

Forgiveness in PTSD After Man-Made Traumatic Events:

A Systematic Review

Date of submission: 20.11.16

Date of revision: 18.04.17

Corresponding author:

Deniz Cerci

Consultant Psychiatrist in General Psychiatry and Substance Misuse

Vivantes Wenckebach-Klinikum, Klinik für Psychiatrie, Psychotherapie und Psychosomatik,

Berlin, Germany

and Centre for Psychiatry, Barts and the London School of Medicine and Dentistry, Queen

Mary University of London, U.K.

Contact details:

Phone: +49 30 130 19 2549

denizcerci@doctors.org.uk

Second author:

Erminia Colucci

Lecturer and MSc lead

Centre for Psychiatry, Barts and the London School of Medicine and Dentistry, Queen Mary

University of London, U.K.

e.colucci@qmul.ac.uk

Abstract

Forgiveness has proven to be beneficial for the physical and mental health of individuals. In sufferers of posttraumatic stress disorder (PTSD) after man-made traumatic events, it is often believed to have a positive effect to forgive the transgressor. This systematic review identifies and presents a summary of the literature into the association of symptoms of PTSD with forgiveness after man-made traumatic events. The bibliography databases EMBASE, PubMed/Medline, PsycInfo, PsycExtra, Scopus and Web of Science were searched. Thirteen studies met the inclusion criteria. The review shows significant differences between individual studies regarding the type of trauma, the setting, the forgiveness concept and the measurement instruments used for PTSD and forgiveness. Only one study could not establish a significant correlation between forgiveness and PTSD symptoms. The other studies found that higher forgiveness levels were associated with lower PTSD-related symptoms scores, but other factors have to be taken into account, as demographic variables, the relationship between transgressor and survivor of trauma, the type and severity of trauma and other variables were also shown to be relevant.

Keywords: trauma; PTSD; forgiveness

Forgiveness in PTSD After Man-Made Traumatic Events: A Systematic Review

Forgiveness and reconciliation have been advocated by political theorists, moral philosophers and religious leaders as an integral part of moving on in a society after individuals or groups suffer an injustice. On the background of South African history and the establishment of the Truth and Reconciliation Commission in South Africa after years of apartheid, Desmond Tutu said: “Forgiveness is an absolute necessity for continued human existence” (Tutu, 1998, p. xiii).

Forgiveness has always been essential in Christian theology which has also affected secular views and attitudes towards how societies and individuals should deal with transgressions and wrongdoings (Couper, 1998). Other religious communities also value forgiveness though concepts might differ (Rye et al., 2000).

Even though many scholars have considered the role of forgiveness over the years, researchers did not begin to devote serious, sustained energy to this field until the last twenty years of the 20th century (McCullough, Pargament, & Thoresen, 2000b). Enright and Worthington started conceptualizing forgiveness and provided an evidence base for its positive effects on physical and mental health of an individual (Robert D. Enright & North, 1998; Worthington, 2006). They suggest that forgiveness can help encountering transgressions in relationships, but also help to overcome man-made traumatic experiences (Robert D. Enright & North, 1998; Worthington, 2006).

Despite the lack of consensus on what forgiveness is, most agree on what it is not: Forgiving a transgression is different from pardoning, condoning, excusing and forgetting it (McCullough, Pargament, et al., 2000b). Forgiveness is also different from reconciliation which can be regarded as the process of restoring relationships which can follow the act of forgiving the offender (Fow, 1996). Enright and the Human Development Group defined forgiveness as a willingness to abandon one’s right to resentment, negative judgement, and

indifferent behaviour toward one who unjustly injured us, while fostering the undeserved qualities of compassion, generosity, and even love toward him or her (R. D. Enright & The Human Development Study Group, 1991). The core features most researchers agree on have been described by Worthington as a reduction in vengeful and angry thoughts, feelings and motives which can be accompanied by an increase in positive thoughts, feelings and motives (Wade, Hoyt, Kidwell, & Worthington, 2014).

Some believe that the process of forgiving can have three possible targets: the self, another person or the situation (Snyder & Heinze, 2005). Others reject the concept of situational forgiveness, and understand forgiveness as an interpersonal concept which cannot occur between a person and forces of nature (Robert D. Enright, Freedman, & Rique, 1998).

Forgiveness can be measured at either dispositional (trait) or offense-specific (state) level (McCullough, Pargament, & Thoresen, 2000a). Dispositional forgiveness conceptualizes forgiveness as a stable individual attribute across situations and time and instruments usually present participants with transgression scenarios and ask them to indicate their likely response. Offense-specific measures require that participants identify an interpersonal transgression and then answer questions about their current reactions to the perpetrator. The Enright Forgiveness Inventory (EFI) is one of the most widely-used offense-specific measures of forgiveness and consists of three subscales – affect, behaviour and cognition (Robert D. Enright, 2000; Subkoviak et al., 1995). The Heartland Forgiveness Scale (HFS) is a widely-used self-report questionnaire composed of three subscales examining dispositional forgiveness of self, others and situations (Thompson et al., 2005).

In recent years, researchers have investigated the association of forgiveness with symptoms of PTSD. No systematic review has been undertaken so far to systematically identify, appraise and synthesise the findings.

