the alternative most like you. If you haven't been in the situation, please say how you feel you would behave in that situation. I remember things that upset me or make me angry for a long time afterwards.

- True (1)
- False (2)

Q17 I don't bear a grudge - when something is over, it's over, and I don't think about it again.

- True (1)
- False (2)

Q18 I get worked up just thinking about things that have upset me in the past.

- True (1)
- False (2)

Q19 I often find myself thinking over and over about things that make me angry.

- True (1)
- False (2)

Q20 I seldom get preoccupied with worries about my future.

- True (1)
- False (2)

Q21 If I see something that frightens or upsets me, it stays in my mind for a long time afterwards.

- True (1)
- False (2)

Q22 My failures give me a persistent feeling of remorse.

- True (1)
- False (2)

Q23 For me, the future seems to be full of troubles and problems.

- True (1)
- False (2)

Q24 I often feel as if I'm just waiting for something bad to happen.

- True (1)
- False (2)

Q25 When I am reminded of my past failures, I feel as if they are happening all over again.

- True (1)
- False (2)

Q26 Sometimes I have to force myself to concentrate on something else to keep distressing thoughts about the future out of my mind.

- True (1)
- False (2)

Q27 Intrusive thoughts about problems I'm going to have to deal with make it difficult for me to keep my mind on a task.

- True (1)
- False (2)

Q28 I don't let a lot of unimportant things irritate me.

- True (1)
- False (2)

Q29 I wish I could banish from my mind the memories of past failures.

- True (1)
- False (2)

Q30 I never get so involved thinking about upsetting things that I am unable to feel positive about the future.

- True (1)
- False (2)

Q31 I worry less about what might happen than most people I know.

- True (1)
- False (2)

Q32 It takes me a comparatively short time to get over unpleasant events.

- True (1)
- False (2)

Q33 Any reminder about upsetting things brings all the emotion flooding back.

- True (1)
- False (2)

Q34 The next part of the survey asks about a variety of self-harm behaviours. Have you ever deliberately harmed yourself, for example by cutting, biting, scratching, burning or hitting yourself, by self-poisoning or by other methods?

- Yes (1)
- No (2)

Answer If The next part of the survey asks about your history of self-harm. Have you ever deliberately ha... Yes Is Selected

Q35 Do you need help now?

- Yes (1)
- No (2)

Answer If Do you need help now? Yes Is Selected

Q36 If you feel that you are in need of immediate support, please contact Samaritans (116 123) or call the NHS 111 helpline. Both are available 24 hours a day, every day, and are free.

Q37 Please estimate the number of times in your life you have intentionally (i.e. on purpose) performed each type of self-harm.	Never (1)	Once (2)	2-5 times (3)	5-20 times (4)	20-100 times (5)	Over 100 times (6)
Cutting (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Biting (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Burning (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Carving (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pinching (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pulling hair (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Severe scratching (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Banging or hitting self (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interfering with wound healing (e.g. picking scabs) (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rubbing skin against rough surface (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sticking self with needles (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Swallowing dangerous substances (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify) (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Answer If Have you ever deliberately harmed yourself, for example by cutting, biting, scratching, burning or hitting yourself, by self-poisoning or by other methods? Yes Is Selected

Q38 How old were you when you first self-harmed? (Please give approximate age.)

Answer If Have you ever deliberately harmed yourself, for example by cutting, biting, scratching, burning or hitting yourself, by self-poisoning or by other methods? Yes Is Selected

Q39 When did you last self-harm?

- In the last week (1)
- In the last six months (2)
- In the last year (3)
- More than a year ago (4)

<p>Q40 Below is a list of statements that may or may not be relevant to your experience of self-harm. Please identify whether the statements are not relevant at all to you, somewhat relevant to you or very relevant to you. When I self harm, I am...</p>	<p>Not relevant at all (1)</p>	<p>Somewhat relevant (2)</p>	<p>Very relevant (3)</p>
<p>... calming myself down. (1)</p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>
<p>... creating a boundary between myself and others. (2)</p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>
<p>... punishing myself. (3)</p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>
<p>... giving myself a way to care for myself (by attending to the wound). (4)</p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>
<p>... causing pain so I will stop feeling numb. (5)</p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>
<p>... avoiding the impulse to attempt suicide. (6)</p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>
<p>... doing something to generate excitement or exhilaration. (7)</p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>
<p>... bonding with peers. (8)</p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>
<p>... letting others know the extent of my emotional pain. (9)</p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>
<p>... seeing if I can stand the pain. (10)</p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>
<p>... creating a physical sign that I feel awful. (11)</p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>
<p>... getting back at someone. (12)</p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>
<p>... ensuring that I am self-sufficient. (13)</p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>	<p><input type="radio"/></p>

Q41 When I self harm, I am...	Not relevant at all (1)	Somewhat relevant (2)	Very relevant (3)
... releasing emotional pressure that has built up inside of me. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... demonstrating that I am separate from other people. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... expressing anger towards myself for being worthless or stupid. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... creating a physical injury that is easier to care for than my emotional distress. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... trying to feel something (as opposed to nothing) even if it is physical pain. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... responding to suicidal thoughts without actually attempting suicide. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... entertaining myself or others by doing something extreme. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... fitting in with others. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... seeking care or help from others. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... demonstrating I am tough or strong. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... proving to myself that my emotional pain is real. (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... getting revenge against others. (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... demonstrating that I do not need to rely on others for help. (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q42 When I self harm, I am...

	Not relevant at all (1)	Somewhat relevant (2)	Very relevant (3)
... reducing anxiety, frustration, anger or other overwhelming emotions. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... establishing a barrier between myself and others. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... reacting to feeling unhappy with myself or disgusted with myself. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... allowing myself to focus on treating the injury, which can be gratifying or satisfying. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... making sure I am still alive when I don't feel real. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... putting a stop to suicidal thoughts. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... pushing my limits in a manner akin to skydiving or other extreme activities. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... creating a sign of friendship or kinship with friends or loved ones. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... keeping a loved one from leaving or abandoning me. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... proving I can take the physical pain. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... signifying the emotional distress I'm experiencing. (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... trying to hurt someone close to me. (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... establishing that I am autonomous/independent. (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Answer If Have you ever deliberately harmed yourself, for example by cutting, biting, scratching, burning or hitting yourself, by self-poisoning or by other methods? Yes Is Selected

Q43 Is there anything you'd like to add about your self-harm?

Q44 Have you ever attempted suicide?

- Yes (1)
- No (2)

Answer If Have you ever attempted suicide? Yes Is Selected

Q45 If you feel that you are in need of immediate support, please contact Samaritans (116 123) or call the NHS 111 helpline. Both are available 24 hours a day, every day, and are free.

Q46 The last part of the survey is a consultation about the best way to deliver 'mindfulness' training. Research suggests that through training and practice, people can become more mindful of how their mind and body are responding to whatever is going on in the present time, using techniques such as meditation, gentle stretching movements and focusing on breathing and sensations in the body. During training people learn how to observe and reflect on their thoughts and feelings in an accepting and non judgmental way. There are many different types of mindfulness course available. For example, the Mindfulness-Based Stress Reduction programme is an 8 week course, with 2 hour weekly group sessions led by a trained mindfulness instructor interspersed by daily practice meditations. Alternatively, online resources and apps are available which guide you through meditations that you can do in your own time. We would like to know about your opinions as to which format or formats of training you feel would be most beneficial for you.

Q47 Do you have any personal experience of any of the following types of mindfulness training? You can check more than one box.

- An instructor-led mindfulness course delivered in group sessions. (1)
- Therapy involving mindfulness practice or meditation. (2)
- Mindfulness App (3)
- Mindfulness book (4)
- Guided audio mindfulness meditation (e.g. on CD or download). (5)
- Other (please specify) (6) _____
- No experience of mindfulness training (7)

Q48 How would you rate your experience of mindfulness training?

- Very unhelpful (1)
- A little unhelpful (2)
- Neither helpful nor unhelpful (3)
- Quite helpful (4)
- Very helpful (5)

Q49 A standard mindfulness course involves the following activities. Please could you indicate how you feel about taking part in each of these?	Very uncomfortable (1)	Fairly uncomfortable (2)	Neither comfortable nor uncomfortable (3)	Fairly comfortable (4)	Very comfortable (5)	Don't know (6)
Focussing on breathing (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'Scanning your body': being aware of any sensations your body is experiencing (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Movement and gentle stretching (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paying attention to your thoughts (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Doing silent meditation in a group (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Meditation practice at home (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talking to a group about your experiences of any of the above activities. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q50 How likely would you be to participate in mindfulness training delivered in the following ways? a) An 8 week course of 2-hour, weekly group sessions led by a trained mindfulness instructor interspersed by daily practice meditations.

- Very unlikely (1)
- Unlikely (2)
- Undecided (3)
- Likely (4)
- Very likely (5)

Q51 b) An 8 week course of online group sessions, led by a trained mindfulness instructor interspersed by daily practice meditations.

- Very unlikely (1)
- Unlikely (2)
- Undecided (3)
- Likely (4)
- Very likely (5)

Q52 c) A shorter, more intensive (e.g. one day) 'taster' group course led by a trained mindfulness instructor.

- Very unlikely (1)
- Unlikely (2)
- Undecided (3)
- Likely (4)
- Very likely (5)

Q53 d) Written guidance, e.g. a book, written by a trained mindfulness instructor.

- Very unlikely (1)
- Unlikely (2)
- Undecided (3)
- Likely (4)
- Very likely (5)

Q54 e) An audio course to download or on CD, including guided meditations recorded by a trained mindfulness instructor.

- Very unlikely (1)
- Unlikely (2)
- Undecided (3)
- Likely (4)
- Very likely (5)

Q55 f) Guided meditations available on an App designed by trained mindfulness instructors.

- Very unlikely (1)
- Unlikely (2)
- Undecided (3)
- Likely (4)
- Very likely (5)

Q56 If you were to take part in mindfulness training, what would be your main reason for doing so?

- General interest or curiosity (1)
- Managing day-to-day stresses (2)
- Dealing with anxiety (3)
- Coping with depression (4)
- Learning skills to help in moments of crisis (5)
- Managing the urge to self-harm (6)
- Other (please specify) (7) _____
- I don't want to take part in mindfulness training. (8)

Q57 If you were not to take part in mindfulness training, what would be your main reason for not doing so?

- I'm not interested. (1)
- I don't have time. (2)
- I don't believe in it. (3)
- It would not be useful for me. (4)
- I don't have access to a course. (5)
- I don't like the group format. (6)
- I don't need it. (7)
- I already practice mindfulness/meditation. (8)
- I've already tried it. (9)
- I don't know enough about it. (10)
- Other (please specify) (11) _____

Q58 If you are a student or member of staff at Middlesex University, you are eligible to take part in a Mindfulness-Based Stress Reduction course, led by Dr Mark Coulson. The courses are run twice a year over 8 weeks, beginning in October and January, and are free for all students and staff. Each week participants attend a 2 hour, led group session and are

encouraged to spend 30-45 minutes a day practising the skills they are learning. Would you be interested in taking part in the course at Middlesex University?

- Yes (1)
- No (2)
- I am not a student or staff member at Middlesex University (3)

Answer If If you are a student or member of staff at Middlesex University, you are eligible to take part in... Yes Is Selected

Q59 Please provide your email address so that we can get in touch with you about the course. Your contact details will not be linked to your other responses to the survey which will remain anonymous.

Answer If If you are a student or member of staff at Middlesex University, you are eligible to take part in a Mindfulness-Based Stress Reduction course, led by Dr Mark Coulson. The courses a run twice ... No Is Selected

Q60 Are there ways in which the course could be structured or delivered in a different way that would make it more attractive to you?

- Yes (1)
- No (2)

Answer If Are there ways in which the course could be structured or delivered in a different way that would... Yes Is Selected

Q61 How could a mindfulness course be made more attractive to you?

Q62 Is there anything you would like to add about the issues raised in this survey?

Q63 Thank you for taking part in the survey. If you would like to be entered for the prize draw to win £50 Amazon voucher, please enter your email address here. Your email address will be stored separately from your responses to the survey which will remain anonymous.

Q69 How did you find out about this survey?

- Poster (1)
- Middlesex University SONA system (2)
- Email (3)
- Samaritans website (4)
- Other website (please specify) (5) _____
- Social media (6)
- Word of mouth (7)
- Other (please specify) (8) _____

Appendix 4.4: The Mindfulness and Emotion Management Study (Study 2)

Debriefing Information

Thank you for participating in this study. Please be assured that all the information you provided will be treated with the strictest confidentiality. If you have any further questions about the research, please don't hesitate to contact me at the address reported above. Alternatively if you have any concerns about the way this research has been conducted, please contact my supervisor, Dr Lisa Marzano, at l.marzano@mdx.ac.uk. Should any of our questions have caused you some distress, or if you would like to find out more about services and organisations offering advice and support to people affected by self-harm (either directly or in a care role), please consider contacting one of the following:

Harmless - Self-Harm Support www.harmless.org.uk A user-led organisation that provides a range of services about self-harm, including support, information, training and consultancy to people who self-harm, their friends and families and professionals.

YoungMinds www.youngminds.org.uk YoungMinds is a charity committed to improving the emotional wellbeing and mental health of children and young people. The website also has a section for parents.

Rethink Mental Illness www.rethink.org Rethink provides advice and information to people affected by mental illness.

Self-injury Support www.selfinjurysupport.org.uk Self-injury support (formerly Bristol Crisis Service for Women) is a national organisation that supports girls and

women in emotional distress, especially those who harm themselves. They also offer TESS, a text and email support service.

Samaritans www.samaritans.org Samaritans provides a 24-hour service offering confidential emotional support to anyone who is in crisis. Helpline 116 123, email: jo@samaritans.org.

NHS 111 www.nhs.uk Phone 111 to speak to a trained advisor supported by healthcare professionals. Available 24 hours a day.

If you are a student at Middlesex University you can also access the University's counselling and mental health services. Email counselling@mdx.ac.uk or call 020 8411 6058 for more information.

Appendix 4.5: Mindfulness and Emotion Management Study (Study 2) Data

Preparation

Missing Data

386 people agreed to take part in the survey. One respondent did not meet the age requirement of over 18 years of age. Sixty respondents failed to complete over 50% of the questions so were excluded from analysis.

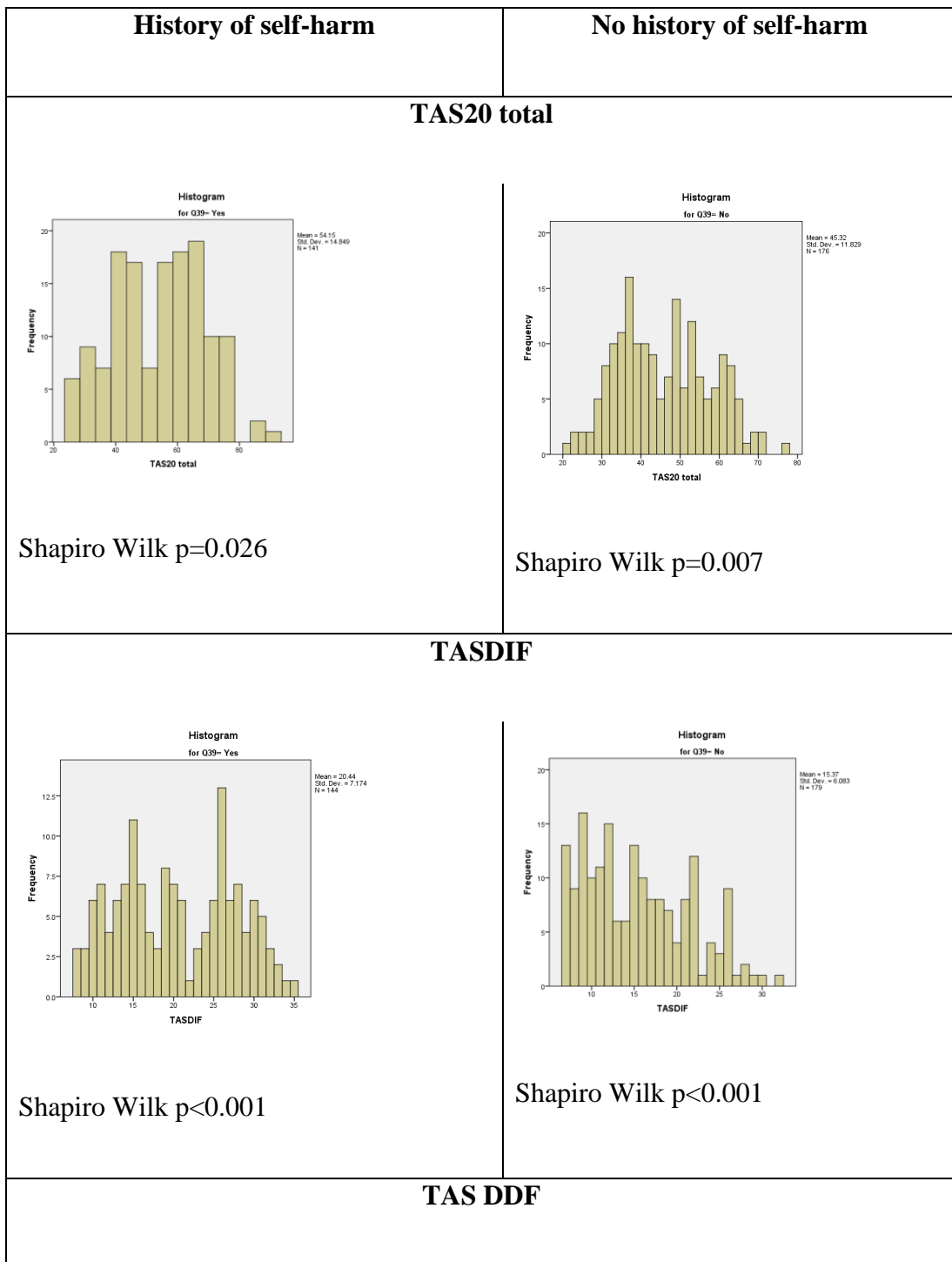
Across the computed variables, missing values accounted for between 0 and 2.9% of the total data, apart from in the case of total FFMQ, which contained 5.9% missing values. There was no relationship between missing TAS20 data and whether or not a respondent had a history of self-harm: $\chi^2(1, N = 325) = 0.154$, exact $p = .737$. Similarly, there was no relationship between missing FFMQ data and whether or not a respondent had a history of self-harm: $\chi^2(1, N = 325) = 0.227$, $p = .634$. The decision was made not to delete any cases with missing values.

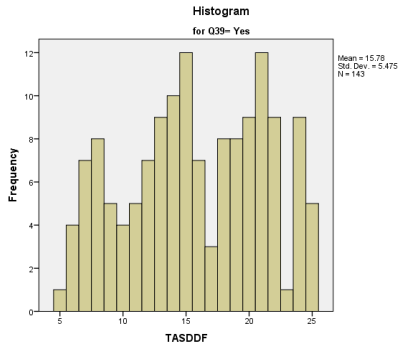
Tests of Normality

Figure A4.5.1 sets out the histograms and Shapiro Wilk tests of skewness for all computed variables. Although the Shapiro-Wilk test is significant for nearly all the variables, an examination of the histograms suggests that this may be more problematic in some cases than others. For example, for those with no history of self-harm, the TAS20 subscale DIF appears to be significantly positively skewed, and among those with a history of self-harm, the interpersonal functions are also positively skewed. The sample is relatively large (325 in total) and tests of normality are more likely to be significant in large samples (Field, 2013).

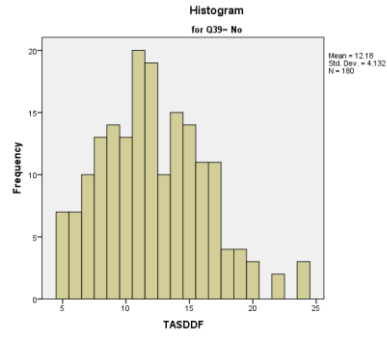
Figure A4.5.1

Histogram and Tests of Normality for all Computed Variables



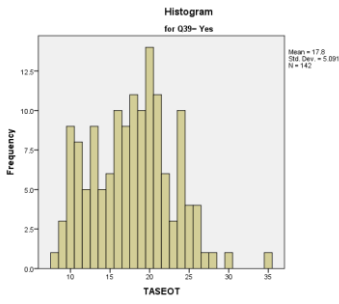


Shapiro Wilk $p < 0.001$

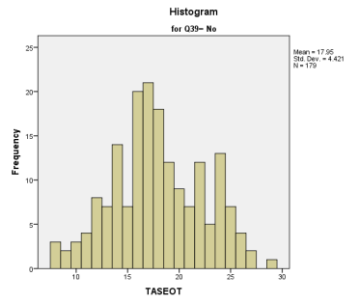


Shapiro Wilk $p = 0.002$

TASEOT

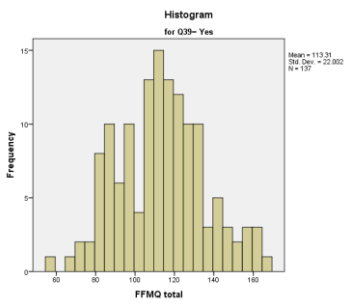


Shapiro Wilk $p = 0.018$

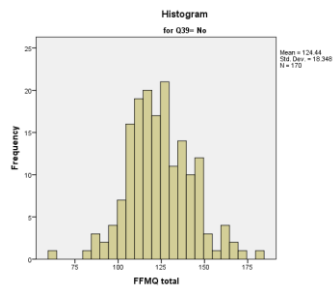


Shapiro Wilk $p = 0.036$

FFMQ Total

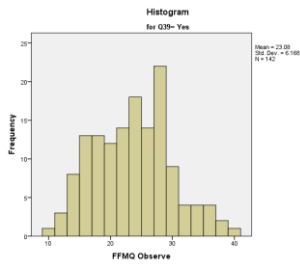


Shapiro Wilk $p = 0.600$

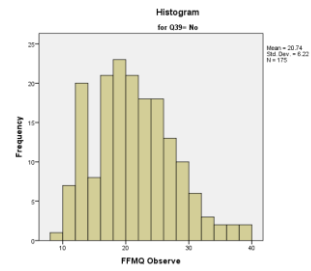


Shapiro Wilk $p = 0.202$

FFMQ Observe

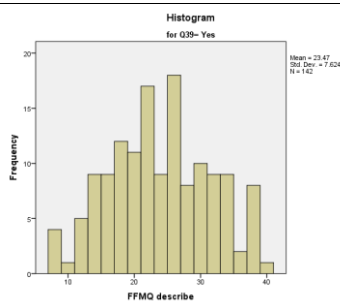


Shapiro Wilk = 0.116

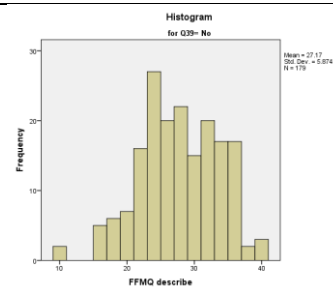


Shapiro Wilk p = 0.005

FFMQ Describe

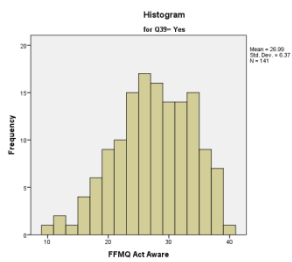


Shapiro Wilk p=0.073

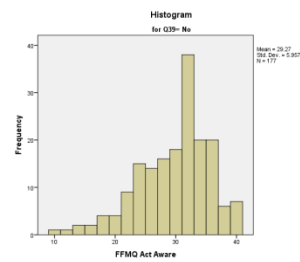


Shapiro Wilk p=0.035

FFMQ Act Aware

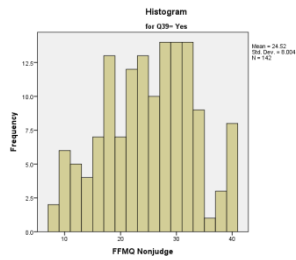


Shapiro Wilk = 0.031

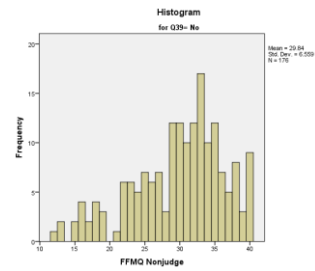


Shapiro Wilk <0.001

FFMQ Non judge

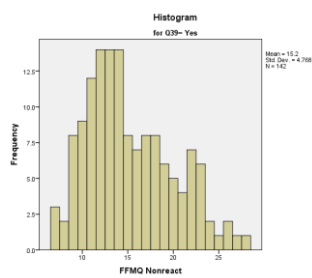


Shapiro Wilk p=0.026

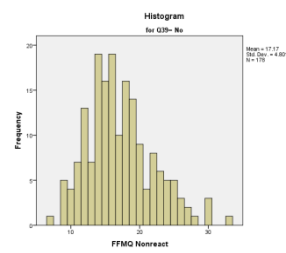


Shapiro Wilk <0.001

FFMQ Non react

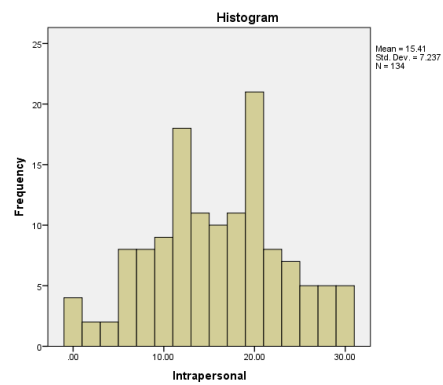


Shapiro Wilk <0.001



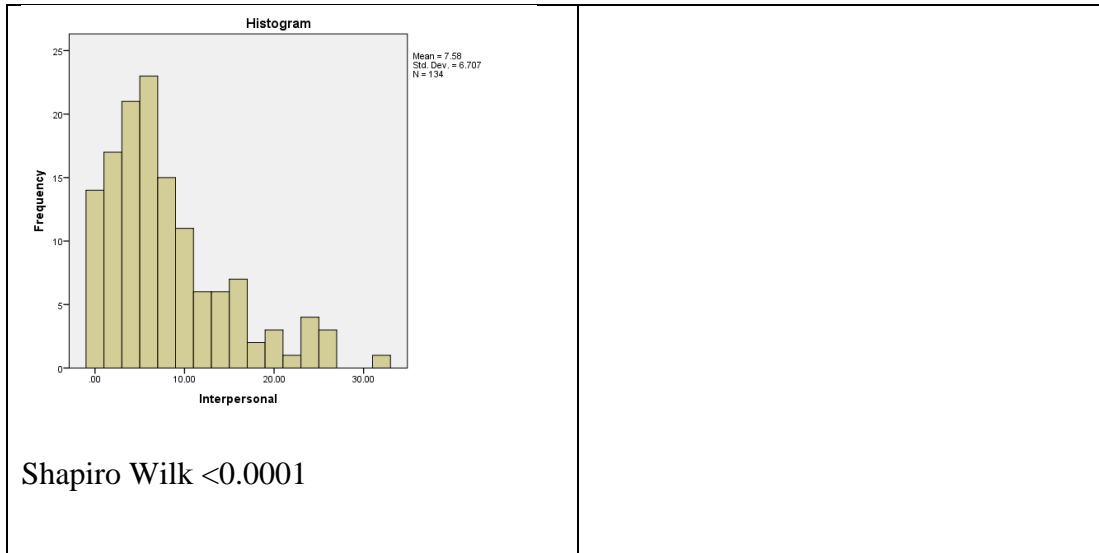
Shapiro Wilk = 0.001

Intrapersonal functions of self-harm



Shapiro Wilk = 0.098

Interpersonal functions of self-harm

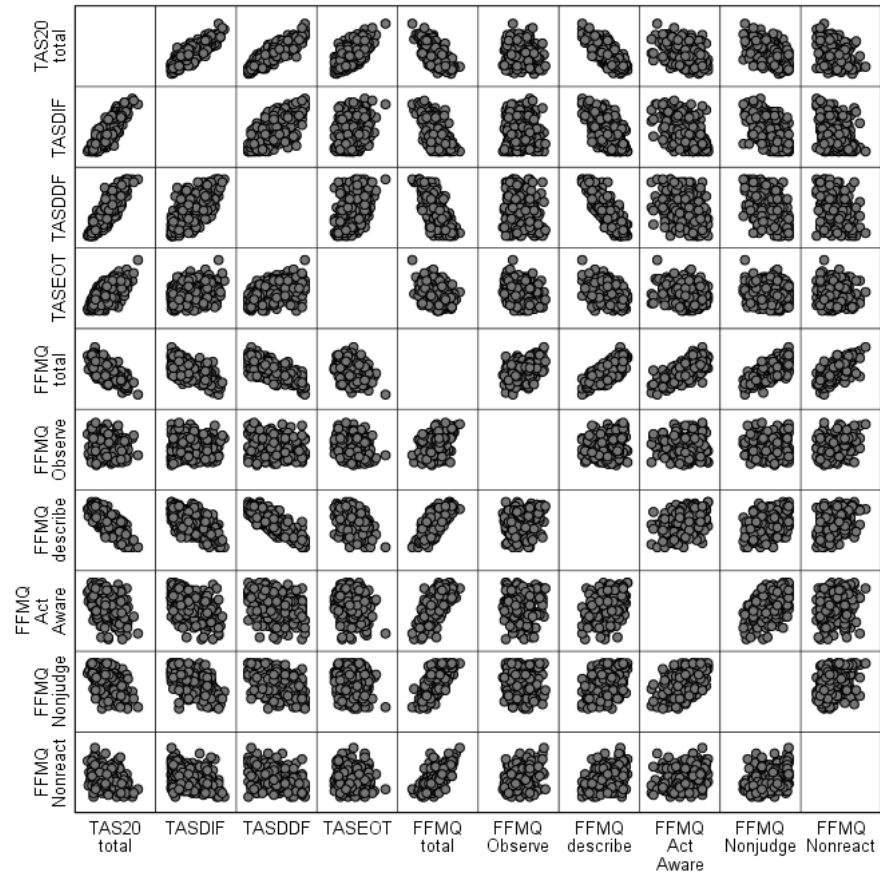


Linearity

Bilateral scatterplots indicate a broadly linear relationship between variables, with the possible exceptions of FFMQ subscale Observe and the TAS20 subscale EOT (Figure A4.5.2).