Method

Procedure

Six databases (EMBASE, PubMed/Medline, PsycInfo, PsycExtra, Scopus and Web of Science) were searched on 24 February 2015 for observational-analytical studies in English published from January 1980 to January 2015. The search terms used were combinations and variations of the keywords post-traumatic stress disorder, trauma*, forgiv* and reconcil*. This review investigated PTSD in relation to forgiveness of others, as the purpose was to explore forgiveness as an interpersonal process after man-made trauma. The reviewers therefore selected the following inclusion criteria: (a) Use of a validated quantitative rating scale measuring PTSD symptoms following man-made trauma (b) Use of a quantitative rating scale that explicitly measures forgiveness. Exclusion criteria were defined as follows: (a) Intervention studies (b) Studies on PTSD following trauma which is not man-made (e.g. natural disaster) or following minor events which would not reach severity of trauma as per ICD-10 or DSM-5 criteria (c) Studies measuring self-forgiveness or reconciliation which provide no data on forgiveness of others (d) Studies which do not explicitly measure forgiveness but use related concepts (e.g. acceptance and commitment; compassion; posttraumatic growth).

The references of the articles and other literature on forgiveness and reconciliation were scanned for further studies and known researchers with publications in this field were contacted and asked about publications related to the topic under review.

STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) was used to assess reporting (Von Elm et al., 2007) and QATSO (Quality Assessment Tool for Systematic Reviews of Observational Studies) was used to assess methodological quality of the studies (Wong, Cheung, & Hart, 2008). No modifications were made to the assessment tools. The assessment was undertaken by one rater (DC) who received advice and supervision by the second author (EC). Data extraction forms were created on the basis

of the content of the sample (Centre for Reviews and Dissemination, 2009) and the results will be presented by narrative synthesis.

Results

The search strategy generated 2261 records, but only 1249 after duplicates were removed. The use of 6 databases and broad inclusion criteria led to a large number of records being generated, many of which were subsequently excluded as they were unrelated to topic (Figure 1). 13 articles met the inclusion criteria.

INSERT FIGURE 1

In the quality assessment, all studies were assessed to be of “good” or “fair” quality. An overview of the included studies is provided in Table 1 and a summary of results in Table 2. All studies provided correlations of PTSD symptoms and forgiveness but no effect sizes. The reported results are statistically significant unless indicated otherwise.

INSERT TABLE 1 AND 2

A total of 3769 participants were assessed in the studies, with a range in sample size from 53 (Kaminer, Stein, Mbanga, & Zungu-Dirwayi, 2001) to 1745 participants (Hamama-Raz, Solomon, Cohen, & Laufer, 2008). Six studies had an about equal ratio of male to female participants (Bae, Hyun, & Ra, 2014; Doran, Kalayjian, Toussaint, & DeMucci, 2012; Kaminer et al., 2001; Kira et al., 2009; Snyder & Heinze, 2005; Weinberg, Gil, & Gilbar, 2014). Four studies had significantly more female than male participants (Friedberg, Adonis, Von Bergen, & Suchday, 2005; Hamama-Raz et al., 2008; Orcutt, Pickett, & Pope, 2005, 2008). The studies involving war veterans had only male participants (Karairmak & Güloğlu, 2014; Nateghian, Dastgiri, & Mullet, 2015; Witvliet, Phipps, Feldman, & Beckham, 2004).

The selected studies covered a wide age range, but with the older age group underrepresented. The lowest age cut-off for a study was 12 (Kira et al., 2009) and the highest was 86 (Kaminer et al., 2001). The lowest mean age provided was 16 (Hamama-Raz

et al., 2008), and the highest mean age 53 (Kaminer et al., 2001). Only little other demographic data was provided and the measures used varied significantly, making it difficult to compare the results.

The instruments more commonly administered to assess PTSD were the Clinician-administered PTSD Scale (Karairmak & Güloğlu, 2014; Kira et al., 2009; Witvliet et al., 2004), the Impact of Event Scale (Bae et al., 2014; Friedberg et al., 2005), the Mississippi PTSD Scale (Nateghian et al., 2015; Witvliet et al., 2004) and the Distressing Events Questionnaire and Traumatic Life Events Questionnaire (Orcutt et al., 2005, 2008).

Five studies measured offense-specific forgiveness by using the EFI (Bae et al., 2014; Doran et al., 2012; Kaminer et al., 2001; Orcutt et al., 2005, 2008). All other studies assessed forgiveness at the dispositional level, out of which three studies administered the HFS (Karairmak & Güloğlu, 2014; Snyder & Heinze, 2005; Weinberg et al., 2014).

In line with the hypothesis, nine studies found a negative association between forgiveness and PTSD symptoms (Bae et al., 2014; Kaminer et al., 2001; Karairmak & Güloğlu, 2014; Nateghian et al., 2015; Orcutt et al., 2005, 2008; Snyder & Heinze, 2005; Weinberg et al., 2014; Witvliet et al., 2004). Similarly, one study found that inability to forgive was positively correlated with PTSD symptoms (Hamama-Raz et al., 2008). The findings of another study were more differentiated: Forgiveness of the dictator was positively associated with PTSD symptoms in Iraqi refugees, whereas forgiveness of the collaborators was negatively associated with PTSD symptoms. One study did not find an association between trauma and forgiveness, but a negative relationship between forgiveness and perceived stress (Friedberg et al., 2005). In contrast, one study could not establish a correlation between forgiveness and trauma exposure or traumatic stress (Doran et al., 2012). To enhance understanding of the importance of the context when investigating the relationship between forgiveness and PTSD, the studies included in the review have been

matched to groups according to the relationship between perpetrator and survivor of trauma and will now be described in more detail.

Trauma at intergroup level

Six studies involved patients exposed to trauma at an intergroup level in the context of terror attacks, political unrest or violence, out of which four measured forgiveness at dispositional level. Even though all but one establish a correlation between forgiveness attitudes and trauma symptoms, some conceptual differences become apparent when comparing the results.

In an Israeli study, participants were contacted by an organization providing assistance to survivors of terror attacks (Weinberg et al., 2014). The authors found a negative relationship between dispositional tendency to forgive and PTSD symptom severity. Another study from Israel assessed how exposure to political terror affected Palestinian and Jewish adolescents but showed a slightly different finding: Dispositional ability to forgive was not significantly associated with PTSD symptoms, but inability to forgive was highly correlated with PTSD among Palestinian and Jewish youths (Hamama-Raz et al., 2008).

In an American study, dispositional forgiveness was measured in students and staff members of a graduate school in New York City with the events of September 11th in mind (Friedberg et al., 2005). No relationship was found between trauma and forgiveness, but perceived stress was negatively associated with forgiveness. The results of a study exploring the views of Iraqi refugees in Michigan/U.S. toward the removed dictator Saddam Hussein and his collaborators were more differentiated: Unforgiveness of the collaborators predicted an increase in PTSD but unforgiveness of the dictator predicted a decrease in PTSD, especially in arousal and re-experiencing subscales (Kira et al., 2009).

Only two studies in this group used an offense-specific measure. A South African study explored trauma exposure, psychiatric status and forgiveness attitudes in survivors of

human rights abuses appearing before the Truth and Reconciliation Commission (Kaminer et al., 2001). PTSD disorders were significantly higher among participants with low forgiveness scores. A study conducted in Sierra Leone exploring the psychological impact of the civil war showed a different result: No significant correlation was found between overall forgiveness and traumatic stress (Doran et al., 2012).

Trauma in war veterans

Three studies investigate the association of PTSD symptoms and forgiveness in war veterans. All measured forgiveness at dispositional level and had similar findings: One study involving Iranian veterans of the Iran-Iraq 1980-1988 conflict found a negative association between unconditional forgiveness and PTSD symptom severity (Nateghian et al., 2015). Similarly, a study exploring the role of anger and negative affect in the relationship between forgiveness and PTSD among Turkish veterans found a negative correlation between PTSD and forgiveness (Kararırmak & Güloğlu, 2014). A U.S. study focussing on war veterans presenting to an outpatient PTSD clinic found that difficulty forgiving oneself and others was positively associated with PTSD symptoms and depression (Witvliet et al., 2004).

Trauma at interpersonal level

Four studies involved participants who developed PTSD symptoms after an interpersonal trauma in the context of a transgression by a specific (individual) perpetrator. Only one used a dispositional measure for forgiveness. It explored the role of forgiveness as a mediator of the relationship between PTSD and hostility in American college students with a history of childhood abuse (Snyder & Heinze, 2005). The results showed an inverse relationship of PTSD symptoms with forgiveness, which was higher for forgiveness of self and situation than for forgiveness of others.

Two other studies also involved American college students, but made use of an offense-specific forgiveness measure (Orcutt et al., 2005, 2008). Both found that forgiveness

was negatively correlated with PTSD symptoms. Interestingly, one study also showed that higher levels of perceived offense severity were strongly related to both increased PTSD symptoms and lower levels of forgiveness (Orcutt et al., 2008). Exploratory analysis revealed that the relationship of offense-specific forgiveness and PTSD symptoms differed by trauma type. Forgiveness and PTSD symptoms were negatively correlated for motor vehicle accidents, witnessing family violence, child physical abuse and child sexual abuse. Among participants reporting child sexual abuse as their most traumatic event, forgiveness and PTSD were positively (though not significantly) correlated.

A South Korean study investigated a different type of trauma: It explored the association of offense-specific forgiveness with PTSD in adults requiring medical treatment after a road traffic accident (Bae et al., 2014). PTSD symptoms were positively correlated with physical injury and perceived threat and negatively correlated with forgiveness.

Discussion

The aim of this review was to investigate the association of PTSD symptoms and forgiveness. The studies included differed in trauma type, setting, sample size, demographics, measurement instruments and variables under investigation which is why no meta-analysis could be undertaken. All but one study could establish a significant correlation between forgiveness and PTSD symptoms.

Sociodemographic variables like gender and age appear to play a part in understanding trauma and the role of forgiveness in the healing process. A meta-analysis exploring the role of gender in forgiveness levels found lower mean values for men than for women but also pointed out that other potential moderators (functional differences processing forgiveness, differences in dispositional qualities and situational cues) may be relevant (Miller, Worthington Jr, & McDaniel, 2008). The results regarding gender in the relationship of forgiveness and PTSD in this systematic review were contradictory: Some studies found a

lower ability to forgive among males (Hamama-Raz et al., 2008) and a higher openness to forgiveness among females (Kira et al., 2009), whereas another study found females to be less forgiving than males when examining the relationship with PTSD symptoms (Kaminer et al., 2001). In this study, public testifiers before the TRC who were unforgiving tended to be women. A possible explanation for these differences is different levels of trauma exposure in different groups, which Hamama-Raz et al., 2008 reported to be higher in males in their study.