Figure A4.5.2

Scatterplots for FFMQ and TAS20 Totals and Subscales



Outliers

An examination of the boxplots identified outliers among those with no history of self-harm on the following variables: TAS EOT, FFMQ total and subscales Describe, Act aware, Non-judge and Non-react. Among those with a history of self-harm there was one outlier on the FFMQ Non-react subscale and several outliers on the Interpersonal functions of self-harm. The Z-scores of these variables were calculated to test the outliers further. The results are given in Table A4.5.1.

Table A4.5.1

Outlier Analysis

Variable		Frequency	Percent	Valid Percent	Cumulative Percent	Participant code
No history of self-harm						
TAS EOT	Z-score < 2	171	94%	96%	96%	
	Z-score > 1.96	8	4%	4%	100%	
	Z-score >2.58	0	0%	0%	100%	
	Z-score >3.29	0	0%	0%	100%	
	Total	179	99%	100%		
	Missing	2	1%			
	Total	181	100%			
FFMQ total	Z-score < 2	157	87%	92%	92%	
	Z-score > 1.96	10	6%	6%	98%	
	Z-score >2.58	2	1%	1%	99%	
	Z-score >3.29	1	1%	1%	100%	193
	Total	170	94%	100%		
	Missing	11	6%			
	Total	181	100%			
FFMQ describe	Z-score < 2	171	94%	96%	96%	
	Z-score > 1.96	6	3%	3%	99%	
	Z-score >2.58	2	1%	1%	100%	
	Z-score >3.29	0	0%	0%	100%	
	Total	179	99%	100%		
	Missing	2	1%			
	Total	181	100%			
FFMQ Act Aware	Z-score < 2	168	93%	95%	95%	
	Z-score > 1.96	6	3%	3%	98%	
	Z-score >2.58	3	2%	2%	100%	
	Z-score >3.29	0	0%	0%	100%	
	Total	177	98%	100%		

	Total	177	98%	100%	
	Missing	4	2%		
	Total	181	100%		
FFMQ Non judge	Z-score < 2	167	92%	95%	95%
	Z-score > 1.96	8	4%	5%	99%
	Z-score >2.58	1	1%	1%	100%
	Z-score >3.29	0	0%	0%	100%
	Total	176	97%	100%	
	Missing	5	3%		
	Total	181	100%		
FFMQ Non react	Z-score < 2	170	94%	96%	96%
	Z-score > 1.96	4	2%	2%	98%
	Z-score >2.58	3	2%	2%	99%
	Z-score >3.29	1	1%	1%	100%
	Total	178	98%	100%	180
	Missing	3	2%		
	Total	181	100%		
History of self-harm					
FFMQ non react	Z-score < 2	137	95%	96%	96%
	Z-score > 1.96	4	3%	3%	99%
	Z-score >2.58	1	1%	1%	100%
	Z-score >3.29	0	0%	0%	100%
	Total	142	99%	100%	
	Missing	2	1%		
	Total	144	100%		
Interpersonal functions	Z-score < 2	134	93%	94%	94%
	Z-score > 1.96	5	3%	3%	97%
	Z-score >2.58	3	2%	2%	99%
	Z-score >3.29	1	1%	1%	100%
	Total	143	99%	100%	142
	Missing	1	1%		
	Total	144	100%		

Two Z-scores across the FFMQ variables had an absolute value of over 3.29. Both these participants had no history of self-harm. One participant had a low alexithymia (TAS20) score and a high mindfulness score (FFMQ). The other had the reverse scores, that is, low mindfulness and high alexithymia. There did not appear to be any justification in deleting these cases from the analysis. One Z-score was above 3.29 for the Interpersonal Functions variable. An examination of this

participant's scores found that they scored highly on several of the functions of self-harm but that there was no anomaly in the data entry that would justify deletion. The FFMQ and TAS20 variables were examined for multivariate outliers using Mahalanobis D^2 . No values were found to be less than 0.001, indicating that no individual respondents had an unusual combination of values across all the measures.

In conclusion, no cases were deleted from the sample as a result of the outlier analysis.

References

Field, A. (2013). Discovering statistics using IBM SPSS statistics. In *Statistics*.

Appendix 4.6: Ethnicity, Employment Status and Education Achievement of Participants in the Mindfulness and Emotion Management Study (Study 2)

Figure A4.6.1

Ethnicity of Participants With and Without a History of Self-Harm

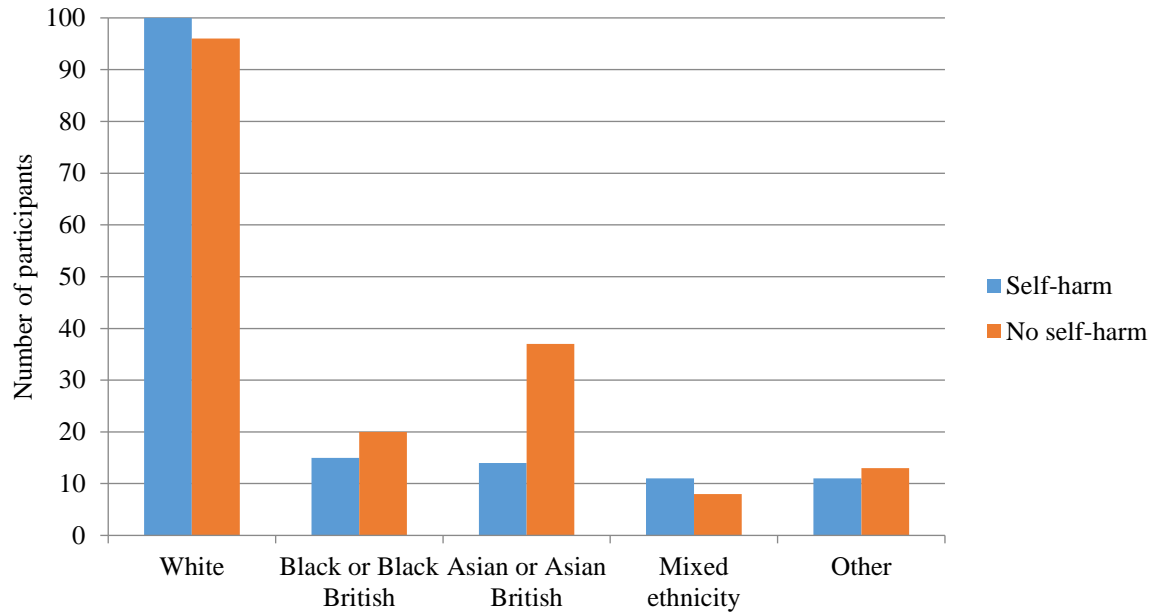


Figure A4.6.2

Employment Status of Participants With and Without a History of Self-Harm

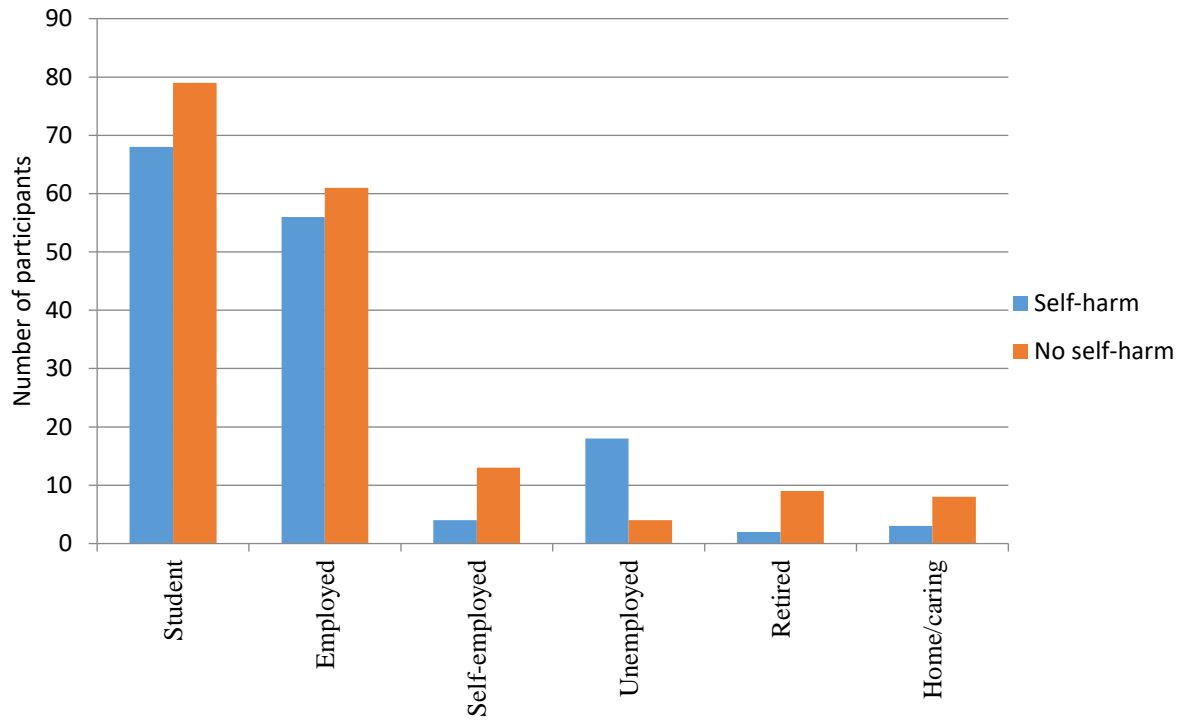
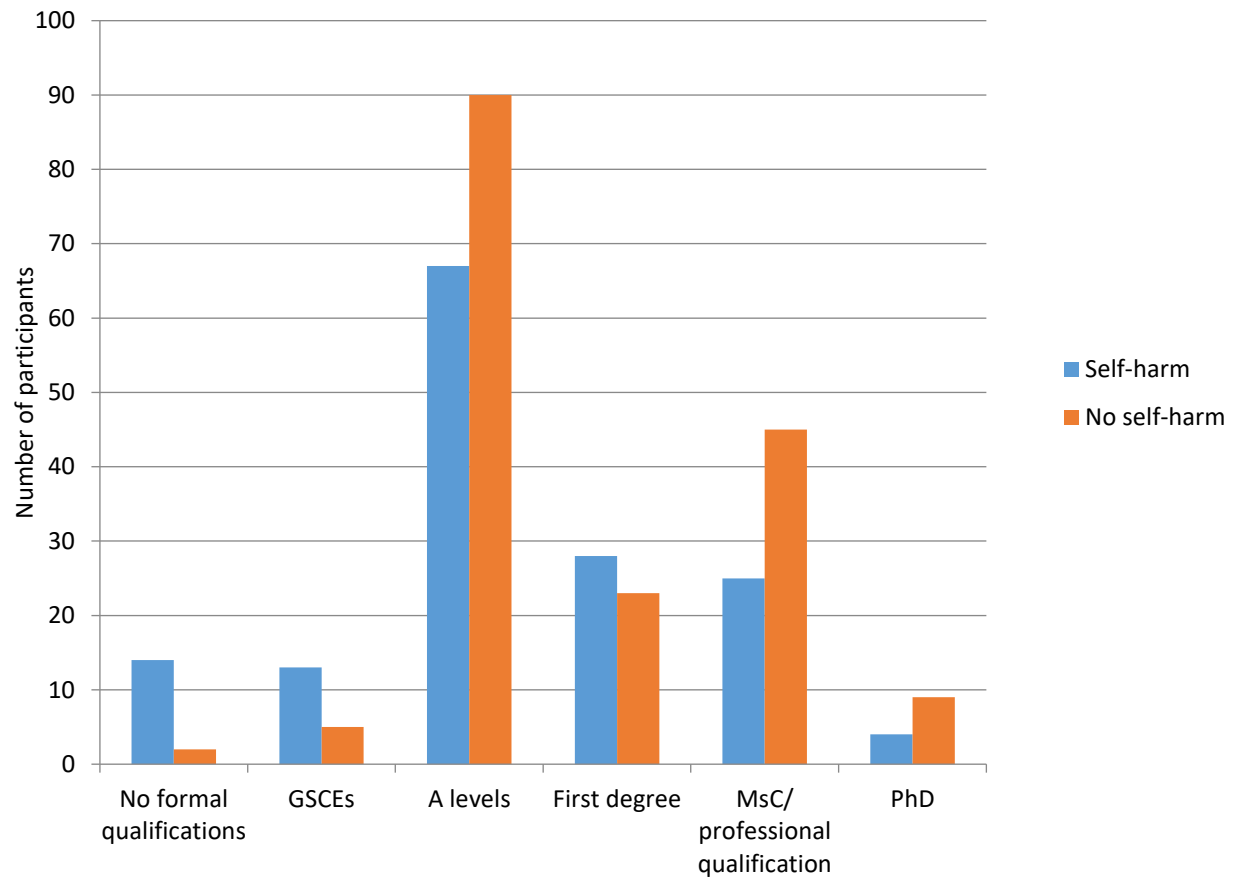


Figure A4.6.3

Educational Attainment of Participants With and Without a History of Self-Harm



Appendix 5.1: Screening the Dataset for Study 3

Missing Cases

Data for this study were collected in two time periods, between February and March 2018 and between July and December 2018. In total, 528 participants meeting the age criteria (18-30 years old) consented to take part in the online survey. Ninety three participants were recruited during the first data collection period which was limited to Middlesex University students, and 435 during the second period, recruited in Middlesex University and also via internet sites such as Reddit and Call for Participants. Data on interoception (measures SAQ and MAIA) were only collected during the second period of data collection.

Fifty-nine cases were removed (listwise deletion) where either the outcome variable question about self-harm history ($N = 50$) or any of the independent variables ($N = 9$) had not been completed. This represented 11% of the total sample. The deleted cases did not differ significantly in age from the rest of the sample ($t(510) = -1.097, p = .273$, 2 tailed) and there was no significant association with gender ($\chi^2(3) = 2.27$, exact $p = .515$), level of education ($\chi^2(5) = 1.91$, exact $p = .855$), ethnicity ($\chi^2(4) = 3.33$, exact $p = .508$) or employment status ($\chi^2(5) = 3.41$, exact $p = .544$). The proportion of cases excluded from the first period of data collection (9%) was not significantly different from that excluded from the second period (12%; $\chi^2(1) = 0.75, p = .386$).

Incomplete survey responses were kept in the sample if they had completed the question about self-harm history and at least one of the measures. From an ethical perspective, this approach enabled as much of the data provided by participants as possible to be used, as well as maximising statistical power. Where pairwise comparisons were used, the sample size for each statistic was reported.

Data screening revealed two participants (participants 479 and 156) who had cited ‘starving’ or ‘restricted eating’ as their only method of self-harm. Eating disorders are not normally included in the definition of self-harm so these two participants were recoded as never having engaged in self-harm. Other participants who named starvation as a method of self-harm but had also engaged in other methods included in the ISAS were not recoded. One participant said they had attempted suicide but responded negatively to the question about self-harm. In order to be consistent with the UK definition of self-harm, which does not distinguish between different motivations for hurting oneself (NICE, 2013), this participant was recoded as having a history of self-harm.

At this stage of the data screening, the sample consisted of 469 participants, of whom 294 (63%) had engaged in self-harm at some point in the past.

Comparing the Two Periods of Data Collection

The proportion of participants in the first period of data collection who had engaged in self-harm (39%) was significantly lower than in the second period (68%) ($\chi^2(1) = 24.77, p < .001$). The two samples did not differ significantly in age ($t(172.37) = -5.32$ (equal variances not assumed), $p = .596$). There was a significant association between data collection period and gender ($\chi^2(3) = 12.84$, exact $p = .008$), ethnicity ($\chi^2(4) = 117.16$, exact $p < .001$) and level of education ($\chi^2(5) = 22.55$, exact $p < .001$). There was no significant association between data collection period and employment ($\chi^2(5) = 4.40$, exact $p = .482$). In summary, participants recruited during the second time period were more likely to be female and white. They were more likely to have no qualifications, but also to have a masters qualification or above. Participants from the first period of data collection were

more likely to be Asian or Asian British and to be educated to A levels or degree level.

This analysis suggests that gender, ethnicity and level of education may be associated with past engagement with self-harm. In order to preserve sufficient statistical power the decision was taken to combine the data from the two periods, but to examine the effect of these potentially confounding demographic variables during the analysis.

Missing Data

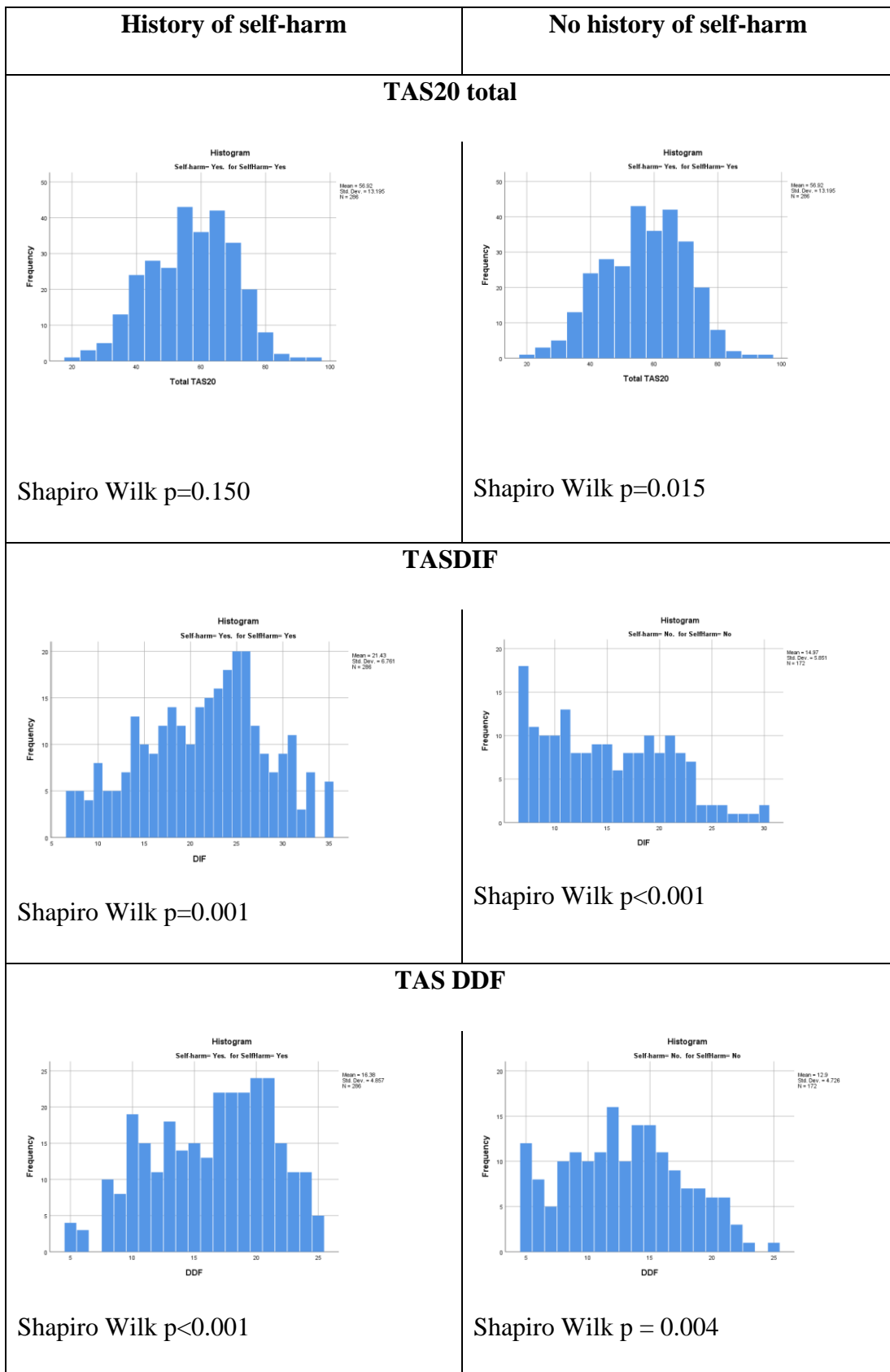
For each of the computed variables, missing values accounted for below 5% of the total dataset, apart from total DERS (6.44%). The measures of interoception, SAQ and MAIA, were not included during the first period of data collection. Of the 384 participants recruited during the second period of data collection, 8% did not complete the SAQ and 4% did not complete the MAIA. There was no relationship between missing data in any of the computed variables and whether or not a respondent had a history of self-harm. The decision was made not to delete any cases with missing values.

Tests of Normality

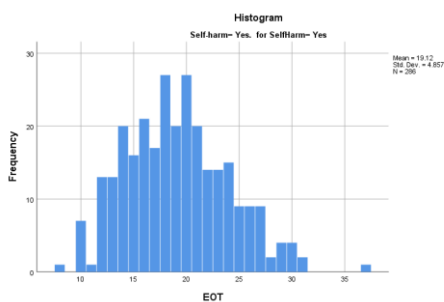
Figure A5.1.1 sets out the histograms and Shapiro-Wilk tests of skewness for all computed variables. Although the Shapiro-Wilk test is significant for nearly all the variables, an examination of the histograms suggests that this may be more problematic in some cases than others. In particular a number of the variables are positively skewed among those with no history of self-harm. However, the sample is relatively large (469 in total) and tests of normality are more likely to be significant in large samples (Field, 2013).

Figure A5.1.1

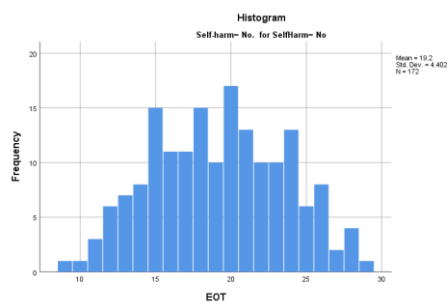
Histogram and Tests of Normality for All Computed Variables



TAS EOT

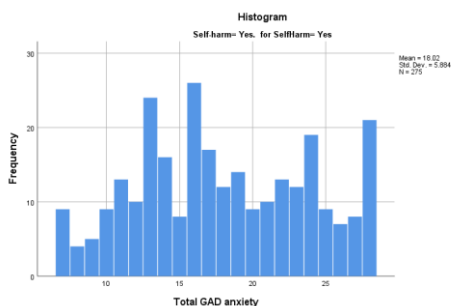


Shapiro Wilk p=0.003

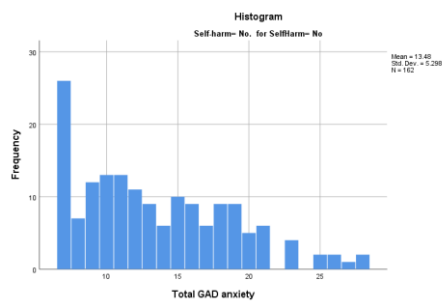


Shapiro Wilk p=0.046

GAD Anxiety

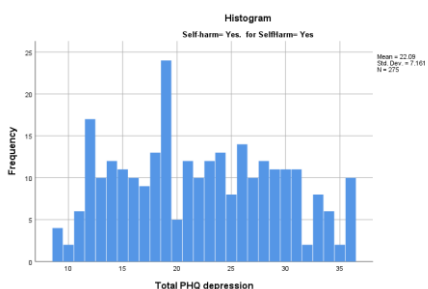


Shapiro Wilk p <0.001

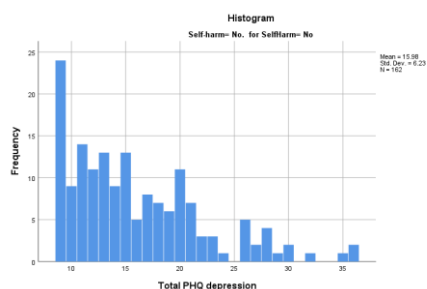


Shapiro Wilk p <0.001

PHQ Depression

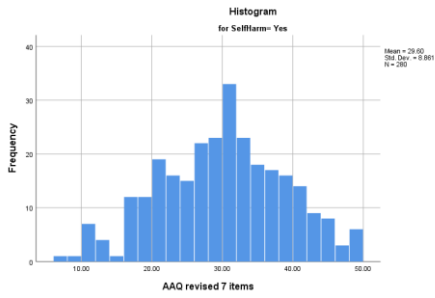


Shapiro Wilk p <0.001

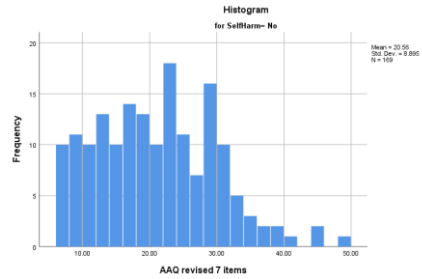


Shapiro Wilk p <0.001

AAQ-II

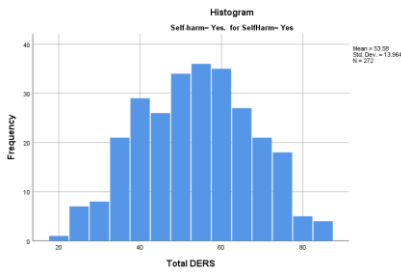


Shapiro Wilk $p=0.101$

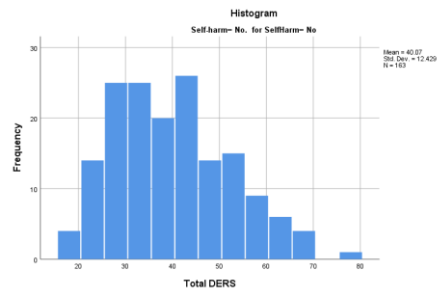


Shapiro Wilk $p=0.001$

Total DERS

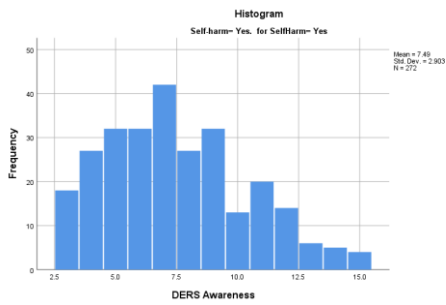


Shapiro Wilk = 0.067

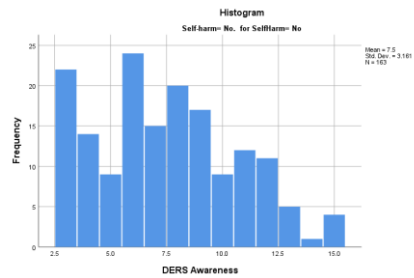


Shapiro Wilk = 0.001

DERS Awareness

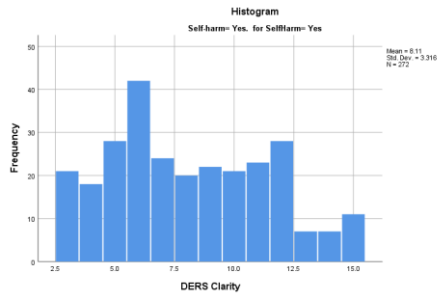


Shapiro Wilk $p<0.001$

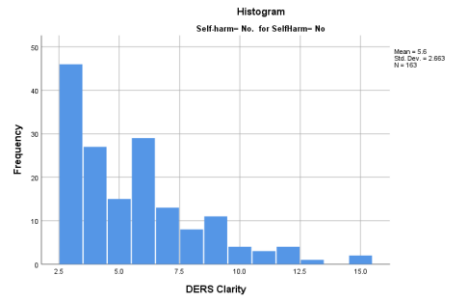


Shapiro Wilk <0.001

DERS Clarity

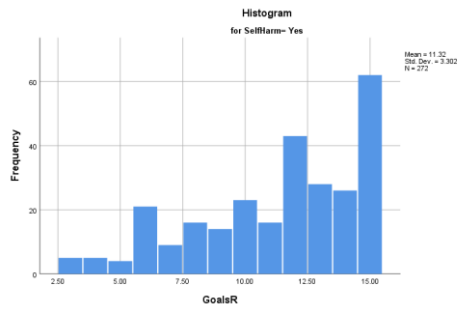


Shapiro Wilk <0.001

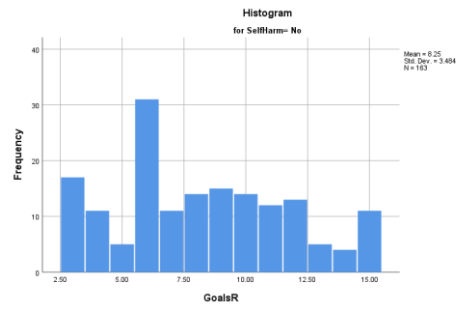


Shapiro Wilk < 0.001

DERS Goals

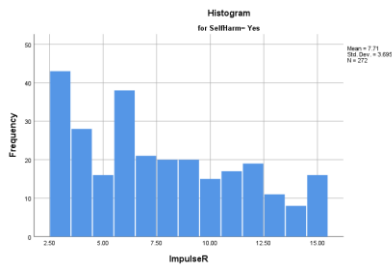


Shapiro Wilk $p < 0.001$

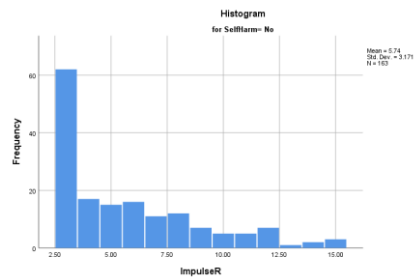


Shapiro Wilk $p < 0.001$

DERS Impulse

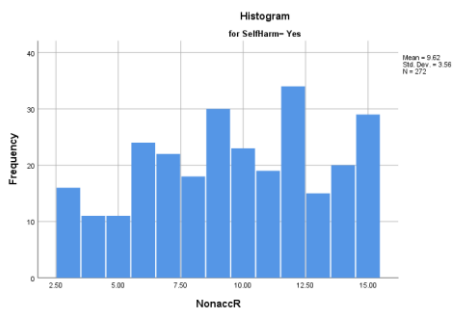


Shapiro Wilk $p < 0.001$

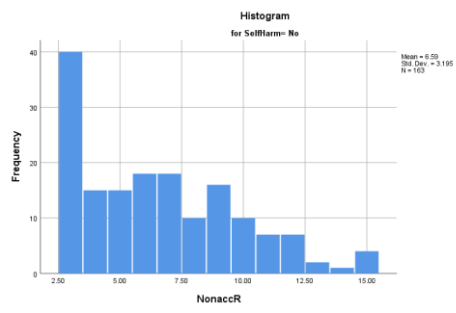


Shapiro Wilk $p < 0.001$

DERS Non acceptance

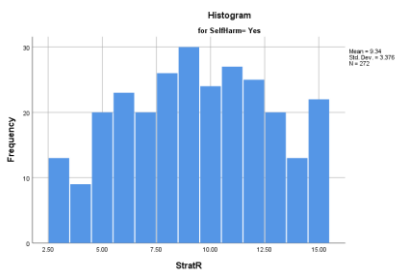


Shapiro Wilk $p < 0.001$

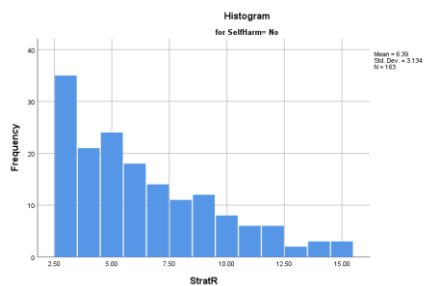


Shapiro Wilk $p < 0.001$

DERS Strategies

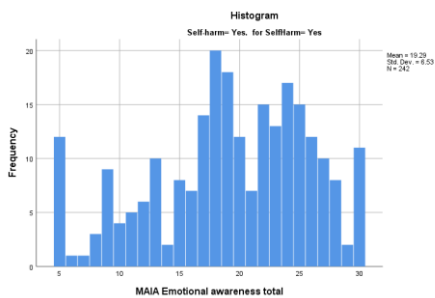


Shapiro Wilk $p < 0.001$

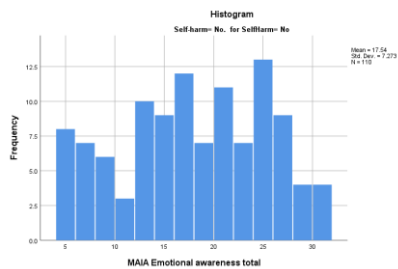


Shapiro Wilk $p < 0.001$

Emotional Awareness MAIA

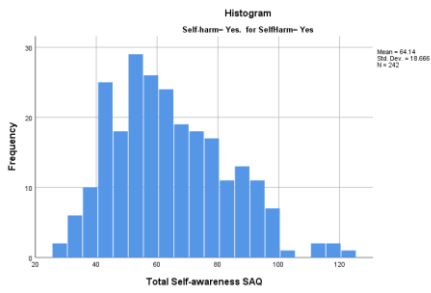


Shapiro Wilk $p < 0.001$

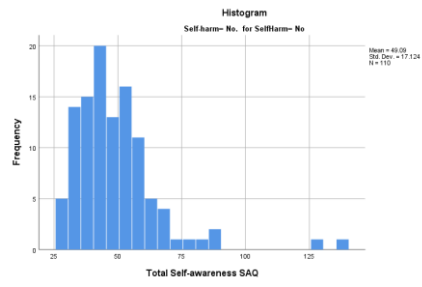


Shapiro Wilk $p = 0.01$

Self-awareness SAQ

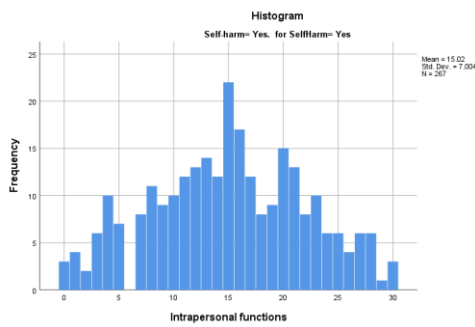


Shapiro Wilk $p < 0.001$



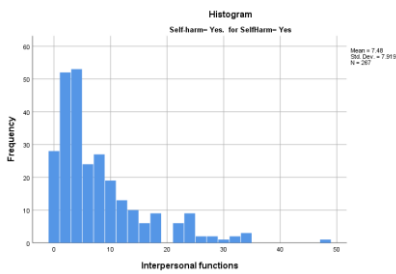
Shapiro Wilk $p < 0.001$

Intrapersonal functions of self-harm



Shapiro Wilk = 0.013

Interpersonal functions of self-harm



Shapiro Wilk < 0.0001

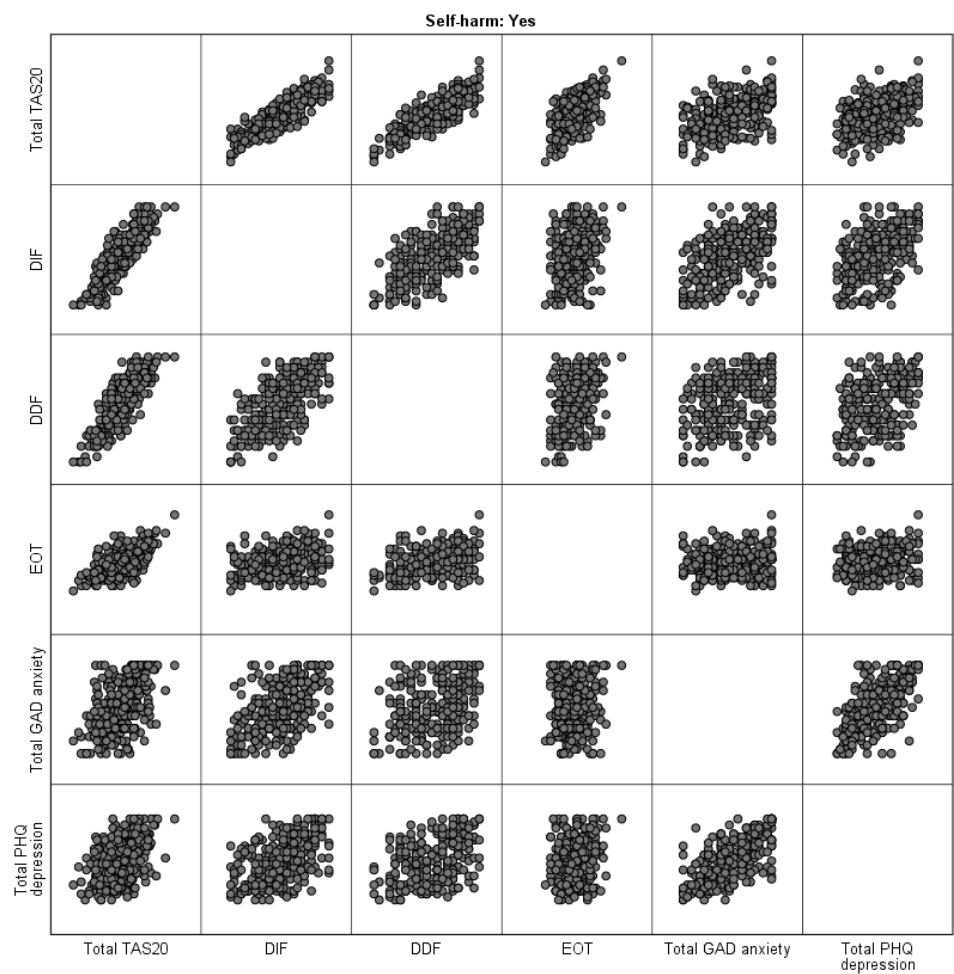
Linearity

Bilateral scatterplots indicate a broadly linear relationship between most variables. The measure of interoceptive emotional awareness (MAIA) did not appear to have a linear relationship with any other variable. Similarly, the TAS20 subscale EOT and the DERS subscale Awareness did not have observable linear relationships with the other variables, and among those with no history of self-harm, the PHQ (depression) measure and the SAQ (bodily interoceptive awareness) did not appear to be related to the other measures.

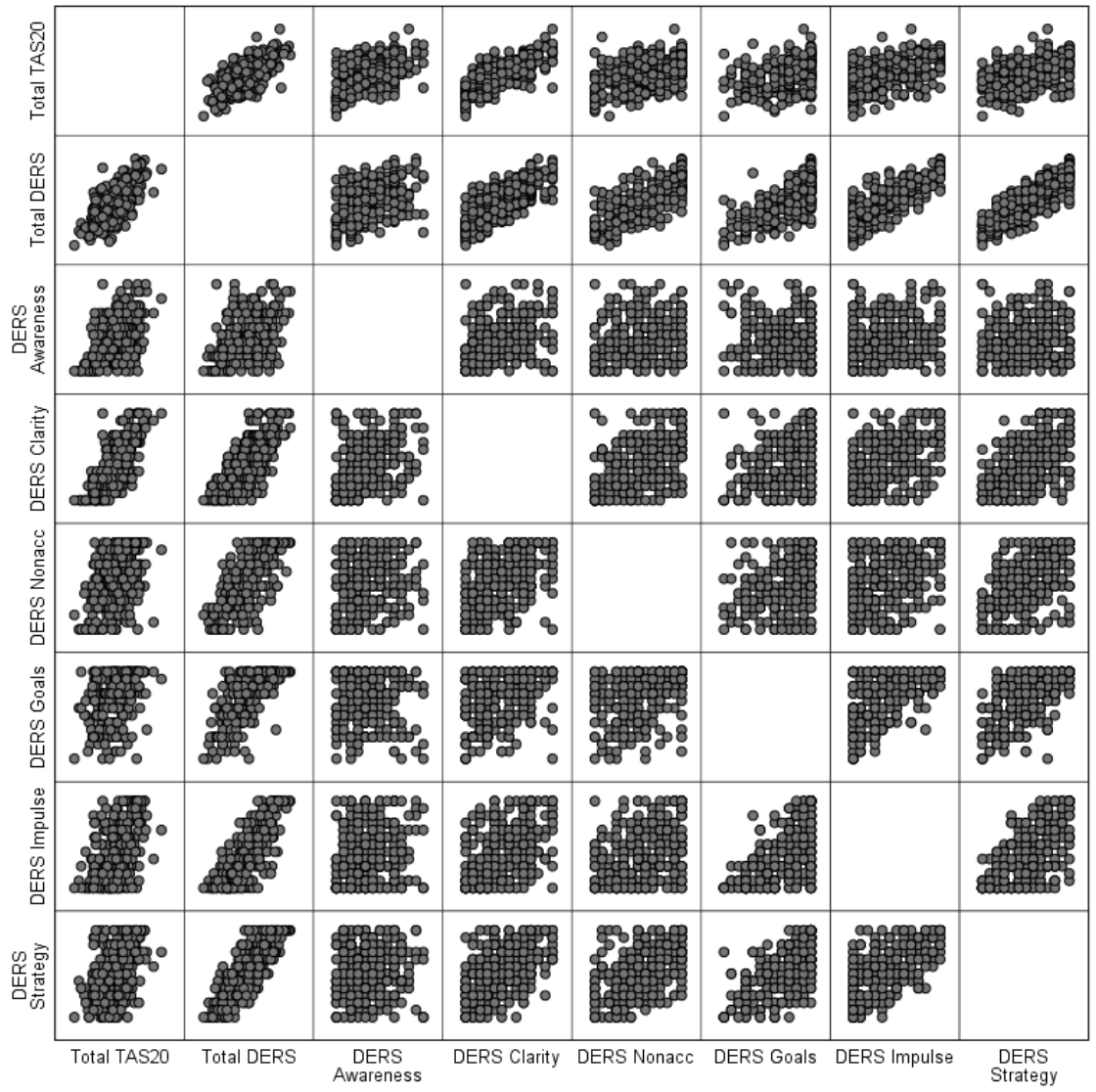
Figure A5.1.2

Scatterplots of TAS20 and Other Computed Variables

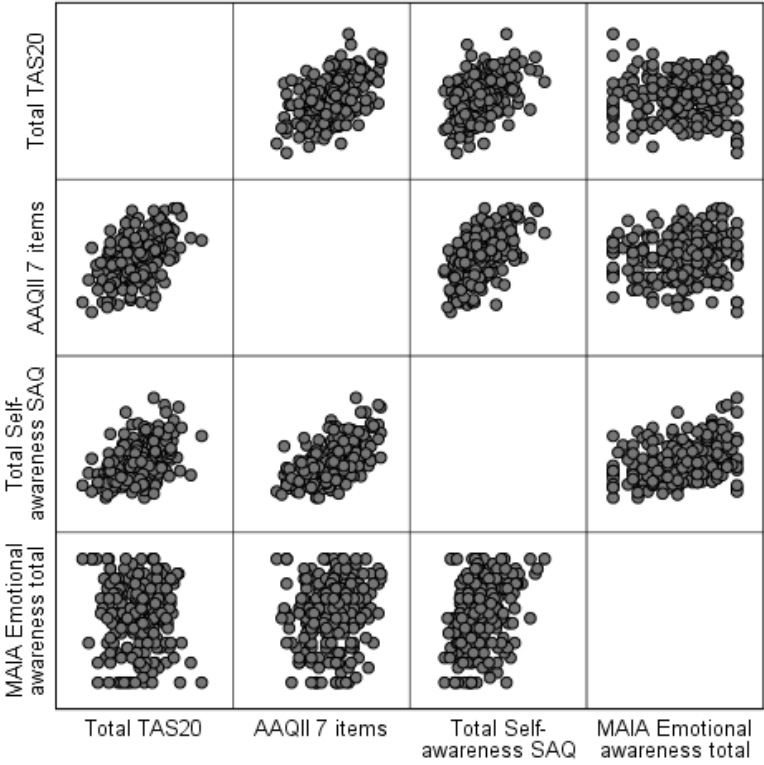
History of self-harm



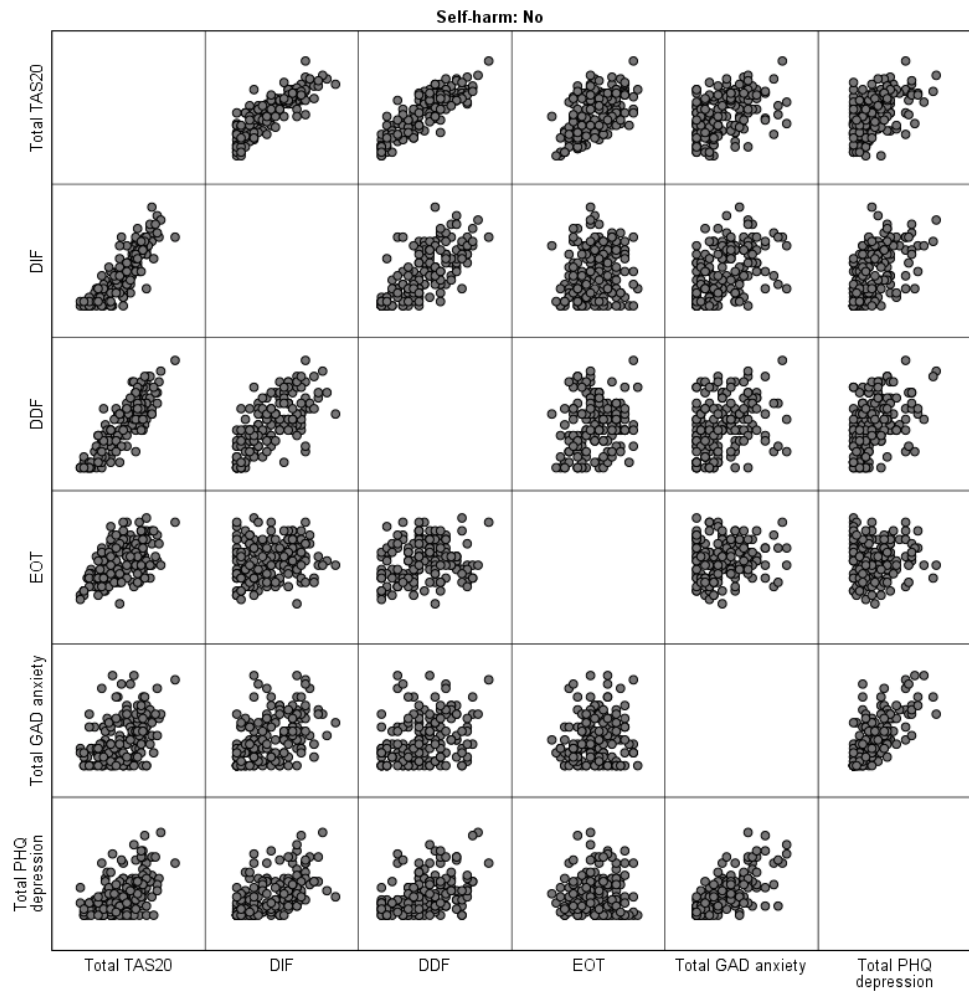
Self-harm: Yes



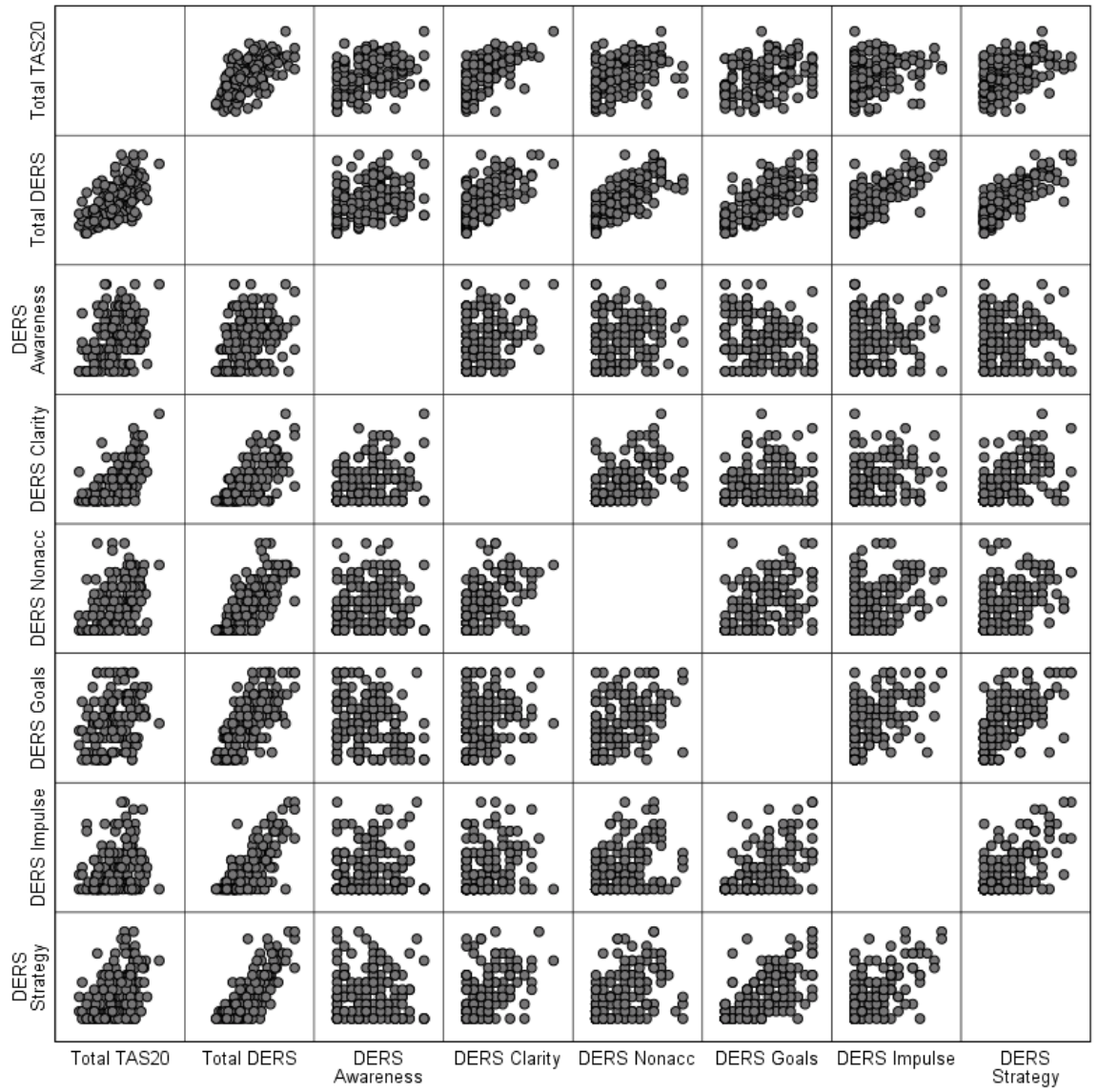
Self-harm: Yes

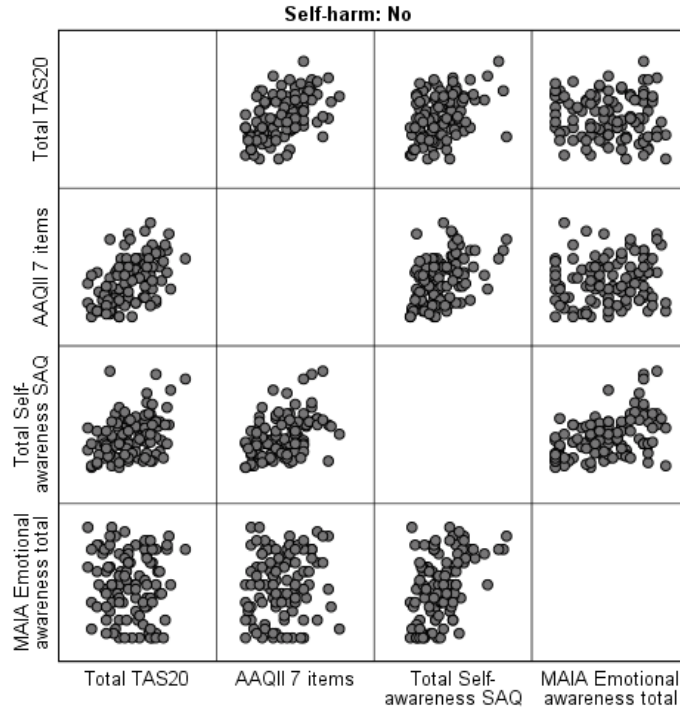


No history of self-harm



Self-harm: No





Outliers

An examination of the boxplots identified outliers among those with no history of self-harm on the following variables: PHQ-9 (depression), DERS subscales Clarity and Strategies, total DERS, AAQ-II and SAQ. Among those with a history of self-harm there was one outlier on each of the total TAS20, subscale EOT and the SAQ. The Z-scores of these variables were calculated to test the outliers further. The results are set out in Table A5.1.1 below.

Table A5.1.1*Analysis of Outliers Identified in Boxplots of Key Variables*

Variable	Absolute Z-score	Frequency	Percent	Valid Percent	Cumulative Percent	Participant code
Self-harm						
Total	Z-score < 1.96	277	94%	96%	96%	
TAS20	Z-score > 1.96	9	3%	3%	99%	
	Z-score >2.58	2	1%	1%	100%	
	Z-score >3.29	0	0%	0%	100%	
	Total	288	98%	100%		
	Missing	7	2%			
	Total	295	100%			
EOT	Z-score < 1.96	277	95%	96%	96%	
	Z-score > 1.96	11	4%	4%	100%	
	Z-score >2.58	0	0%	0%	100%	
	Z-score >3.29	1	0%	0%	100%	208
	Total	289	99%	100%		
	Missing	4	1%			
	Total	293	100%			
SAQ	Z-score < 1.96	236	81%	98%	98%	
	Z-score > 1.96	3	1%	1%	99%	
	Z-score >2.58	3	1%	1%	100%	
	Z-score >3.29	0	0%	0%	100%	
	Total	242	83%	100%		
	Missing	51	17%			
	Total	293	100%			
No history of self-harm						
PHQ	Z-score < 1.96	158	90%	93%	93%	
	Z-score > 1.96	7	4%	4%	98%	
	Z-score >2.58	4	2%	2%	100%	
	Z-score >3.29	0	0%	0%	100%	
	Total	169	96%	100%		
	Missing	7	4%			
	Total	176	100%			
DERS Impulse	Z-score < 1.96	160	91%	98%	98%	
	Z-score > 1.96	0	0%	0%	98%	
	Z-score >2.58	4	2%	2%	100%	
	Z-score >3.29	0	0%	0%	100%	
	Total	164	93%	100%		
	Missing	12	7%			
	Total	176	100%			

Variable	Absolute Z-score	Frequency	Percent	Valid Percent	Cumulative Percent	Participant code
DERS Strategies	Z-score < 1.96	156	89%	95%	95%	
	Z-score > 1.96	5	3%	3%	98%	
	Z-score >2.58	3	2%	2%	100%	
	Z-score >3.29	0	0%	0%	100%	
	Total	164	93%	100%		
	Missing	12	7%			
	Total	176	100%			
DERS Clarity	Z-score < 1.96	155	88%	94%	94%	
	Z-score > 1.96	7	4%	4%	98%	
	Z-score >2.58	1	1%	1%	99%	
	Z-score >3.29	2	1%	1%	100%	520, 395
	Total	165	94%	100%		
	Missing	11	6%			
	Total	174	100%			
Total DERS	Z-score < 1.96	156	89%	96%	96%	
	Z-score > 1.96	6	3%	4%	99%	
	Z-score >2.58	1	1%	1%	100%	
	Z-score >3.29	0	0%	0%	100%	
	Total	163	93%	100%		
	Missing	13	7%			
	Total	176	100%			
SAQ	Z-score < 1.96	106	60%	95%	95%	
	Z-score > 1.96	3	2%	3%	98%	
	Z-score >2.58	0	0%	0%	98%	
	Z-score >3.29	2	1%	2%	100%	520,519
	Total	111	63%	100%		
	Missing	65	37%			
	Total	176	100%			
AAQ-II	Z-score < 1.96	164	93%	97%	97%	
	Z-score > 1.96	2	1%	1%	98%	
	Z-score >2.58	3	2%	2%	100%	
	Z-score >3.29	0	0%	0%	100%	
	Total	169	96%	100%		
	Missing	7	4%			
	Total	176	100%			

Four participants were identified as outliers on at least one variable. Of these, one participant (520) was an outlier on three variables. Examination of their responses showed that they had entered the same response for all items in a scale (e.g. all '5= almost always' for all items of the DERS) including those items that were reverse worded. For this reason, data from this participant was removed from the sample. T tests to compare the relevant variables in those with and without a history of self-harm were run with and without the outlier cases. Removal of the outlier made no difference to whether or not the result was significant.

The independent variables were examined for multivariate outliers using Mahalanobis D^2 . Tests were conducted separately on data from the two periods of data collection to account for the fact that the second period sample completed two additional measures (SAQ and MAIA). One probability was found to be less than 0.001, relating to participant 519, indicating that this individual respondent had an unusual combination of values across all the measures. This participant had already been identified as outliers on one individual variable. For this reason this case was removed from the dataset.

A T test was calculated to test whether there was a significant difference in the variable SAQ in those with no history of self-harm, comparing the full dataset with the dataset with the two cases removed. No significant difference was found. The two remaining cases that had been identified as outliers on one variable (participants 208 and 395) was examined but there was no clear reason to remove this case from the dataset.

In summary two outliers were removed from the dataset, leaving a final sample of 467 participants. Their removal did not affect the degree of skew of the variables.

Statistical Analysis

Despite the removal of two outliers, there remains a tendency towards skew in most of the computed variables. Field, (2013) suggests that in samples over 100 the sampling distribution will approximate to normal, due to the central limit theorem. The decision was therefore taken to use the more powerful parametric tests.

References

Field, A. (2013). Discovering statistics using IBM SPSS statistics. In *Statistics*.

Appendix 5.2: Participant Briefing Information and Consent Study 3

You are invited to take part in a research study on self-harm and emotions, aimed at increasing understanding of self-harming behaviours. The survey is open to all adults aged between 18 and 30, whether or not you have ever engaged in self-harm. This will enable us to compare the experiences of those who have self-harmed with those who have not. Before you decide to participate, it is important for you to understand why the research is being done and what it will involve. Please take your time to read the following information carefully, and discuss it with others if you wish. Please ask if there is anything that is not clear or if you would like more information (contact details below). Take your time to decide whether or not you wish to take part.

What is the purpose of the research?

The aim of this study is to explore why some people deliberately hurt themselves, and how it relates to the way we experience and manage our emotions. Self-harm is the act of injuring yourself, for example by cutting, scratching, burning or self-poisoning. Some research has suggested that people who self-harm may have difficulty understanding their feelings. Understanding this better could help improve treatment.

What will happen to me if I take part?

If you agree to take part you will be asked to complete an online questionnaire. This consists of questions relating to how you experience and manage your emotions and physical symptoms and about whether you have ever engaged in self-harm. The survey should take no more than 45 minutes to complete. Your answers will be combined with all other responses to be analysed and will remain completely confidential and anonymous. Participation in this research is entirely voluntary. You do not have to take part if you do not want to. If you decide to take part you may withdraw at any time without giving a reason. If, after completing the survey, you decide you do not want your responses to be included in the analysis, you can ask for your data to be withdrawn by contacting the researchers (HN274@live.mdx.ac.uk) within four weeks of taking the survey and quoting a reference number which can be generated at the end of the survey.

How can I win a £50 Amazon voucher?

Everyone who takes part in the survey will have the chance to enter a prize draw to win a £50 Amazon voucher. You will be asked at the end of the survey to give your email address if you would like to be entered into the draw and this will be collated and stored separately from the other responses to maintain anonymity. Email address provided will only be used for the purpose of the prize draw and the record of the email addresses will be destroyed once the draw has taken place.

What are the possible disadvantages to taking part?

The survey includes personal and potentially sensitive questions about your own experiences, including past engagement in self-harm. Previous research suggests that most people are not negatively affected by these sorts of questions (even when personally affected by these issues) though some may find them difficult and potentially upsetting. Before deciding if you want to take part in this study, please consider carefully if you are

likely to find this distressing.

What will happen to the results of this research study?

All the responses will be anonymous and combined for analysis so that no one participant's data will be examined individually or identifiable in any report. The study is being conducted as part of a PhD and will be written up as part of a thesis. The results may be published in an academic journal. We will also produce a summary of the results which will be available to you once we have finished collecting and analysing the data.

Who has reviewed this study?

All proposals for research using human participants are reviewed by an Ethics Committee before they can proceed. The Middlesex University Psychology Department's Ethics Committee has reviewed this proposal.

Thank you for taking the time to read this information.

If reading it has caused you any distress, please consider contacting Harmless, a user-led support organisation for people who self-harm (www.harmless.org.uk) or Samaritans, which provides confidential emotional support any time, from any phone on 116 123 or by email (jo@samaritans.org). Students at Middlesex University can also access the University's counselling and mental health services (counselling@mdx.ac.uk).

Contact for further information:

If you have any further questions about the study, please contact:

Researcher
Hilary Norman
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The Burroughs Hendon
London
NW4 4BT

Email: L.Marzano@mdx.ac.uk

If you would like to take part in the survey and you agree with the following statement, please confirm your consent.