Previous literature suggests higher forgiveness levels in older age groups (Cheng & Yim, 2008; Toussaint, Williams, Musick, & Everson, 2001). In this review, one study reported a statistically significant inverse relationship between overall forgiveness and trauma symptom severity in this group, with older women showing the strongest association across groups (Doran et al., 2012). This finding needs to be explored in further research, especially as the older age group is underrepresented in this systematic review.

Some studies in this review employ an offense-specific measure to assess forgiveness, whereas other studies use dispositional measures. It has been pointed out in the literature that dispositional and offense-specific forgiveness may be inherently different concepts (McCullough, Hoyt, & Rachal, 2000). It is possible that dispositional forgiveness has a protective effect in the development of trauma symptoms and increases resilience. Offense-specific forgiveness may however carry more weight in severe trauma, but how this affects the association with PTSD symptoms remains unclear.

In the relationship of forgiveness and PTSD, the type and severity of trauma may be playing an important and complicating part in the relationship of forgiveness and PTSD. When there is no personal connection between the survivor and the perpetrator, situational forgiveness can be more important than forgiveness of self and others (Weinberg et al., 2014). On a socio-political level, it appears that even though higher forgiveness levels are

associated with lower PTSD scores, participation in a TRC shows no correlation with psychiatric status, so forgiveness in a political setting may be qualitatively different from a clinical setting. Participants giving a public statement before the TRC tended to be either very forgiving or very unforgiving (Kaminer et al., 2001). It is possible that other justice-based factors like procedural and retributive justice are relevant.

Whereas forgiveness of the principal perpetrator on an intergroup level was associated with an increase of PTSD symptoms, forgiveness of the collaborators was correlated with less severe symptoms. A possible explanation is that collaborators were ordered by the principal perpetrator and considered only partially responsible. Levels and effects of forgiveness may differ depending on whether retributive justice has already been enacted and temporal longitudinal change in forgiveness attitudes can happen between pre and post retribution.

The studies involving war veterans show a clearer association between forgiveness and PTSD but other factors seem to be at play in the relationship – empathy, hope, anger, negative affect and religious coping to name a few (Karairmak & Güloğlu, 2014; Nateghian et al., 2015; Witvliet et al., 2004).

For survivors of childhood abuse, forgiving oneself and the situation seems to be more relevant in relation to PTSD symptoms than forgiving the perpetrator (Snyder & Heinze, 2005). In childhood abuse, forgiveness of the other may be difficult because the perpetrator has broken a profound and fundamental trust, and the results indicate that forgiveness of self and the situation is therefore more important.

In close relationships, forgiveness may have different outcomes than if no close relationship exists between the survivor and the offender, or if there is an adversarial relationship, as in intergroup conflicts which often involve multiple actors (e.g. oppression, genocide, torture). Interpersonal forgiveness and group forgiveness can be considered two different levels of personal and collective identity dynamics, so different levels of forgiveness

with different mental health outcomes may exist. The picture is complicated when taking the concept of acute and complex PTSD into account.

Table 3 shows an overview of the factors which may be relevant in the relationship of PTSD symptoms and forgiveness in man-made trauma and which should be investigated in future research. These could be explored in individual studies or reviews with meta-analyses with a narrower focus than this article. The list is by no means exhaustive, and there may be overlaps and interactions between these variables.

The wide range of measurement instruments used to assess forgiveness and their content illustrate that the forgiveness concept still lacks clarity. Forgiveness and unforgiveness may be independent processes, as shown for positive and negative affect systems (Gable, Reis, & Elliot, 2003). Lay conceptions of forgiveness may differ from researcher concepts, especially when making the distinction to forgetting, excusing and reconciling (Kearns & Fincham, 2004). Despite these conceptual problems, most studies point to an inverse relationship between forgiveness levels and the frequency of PTSD symptoms.

In terms of limitations of individual studies, most studies point out that they employed a cross-sectional design which investigated association but not causation. It is therefore not possible to conclude that increasing forgiveness reduces PTSD symptoms, even though this could be investigated further, and evidence for the positive effects of forgiveness interventions on physical and mental health already exists (Worthington, 2006). Participants were often recruited through convenience or quota sampling and snowball methods, and samples were often self-selective. A number of samples were recruited through university settings, which meant that most participants were young and educated. Only very few studies confirmed a diagnosis of PTSD before assessing PTSD symptoms. This systematic review only included studies in English language.

The use of random samples, prospective research designs, culturally sensitive instruments and a clearer conceptualisation of forgiveness will enhance future research. The validity of the different subscales (forgiving oneself, others and the situation; forgiving affect, behavior and cognition) should be investigated for different types of trauma and in different cultural settings. Future research might incorporate both offense-specific and dispositional measures. Longitudinal studies could help establish causation rather than correlation.