The nature and purpose of this research have been sufficiently explained and I agree to

take part in this study. I understand that I am free to withdraw at any time without giving a reason or incurring any penalty.

- YES, I would like to continue and take part in the study (1)
- NO, I would not like to take part in the study (2)

Appendix 5.3: Survey Questionnaire Study 3

How old are you?

Under 18 (1)

Between 18 and 30 (please give age) (2) _____

Over 30 (3)

How would you describe your gender?

Male (1)

Female (2)

Other (3)

Prefer not to say (4)

What is your ethnic group?

White (1)

Mixed/ Multiple ethnic groups (2)

Asian/ Asian British (3)

Black/ African/ Caribbean/ Black British (4)

Other (5)

Which of the following describes your current status:

Employed (1)

Self- Employed (2)

Unemployed (3)

Retired (4)

Student (5)

Home/ Caring responsibilities (6)

Other (Please specify) (7) _____

What is the highest level of education you have achieved?

No formal qualifications (1)

GCSEs/ O Levels (2)

A Levels (3)

Bachelor's Degree (4)

Master's Degree/ Professional qualification (5)

Doctoral Level (6)

Using the scale provided as a guide, please indicate how much you agree or disagree with each of the following statements.

	Strongly disagree (1)	Moderately disagree (2)	Neither agree or disagree (3)	Moderately agree (4)	Strongly agree (5)
1. I am often confused about what emotion I am feeling.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. It is difficult for me to find the right words for my feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I have physical sensations that even doctors do not understand.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I am able to describe my feelings easily	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I prefer to analyse problems rather than just describe them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. When I am upset, I do not know if I am sad, frightened or angry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I am often puzzled by sensations in my body.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I prefer to just let things happen rather than to understand why they turned out that way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I have feelings that I cannot quite identify.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Being in touch with emotions is essential.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I find it hard to describe how I feel about people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. People tell me to describe my feelings more.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I do not know what is going on inside me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I often do not know why I am angry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I prefer talking to people about their daily activities rather than their feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. I prefer to watch 'light' entertainment shows rather than psychological dramas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. It is difficult for me to reveal my innermost feelings, even to close friends.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I can feel close to someone, even in moments of silence.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. I find examination of my feelings useful in solving personal problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. Looking for hidden meanings in movies or plays distracts from their enjoyment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Have you ever intentionally (i.e. on purpose) harmed yourself, for example by cutting; biting; burning; carving; pinching; pulling hair; severe scratching; banging/hitting self; interfering with wound healing; rubbing skin against rough surfaces; sticking self with needles, taking an overdose of pills, swallowing dangerous substances or in another way?

- Yes (1)
- No (2)

Do you need help now?

- Yes (1)
- No (2)

Display This Question:

If Do you need help now? = Yes

If you feel that you are in need of immediate support, please contact Samaritans (116 123) or call the NHS 111 helpline. Both are available 24 hours a day, every day, and are free.

Please estimate the number of times in your life you have intentionally (i.e., on purpose) harmed yourself. (Insert approximate number)

Which of the following ways of self-harming have you used? Please tick all that apply

- Cutting (1)
 - Biting (2)
 - Burning (3)
 - Carving (4)
 - Pinching (5)
 - Pulling hair (6)
 - Sever scratching (7)
 - Banging/ Hitting self (8)
 - Interfering with wound healing (9)
 - Rubbing skin against rough surfaces (10)
 - Sticking self with needles (11)
 - Swallowing dangerous substances (12)
 - Taking an overdose (13)
 - Other (Please say what method) (14)
-

If you feel that you have a main form of self-harm, please tick the one behaviour that you consider to be your main form of self-harm.

- Cutting (1)
 - Biting (2)
 - Buring (3)
 - Carving (4)
 - Pinching (5)
 - Pulling hair (6)
 - Severe scratching (7)
 - Banging/ Hitting self (8)
 - Interfering with wound healing (9)
 - Rubbing skin against rough surfaces (10)
 - Sticking self with needles (11)
 - Swallowing dangerous substances (12)
 - Taking an overdose (13)
 - Other (Please say what method) (14)
-

- I don't have one main form of self harm (15)

- How old were you when you first self-harmed? (Please give approximate age.)
-

When did you last self harm?

- Within the past week (1)
 - Within the past year (2)
 - Over a year ago (Please give approximate date you last self-harmed) (3)
-

Display This Question:

If When did you last self harm? = Within the past year

How many times within the past year have you self-harmed?

- Once (1)
- 2-4 times (2)
- 5 times or more (3)

Display This Question:

If When did you last self harm? = Over a year ago (Please give approximate date you last self-harmed)

Do you feel that you have stopped self-harming?

- Yes (1)
- No (2)
- I don't know (3)

What would you say was your main, or most common, reason for self-harming?

Have you ever attempted suicide?

- Yes (1)
- No (2)

Do you need help now?

- Yes (1)
 - No (2)
-

If you feel that you are in need of immediate support, please contact Samaritans (116 123) or call the NHS 111 helpline. Both are available 24 hours a day, every day, and are free.

Over the last 2 weeks, how often have you been bothered by any of the following problems?

Please select one answer per question

	Not at all (0) (1)	Several days (1) (2)	More than half the days (2) (3)	Nearly every day (3) (4)
1. Feeling nervous, anxious or on edge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Not being able to stop or control worrying	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Worrying too much about different things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Trouble relaxing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Being so restless that it is hard to sit still	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Becoming easily annoyed or irritable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Feeling afraid as if something awful might happen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

	Not difficult at all (1)	Somewhat difficult (2)	Very difficult (3)	Extremely difficult (4)
How difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Over the last 2 weeks, how often have you been bothered by any of the following problems?
Please select one answer per question.

	Not at all (1)	Several days (2)	More than half the days (3)	Nearly every day (4)
1. Little interest or pleasure in doing things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Feeling down, depressed, or hopeless.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Trouble falling or staying asleep, or sleeping too much.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Feeling tired or having little energy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Poor appetite or overeating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Trouble concentrating on things, such as reading the newspaper or watching television.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Thoughts that you would be better off dead or of hurting yourself in some way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Below you will find a list of statements. Please rate how true each statement is for you. Use the scale below to make your choice

	Never true (1) (1)	Very seldom true (2) (2)	Seldom true (3) (3)	Sometimes true (4) (4)	Frequently true (5) (5)	Almost always true (6) (6)	Always true (7) (7)
1. It's OK if I remember something unpleasant.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. My painful experiences and memories make it difficult for me to live a life that I would value.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I'm afraid of my feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I worry about not being able to control my worries and feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. My painful memories prevent me from having a fulfilling life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I am in control of my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Emotions cause problems in my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. It seems like most people are handling their lives better than I am.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Worries get in the way of my success.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. My thoughts and feelings do not get in the way of how I want to live my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Please indicate how often the following apply to you	Almost Never (0-10%) (1)	Sometimes (11-35%) (2)	About half of the time (36-65%) (3)	Most of the time (66-90%) (4)	Almost always (91-100%) (5)
1. I pay attention to how I feel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I have no idea how I am feeling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I have difficulty making sense out of my feelings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I care about what I am feeling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I am confused about how I feel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. When I'm upset, I acknowledge my emotions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. When I'm upset, I become embarrassed for feeling that way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. When I'm upset, I have difficulty getting work done	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. When I'm upset, I become out of control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate how often the following apply to you					
	Almost Never (0- 10%) (1)	Sometimes (11-35%) (2)	About half of the time (36-65%) (3)	Most of the time (66- 90%) (4)	Almost always (91- 100%) (5)
10. When I'm upset, I believe that I will end up feeling very depressed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. When I'm upset, I have difficulty focusing on other things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. When I'm upset, I feel guilty for feeling that way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. When I'm upset, I have difficulty concentrating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. When I'm upset, I have difficulty controlling my behaviours	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. When I'm upset, I believe there is nothing I can do to make myself feel better	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. When I'm upset, I become irritated with myself for feeling that way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. When I'm upset, I lose control over my behaviour	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. When I'm upset, it takes me a long time to feel better	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Below you will find a list of statements. Please indicate how often each statement applies to you generally in daily life (from 0 = Never to 5= Always).

	0 (Never) (1)	1 (2)	2 (3)	3 (4)	4 (5)	5 (Always) (6)
I notice how my body changes when I am angry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When something is wrong in my life I can feel it in my body.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I notice that my body feels different after a peaceful experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I notice that my breathing becomes free and easy when I feel comfortable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I notice how my body changes when I feel happy/joyful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please read each item carefully and tick the one box that best describes how often you feel each sensation. There are no right or wrong answers.

	Never (1)	Sometimes (2)	Often (3)	Very often (4)	Always (5)
I feel my heart beat in my ears.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel very hot in comparison to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel pain excessively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my stomach tightening.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel a sudden hunger pang.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my back ache.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel pins and needles.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that I can't get enough air into my lungs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have an extra-strong heartbeat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel full and bloated after eating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please read each item carefully and tick the one box that best describes how often you feel each sensation. There are no right or wrong answers.

	Never (1)	Sometimes (2)	Often (3)	Very often (4)	Always (5)
I have a sudden urge to urinate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel as if I am on fire.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel a burning sensation in my stomach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel a pain in my stomach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel very cold in comparison to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel as if I have to throw up.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel chilled.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my legs are heavy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i feel my throat is dry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a heavy feeling in my chest.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please read each item carefully and tick the one box that best describes how often you feel each sensation. There are no right or wrong answers.

	Never (1)	Sometimes (2)	Often (3)	Very often (4)	Always (5)
I feel my heart thudding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel sudden thirst pangs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel breathless without engaging in any type of exertion or effort.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my ears burning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel a lump in my throat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel faint.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my palms are sweaty.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have difficulty swallowing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Have you ever intentionally (i.e. on purpose) harmed yourself, for example by cutting; biting; bu... = Yes

The final set of questions return to the topic of self-harm, if that's ok. Below is a list of statements that may or may not be relevant to your experience of self-harm. Please identify whether the statements are not relevant at all to you, somewhat relevant to you or very relevant to you.

When I self harm, I am...

	Not relevant at all (1)	Somewhat relevant (2)	Very relevant (3)
... Calming myself down	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Creating a boundary between myself and others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Punishing myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Giving myself a way to care for myself (by attending to the wound)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Causing pain so I will stop feeling numb	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Avoiding the impulse to attempt suicide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Doing something to generate excitement or exhilaration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Bonding with peers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Letting others know the extent of my emotional pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Seeing if I can stand the pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

When I self harm, I am...

	Not relevant at all (1)	Somewhat relevant (2)	Very relevant (3)
... Creating a physical sign that I feel awful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Getting back at someone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Ensuring that I am self-sufficient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Releasing emotional pressure that has built up inside of me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Demonstrating that I am separate from other people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Expressing anger towards myself for being worthless or stupid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Creating a physical injury that is easier to care for than my emotional distress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Trying to feel something (as opposed to nothing) even if it is physical pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Responding to suicidal thoughts without actually attempting suicide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Entertaining myself or others by doing something extreme	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

When I self harm, I am...

	Not relevant at all (1)	Somewhat relevant (2)	Very relevant (3)
... Fitting in with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Seeking care or help from others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Demonstrating I am tough or strong	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Proving to myself that my emotional pain is real	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Getting revenge against others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Demonstrating that I do not need to rely on others for help	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Reducing anxiety, frustration, anger, or other overwhelming emotions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Establishing a barrier between myself and others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Reacting to feeling unhappy with myself or disgusted with myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Allowing myself to focus on treating the injury, which can be gratifying or satisfying	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

When I self harm, I am...

	Not relevant at all (1)	Somewhat relevant (2)	Very relevant (3)
... Making sure I am still alive when I don't feel real	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Putting a stop to suicidal thoughts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Pushing my limits in a manner akin to skydiving or other extreme activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Creating a sign of friendship or kinship with friends or loved ones	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Keeping a loved one from leaving or abandoning me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Proving I can take the physical pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Signifying the emotional distress I'm experiencing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Trying to hurt someone close to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Establishing that I am autonomous/independent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

Is there anything you would like to add about your self-harm?

Would you be willing to be contacted by the researcher, Hilary Norman, to talk more about your experiences of self-harm and managing emotions? Your responses to this survey and any further information would be treated anonymously and in confidence. Interviews would take place at a mutually convenient location or via Skype and would take no longer than an hour. If you agree to be contacted you would receive more information about the study so that you can decide whether or not you would like to take part in an interview.

- Yes I would be willing to be contacted about a follow-up interview and would like more information. Please give your email address here: (1)

- No I do not want to be contacted (2)

If you would like to enter a prize draw to win a £50 Amazon voucher, please enter your email address here:

Are you a psychology undergraduate student at Middlesex University and eligible for course credit for participating in this survey?

- Yes (1)
 - No (2)
-

Appendix 5.4: Validation of the Toronto Alexithymia Scale

The TAS-20 was originally validated using US student and clinical samples and demonstrated good internal consistency ($\alpha = .80 - .83$ in the different samples) and test-retest reliability ($r = .77$; Bagby et al., 1994). An Exploratory Factor Analysis (EFA) identified three distinct factors, labelled by the authors as difficulty identifying feelings (DIF; e.g. “I am often confused about what emotion I am feeling”), difficulty describing feelings (DDF; e.g. “It is difficult for me to find the right words for my feelings”) and externally-orientated thinking (EOT; e.g. “I prefer to just let things happen rather than to understand why they turned out that way.”). The factor structure has been replicated in other studies, including in translation to other languages (Bressi et al., 1996; Meganck et al., 2008; Simonsson-Sarnecki et al., 2000). However, a number of recurrent issues have led some to question the robustness of the factor structure (Koch et al., 2015; Müller et al., 2003). In particular, the third factor, EOT, has persistently demonstrated inadequate internal consistency, both in the original validation study ($\alpha = .66$) and in many subsequent studies (e.g. Bressi et al., 1996). In addition, DIF and DDF tend to be highly correlated, and in some validation studies, have been found to map onto a single factor (Erni et al., 1997; Franz et al., 2001). Finally, results from different populations suggest that the factor structure may vary across samples (Müller et al., 2003).

This uncertainty has led to the testing of alternative factor structures of the TAS20. Müller, Bühner and Ellgring (2003) conducted Confirmatory Factor Analysis (CFA) to test the structure of the German TAS20 on data from separate clinical and community samples. Two models fitted the data best. In both cases, the original EOT was split into two factors “low importance of emotion” and “pragmatic

thinking”. The four factor model then also included the original DIF and DDF factors, while, in the three factor model, DIF and DDF were combined into one factor.

Meganck et al. (2008) tested six possible factor models of the Dutch TAS20 on a sample of mental health outpatients and, separately, a student sample. They found the original three factor structure (Bagby et al., 1994) to be the best fit in both samples.

Randomly dividing the data from their sample of German somatoform patients in half, Koch et al. (2015) used CFA to test three previously derived factor structures, and EFAs constrained to two, three and five factors to derive possible novel solutions. The four factor solution (Franz et al., 2001) proved to be the best fit to their data. This structure consisted of one factor “difficulty identifying and describing feelings”, involving most of the items from the original DIF and DDF, then three further factors, “emotional introspection”, “external thinking” and “difficulties with identification and attribution of bodily sensations”.

Finally, more recently, Preece, Becerra, Robinson and Dandy (2018) found that the original three factor structure fitted their data best when a method factor was included in the model, onto which was loaded the five reverse-scored items. They also allowed for covariance between items 3 and 7. Although this model was the best fit in both a nonclinical and a psychiatric sample and the RMSEA statistic was acceptable, the CFI and TLI indices were at or below 0.90, indicating marginal acceptability at best. The authors attributed the poor fit to the low factor loadings of the EOT items which, they argue, lack construct validity (Preece et al., 2017).

Although the TAS20 is widely used as a total score, only a few studies have in fact tested whether the three factors load onto a single, higher-order factor

capturing an underlying trait ‘alexithymia’. Both Meganck et al. (2008) and Preece et al. (2018) tested second order models. Though both found a slight worsening of fit in the second order compared to the first order three factor models, different conclusions were drawn. Meganck et al. (2008) considered the RMSEA of 0.06 to be unacceptably high, whereas Preece et al. (2018) set their threshold at 0.08 and so considered their RMSEA result of 0.07 to be acceptable, despite CFI and TLI indices being below 0.90. Preece et al. (2018) also pointed to the high and significant correlations of the three factors onto the higher order factor as sufficient to justify use of the TAS20 as a total measure of alexithymia. However, on the basis of their results, they concluded that EOT was not sufficiently reliable to be analysed as a separate factor. The same authors have since developed a new measure of alexithymia, the Perth Alexithymia Scale (Preece, Becerra, Robinson, Dandy, et al., 2018). This scale aims to correct the problems with the TAS20 subscale EOT by using items that relate specifically to the tendency not to focus on one’s emotions (the ‘attention’ stage of emotion regulation, (Gross, 1998)) and by using no reverse-scored items. In addition, the factors DIF and DDF, which the authors consider to be capturing deficiencies at the ‘appraisal’ stage of emotion regulation (Gross, 1998) are each separated into two factors measuring the identification and description of positive and negative emotions.

Despite the development of new, alternative measures of alexithymia, the TAS20 remains the most widely used measure of alexithymia. The decision was taken, therefore, to use the TAS20 for the current study but to add to the validation literature by conducting a CFA analysis using the current dataset. In addition, using the TAS20 facilitates a comparison of the results with the wider literature, including the meta-analysis presented in Chapter 2 of this thesis.

Testing the Factor Model of the TAS20 Using the Current Dataset

The following analysis is based on the data from the study presented in Chapter 5 of this thesis. Participants were recruited online from within Middlesex University and among the general population. Age limits were set at 18 (minimum) and 30 (maximum). The total sample consisted of 467 participants, of whom 63% had engaged in self-harm at some point in the past. For the purpose of this validation analysis, no distinction was made between participants with and without a history of self-harm, in order to maximise power.

A CFA was conducted on the current sample to test the original solution (Bagby et al., 1994), with three factors, DIF (items 1, 3, 6, 7, 9, 13 and 14), DDF (items 2, 4, 11, 12, 17) and EOT (items 5, 8, 10, 15, 16, 17, 18 and 20). A weighted least squares maximum likelihood (WLSML) estimation was used because of the categorical nature of the Likert data. Model identification criteria were set at CFI and TLI > 0.95 , RMSEA < 0.08 and SRMR < 0.08 . In addition, ideally the chi-square should be non-significant, although good fitting models may also be significant with large samples. The model fit indices are set out in Table A5.4.1.

Table A5.4.1*Fit Indices for Original TAS20 Bagby Model*

Fit Indices	Bagby 3 factor model	Bagby model allowing for residual covariance between items 3 and 7	Bagby model with residual covariance between items 3 and 7 and items 5, 16, 18 and 20 removed
RMSEA	0.085	0.079	0.086
(90% CI)	(0.079–0.092)	(0.073-0.086)	(0.078-0.094)
CFI	0.935	0.944	0.958
TLI	0.926	0.936	0.950
Chi-square	731.907	651.968	446.532
<i>df</i>	167	166	100
<i>p</i>	< .001	< .001	< .001
SRMR	0.067	0.065	0.051

The fit statistics for the original Bagby model were not acceptable (Table A5.4.1). The problem appears to lie with the third factor, EOT, for which the factor loadings were very low, with four of the eight items having a loading of less than 0.4 (Table A5.4.2). Furthermore, though internal consistency was good for DIF ($\alpha = .89$) and DDF ($\alpha = .82$), it did not reach the accepted level for EOT ($\alpha = .59$). DIF and DDF were highly correlated ($r = .87, p < .001$). EOT was also significantly correlated with DIF ($r = .31, p < .001$) and DDF ($r = .44, p < .001$).

Table A5.4.2*Standardised Factor Loadings for TAS20 Subscales (Bagby Model)*

		Estimate	S.E.	Est./S.E.	<i>p</i> -value
DIF	TAS1	0.811	0.022	37.711	< .001
	TAS3	0.662	0.029	22.489	< .001
	TAS6	0.773	0.021	36.898	< .001
	TAS7	0.728	0.025	28.983	< .001
	TAS9	0.835	0.017	49.933	< .001
	TAS13	0.854	0.017	50.199	< .001
	TAS14	0.778	0.022	36.042	< .001
DDF	TAS2	0.910	0.016	58.583	< .001
	TAS4R	0.738	0.025	29.974	< .001
	TAS11	0.741	0.025	29.684	< .001
	TAS12	0.714	0.028	25.336	< .001
	TAS17	0.580	0.034	16.979	< .001
EOT	TAS5R	0.139	0.050	2.793	.005
	TAS8	0.435	0.053	8.196	< .001
	TAS10R	0.744	0.045	16.543	< .001
	TAS15	0.577	0.045	12.726	< .001
	TAS16	0.253	0.056	4.522	< .001
	TAS18R	0.268	0.054	4.966	< .001
	TAS19R	0.640	0.043	14.730	< .001
	TAS20	0.375	0.061	6.154	< .001

Adjusting the model to allow for residual covariance between items 3 and 7, as suggested by the MPlus programme, improved the fit statistics somewhat but RMSEA, CFI and TLI still did not indicate a good fit (Table A5.4.1). Finally, the four items with factor loadings under 0.40 (items 5, 16, 18 and 20) were removed from the model. In this model, the fit indices improved such that CFI and TLI indicated a good fit, and RMSEA an adequate fit (Table A5.4.1). However, the

internal consistency of the revised EOT was still poor ($\alpha = .56$). The item make-up of the revised EOT did not correspond to any of the alternative factors derived in other studies (Koch et al., 2015; Müller et al., 2003) and the four remaining items appear to cover both a lack of analytical thinking (“I prefer to just let things happen rather than to understand why they turned out that way”) and placing a low importance on emotion (“Being in touch with emotions is essential”; reversed).

Bagby Model with Method Factor

Following Preece, Becerra, Robinson and Dandy (2018) a method factor was added to the Bagby three factor model. The five reverse-scored items were loaded onto this factor, in addition to their original factor. The correlations between the alexithymia factors were freely estimated, but the method factor was specified to be orthogonal to DIF, DDF and EOT, with correlations fixed to zero (Brown, 2015). The results are set out in Table A5.4.3 alongside the fit indices for the original three factor model for comparison. With the inclusion of the method factor and allowing for residual covariance between items 3 and 7, the indices all showed that the data fitted the model well. Correlations between the trait factors were all significant (DIF and DDF $r = .87, p < .001$; DIF and EOT $r = .43, p < .001$; DDF and EOT $r = .52, p < .001$).

Table A5.4.3*Fit Indices for TAS20 Bagby Model With Method Factor*

Fit Indices	Bagby 3 factor model (no method factor)	Bagby model with method factor	Bagby model with method factor and residual covariance between items 3 and 7
RMSEA	0.085	0.078	0.069
(90% CI)	(0.079–0.092)	(0.072 – 0.085)	(0.063-0.076)
CFI	0.935	0.947	0.959
TLI	0.926	0.937	0.951
Chi-square	731.907	626.615	519.860
<i>df</i>	167	162	161
<i>p</i>	< .001	< .001	< .001
SRMR	0.067	0.052	0.049

Even with the addition of the method factor, however, many of the item loadings for EOT were low, indicating that the reverse-score items represent some but not all of the problems with EOT (Table A5.4.4).

Table A5.4.4

Standardised Factor Loadings for TAS20 Subscales and Method Factor (Bagby Three Factor Structure With Method Factor)

		Estimate	S.E.	Est./S.E.	<i>p</i> -value
DIF	TAS1	0.814	0.021	37.919	< .001
	TAS3	0.591	0.035	17.092	< .001
	TAS6	0.777	0.021	36.907	< .001
	TAS7	0.678	0.029	28.476	< .001
	TAS9	0.838	0.017	50.194	< .001
	TAS13	0.858	0.017	50.455	< .001
	TAS14	0.781	0.066	36.194	< .001
DDF	TAS2	0.912	0.016	57.176	< .001
	TAS4R	0.728	0.026	28.021	< .001
	TAS11	0.746	0.025	29.803	< .001
	TAS12	0.718	0.028	25.415	< .001
	TAS17	0.583	0.034	16.970	< .001
EOT	TAS5R	0.041	0.066	0.611	< .001
	TAS8	0.469	0.060	7.800	< .001
	TAS10R	0.484	0.065	7.396	< .001
	TAS15	0.601	0.054	11.168	< .001
	TAS16	0.238	0.063	3.796	< .001
	TAS18R	-0.016	0.074	-0.220	0.826
	TAS19R	0.341	0.066	5.136	< .001
	TAS20	0.434	0.067	6.524	< .001
Method factor	TAS4R	0.262	0.051	5.118	< .001
	TAS5R	0.202	0.061	3.314	0.001
	TAS10R	0.607	0.057	10.710	< .001
	TSA18R	0.584	0.046	12.777	< .001
	TAS19R	0.760	0.040	19.146	< .001

Alternative Models

Five alternative factor structures, based on the published factor analyses detailed above, were tested on the current dataset using CFA to establish whether the Bagby model could be improved upon without the need of a method factor. The allocation of the TAS20 items in each structure is set out in Table A5.4.5.

Table A5.4.5

Allocation of TAS20 Items Across the Tested Models

Model	Factor 1	Factor 2	Factor 3	Factor 4
One factor solution	TAS20 All items			
Erni model	DIDF 1, 2, 3, 4, 6, 7, 9, 11, 12, 13, 14, 17	EOT 5, 8, 10, 15, 16, 18, 19, 20		
Bagby model	DIF 1, 3, 6, 7, 9, 13, 14	DDF 2, 4, 11, 12, 17	EOT 5, 8, 10, 15, 16, 18, 19, 20	
Modified Bagby model	DIF 1, 3, 6, 7, 9, 13, 14	DDF 2, 4, 11, 12, 17	EOT 8, 10, 15, 19	
Müller 3 factor model	DIDF 1, 2, 3, 4, 6, 7, 9, 11, 12, 13, 14, 17	PT 5, 8, 20	IE 10, 15, 16, 18, 19	
Müller 4 factor model	DIF 1, 3, 6, 7, 9, 13, 14	DDF 2, 4, 11, 12, 17	PT 5, 8, 20	IE 10, 15, 16, 18, 19
Koch 4 factor model	DIDF 1, 2, 4, 6, 8, 9, 11, 12, 13, 14	EI 5, 10, 18, 19	ET 15, 16, 17, 20	IB 3, 7

Note: DIF = difficulty identifying feelings; DDF = difficulty describing feelings; EOT = externally orientated thinking; DIDF = difficulty identifying and describing feelings; PT = pragmatic thinking; IE = low importance of emotion; EI = emotional introspection; ET = external thinking; IB = difficulties with identification and attribution of bodily sensations.

The fit indices are set out in Table A5.4.6. None of the alternative models were a good fit to the data, and none improved on the modified version of the Bagby model.

Table A5.4.6*Fit Indices for the Toronto Alexithymia Scale*

Fit Indices	Alternative models					Original model	
	1 factor CFA	Erni model	Müller 3 factor model	Müller 4 factor model	Koch 4 factor model	Bagby model	Modified Bagby model
RMSEA	0.130	0.092	0.090	0.081	0.086	0.085	0.086
(90% CI)	(0.124–0.136)	(0.086–0.098)	(0.083–0.096)	(0.074–0.087)	(0.079–0.092)	(0.079–0.092)	(0.078–0.094)
CFI	0.846	0.923	0.928	0.943	0.935	0.935	0.958
TLI	0.828	0.913	0.918	0.934	0.925	0.926	0.950
Chi-square	1507.585	838.727	793.338	659.358	726.504	731.907	446.532
<i>df</i>	170	169	167	164	164	167	100
<i>p</i>	< .001	< .001	< .001	< .001	< .001	< .001	< .001
SRMR	0.082	0.071	0.065	0.060	0.061	0.067	0.051

Finally, an EFA was conducted on the TAS20 items to see if any further solutions could be identified. One, two, three and four factor models were tested. As Table A5.4.7 sets out, the four factor model was the best fit. However, the factor loadings were not satisfactory, with considerable overlap between the first two factors (which consisted of the items from the original DIF and DDF factors) and mostly low loadings on the other factors (Table A5.4.8).

Table A5.4.7

Fit Indices for EFA of 1, 2, 3 and 4 Factor Models of TAS20 Items

Fit Indices	1 factor	2 factors	3 factors	4 factors
RMSEA	0.130	0.094	0.073	0.056
(90% CI)	(0.124-0.136)	(0.087-0.101)	(0.066-0.081)	(0.048-0.064)
CFI	0.846	0.929	0.962	0.980
TLI	0.828	0.910	0.945	0.968
Chi-square	1507.585	771.662	467,491	286.641
<i>df</i>	170	151	133	116
<i>p</i>	< .001	< .001	< .001	< .001
SRMR	0.101	0.062	0.046	0.034

Table A5.4.8*Factor Loadings for Four Factor Solutions Resulting From EFA of TAS20 Items*

Items	1 factor	2 factors	3 factors	4 factors
TAS1	0.645	0.746	-0.014	-0.048
TAS2	0.560	0.863	0.140	-0.197
TAS3	0.774	0.428	0.024	0.039
TAS4R	0.363	0.748	0.355	-0.158
TAS5R	0.023	-0.062	0.225	0.169
TAS6	0.696	0.661	0.042	0.016
TAS7	0.838	0.501	0.035	-0.024
TAS8	0.273	0.185	0.167	0.387
TAS9	0.667	0.770	-0.062	-0.070
TAS10R	0.094	0.289	0.717	0.206
TAS11	0.455	0.732	0.055	0.142
TAS12	0.423	0.707	0.092	0.190
TAS13	0.707	0.773	0.021	0.077
TAS14	0.681	0.672	0.134	0.112
TAS15	0.094	0.329	0.337	0.432
TAS16	0.067	0.024	0.172	0.475
TAS17	0.217	0.630	0.185	0.266
TAS18R	-0.055	-0.013	0.505	0.026
TAS19R	0.082	0.156	0.855	0.214
TAS20	0.292	0.161	0.063	0.361

Validation of the Total TAS20 Score

The best factor structure for this dataset, therefore, is the three factor Bagby structure, with the addition of the method factor, and one modification to allow items 3 and 7 to co-vary. A second order CFA was carried out to see if these three factors (with and without the method factor) loaded onto a single higher order factor. The second order factor, total TAS20, was fixed at 1 (Costamailere et al., 1980). In

addition, because there are only three trait subfactors contributing to the second order factor, the residuals between DIF and DDF were constrained as equal in order to save one degree of freedom (Costamailere et al., 1980). The fit indices for these models are set out in Table A5.4.9. With the method factor included, the data indicated a good fit. The three factors loaded significantly ($p < .001$) onto the second order factor Total TAS20 (factor loadings DIF = 0.93, DDF = 0.94, EOT = 0.50).

Table A5.4.9

Fit Indices for Second Order Model of Total Alexithymia (TAS20 total)

Fit Indices	Second order model based on Bagby 3 factors	Second order model based on Bagby 3 factors with method factor
RMSEA	0.081	0.069
(90% CI)	(0.074–0.087)	(0.062 – 0.076)
CFI	0.942	0.959
TLI	0.934	0.952
Chi-square	672.701	520.832
<i>df</i>	167	df = 162
<i>p</i>	< .001	< .001
SRMR	0.066	0.049

In summary, in line with Preece, Becerra, Robinson and Dandy (2018), the original three factor structure (Bagby et al., 1994) provided the best fit to the data, but only with the inclusion of a method factor for the reverse-scored items and allowing for residual covariance between items 3 and 7. Although the fit statistics were good, the third factor, EOT, remained problematic, consistent with many other validation studies. The DIF and DDF factors appear to be robust, although they are highly correlated and the results of the EFA show that several items have high

loadings on both factors. All three factors loaded significantly onto a higher order factor capturing underlying alexithymia. Again, the fit indices improved following the inclusion of the method factor.

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Appendix 5.5: Participant Debriefing Information Study 3



**Middlesex
University**
Psychology Department
Middlesex University
Hendon
London NW4 4BT

Hilary Norman
Email: HN274@live.mdx.ac.uk

Thank you for participating in this study.

The information you have provided will be combined with information from other people taking part in this project and used to improve understanding of the relationship between emotions and self-harm. Please be assured that all the information you provided will be treated with the strictest confidentiality. If you have any further questions about the research, please don't hesitate to contact me at the above address. Alternatively if you have any concerns about the way this research has been conducted, please contact my supervisor, Dr Lisa Marzano, at l.marzano@mdx.ac.uk.

If, after completing the survey, you decide you do not want your responses to be included in the analysis, you can ask for your data to be withdrawn by contacting me (HN274@live.mdx.ac.uk) within four weeks of completing the survey, quoting a reference number which can be generated at the end of this survey.

Should any of our questions have caused you some distress, or if you would like to find out more about services and organisations offering advice and support to people affected by self-harm (either directly or in a care role), please consider contacting one of the following:

- Harmless – Self Harm Support www.harmless.org.uk

A user led organisation that provides a range of services about self-harm including support, information, training and consultancy to people who self-harm, their friends and families and professionals.

- Young Minds www.youngminds.org.uk

YoungMinds is a charity committed to improving the emotional wellbeing and mental health of children and young people. The website also has a section for parents.

- Rethink Mental Illness www.rethink.org

Rethink provides advice and information to people affected by mental illness.

- Self-injury Support www.selfinjurysupport.org.uk

Self-injury support (formerly Bristol Crisis Service for Women) is a national organisation that supports girls and women in emotional distress, especially those who harm themselves. They also offer TESS, a text and email support service.

- Samaritans www.samaritans.org

Samaritans provides a 24-hour service offering confidential emotional support to anyone who is in crisis. Helpline 116 123 e-mail: jo@samaritans.org

- NHS 111
<http://www.nhs.uk/NHSEngland/AboutNHSservices/Emergencyandurgentcareservices/Pages/NHS-111.aspx>

NHS 111 is a 24 hour help line where you can speak to a trained advisors supported by healthcare professionals.

If you are a student at Middlesex University you can also access the University's counselling and mental health services. Email counselling@mdx.ac.uk or call 020 8411 6058 for more information.

The following organisations offer support in countries outside the UK:

USA: National Suicide Prevention Lifeline <http://suicidepreventionlifeline.org/> can be reached at 1-800-273-8255 and offers free, confidential support to anyone in suicidal crisis or emotional distress.

Canada: Crisis Services Canada (<http://www.crisisservicescanada.ca/>) has a free 24 hour hotline available to anyone in Canada: 1.833.456.4566

Australia: Lifeline (<https://www.lifeline.org.au/>) is a 24-hour nationwide service that provides access to crisis support, suicide prevention and mental health support services. Telephone 13 11 14.

New Zealand: Samaritans New Zealand (<http://www.samaritans.org.nz/>), telephone 0800 726 666 offer confidential, non-religious and non-judgemental support to anyone who may be feeling depressed, lonely, or contemplating suicide.

Appendix 5.6 Tests of Difference in Study Variables by Gender

Table A5.6.1

Parametric Tests of Difference Between Participants With and Without a History of Self-Harm – Women Participants (Study 3)

Variable (range)	Self-harm			No self-harm			<i>t</i>	<i>df</i>	Effect size <i>r</i>
	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>			
Total TAS20 (20-100)	56.49	13.26	222	46.18	11.73	110	7.02***	330	0.36
DIF (5-35)	21.27	6.72	226	15.12	5.81	110	8.22***	334	0.41
DDF (5-25)	16.20	4.90	224	12.45	4.56	113	6.79***	335	0.35
EOT (5-40)	18.96	4.71	224	18.54	4.13	113	0.81	335	0.04
GAD-7 (4-28)	18.01	5.78	224	14.05	5.14	111	6.13***	333	0.32
PHQ-9 (4-36)	21.91	7.16	221	16.16	6.01	111	7.70***	257.30	0.43
AAQ-II (7-49)	29.62	8.85	281	20.30	8.64	166	8.68***	328	0.43
DERS Total (18-90)	53.60	13.94	273	39.56	11.92	160	9.26***	241.23	0.51
Awareness (5-15)	7.56	2.91	220	7.25	3.11	107	0.89	325	0.05
Clarity (5-15)	8.06	3.30	221	5.42	2.41	106	8.16***	273.48	0.44
Goals (5-15)	11.33	3.37	221	8.37	3.52	106	7.32***	325	0.38
Impulse (5-15)	7.81	3.73	221	5.67	3.23	106	5.34***	236.59	0.33
Non-accept (5-15)	9.77	3.51	219	6.66	3.11	106	7.77***	323	0.40
Strategies (5-15)	9.27	3.47	219	6.45	3.20	105	7.04***	322	0.37
SAQ (28-140)	64.47	18.82	193	48.58	12.54	72	7.92***	190.66	0.50
MAIA (6-30)	19.49	6.35	200	18.33	6.62	75	1.32	273	0.08

** $p < 0.01$, *** $p < 0.001$. Differences are still significant even at adjusted critical value of $(0.05/16 =) 0.003$ to account for multiple tests.

Table A5.6.2*Parametric Tests of Difference Between Participants With and Without a History of Self-Harm – Male Participants (Study 3)*

Variable (range)	Self-harm			No self-harm			<i>t</i>	<i>df</i>	Effect size <i>r</i>
	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>			
Total TAS20 (20-100)	57.32	12.05	47	47.96	11.19	57	4.10***	102	0.38
DIF (5-35)	21.09	6.34	47	14.21	5.32	48	6.01***	102	0.51
DDF (5-25)	16.40	4.43	48	13.40	4.91	57	3.25***	103	0.30
EOT (5-40)	19.98	5.37	48	20.35	4.60	57	-0.382	103	0.04
GAD-7 (4-28)	16.91	5.80	44	12.07	5.27	56	4.36***	98	0.40
PHQ-9 (4-36)	21.37	6.38	41	15.00	5.93	41	5.02***	93	0.46
AAQ-II (7-49)	29.26	8.55	43	19.83	9.11	54	5.12***	95	0.47
DERS Total (18-90)	52.22	12.62	41	39.52	12.61	54	4.98***	93	0.46
Awareness (5-15)	7.35	2.83	43	8.07	3.18	54	-1.17	95	0.12
Clarity (5-15)	8.26	3.36	43	5.70	2.81	54	3.99***	81.77	0.40
Goals (5-15)	10.51	3.13	43	7.87	3.34	54	4.00***	95	0.38
Impulse (5-15)	7.09	3.48	43	5.67	2.76	54	2.25*	95	0.22
Non-accept (5-15)	9.12	3.46	42	6.26	3.12	54	4.25***	94	0.40
Strategies (5-15)	9.40	3.21	42	5.94	2.76	54	5.68***	94	0.51
SAQ (28-140)	61.28	19.70	32	45.51	13.33	35	3.80***	53.79	0.46
MAIA (6-30)	18.86	7.58	35	14.94	7.17	36	2.24*	69	0.26

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Using an adjusted critical value of $p = (0.05/16 =) 0.003$ to account for multiple tests, Impulse and MAIA are not significantly different.

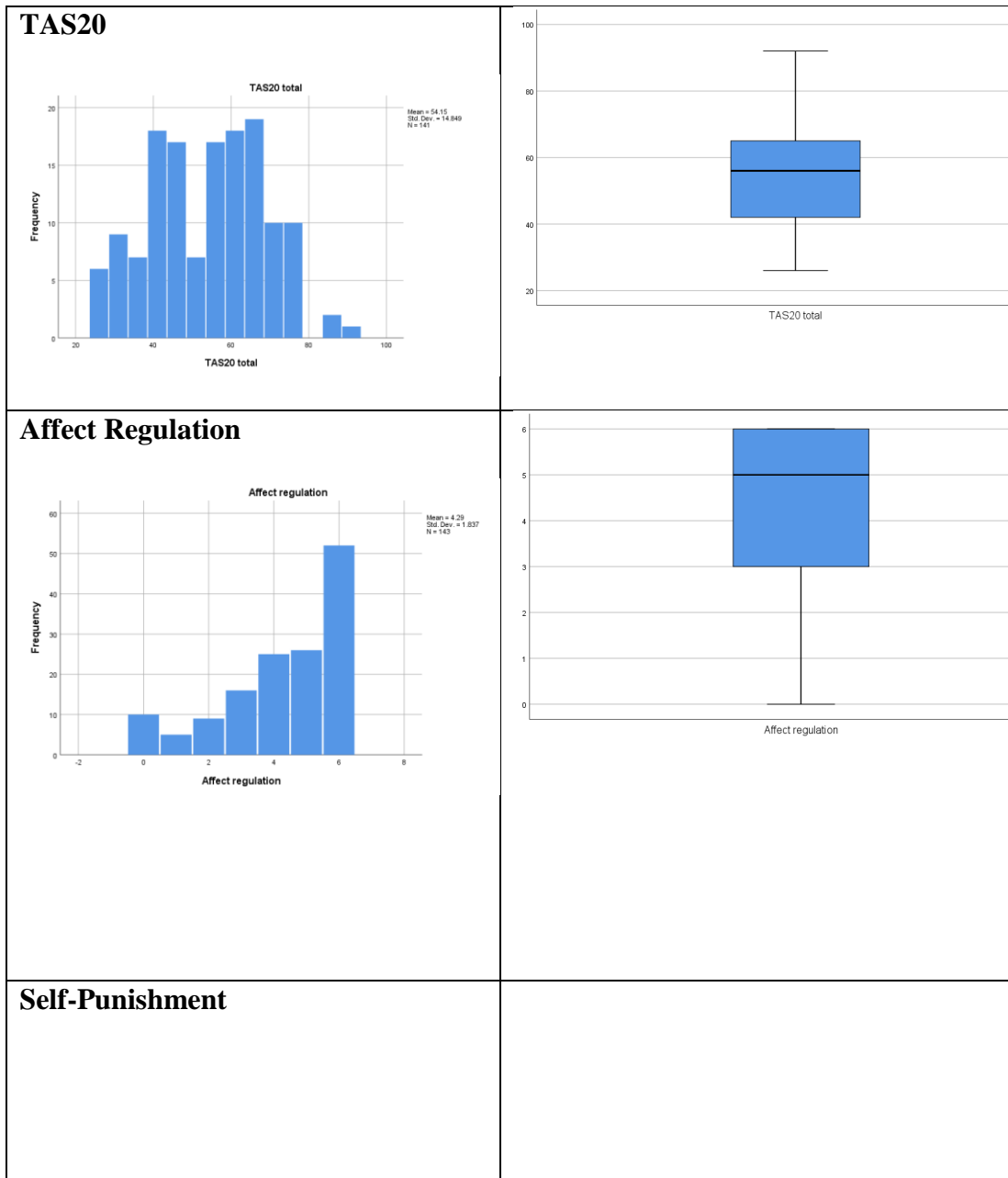
Appendix 6.1: Study 4a Data Screening of the Dependent and Predictor

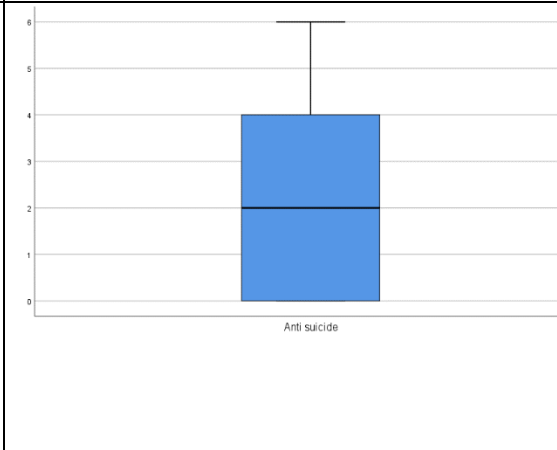
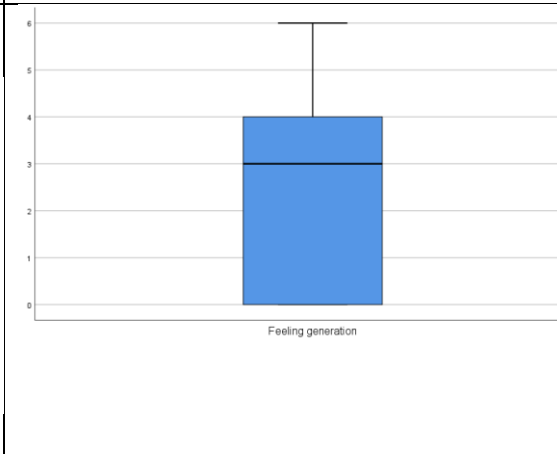
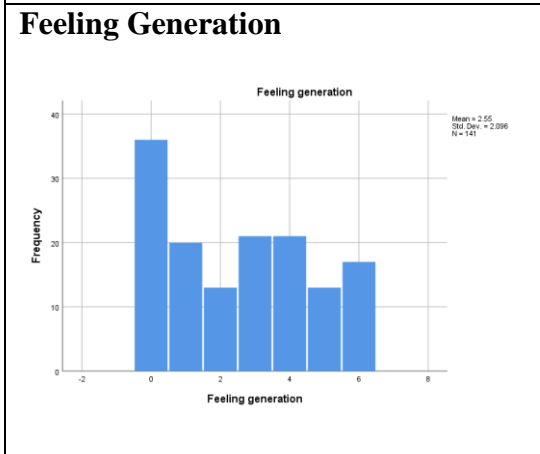
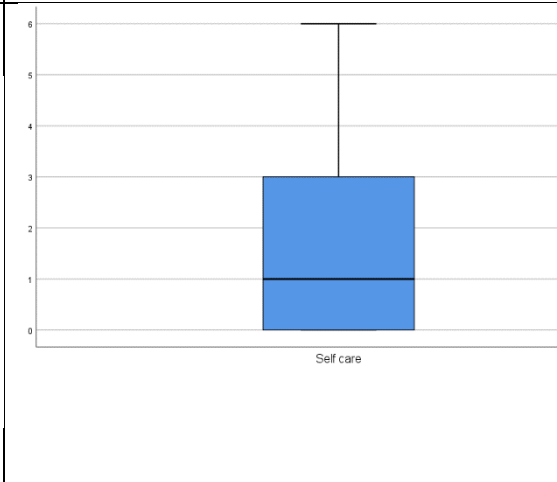
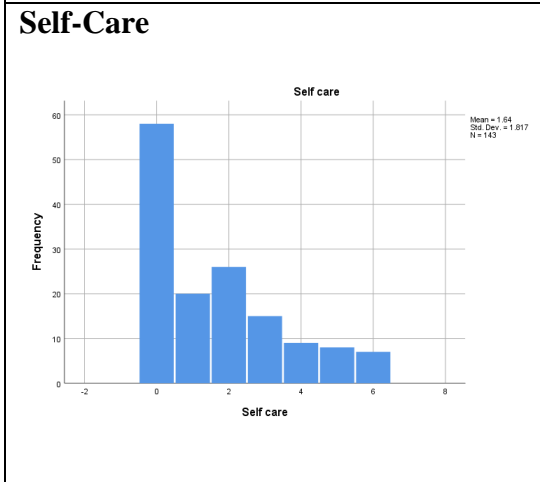
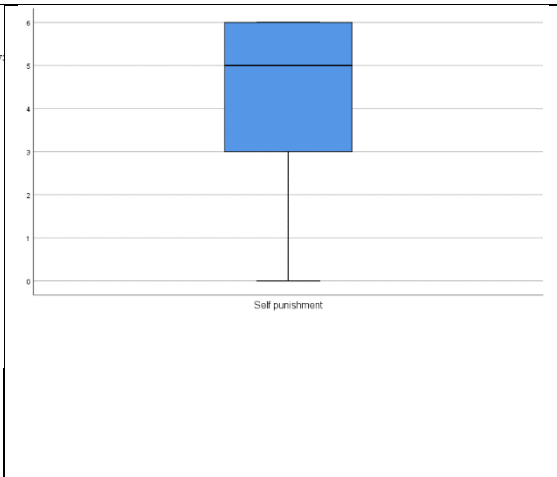
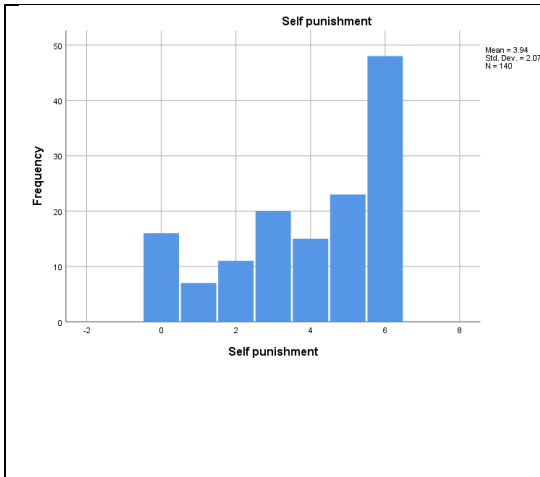
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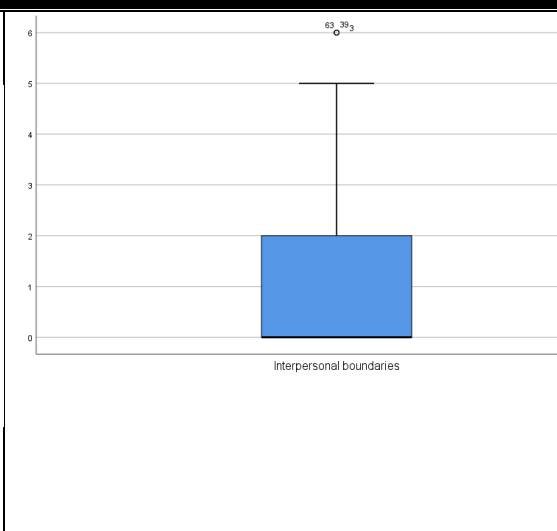
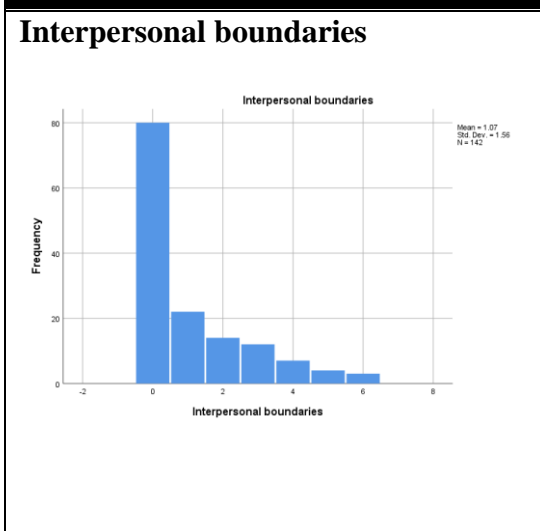
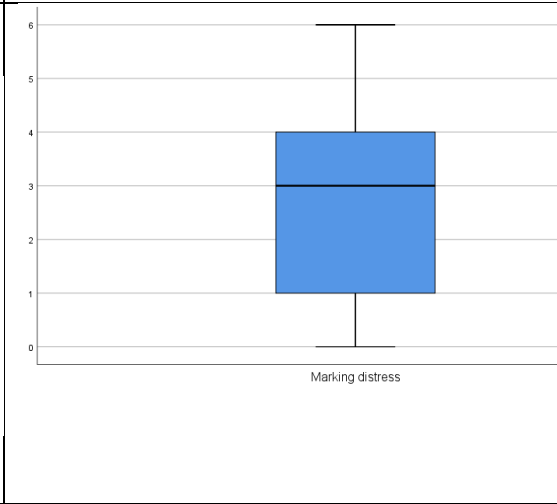
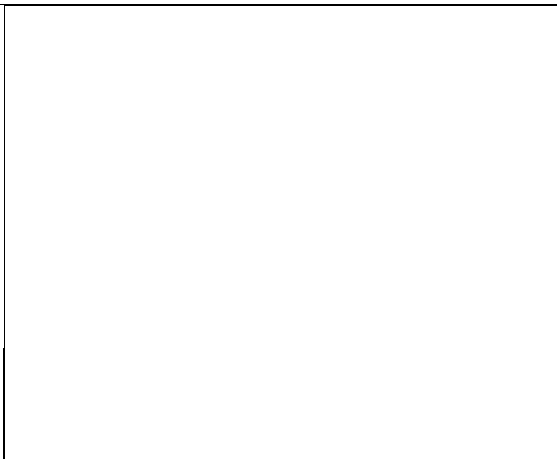
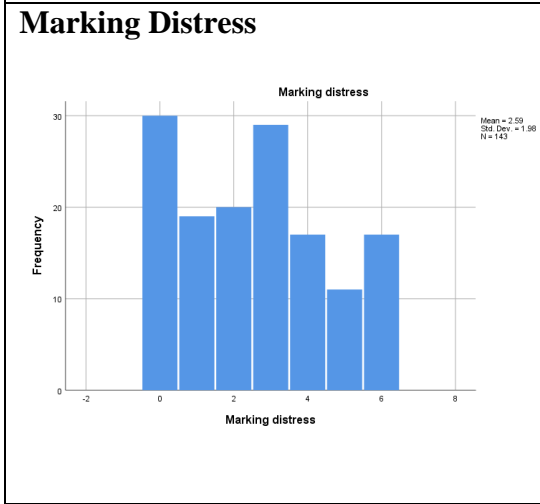
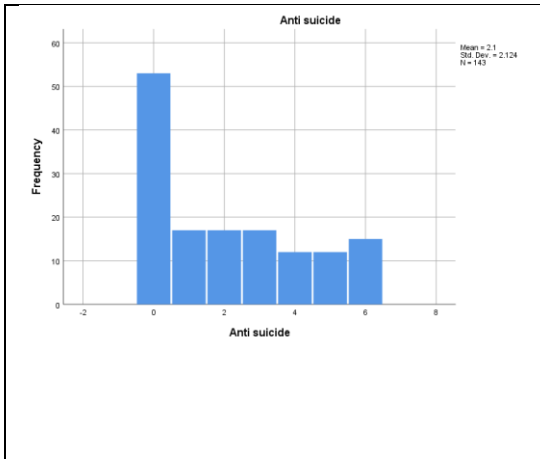
Study 4a

Figure 6.1.1

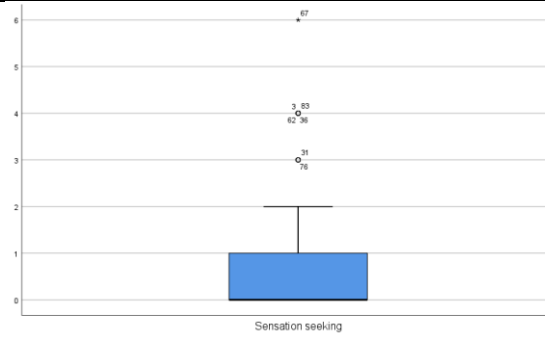
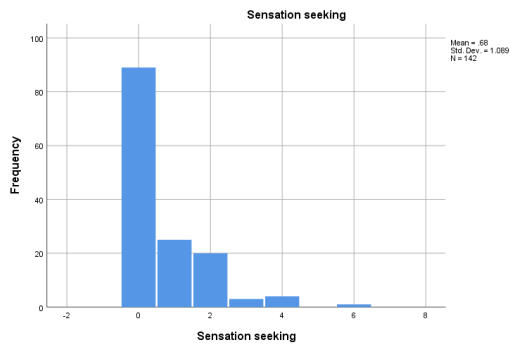
Histogram and Boxplots of TAS20 and the Functions of Self-Harm from the ISAS



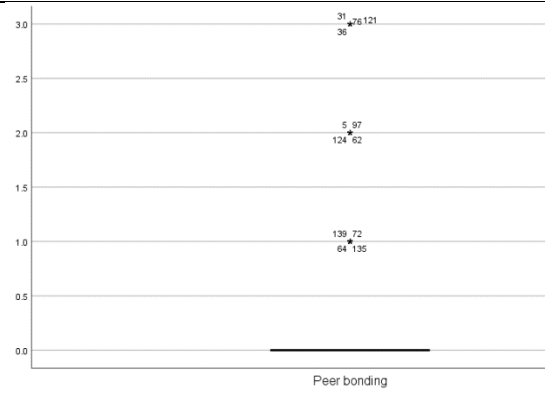
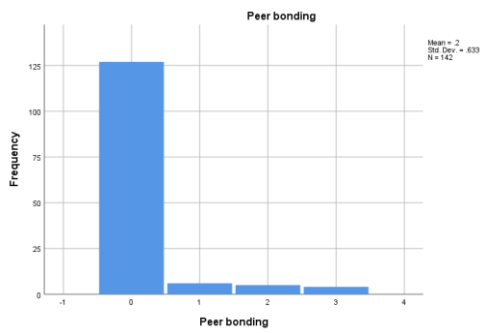




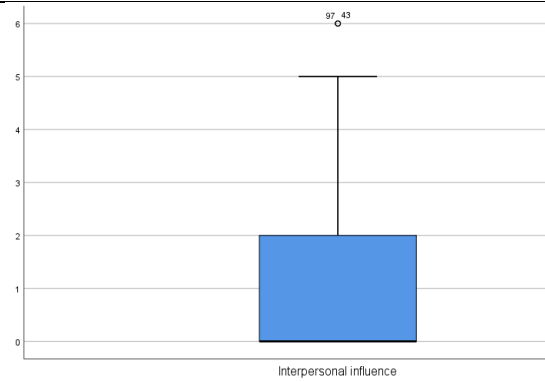
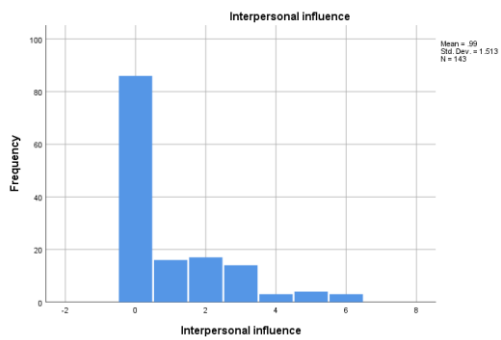
Sensation seeking



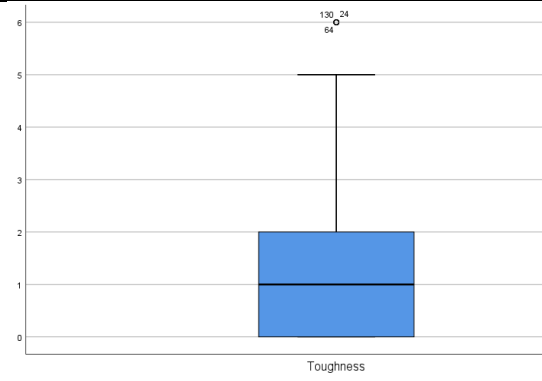
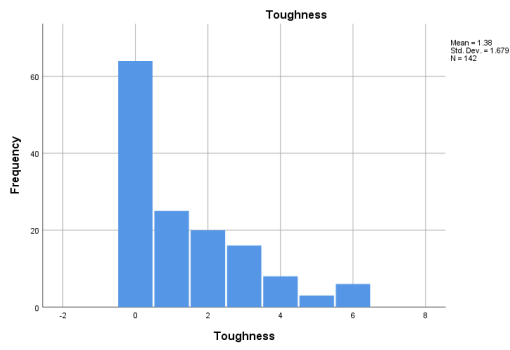
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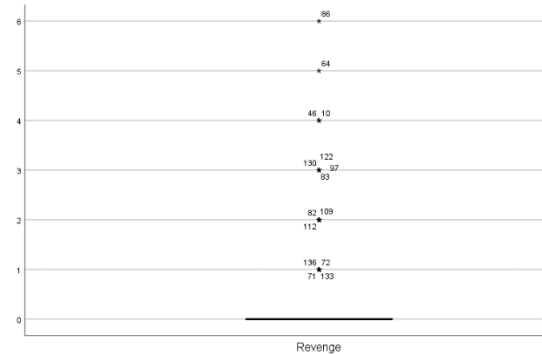
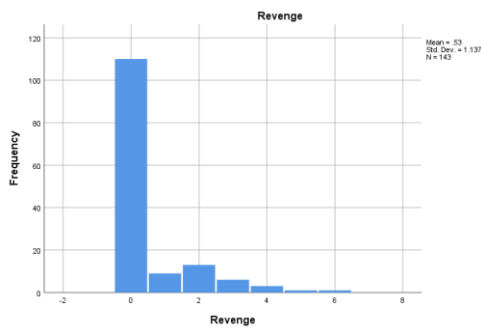
Interpersonal influence