To provide culturally appropriate treatment in clinical practice, it will be essential to find out which concept is acceptable to the patient and what the patient believes to have a positive effect on the physical and mental well-being. Even though no conclusions regarding the effectiveness of interventions can be drawn based on this review, patients can be reassured that evidence exists for some patient groups which shows that a higher degree of forgiveness is associated with lower PTSD symptom scores after man-made trauma, should they wish to work towards forgiveness after a transgression.

References

- Bae, S.-M., Hyun, M.-H., & Ra, Y.-S. (2014). Mediating effects of forgiveness and emotion-focused coping on post-traumatic stress disorder symptoms caused by physical injury and perceived threat: Predictive model of PTSD. *Asia-Pacific Psychiatry*, 1–9. <https://doi.org/10.1111/appy.12142>
- Centre for Reviews and Dissemination. (2009). *Systematic Reviews: CRD's guidance for undertaking systematic reviews in health care* (3rd ed.). York: York Publishing Services Ltd. Retrieved from http://www.york.ac.uk/inst/crd/pdf/Systematic_Reviews.pdf
- Cheng, S.-T., & Yim, Y.-K. (2008). Age differences in forgiveness: The role of future time perspective. *Psychology and Aging*, 23(3), 676–680. <https://doi.org/10.1037/0882-7974.23.3.676>
- Couper, D. (1998). Forgiveness in the Community: Views from an Episcopal Priest and Former Chief of Police. In R. D. Enright & J. North (Eds.), *Exploring Forgiveness* (pp. 121–130). Madison, Wisconsin: The University of Wisconsin Press.
- Doran, J. M., Kalayjian, A., Toussaint, L., & DeMucci, J. (2012). The relationship between trauma and forgiveness in post-conflict Sierra Leone. *Psychological Trauma: Theory, Research, Practice, and Policy*, 4(6), 614–623. <https://doi.org/10.1037/a0025470>
- Enright, R. D. (2000). *Helping clients forgive: an empirical guide for resolving anger and restoring hope* (1st ed). Washington, DC: American Psychological Association.
- Enright, R. D., Freedman, S., & Rique, J. (1998). The psychology of interpersonal forgiveness. In R. D. Enright & J. North (Eds.), *Exploring Forgiveness* (pp. 46–62). Madison, Wisconsin: The University of Wisconsin Press.
- Enright, R. D., & North, J. (Eds.). (1998). *Exploring forgiveness*. Madison, WI: University of Wisconsin Press.

- Enright, R. D., & The Human Development Study Group. (1991). The moral development of forgiveness. In W. M. Kurtines & J. L. Gewirtz (Eds.), *Handbook of moral behavior and development* (pp. 123–152). Hillsdale, N.J: L. Erlbaum.
- Fow, N. R. (1996). The Phenomenology of Forgiveness and Reconciliation. *Journal of Phenomenological Psychology*, 27(2), 219–233.
- Friedberg, J. P., Adonis, M. N., Von Bergen, H. A., & Suchday, S. (2005). September 11th related stress and trauma in New Yorkers. *Stress and Health*, 21(1), 53–60.
<https://doi.org/10.1002/smi.1039>
- Gable, S. L., Reis, H. T., & Elliot, A. J. (2003). Evidence for bivariate systems: An empirical test of appetition and aversion across domains. *Journal of Research in Personality*, 37(5), 349–372. [https://doi.org/10.1016/S0092-6566\(02\)00580-9](https://doi.org/10.1016/S0092-6566(02)00580-9)
- Hamama-Raz, Y., Solomon, Z., Cohen, A., & Laufer, A. (2008). PTSD symptoms, forgiveness, and revenge among Israeli Palestinian and Jewish adolescents. *Journal of Traumatic Stress*, 21(6), 521–529. <https://doi.org/10.1002/jts.20376>
- Kaminer, D., Stein, D. J., Mbanga, I., & Zungu-Dirwayi, N. (2001). The Truth and Reconciliation Commission in South Africa: relation to psychiatric status and forgiveness among survivors of human rights abuses. *The British Journal of Psychiatry*, 178(4), 373–377. <http://dx.doi.org/10.1192/bjp.178.4.373>
- Karairmak, Ö., & Güloğlu, B. (2014). Forgiveness and PTSD among veterans: The mediating role of anger and negative affect. *Psychiatry Research*, 219(3), 536–542.
<https://doi.org/10.1016/j.psychres.2014.05.024>
- Kearns, J. N., & Fincham, F. D. (2004). A Prototype Analysis of Forgiveness. *Personality and Social Psychology Bulletin*, 30(7), 838–855.
<https://doi.org/10.1177/0146167204264237>