Toughness



Revenge



Autonomy

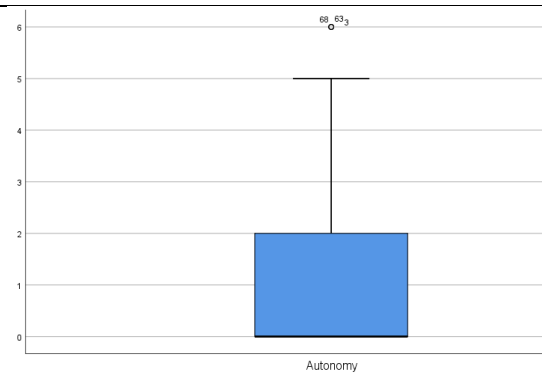
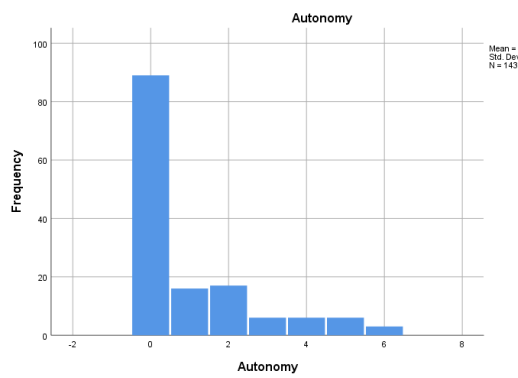


Figure 6.1.2

Scatterplots of the Intrapersonal Functions of Self-Harm and TAS20 (Study 4a)

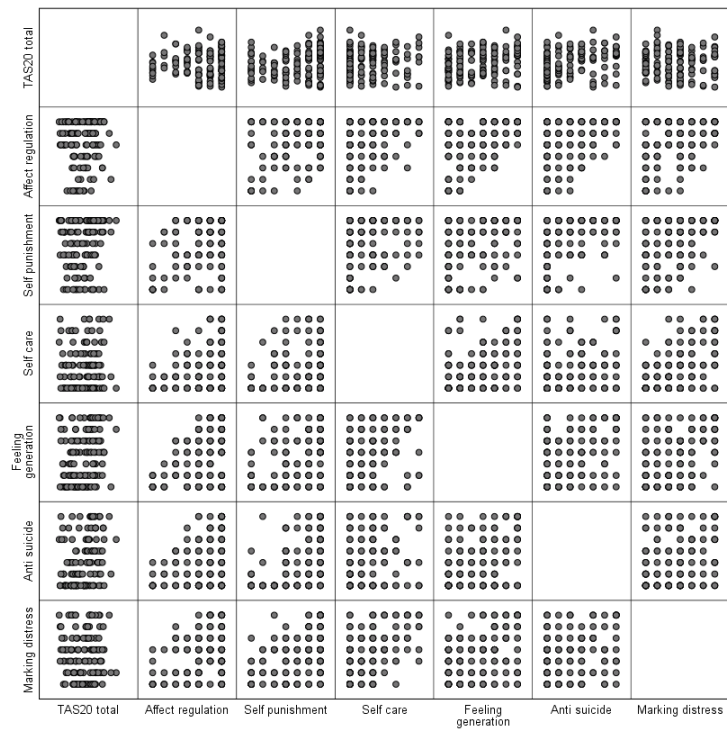
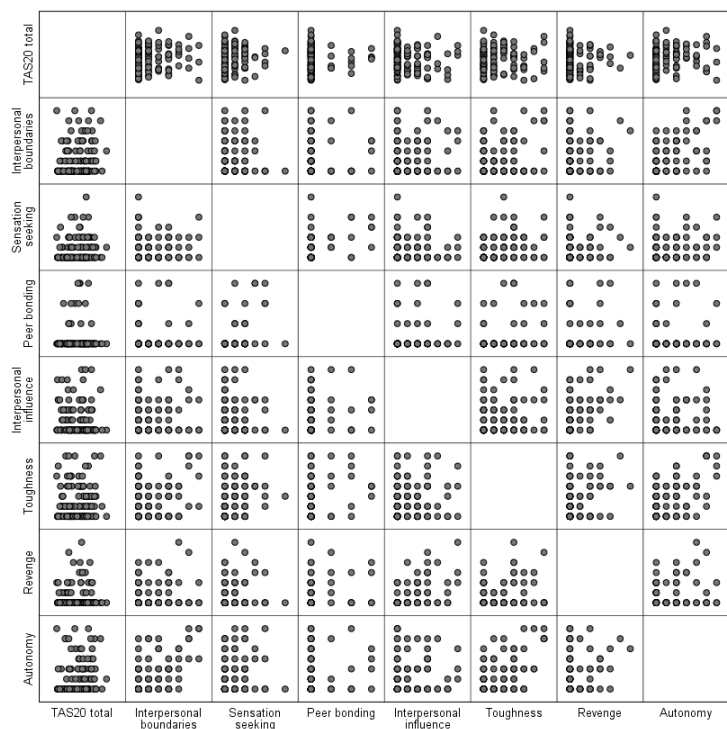


Figure 6.1.3

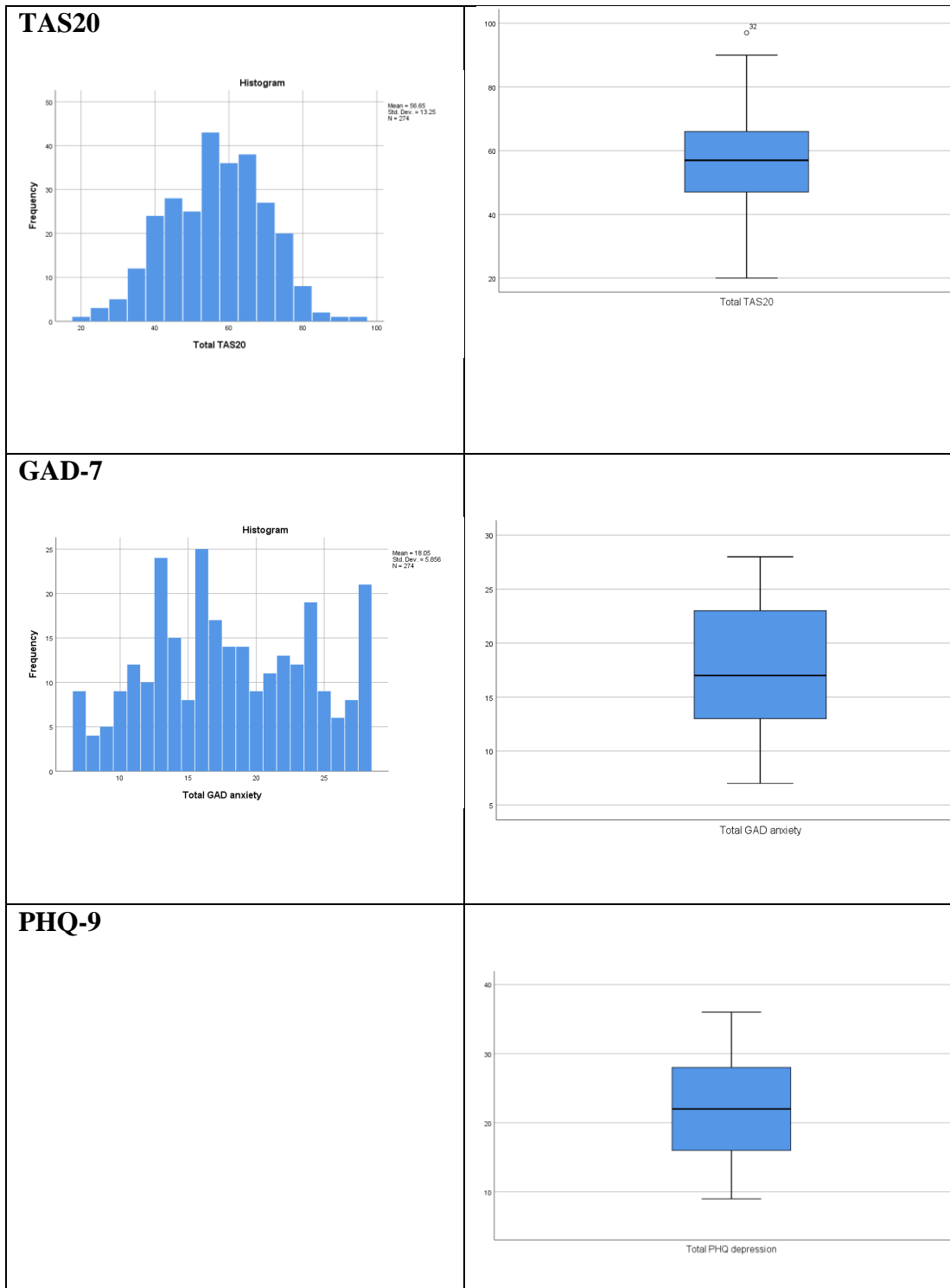
Scatterplots of the Interpersonal Functions of Self-Harm and TAS20 (Study 4a)

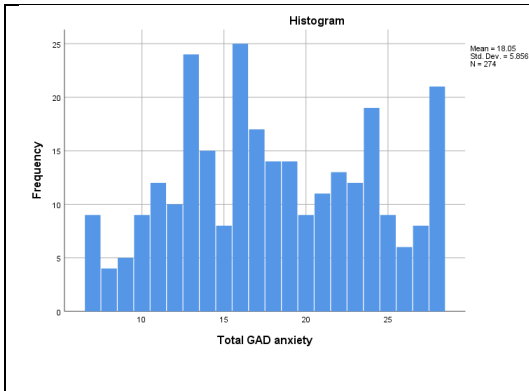


Appendix 6.2: Study 4b Data Screening of the Dependent and Predictor Variables

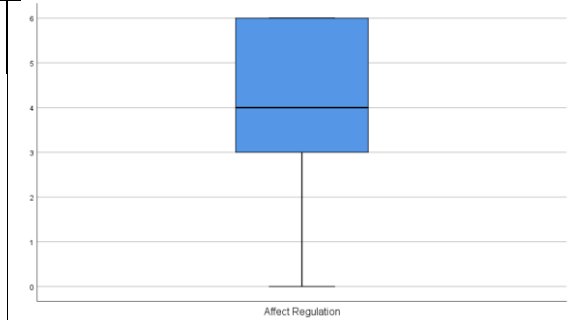
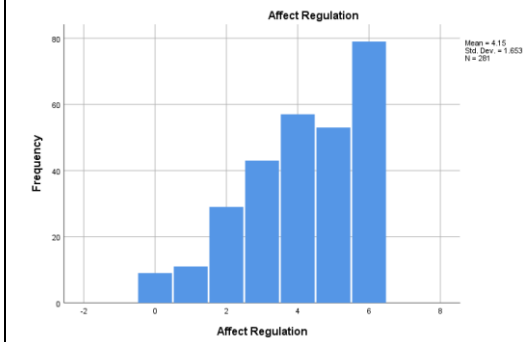
Figure 6.2.1

Histogram and Boxplots of TAS20, GAD-7, PHQ-9 and the Functions of Self-Harm from the ISAS

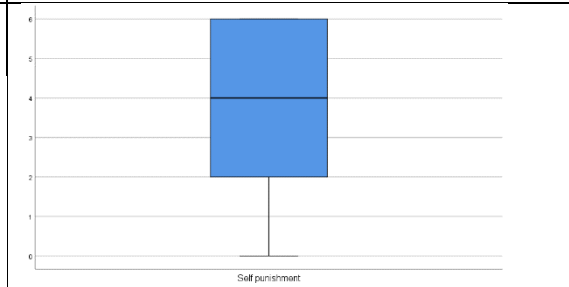
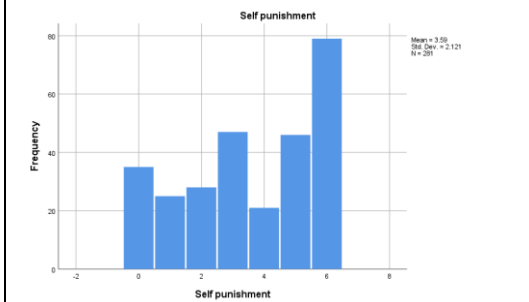




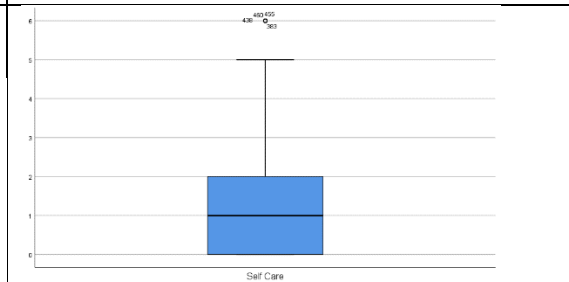
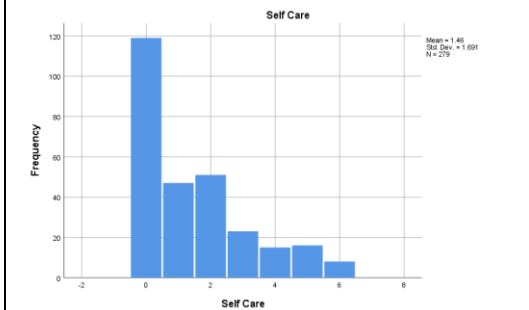
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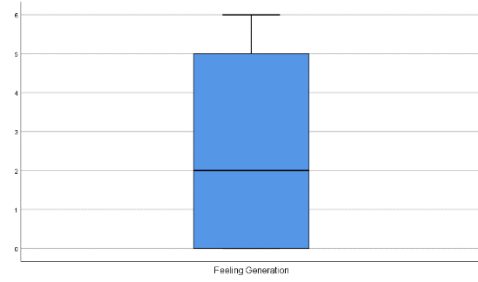
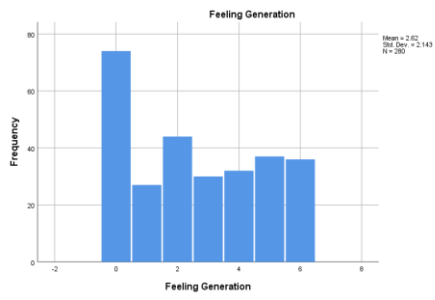
Self-Punishment



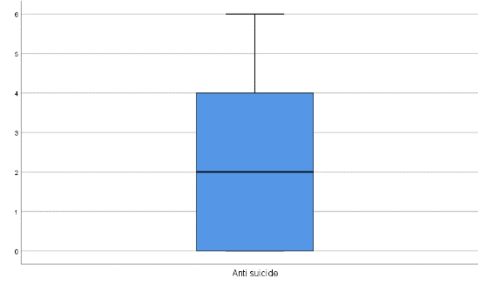
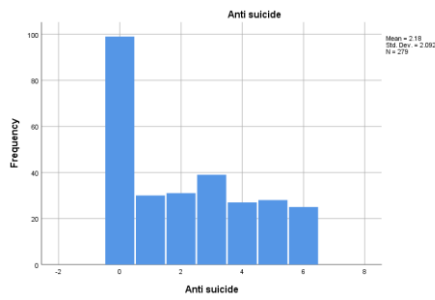
Self-Care



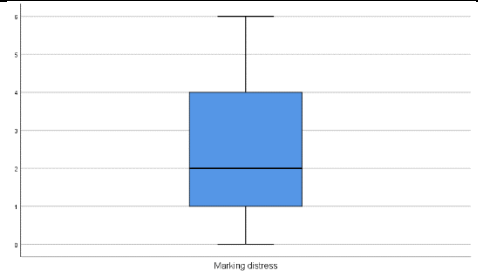
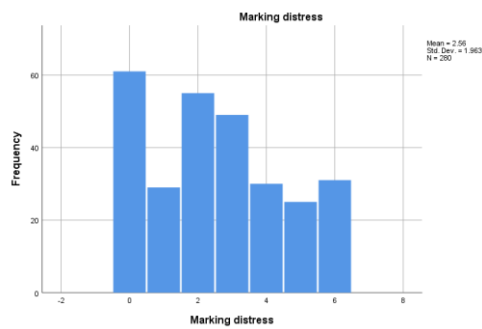
Feeling Generation



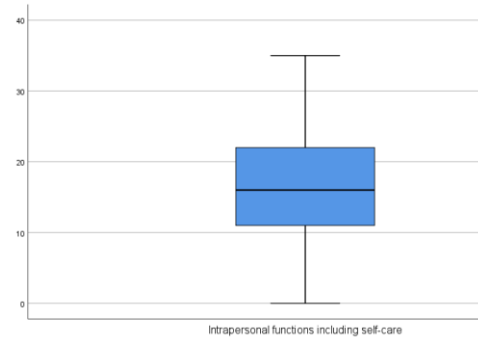
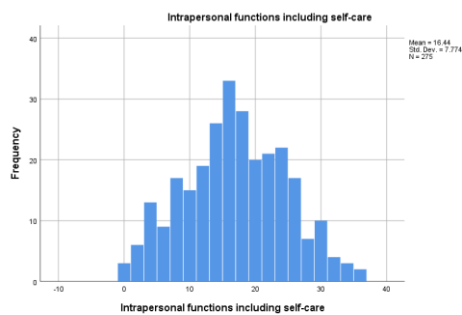
Anti-suicide



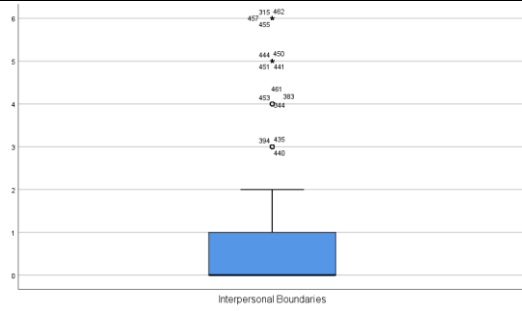
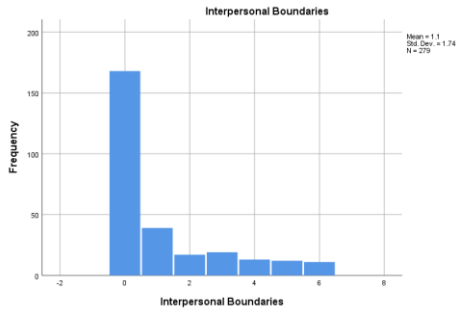
Marking Distress



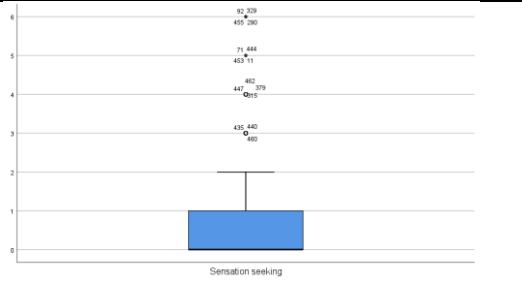
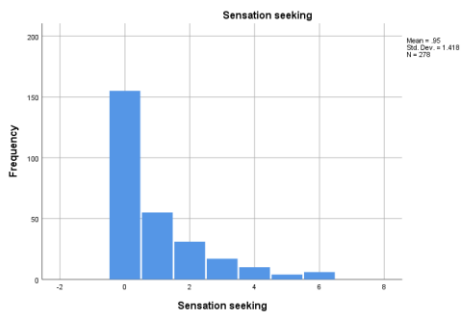
Total Intrapersonal functions



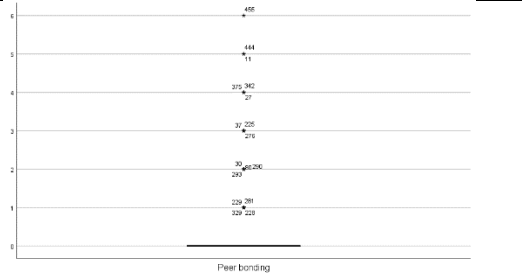
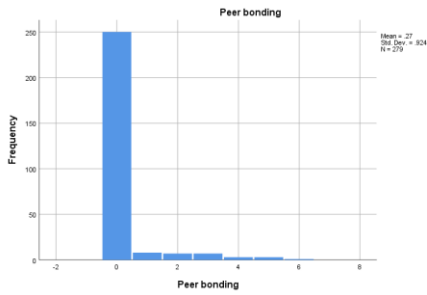
Interpersonal boundaries



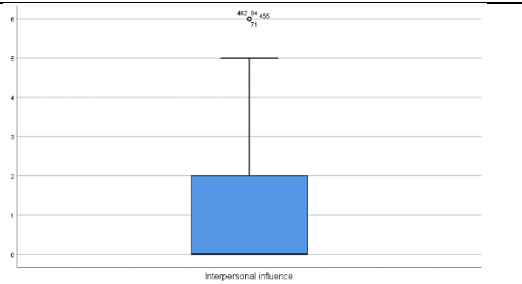
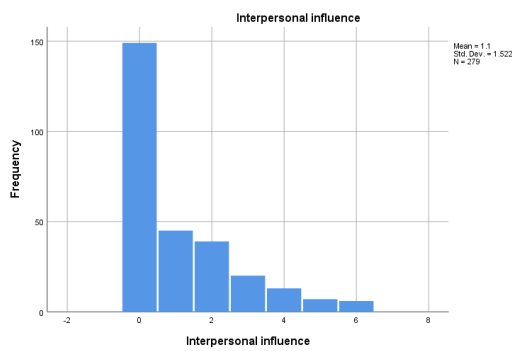
Sensation seeking



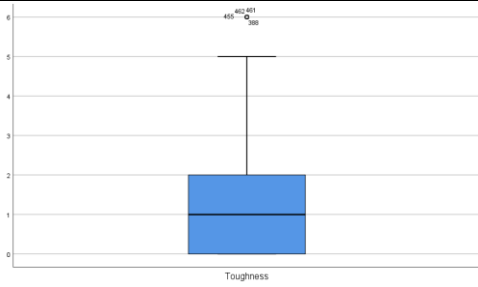
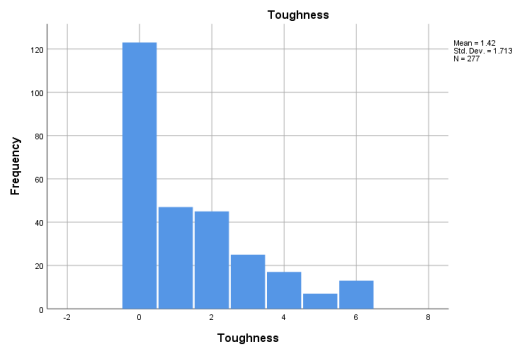
Peer bonding



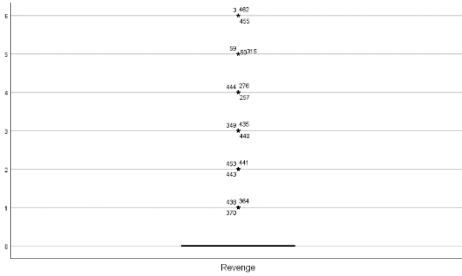
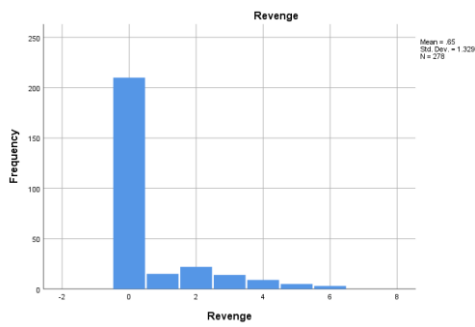
Interpersonal influence



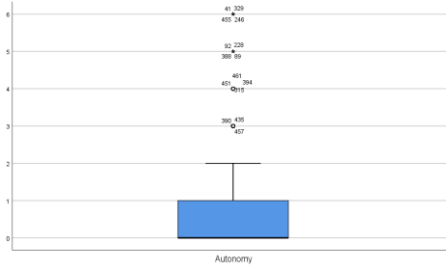
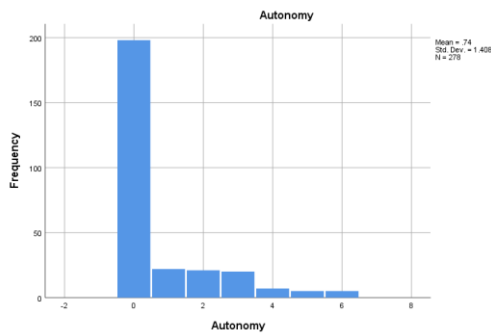
Toughness



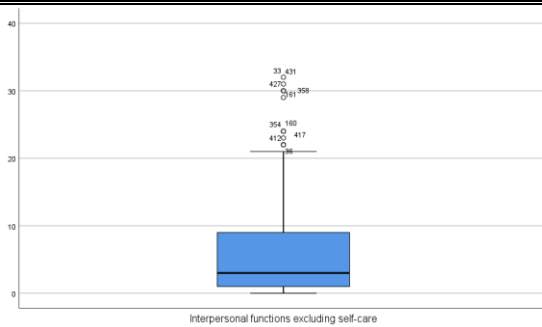
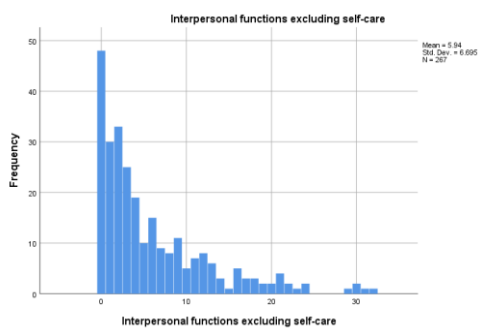
Revenge



Autonomy



Total Interpersonal functions



Because of the limited number of items that make up each function, and the limited range of the Likert scale (0-2), the decision was taken to treat the functions as categorical data, based on the average score. Thus a participant scoring an average of 0 across the 3 items would fall into the category “never relevant”, a participant scoring an average of 1 would fall into the category “sometimes relevant” and a participant scoring an average of 2 would be in the category “always relevant”. Figure 2.2 shows the scatterplots for the outcome variable (TAS20) and continuous predictor variables GAD-7 and PHQ-9. There is a broadly linear relationship between TAS20 and GAD7 and PHQ-9.

Figure 6.2.2

Scatterplot Matrix of the Outcome Variable (TAS20) With Continuous Predictor Variables GAD7 and PHQ9.