- Kira, I. A., Lewandowski, L. A., Templin, T. N., Ramaswamy, V., Ozkan, B., & Mohanesh, J. (2009). The effects of post-retribution inter-group forgiveness: The case of Iraqi refugees. *Peace and Conflict: Journal of Peace Psychology, 15*(4), 385–413.
<https://doi.org/10.1080/10781910903158669>
- McCullough, M. E., Hoyt, W. T., & Rachal, K. C. (2000). What We Know (and Need to Know) about Assessing Forgiveness Constructs. In M. E. McCullough, K. I. Pargament, & C. E. Thoresen (Eds.), *Forgiveness: theory, research, and practice* (pp. 65–88). New York, NY: Guilford Press.
- McCullough, M. E., Pargament, K. I., & Thoresen, C. E. (2000a). *Forgiveness: theory, research, and practice*. New York: Guilford Press.
- McCullough, M. E., Pargament, K. I., & Thoresen, C. E. (2000b). The Psychology of Forgiveness: History, Conceptual Issues, and Overview. In M. E. McCullough, K. I. Pargament, & C. E. Thoresen (Eds.), *Forgiveness: theory, research, and practice*. New York: Guilford Press.
- Miller, A. J., Worthington Jr, E. L., & McDaniel, M. A. (2008). Gender and forgiveness: A meta-analytic review and research agenda. *Journal of Social and Clinical Psychology, 27*(8), 843–876. <http://dx.doi.org/10.1521/jscp.2008.27.8.843>
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals of Internal Medicine, 151*(4), 264–269. <http://dx.doi.org/10.7326/0003-4819-151-4-200908180-00135>
- Nateghian, S., Dastgiri, S. S., & Mullet, E. (2015). Dispositional Forgiveness and PTSD Among Iranian Veterans of the 1980–1988 War. *Journal of Loss and Trauma, 20*(2), 123–130.

- Orcutt, H. K., Pickett, S. M., & Pope, E. B. (2005). Experiential avoidance and forgiveness as mediators in the relation between traumatic interpersonal events and posttraumatic stress disorder symptoms. *Journal of Social and Clinical Psychology, 24*(7), 1003–1029. <https://doi.org/10.1521/jscp.2005.24.7.1003>
- Orcutt, H. K., Pickett, S. M., & Pope, E. B. (2008). The Relationship of Offense-Specific Forgiveness to Posttraumatic Stress Disorder Symptoms in College Students. *Journal of Aggression, Maltreatment & Trauma, 16*(1), 72–91. <https://doi.org/10.1080/10926770801920776>
- Rye, M. S., Pargament, K. I., Amir Ali, M., Beck, G. L., Dorff, E. N., Hallisey, C., ... Williams, J. G. (2000). Religious Perspectives on Forgiveness. In M. E. McCullough, K. I. Pargament, & C. E. Thoresen (Eds.), *Forgiveness: theory, research, and practice*. New York: Guilford Press.
- Snyder, C. R., & Heinze, L. S. (2005). Forgiveness as a mediator of the relationship between PTSD and hostility in survivors of childhood abuse. *Cognition & Emotion, 19*(3), 413–431. <https://doi.org/10.1080/02699930441000175>
- Subkoviak, M. J., Enright, R. D., Wu, C.-R., Gassin, E. A., Freedman, S., Olson, L. M., & Sarinopoulos, I. (1995). Measuring interpersonal forgiveness in late adolescence and middle adulthood. *Journal of Adolescence, 18*(18), 641–655. <http://dx.doi.org/10.1006/jado.1995.1045>
- Thompson, L. Y., Snyder, C. R., Hoffman, L., Michael, S. T., Rasmussen, H. N., Billings, L. S., ... Roberts, D. E. (2005). Dispositional Forgiveness of Self, Others, and Situations. *Journal of Personality, 73*(2), 313–360. <https://doi.org/10.1111/j.1467-6494.2005.00311.x>

- Toussaint, L. L., Williams, D. R., Musick, M. A., & Everson, S. A. (2001). Forgiveness and health: Age differences in a US probability sample. *Journal of Adult Development*, 8(4), 249–257.
- Tutu, D. (1998). Without Forgiveness There is No Future. In R. D. Enright & J. North (Eds.), *Exploring Forgiveness* (pp. xiii–xiv). Madison, Wisconsin: The University of Wisconsin Press.
- Von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gøtzsche, P. C., & Vandenbroucke, J. P. (2007). The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *Preventive Medicine*, 45(4), 247–251.
- Wade, N. G., Hoyt, W. T., Kidwell, J. E. M., & Worthington, E. L. (2014). Efficacy of psychotherapeutic interventions to promote forgiveness: A meta-analysis. *Journal of Consulting and Clinical Psychology*, 82(1), 154–170.
<https://doi.org/10.1037/a0035268>
- Weinberg, M., Gil, S., & Gilbar, O. (2014). Forgiveness, Coping, and Terrorism: Do Tendency to Forgive and Coping Strategies Associate With the Level of Posttraumatic Symptoms of Injured Victims of Terror Attacks?: Forgiveness, Coping Strategies, and Terrorism. *Journal of Clinical Psychology*, 70(7), 693–703.
<https://doi.org/10.1002/jclp.22056>
- Witvliet, C. V. O., Phipps, K. A., Feldman, M. E., & Beckham, J. C. (2004). Posttraumatic mental and physical health correlates of forgiveness and religious coping in military veterans. *Journal of Traumatic Stress*, 17(3), 269–273.
<http://dx.doi.org/10.1023/B:JOTS.0000029270.47848.e5>
- Wong, W. C., Cheung, C. S., & Hart, G. J. (2008). Development of a quality assessment tool for systematic reviews of observational studies (QATSO) of HIV prevalence in men

having sex with men and associated risk behaviours. *Emerging Themes in Epidemiology*, 5(1), 23. <https://doi.org/10.1186/1742-7622-5-23>

Worthington, E. L. (2006). *Forgiveness and Reconciliation: Theory and Application*. New York and London: Taylor & Francis.