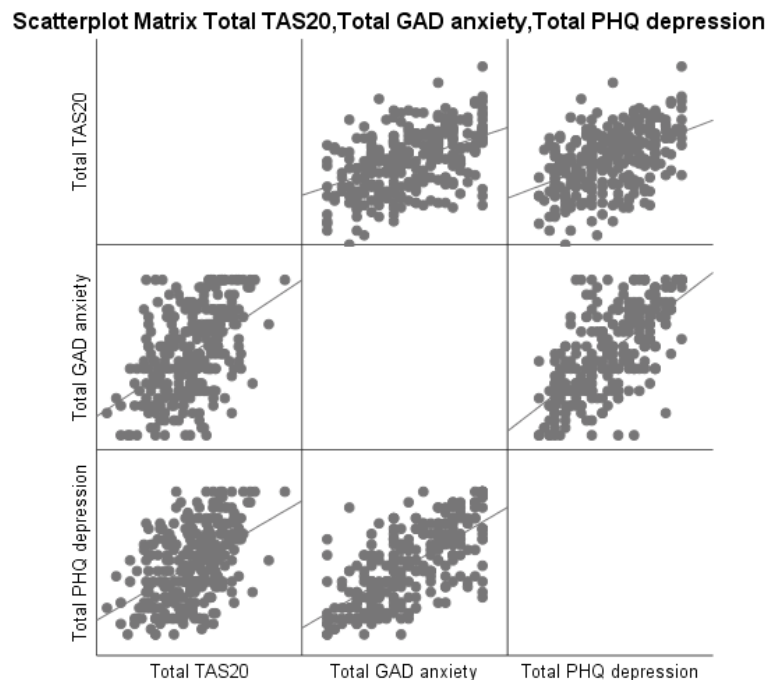


Figure 6.2.3

Scatterplots of the Intrapersonal Functions of Self-Harm and TAS20 (Study 4b)

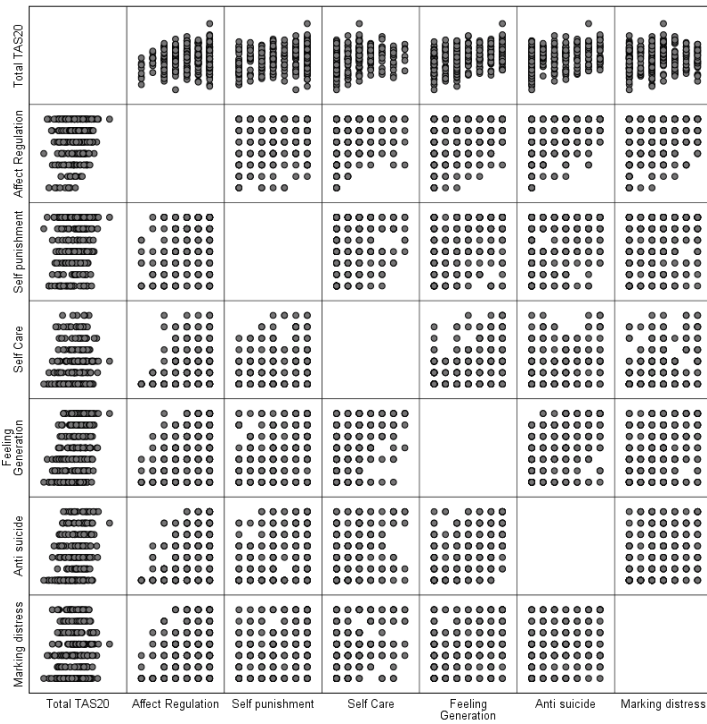
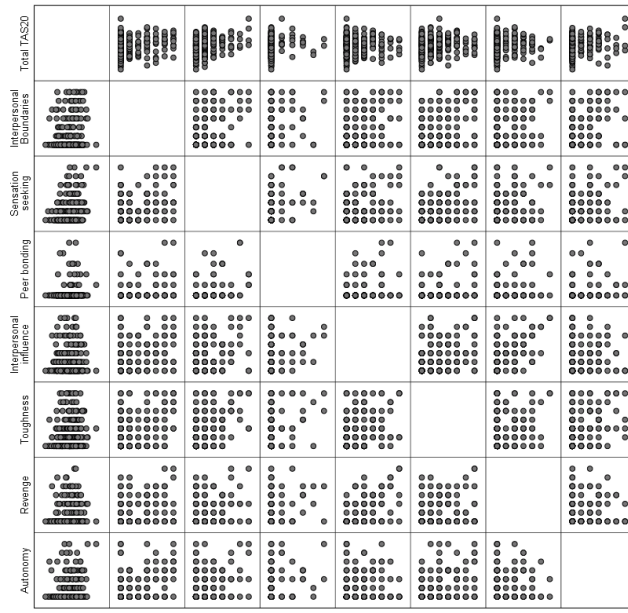


Figure 6.2.4

Scatterplots of the Interpersonal Functions of Self-harm and TAS20 (Study 4b)

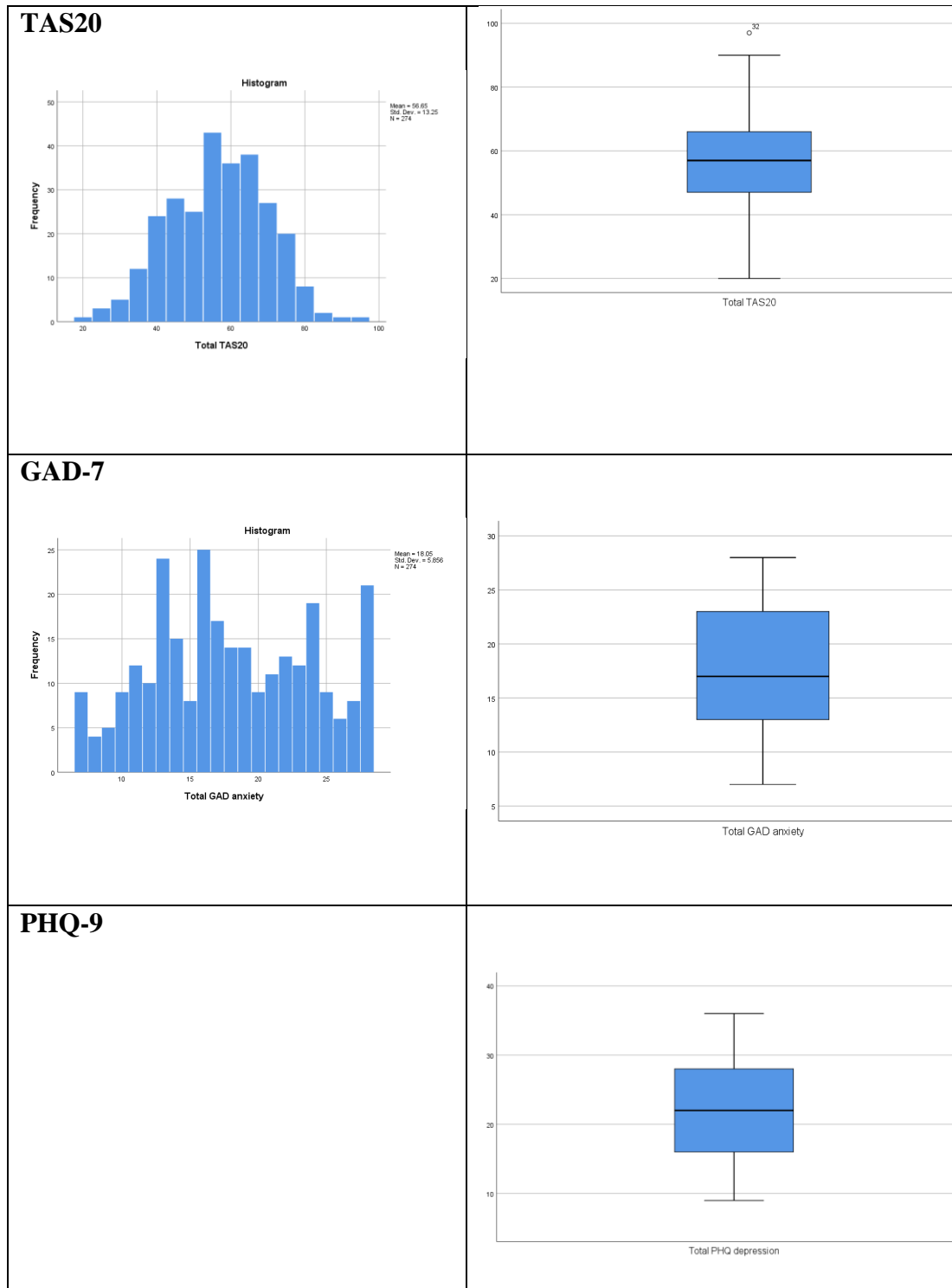


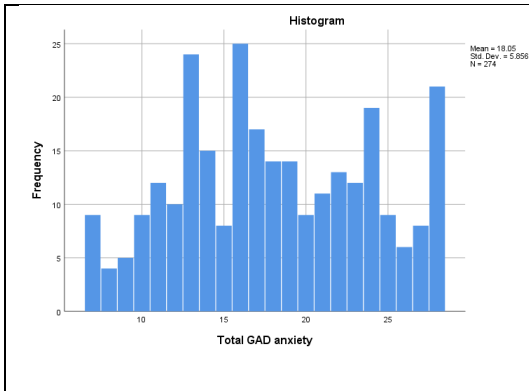
Appendix 6.2

Data Screening of the Dependent and Predictor Variables (Study 4b)

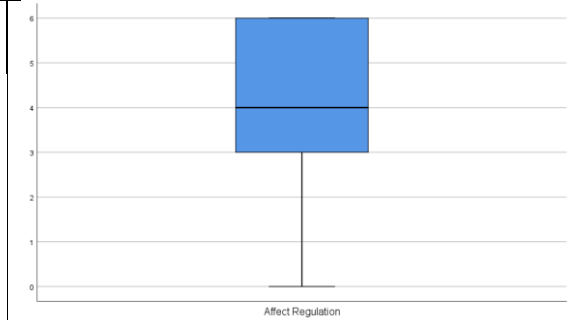
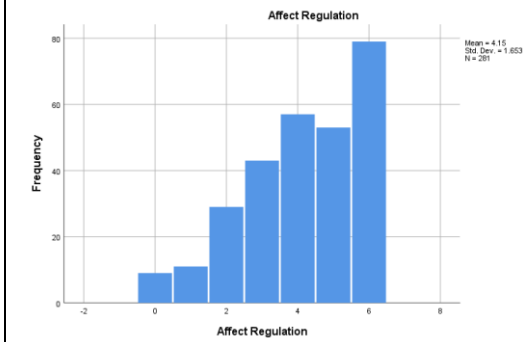
Figure 6.2.1

Histogram and Boxplots of TAS20, GAD-7, PHQ-9 and the Functions of Self-Harm from the ISAS

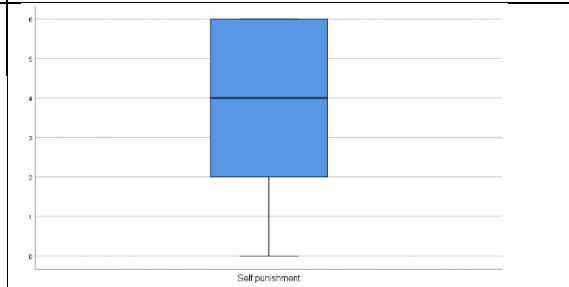
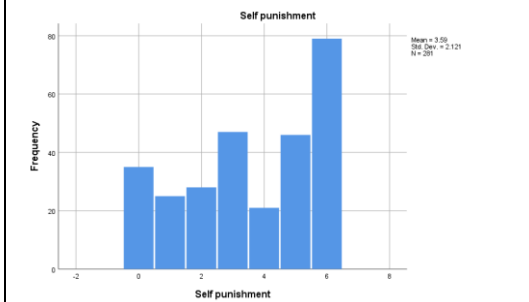




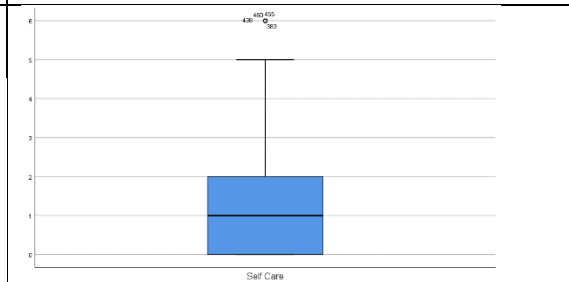
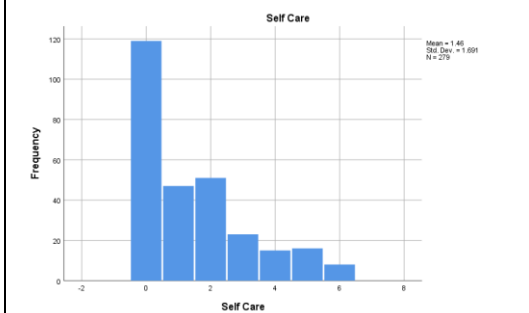
Affect Regulation



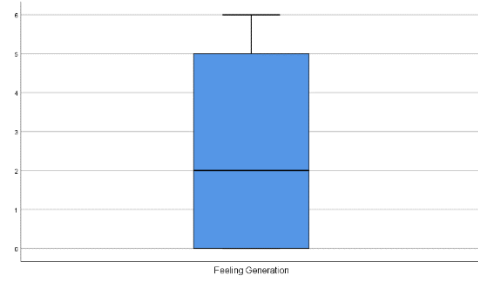
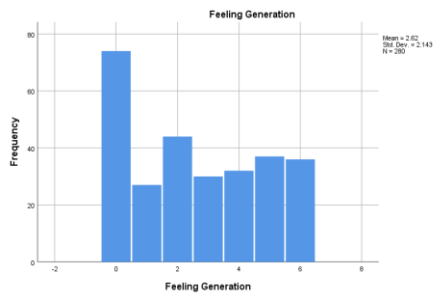
Self-Punishment



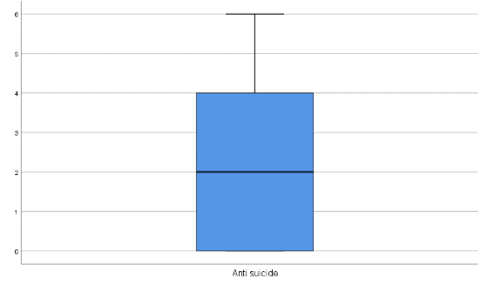
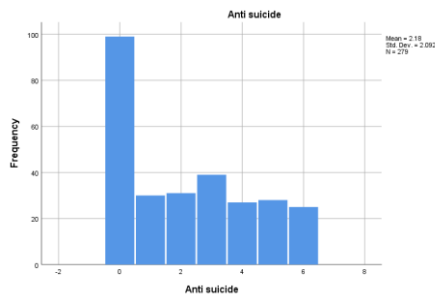
Self-Care



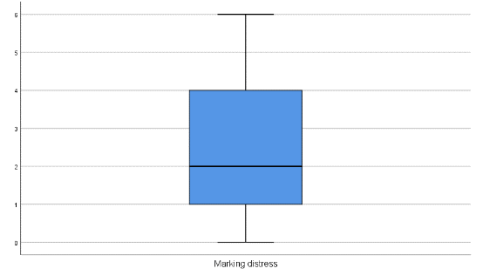
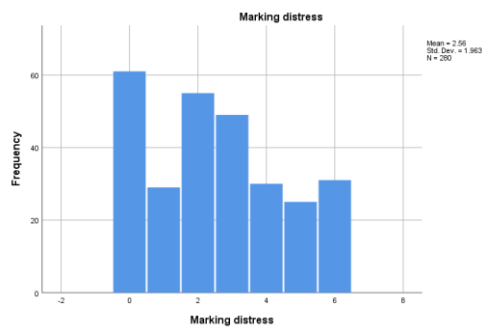
Feeling Generation



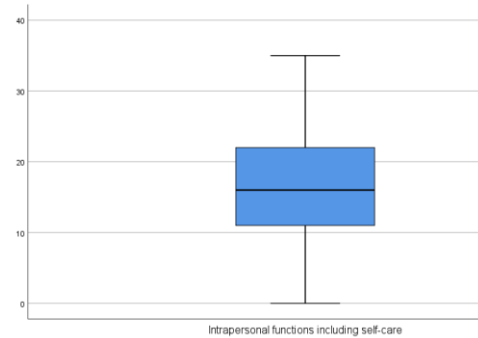
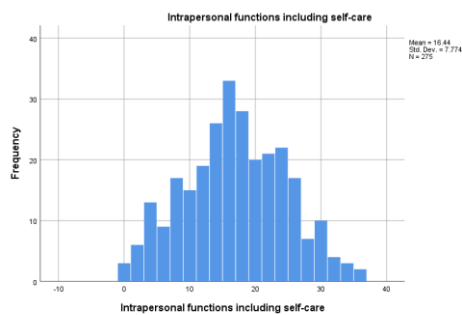
Anti-suicide



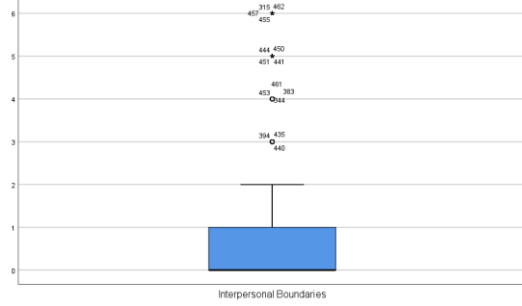
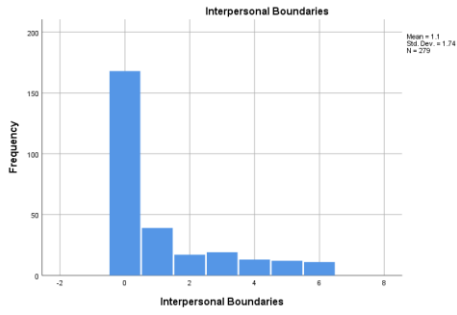
Marking Distress



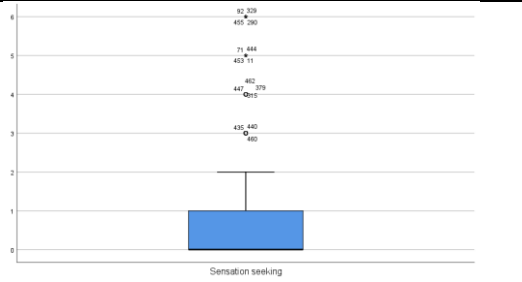
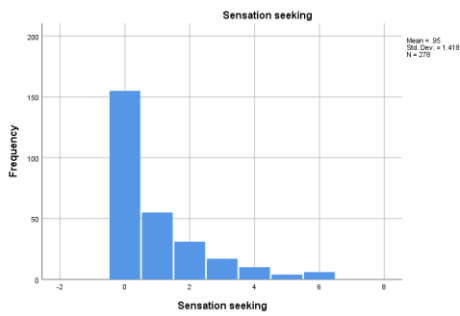
Total Intrapersonal functions



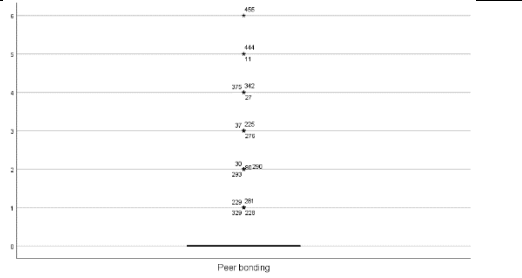
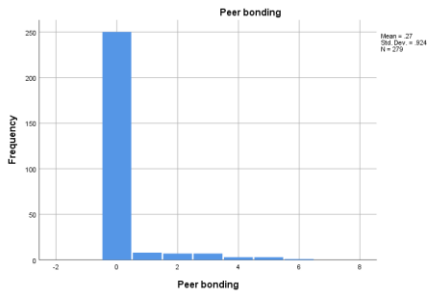
Interpersonal boundaries



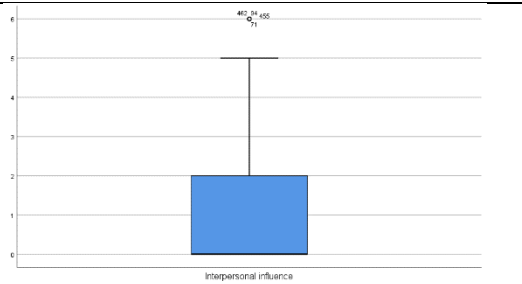
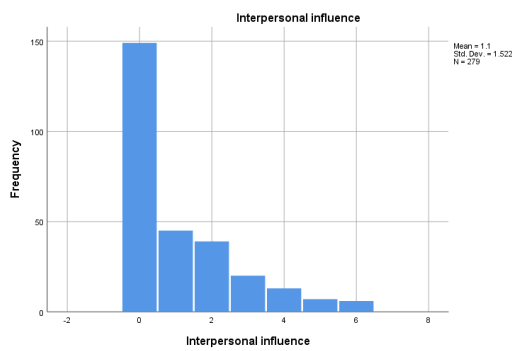
Sensation seeking



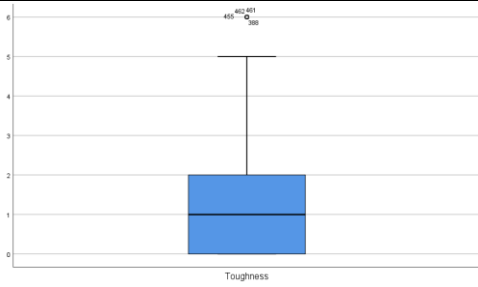
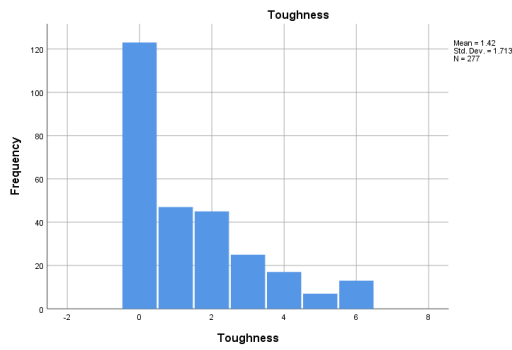
Peer bonding



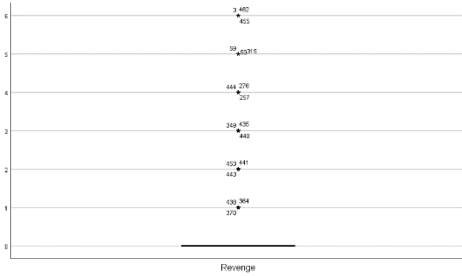
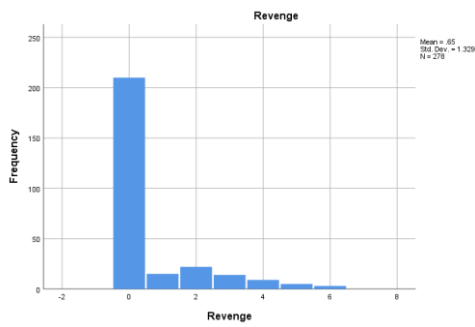
Interpersonal influence



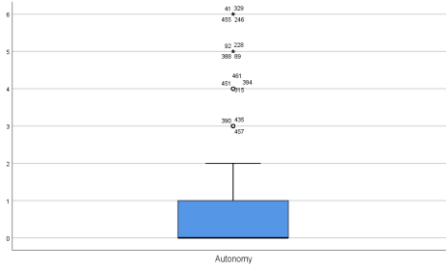
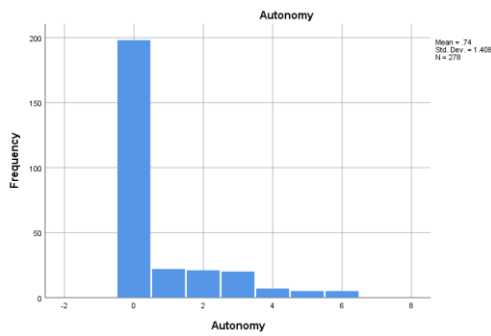
Toughness



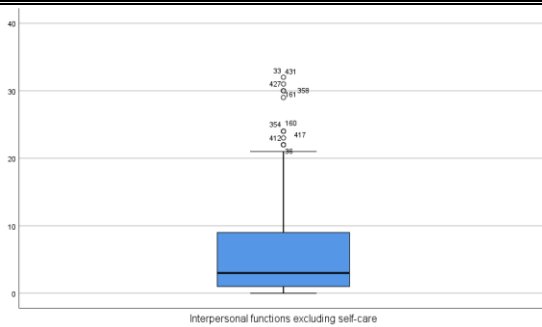
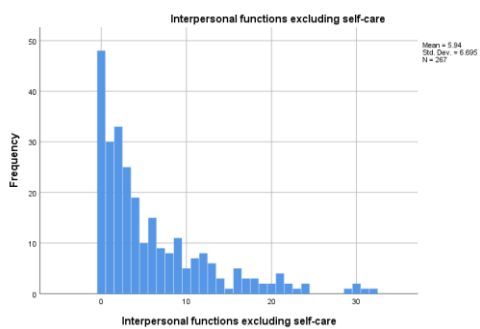
Revenge



Autonomy



Total Interpersonal functions



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Figure 6.2.2

Scatterplot Matrix of the Outcome Variable (TAS20) With Continuous Predictor Variables GAD7 and PHQ9.

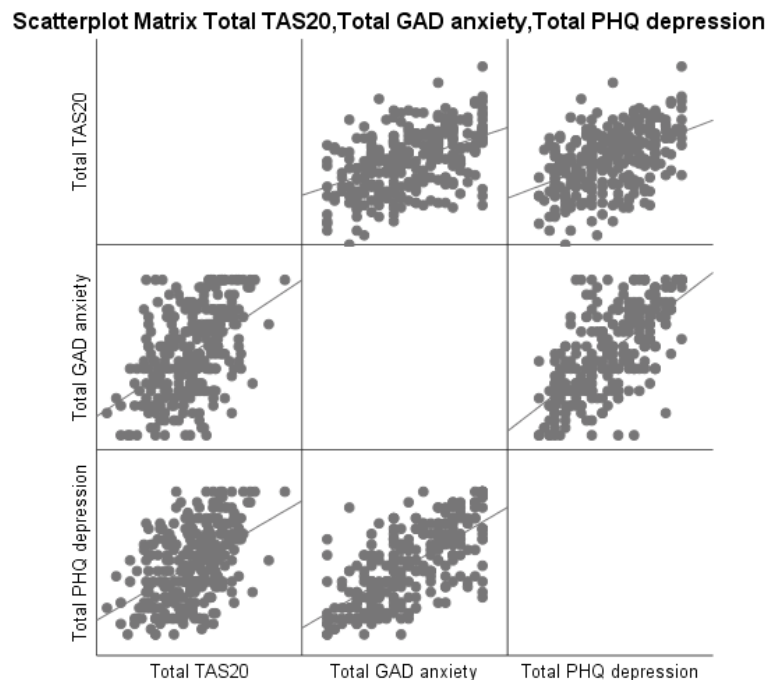


Figure 6.2.3

Scatterplots of the Intrapersonal Functions of Self-Harm and TAS20 (Study 4b)

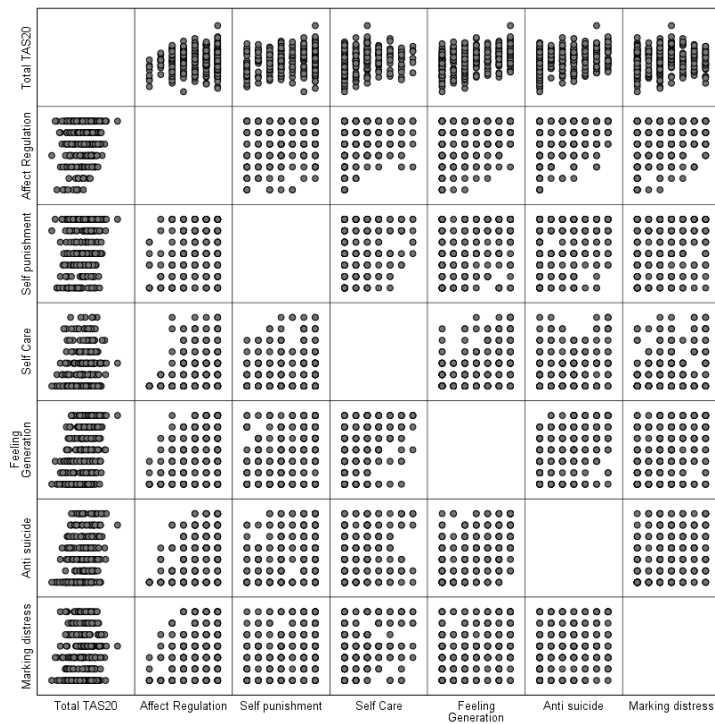
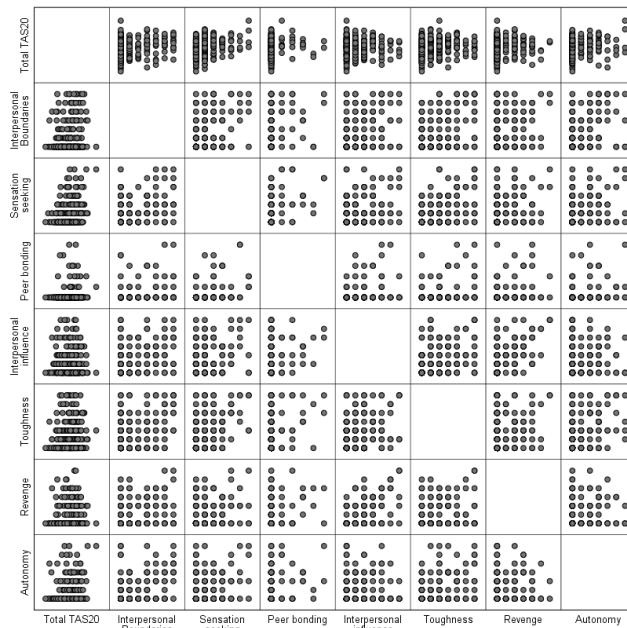


Figure 6.2.4

Scatterplots of the Interpersonal Functions of Self-harm and TAS20 (Study 4b)



Appendix 6.3: Coded Free Text Responses About the Main Reason for Self-Harm, Study 4b

Main category*	Sub category*	Number of participants giving reason		Mean TAS20 (SD)		<i>t</i>	<i>p</i>
		<i>N</i>	%	No	Yes		
Overwhelming emotion / no control/ emotional pain		49	18	57.41 (12.86)	53.24 (13.82)	2.03	.044
Specific emotion		146	53	57.74 (12.56)	55.72 (13.56)	1.28	.203
	Stress	28	10				
	Anger	26	10				
	Anger at self	12	4				
	Worthlessness	25	9				
	Self-hatred	18	7				
	Distress	17	6				
	Frustration	16	6				
	Sad	13	5				
	Loneliness or feeling alone	10	4				
	Shame	8	3				
	Fear	4	2				
	Tired	3	1				
	Grief	2	1				
	Feeling out of place	2	1				
	Jealousy or insecurity	1	<1				
Difficulty identifying feelings		5	2	56.64 (13.13)	58.00 (13.23)	-0.23	.819
Difficulty describing feelings		8	3	56.43 (13.13)	64.50 (10.27)	-1.72	.086
Emotion regulation		64	23	57.14 (12.97)	55.11 (13.56)	1.08	.279
	To regulate emotions	6	2				
	Calming or to stop thoughts or pain	9	3				
	Distraction	14	5				
	To feel better	4	2				
	Control	5	2				

Main category*	Sub category*	Number of participants giving reason		Mean TAS20 (<i>SD</i>)		<i>t</i>	<i>p</i>
		N	%	No	Yes		
	Coping	5	2				
	Release or relief	22	8				
	Making pain physical	11	4				
Marking distress		4	2	56.79 (13.12)	48.25 (10.66)	1.30	.197
Punishment		15	6	56.68 (13.15)	56.47 (12.96)	0.06	.952
Feeling generation		25	9	55.93 (12.86)	64.00 (13.53)	-2.976	.003
	Feeling nothing	15	6				
	To feel something / to feel alive	11	4				
	Anti-dissociation / grounding	7	3				
Boredom or habit		5	2	56.58 (13.11)	61.40 (12.34)	-0.82	.416
Sensation seeking		8	3	56.76 (12.97)	53.63 (18.10)	0.67	.507
Suicidal feelings		6	2	56.59 (13.11)	60.17 (14.12)	-0.66	.509
Mental health challenges		47	17	57.11 (13.15)	54.53 (12.83)	1.23	.221
	Anxiety	21	8				
	Depression	24	9				
	Other mental health	9	3				
Interpersonal issues		29	11	56.47 (13.44)	58.31 (9.99)	-0.71	.476
	Relationship problems	16	6				
	Family problems	8	3				
	Social pressures	10	4				
Interpersonal influence		5	2	56.82 (13.10)	48.40 (11.70)	1.43	.155
Autonomy		1	<1				
Life stresses		17	7	56.71 (13.24)	55.94 (11.35)	0.23	.815
	Financial worries	2	1				
	Work / school	5	2				
	Things not going well	8	3				
	Uncertainty	2	1				
Body image / eating disorder		10	4	56.52 (13.11)	60.60 (12.94)	-0.07	.334
Gender dysphoria		2	1				

*Sub categories do not sum to the main categories because one participant may name several subcategories in their response. The main category indicates if at least one of the subcategories have been referred to.

Significant differences in mean TAS20 marked in bold.

Appendix 7.1: Participant Briefing Information Study 5



PARTICIPANT INFORMATION SHEET

The experience of self-harm in young adults who report difficulties identifying and describing feelings: a qualitative study

You are being invited to take part in a research study about your experiences of self-harm. Before you decide to participate, it is important for you to understand why the research is being done and what it will involve. Please take your time to read the following information carefully, and discuss it with others if you'd like to. Please ask if there is anything that is not clear or if you would like more information. Thank you for reading this.

What is the purpose of the research?

The research is being conducted as part of my PhD at Middlesex University on the relationship between self-harm and the way in which we experience emotions. The research proposal has been reviewed and approved by the Middlesex University Psychology Department's Ethics Committee, whose role is to make sure that your safety, rights, well-being and dignity are protected.

Why have I been invited?

I am interested in speaking with people who have personal experience of self-harm and who report that they sometimes find it hard to know and describe how they feel. You recently took part in an online survey in which you indicated that you have self-harmed within the past five years. In addition, some of your answers to the survey suggest that you sometimes have difficulties identifying and describing your feelings. Your experiences are therefore very relevant for the research.

What will happen to me if I take part?

In this study we are using a technique called photo elicitation in which participants are invited to bring a small number of photographs to an interview, and to talk about them with the interviewer. This method can be helpful in cases where participants are talking about a sensitive subject. It also allows the participant to decide what is important to them and control the direction of the interview.

If you decide to take part you can choose whether or not you would like to bring photographs to the interview. If you decide to do so, I will ask you to collect up to ten photographs over the course of two weeks which will help you describe how you feel about your self-harm. They can be new photos, ones you have taken in the past or ones taken by someone else. There is no right or wrong way of doing it, and the only important thing is that the photos are meaningful to you. I will ask you to avoid taking or choosing pictures of other people, as we would need to ask

their permission to use images of them as part of this research. You may however take or choose pictures of items that will help you to think about that person and discuss them in the meeting. The photos will form the basis of the discussion in the interview. You will have full control of the interview to talk about your photographs; you may select which photographs you wish to discuss, the order in which you want to show them and for how long. I may also ask some questions to help me understand your experiences of self-harm.

The photographs will be used only to stimulate discussion and will not be analysed in their own right. They will only be seen by me, Hilary Norman, and my supervisors, and not made public in any way. You will remain the owner of the photographs.

You may choose not to bring photographs to the interview. In this case I will ask you questions about your experiences of self-harm.

Before you take part in the research you will be asked to sign a consent form to say that you have understood what the research will involve.

Where will the interview take place?

The interview will take place at a time that suits you, and in a suitable, convenient location which can be agreed between us. Interviews will be carried out by me, Hilary Norman, a PhD student at Middlesex University. The meeting should take approximately one hour.

If it is not possible to find a location that is convenient for you and for me, the interview can be carried out via Skype or by telephone.

What will happen to the information gathered in the interview?

The interview will be audio recorded so that we can capture all the information you provide as accurately as possible. As soon as the interviews have been transcribed electronically the audio recording, and any photos that you have provided in electronic form, will be deleted. The transcribed interview will be kept securely without any identifying information such as your name. This is so that no one other than me, as the interviewer, will know who gave the interview. Nobody outside the research team (me and my supervisors at Middlesex University) will be able to read your interview. All documents will be destroyed after three years. Your contact details will be kept securely for three years, separate from the transcribed interview. They will not be used to contact you except in relation to this study and will not be passed on to anyone else.

Do I have to take part?

No. Participation in any part of this research is entirely voluntary. You do not have to take part if you do not want to. If you decide to take part you may withdraw at any time or choose not to answer one or more question without giving a reason. If, after the interview is finished, you decide you do not want your responses to be

included in the analysis, you can ask for your data to be withdrawn by contacting me (HN274@live.mdx.ac.uk) within four weeks of your taking part.

What are the possible disadvantages to taking part?

We hope that taking part in this study will give you a space for reflection and chance to talk about your experiences. Previous research suggests that most people find this an interesting and worthwhile experience, even when focusing on very sensitive and personal issues. However, it is possible that you may feel uncomfortable or distressed discussing your experiences of self-harm. Before deciding if you want to take part in this study, please consider carefully if you are likely to find this difficult. For example, it might be better not to take part if you are currently going through a stressful life event or if you are feeling suicidal. If you agree to be interviewed, we would spend some time talking about what happens if you become distressed during or after the interview, and draw up a 'safety plan', which will include links to organisations that may be able to support you.

Should you feel uncomfortable at any time during the interview, you do not have to answer any questions if you do not wish to, and you can take a break from responding at any time. At the end of the interview we will check you are still happy for us to use the information you have provided.

What will happen to the results of this research study?

The results of this study will be written up and analysed as part of my PhD on self-harm and may be published in an academic book or journal. It will not be possible to identify any individual in the final reports. Sometimes things that people said might be quoted directly but only if it is not possible to tell from the quotation who said it.

The researcher will also produce a summary of the results which will be available to you once we have finished collecting and analysing the data.

Thank you for taking the time to read this information sheet. If reading it has caused you distress, you could contact Samaritans, which provides a 24-hour service offering emotional support to anyone who is in crisis, wherever they live (www.samaritans.org).

Contact for further information

If you have any further questions about the study, please contact:

Researcher:

Supervisor:

Hilary Norman
Psychology Department
School of Science and Technology
Middlesex University
Town Hall
The Burroughs
Hendon
London
NW4 4BT

Email: HN274@live.mdx.ac.uk

Dr Lisa Marzano
Psychology Department
School of Science and Technology
Middlesex University
Town Hall
The Burroughs Hendon
London
NW4 4BT

Email: l.marzano@mdx.ac.uk

Tel: 020 8411 6998

Instructions for participants: taking or choosing photographs to bring to interview

Project title: The experience of self-harm in young adults who report difficulties identifying and describing feelings

The primary purpose of the study is to understand the experience of self-harm in young adults who find it hard to identify and talk about their feelings.

What you are being invited to do:

1. If you are willing to take part in the study, please read and sign the consent form. If your interview is being conducted by telephone or Skype, you will be asked to confirm your consent orally.
2. Before the interview, please could you take or find up to ten photographs. They can be new photos taken on your own camera or mobile phone, photos you have taken in the past or photos taken by someone else. Each photograph should reflect in some way what self-harm means to you.
3. At the time you take or find each photograph please note down any thoughts that come to mind, and any emotions or physical sensations you become aware of.
4. Please do not take or bring any photos of other people and please do not put yourself at risk of harm in order to take a photo. Please do not bring photographs showing anything illegal.
5. Once you have taken or chosen all the photographs, please bring them to the interview in printed form, or electronic form (e.g. on an ipad). Alternatively you can email them to me (hn274@live.mdx.ac.uk) and I can print them in advance or display them on my laptop during the interview.
6. At the interview you will be invited to talk about the photographs, what they represent for you, how they made you feel when you first took or found them, and how you feel about them now. You can choose the order in which you

talk about the photographs and you can choose not to talk about any photographs if you prefer not to on the day.

7. You will retain ownership of the photographs and you can choose to take away any printed photographs after the interview. Any photographs that you provide to the research team electronically will be kept securely until the interviews have been electronically transcribed and subsequently deleted. The photographs will be used only during the interviews, to stimulate discussion, and will not be analysed in their own right. They will only be seen by me and my supervisors, and not made public in any way.
8. If for any reason you are not able to take or find photos, you will still be able to take part in the interview, if you wish to do so.

If you have any questions about these instructions, please get in touch with me (Hilary Norman hn274@live.mdx.ac.uk)

Appendix 7.2: Consent Form Study 5

Project Title: The experience of self-harm in young adults who report difficulties identifying and describing feelings: a qualitative study

Please circle yes or no as appropriate.

I have read and understood the participant information sheet and feel that the nature and purpose of this research have been sufficiently explained to me. Yes No

I understand that my participation in the study is voluntary. Yes No

I understand I can choose to withdraw from the study at any time during or at the end of the interview without giving a reason. In addition I understand I can decline to answer any individual question. Yes No

I understand that I can ask for my data to be withdrawn from the study up to four weeks after the interview date by contacting Hilary Norman (HN274@live.mdx.ac.uk). Yes No

I understand that the interview will be audio recorded so that the researcher can remember what is said. Yes No

I understand that any photographs I bring to the interview will remain my property and will not be used in any reports. Yes No

I understand that the data I provide will be analysed and used in written reports, in such a way that I will not be able to be identified. Yes No

I understand that my contact details will be held securely for a maximum of three years. They will only be used to contact me in relation to this study and will not be passed to anyone else. Yes No

I agree to be interviewed for this study. Yes No

I agree to my interview being audio recorded Yes No

I would like to bring photographs to the interview Yes No

Name of participant

Signature of participant

Date

Hilary Norman

Name of researcher

Signature of researcher

Date

Appendix 7.3: Recruitment Email Sent to Potential Participants Study 5

Dear [name]

You recently completed an online survey on Understanding the relationship between emotions and self-harm. Thank you very much for doing so. I am also very grateful to you for saying that you'd be willing to be contacted about a possible interview. This email is to give you more information about what that would involve.

The interview would be with me (Hilary Norman) – I'm a psychology PhD student at Middlesex University in London. It would take about an hour, and would be a chance for you to talk more about your experience of self-harm. It would take place at a venue and at a time that suits us both (either in person or by Skype).

Sometimes it can be hard to talk about personal subjects. To make that easier, if you agree to take part in an interview, I would invite you to bring along some photographs which reflect in some way what self-harm means to you. We'd use them in the interview to prompt thoughts and feelings about your experience. But you don't have to bring photographs if you don't want to.

I'm attaching a letter with more information about the interview including about using photographs. I'm also attaching a consent form. I'd be very grateful if you could read these to decide if you'd like to take part in the interview. To let me know if you'd like to take part, or if you have any questions, you can contact me by replying to this email or by phoning me on the number below. If you have any concerns about the study, you can also contact my supervisor Dr Lisa Marzano (email address supplied).

Once again, thank you for your interest in my research.

Best wishes

Hilary

[phone number supplied]

Appendix 7.4: Personalised Safety Plan Study 5

Most people find it helpful to talk about their experiences but this can also be upsetting. Please let me know if you are feeling uncomfortable and would like to stop or suspend the interview. You do not have to answer anything you do not feel comfortable answering, and are free to stop the interview at any point.

Given the sensitive nature of the study, we would advise against taking part in the research if you are currently experiencing strong thoughts of suicide, or if you are going through a particularly stressful life event. Please note that if someone I am interviewing tells me that they are currently experiencing serious thoughts of suicide I am duty bound to inform someone, to ensure their own safety. However, I would tell them that this will happen and would not mention anything else from the interview. Please let me know whom I may contact should I have some serious concerns over your safety. This may be your GP, a key worker, and/or a trusted family member or friend.

Name of person or persons to contact:

Email(s):

Telephone number(s):

What happens if I become distressed after the interview?

It might be helpful to think briefly now about your own support network and who you might talk to if you feel upset after the interview and to write down their name. This would be a reminder for you, not for the research team.

The person I would probably talk to if I felt upset is

_____.

Please use email to contact either me (email address supplied) or my supervisor Lisa Marzano (email address supplied) if you have any concerns after the interview. If you are thinking about harming yourself or attempting suicide, please seek help from your GP, a key worker, or family and friends. If you feel that you are in need of immediate support, please contact Samaritans (116 123) or NHS Choices (www.nhs.uk/111) on 111 (both are available 24 hours a day, 365 days a year and calls are free within the UK). If you are outside the UK, the Samaritans email

service is available free (jo@samaritans.org). Alternatively, please go to, or call, your nearest hospital accident and emergency (A&E) department and tell the staff how you are feeling.

Below is a list of support organisations can provide support including information and low cost counselling options.

Organisation Support Contacts

Middlesex University Counselling and Mental Health Service: Counselling, support and advice service open to all Middlesex University Students and Staff, including a drop in service from 2pm Monday to Friday. Email: cmh@mdx.ac.uk Website: unihub.mdx.ac.uk/cmh

Samaritans - 24-hour service providing confidential emotional support to anyone in crisis. Helpline: 116 123 Email: jo@samaritans.org Website: www.samaritans.org

Mind - Charity about mental health and related topics. Helpline: 0300 123 3393 Text: 86463 Website: www.mind.org.uk

Harmless – User led organisation providing support and information for people who self-harm Website: www.harmless.org.uk

Self-injury Support - Supports girls and women in emotional distress. Helpline (limited hours): 0808 800 8088 Text (limited hours): 07800 472908 Website: www.selfinjurysupport.org.uk

CALM Charity supporting suicidal men Helpline: 0800 58 58 58 Website: www.thecalmzone.net

Papyrus (HopeLineUK) Charity for the prevention of young suicide Helpline: 0800 068 41 41 Text: 07786 209 697 Email: pat@papyrus-uk.org Website: www.papyrus-uk.org

The Depression Alliance Online information Website: www.depressionalliance.org

NHS 111 Website: <http://www.nhs.uk/NHSEngland/AboutNHSservices/Emergencyandurgentcareservices/Pages/NHS-111.aspx>

[This safety plan was amended for use with the participants who were resident in the US, for example relevant US helplines were included instead of the NHS and UK-specific charities.]

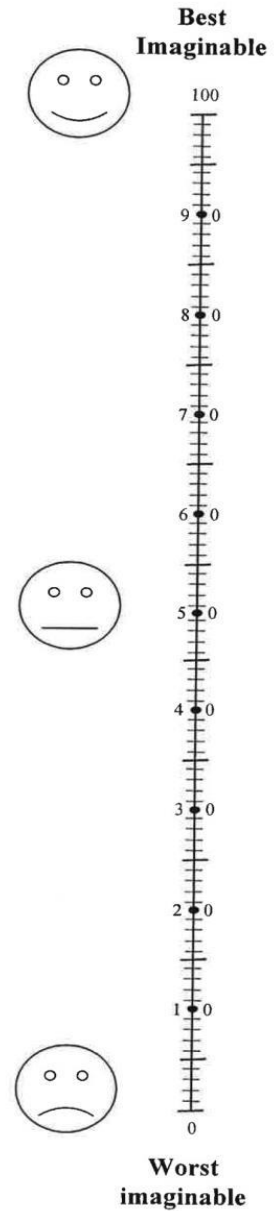
Appendix 7.5: Visual Analogue Scale Study 5

Date of meeting _____ Pre/post interview.

To help people say how happy or upset they feel, we have drawn a scale (rather like a thermometer) on which the best state you can imagine is marked 100 and the worst state you can imagine is marked 0.

We would like you to indicate on this scale how you feel at the moment. Please do this by drawing a line from the box below to whichever point on the scale indicates how good or bad your emotional state is now.

**Your own
emotional state
at the moment**



Appendix 7.6a: Interview Schedule Using Photo Elicitation Study 5

Interviewer: Hilary Norman

Venue: Neutral public place, e.g. room on the campus at Middlesex University

Thank you very much for agreeing to be interviewed. It will last about an hour. If at any point you would like to stop or take a break, just let me know.

As you know from the information you got earlier, I'm going to record the interview so that I remember everything you say. I will then transcribe it electronically and delete the recordings. I will treat what you say in confidence unless you tell me something that makes me think you or someone else is at risk of serious harm. When I come to write the report, if I quote anything you say, I will make sure that there's nothing that identifies you. Is that ok?

Confirm that the participant has read the participant information sheet and has signed the consent form.

Discuss the Safety Plan with the participant and record the name and contact details of someone to contact in case the participant discloses they are at risk of serious harm.

Do you have any questions for me?

I am now going to switch on the recording equipment.

If the interview is being conducted by telephone or via Skype read through the consent form and ask the participant to indicate their consent to each question orally.

Before we start please could you look at this [Visual Analogue Scale] and indicate where your current mood is?

I've asked you to come today because I'm interested in you and your experiences self-harm. There are no right or wrong answers and please take as much time you need to answer the questions. I hope the interview will be like a chat, with you doing most of the talking. I'm happy to answer any questions you might have about me, but I'd rather we left them until the end of the interview.

If I ask you a question that doesn't make sense please ask me. Sometimes questions might sound a bit obvious or strange – this is because I am trying not to take anything for granted and to find out your opinions. I'm using photos in this study because it can be a good way of helping people talk about personal subjects, and also because I hope that it means you can take the lead in talking about the things that are most important to you.

Are you ready to start?

Thank you very much for bringing photos today which represent what self-harm means to you. Which photo would you like to start with?

Can you tell me about this photo please?

Possible prompts:

What does this photo represent for you?

Why did you take this photo?

What thoughts or feelings did you note when you took or chose the photo?

What thoughts or feelings do you have now looking at this photo?

Do you have any particular physical reaction when you look at this photo?

This format will be followed until all the photos have been discussed.

Is there one photo among those we've talked about that most sums up how you feel about self-harm?

Is there anything you would like to add to what we've been talking about?

Debrief questions

How did you find taking part in the interview?

What do you think about the method of using photographs?

Do you have any questions for me?

How are you feeling now? Please could you complete the mood questionnaire again?

Would you like me to talk to anyone about how you're feeling?

Before we finish I'd be very grateful if you could fill in the evaluation. Also, if there is anything that occurs to you afterwards that you would like to add, please do email me or write it down and send it to me in this stamped addressed envelope.

End of interview

Appendix 7.6b: Interview Schedule for Interviews Without Photo Elicitation

Study 5

Interviewer: Hilary Norman

Venue: Neutral public place, e.g. room on the campus at Middlesex University

Thank you very much for agreeing to be interviewed.

It will last about an hour. If at any point you would like to stop or take a break, just let me know.

As you know from the information you got earlier, I'm going to record the interview so that I remember everything you say. I will then transcribe it onto paper and delete the recordings. I will treat what you say in confidence unless you tell me something that makes me think you or someone else is at risk of serious harm. When I come to write the report, if I quote anything you say, I will make sure that there's nothing that identifies you. Is that ok?

Confirm that the participant has read the participant information sheet and has signed the consent form.

Discuss the Safety Plan with the participant and record the name and contact details of someone to contact in case the participant discloses they are at risk of serious harm.

Do you have any questions for me?

I am now going to switch on the recording equipment.

If the interview is being conducted by telephone or via Skype read through the consent form and ask the participant to indicate their consent to each question orally.

Before we start please could you look at this [Visual Analogue Scale] and indicate where your current mood is?

I've asked you to come today because I'm interested in you and your experiences self-harm. There are no right or wrong answers and please take as much time you need to answer the questions. I hope the interview will be like a chat, with you doing most of the talking. I'm happy to answer any questions you might have about me, but I'd rather we left them until the end of the interview.

If I ask you a question that doesn't make sense please ask me. Sometimes questions might sound a bit obvious or strange – this is because I am trying not to take anything for granted and to find out your opinions.

Are you ready to start?

I'm going to start with a really open question, so take your time in answering it.

1. *Can you tell me about your experience of self-harm?*

Once the participant has finished speaking, summarise main points and say we'll try to come back to all of them.

Which of those point would you like to talk about first? Expand on that point and return to other points.

2. *Can you tell me about the first time you self-harmed?*

Possible prompts

- *How old were you?*
- *What was going on for you at the time?*
- *Can you remember how you were feeling?*
- *Can you remember why you self-harmed instead of doing something else?*
- *How did it make you feel?*

3. *Can you tell me about your self-harm since that first time?*

Possible prompts

- *Are there particular feelings or situations that lead to you self-harming?*
- *How does it make you feel afterwards?*
- *(If they have indicated that they self-harm because they feel bad, or that they want/ed to stop self-harming) Is there anything that helps you feel less likely to self-harm?*
- *(If they indicate that they have stopped self-harming) Can you tell me what it was like to stop?*

4. *What does/did self-harm do for you?*

5. *What, if any, feelings or bodily sensations do you associate with self-harm?*

Possible prompts

- *Before/after self-harm?*
- *Is it always the same?*
- Possibly prompt *using* the PANAS emotion words list.

6. *Has self-harm affected your life in any way? If so, how?*

7. *Has self-harm affected your relationships with other people? If so, how?*

8. *(If they no longer self-harm) How do you feel about self-harm now?*

9. *We've been talking a lot about feelings. On the survey you filled in, you said you sometimes find it hard to know how you feel. Can you tell me about that?*

10. *How easy do you find it to talk about feelings? In what way is it [hard/easy]?*

11. *Is there anything you would like to add to what we've been talking about?*
12. *I know that you chose not to bring photographs to represent your feelings about your self-harm. Can you tell me why you didn't want to? What images do you think you might have brought?*
13. *Do you have any questions for me?*

How are you feeling now? Please could you complete the mood questionnaire again?

Would you like me to talk to anyone about how you're feeling?

Before we finish I'd be very grateful if you could fill in the evaluation. Also, if there is anything that occurs to you afterwards that you would like to add, please do email me or write it down and send it to me in this stamped addressed envelope.

End of interview

Appendix 7.7: Evaluation Form Study 5

**The experience of self-harm in young adults who report difficulties identifying
and describing feelings: a qualitative study**

Date of meeting _____

Taking part in this interview was...

Very easy					Very difficult
1	2	3	4	5	
Very upsetting					Not at all upsetting
1	2	3	4	5	
Very enjoyable					Not at all enjoyable
1	2	3	4	5	
Very helpful					Not at all helpful
1	2	3	4	5	

Overall, are you pleased that you took part in this interview? Yes / No

Why?

Is there anything else you would like to say, that you weren't able to say during the interview (continue over the page if necessary)?

Thank You

Appendix 7.8: Review of the Visual Analogue Scale and Evaluation Data Study

5

None of the participants indicated either verbally, or via the Visual Analogue Scale, that they found the experience of being interviewed upsetting. In fact, half the participants reported improved mood at the end of the interview. Six participants completed the evaluation form. On average, they rated taking part in the interview as 4, on a scale from very upsetting (1) to not at all upsetting (5). The evaluation scores and additional free text comments suggested that, for some, rather than being distressing, the process had been positively helpful (the average score was 1.8 where 1 was very helpful, and 5 was not at all helpful). One participant reflected that verbalising her thoughts helped her to clarify them:

“It makes me easier to see things more logically when I talk about them to someone else.”

Another participant reported that the interview had had a lasting positive effect:

“I have never spent significant time reflecting on that phase of my life, so I am glad I was able to do it in a safe space. Even a few days after the interview, I feel more comfortable talking about and acknowledging that time in my life.”

All participants who completed the evaluation form said they were glad that they had taken part. For three participants, the value came in the potential help it might give to others:

“It helps other people to understand what self-harm really is.”

Despite the positive feedback on the experience of being interviewed, several participants found it hard to use the Visual Analogue Scale itself. On reflection, it may be challenging for people who struggle to understand their feelings to give their current mood a rating on a numerical scale, as this extract illustrates:

I: *“And how are you feeling now? Are you able to give me a number on the 0-100 scale (sorry, I know you said that was difficult).”*

P6: *“It’s ok, we used to refer to them as “on a scale of 1-10, what is your favourite colour of the alphabet”. I’ll take a stab at 85.”*

One participant chose to use words instead of the scale to describe how they were feeling (“apprehensive”) and others noted any change pre/post interview (“about the same”). It might be more appropriate in future research with similar participants to ask participants to comment, in their own words, whether they feel better or worse after the interview.

Appendix 7.9: Letter of support from Middlesex University Counselling Service

Study 5



11th June 2018

Dear Dr Marzano

The experience of self-harm in adults who report difficulties identifying and describing feelings: a qualitative study.

I have received Hilary Norman's email of 11 June 2018 confirming that ethical approval has been granted for this study by Middlesex University's Ethics Committee.

I am writing to confirm that Middlesex University Counselling and Mental Health Service is happy to support the study as detailed in the application for ethical approval. The lead researcher is Hilary Norman, supported by you and her co-supervisors, Dr Andrea Oskis and Dr Mark Coulson.

The aim of this research is to explore the lived experience of self-harm among young adults who struggle to identify and describe their feelings, a trait known as alexithymia. The information gathered will be used as part of Hilary Norman's PhD on self-harm and alexithymia.

The study will consist of up to 15 interviews with young adults aged between 18 and 30 who have indicated in a screening questionnaire that they have self-harmed within the past five years and sometimes have difficulty identifying and describing feelings. Participation in the study is voluntary and consent will be gained in advance.

We are happy to advertise the study within the Middlesex University Counselling and Mental Health Service, and alert potential participants to it, subject to the discretion of individual counsellors. We are also willing to provide support, should it be needed, through the drop-in service to any student or staff member who takes part in the study and also to Hilary as the lead researcher. We have advised Hilary on the Cause for Concern procedures and what to do if she believes a participant in the study is at immediate risk.

I understand that it is the intention to start recruitment by the end of June and continue until sufficient data have been collected, extending into the Autumn term if necessary.

Yours sincerely,

A handwritten signature in blue ink that reads "Louise Baddeley". The signature is fluid and cursive, with a long, sweeping tail on the final letter.

Louise Baddeley

Deputy Head of Student Support and Wellbeing



Appendix 7.10: Research Sensitivity Protocol Study 5

When participants volunteer to discuss emotional issues, it may lead to them talking about personal information that they may find distressing. To overcome any situation where this can occur a number of approaches have been considered to minimise potential distress to the participants. These include use of participant information sheet and consent form and the implementation of a research sensitive protocol.

Participant Information Sheet and Consent Form

We will make the following clear to participants, in all written information sheets and conversation (e.g. during recruitment and data collection):

- What the interview topic will be
- That they may stop or delay the interview at any time, or withdraw from the evaluation, without having to give a reason
- That all data they provide is confidential and will be reported in a way that preserves their anonymity

Research sensitivity protocol

The researcher will implement a ‘sensitive research protocol’, which will involve:

- Drawing up detailed personalised safety plans in relation to each interviewee, with input from participants themselves.
- Closely monitoring participants for distress during interviews
- Stopping the interview if a participant becomes upset and only recommencing when (and if) the interviewee is ready to do so
- Any interview will be ceased completely if the interviewee is too distressed to continue, without any blame from the researcher or pressure to reschedule
- Asking specifically if there are any issues raised by doing the interview at the end of the interview
- Offering to sit with, and listen to, any participant who has become upset during interview
- Encouraging participants to contact the researcher by email if they have any concerns post interview

- Providing all participants with a support and information sheet that includes free and low-cost counselling options
- Following up any participants that become upset by email and/or phone in the following days.

Researcher experience and expertise

Interviews will be carried out by Hilary Norman, who is a trained Samaritan (since 2013).

Appendix 7.11: Process of Developing Themes Study 5

Figure 7.11.1

Example of the Development of a Theme (Participant 1)

Figure 7.11.1 shows how the initial emergent themes were grouped into subthemes and finally into one super-ordinate theme (the cognitive self).

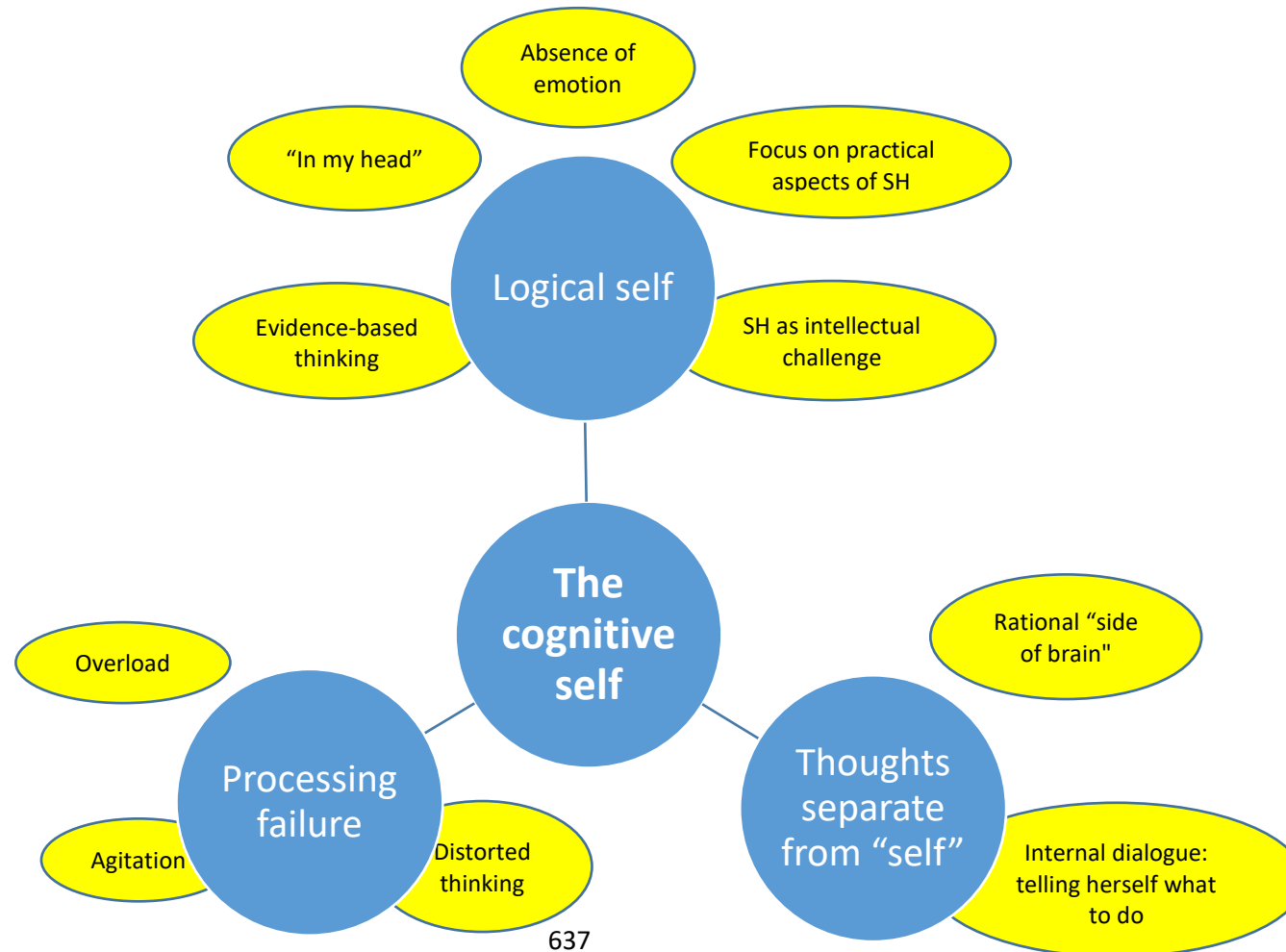


Figure 7.11.2

Map of Themes (Participant 1)



Table 7.11.1*Summary of Super-Ordinate- and Sub-Themes from Participant 1*

Themes	Page	Key words
<i>The cognitive self</i>		
Processing failure	24	there's like no order in my head
Head (vs heart?)	11	I was like in my logical brain
Arguing with self	21	well that didn't work, it just made you really sick
<i>Search for self</i>		
Can't understand own motives	21	why do you do that why do you do that?
Difficulty understanding feelings	41	Sometimes I'm not 100% sure what feelings I should be feeling with what
Identifying boundaries	20	a lot of it has been like that thing about pushing limits
Experimenting on self	11	I'll just do a little cut and see what it does
<i>Control</i>		
Self-harm gives control	25	I'm going to do it on my terms
Beating this system	4	it was almost like, um a bit of a thrill
No control over other people's reactions	29	they're going to think oh my god this person is an absolute nut job
<i>No words, only actions</i>		
Communication is unspoken	14	you've upset me look at what I've done
Communication through SH	22	I'm going to show you that I can still do it
No words	17	now it's like I don't know blah blah blah
<i>Seeing is believing</i>		
I am real	9	I enjoyed seeing the blood, um flowing out
Image conveys truth	6	it started out as trying to um sort of see what suicide looked like
Influence of visual image	10	it just reminds me of this horror movie