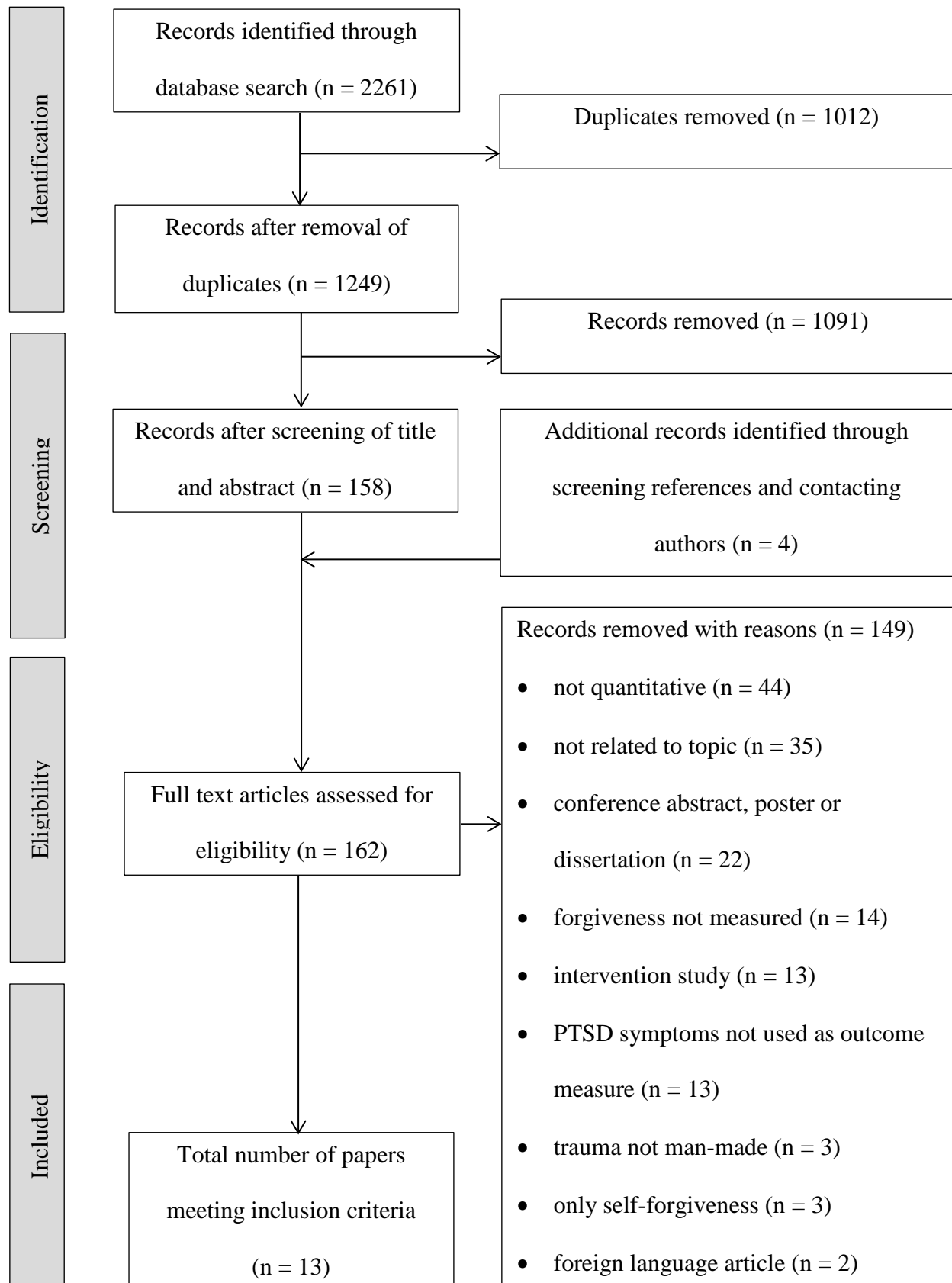
Figure 1: Prisma 2009 Flow Diagram (Moher, Liberati, Tetzlaff, & Altman, 2009)

Table 1: Overview of studies

Study	Country	Type of patient group
Bae et al., 2014	South Korea	Medical inpatients and outpatients recovering from automobile accidents
Doran et al., 2012	Sierra Leone	Participants in trauma outreach programme after the civil war
Friedberg et al., 2005	U.S.A.	New York City residents one year after the September 11 th terrorist attack
Hamama-Raz et al., 2008	Israel	Palestinian and Jewish adolescents
Kaminer et al., 2001	South Africa	Survivors of human rights abuses providing public, closed or no testimony to the TRC
Karairmak & Güloğlu, 2014	Turkey	Veterans injured in terrorist attacks during military service
Kira et al., 2009	U.S.A.	Iraqi refugees
Nateghian et al., 2015	Iran	Veterans exposed to combat in the Iran-Iraq 1980-1988 conflict
Orcutt et al., 2005	U.S.A.	College students who experienced interpersonal trauma
Orcutt et al., 2008	U.S.A.	College students who experienced interpersonal trauma
Snyder & Heinze, 2005	U.S.A.	College students with a history of childhood abuse
Weinberg et al., 2014	Israel	Injured survivors of terror attacks
Witvliet et al., 2004	U.S.A.	Military veterans presenting to a PTSD outpatient clinic

Table 2: Results

Study	PTSD instrument	Forgiveness instrument	Correlation PTSD and forgiveness overall	Correlation PTSD and forgiveness subscales
Bae et al., 2014	IES-R (Korean Version)	EFI (Korean version)	-.55 (p<.001)	Not provided
Doran et al., 2012	HTQ	EFI	<u>Traumatic exposure</u> .10 (n.s.) <u>Traumatic stress</u> -.09 (n.s.)	<u>Traumatic exposure:</u> Affect: .09 (n.s.) Behaviour: .08 (n.s.) Cognition: .08 (n.s.) <u>Traumatic stress:</u> Affect: .05 (n.s.) Behaviour: - .16 (n.s.) Cognition: - .11(n.s.)
Friedberg et al., 2005	IES PSS	Six question scale designed for this study	<u>IES</u> -0.13 (n.s.) <u>PSS</u> -0.28 (p<.05)	Not provided
Hamama-Raz et al., 2008	CPTS-RI	MFS	Not provided	<u>Inability to forgive</u> Palestinian .29 (p<.001) Jewish .12 (p<.01) <u>Ability to forgive</u> Palestinian: .16 (n.s.)

				Jewish: $-.02$ (n.s.)
				<u>Revenge</u>
				Palestinian: $.15$ (n.s.)
				Jewish: $.04$ (n.s.)
Kaminer et al., 2001	CIDI PTSD module	EFI	Data not provided, but correlation found ($p=0.03$)	Not provided
Karairmak & Güloğlu, 2014	TSSC CAPS	HFS	<u>TSSC PTSD</u> $-.28$ ($p<.01$) <u>TSSC Dep + PTSD</u> $-.27$ ($p<.01$)	Not provided
Kira et al., 2009	Frequency scale of CAPS-2	FRFS (based on MFS)	Not provided	<u>Unforgiveness</u> <u>collaborators:</u> $B = 3.67$ ($p<.001$); SE $=.76$; $\beta = .22$; $R^2 = .11$ <u>Forgiveness collaborators:</u> $B = -1.33$ ($p=.06-.10$); SE $=.79$; $\beta = -.08$; $R^2 = .06$ <u>Forgiveness dictator:</u> $B = -1.59$ ($p<.05$); SE $=.77$; $\beta = -.10$; $R^2 = .07$
Nateghian et al., 2015	Mississippi PTSD Scale (Persian	FQ (Persian Version)	Not provided	<u>Resentment</u> $.53$ ($p<.0013$) <u>Sensitivity</u> $-.55$ ($p<.0013$) <u>Forgiveness</u> $-.45$

Version)			(p<.0013)	
Orcutt et al., 2005	TLEQ	EFI	-.25 (p<.05)	<u>Affect</u> -.25 (p<.05)
	DEQ			<u>Behaviour</u> -.24 (p<.05)
				<u>Cognition</u> -.25 (p<.05)
Orcutt et al., 2008	TLEQ	EFI	-.22 (p<.05)	Not provided
	DEQ			
Snyder & Heinze, 2005	MISS	HFS	<u>Overall</u> -.67 (p<.001)	<u>Self</u> -.74 (p<.001)
				<u>Others</u> -.25 (p<.05)
				<u>Situations</u> -.62 (p<.001)
Weinberg et al., 2014	PSS-SR	HFS	<u>Overall</u> -.67 (p<.01)	<u>Self</u> -.48 (p<.01)
				<u>Others</u> -.55 (p<.01)
				<u>Situations</u> -.67 (p<.01)
Witvliet et al., 2004	CAPS	FOO+FOS	Not provided	<u>Unforgiving of self</u>
	DTS			DTS .14 (n.s.)
	Mississippi			MISS .19 (p<.01)
	PTSD Scale			<u>Unforgiving of others</u>
				DTS .26 (p<.01)
			MISS .28 (p<.001)	

n.s. = not significant.

Table 3: Factors likely to be relevant in the relationship of PTSD symptoms and forgiveness

Demographics	Relationship between survivor and perpetrator	Trauma-related factors	Temporal factors	Forgiveness-related factors	Justice-based factors
Role of gender	Level of proximity	Minor vs. severe	Past vs. ongoing	Role of target: Self, situation and others	Attribution of responsibility
Role of age	Ongoing relationship with perpetrator vs. permanent separation	Acute vs. complex	trauma	Role of affect, behavior and cognition	Role of shame and guilt
Role of ethnic or religious background	One actor vs. multiple actors	Single vs. multiple violations	Length of time since offense	Ability to forgive vs. inability to forgive	Role of retribution
Role of education	Perpetrator known vs. not known to survivor	Direct vs. indirect exposure	Likelihood of future trauma	Offense-specific vs. dispositional	Role of procedural and restorative justice
Role of socio-economic status		Deliberate vs. accidental		Decisional vs. emotional forgiveness	Role of apologies
		Personal vs. collective identity traumas		Motive for forgiving (religious, financial, social, political etc.)	Role of financial aspects in legal proceedings
				Level reached within forgiveness process	