

Being Fit and Feeling Pleased:

The Mediational Role Of Physical Self-Efficacy In UAE Women Residents

Abstract

Objective: High prevalence of mood disorders among women in the United Arab Emirates might be derived from low levels of physical activity. The present study aimed to explore the underlying mechanism through which physical activity affects mood by examining the possible mediating role of physical self-efficacy. Design: A cross-sectional investigation was performed on a population opportunistically sampled among women in the UAE (n=160). Main Outcome Measures: The analysis was based on the Baron and Kenny (1986) four steps mediation model which allowed the identification of the mediation effect through a series of simple and multiple linear regression analyses. Results: The results confirmed that physical self-efficacy mediates the relationship between physical activity and mood but only partially. Conclusions: In consequence, exercise-based interventions designed to improve mood should also include physical self-efficacy enhancement, as this may constitute a complementary mechanism of mood regulation. Implications for women in the UAE are discussed in light of such results.

Key words: mood, physical self-efficacy, physical activity, women, mediation model, UAE

1. Introduction

1.1. Mental disorders in the context of the United Arab Emirates

Mental disorders are predicted to be the first cause of death and disability by the year 2030 worldwide (Mathers & Loncar, 2006). Globally, more than 350 million people of all ages suffer of depression with a higher prevalence among women (WHO, 2012). In the Middle East, the disproportion between men and women is even larger (Eloul, Ambusaidi & Al-Adawi, 2009). In the United Arab Emirates (UAE) the occurrence of mental health problems is reported at an alarming level, with depressive symptoms touching nearly a quarter of college students (Ahmadi, Kamel, Ahmed, Bayoumi & Moneenum, 2008). UAE is a unique example of a Middle Eastern country, where local Emiratis and foreign expatriates coexist. Such coexistence creates a sociocultural combination of ultramodern Western characteristics and traditional Eastern cultural traits, as people are exposed to large amount of different values, cultural habits, religions and behavioural norms. The exposure to cultural diversity may bring as much benefits as drawbacks to individuals (Jensen, 2003) frequently putting in jeopardy their mood stability (Berry, Phinney, Sam, & Vedder, 2006).

1.2. Women and mood disorders in the UAE

Women in the UAE tend to experience stressors related to the unique socio-economic environment they live in. On one hand, local Emirati women are being compelled to conform to a slim body image derived from Western patterns, which is difficult to follow (Musaiger & Al-Mannai, 2013). At the same time they adopt unhealthy eating habits and limit their energy expenses to the minimum, a phenomenon resulting in high prevalence of eating disorders and low mood (Trainer, 2010). Indeed, an impaired body image can induce a negative body self-

perception which is correlated with depression (Green, Broom & Mirabella, 2004). On the other hand women expatriates in the UAE may be subject to a high risk of experiencing mood disturbances because of being exposed to loosened social support systems, which may be insufficient for tackling loneliness and dealing with life problems in their new environment (Hack-Polay, 2012). Hence, both Emirati and expatriate women living in the United Arab Emirates are at an increased risk of experiencing anxiety and mood disorders (Berry et al., 2006).

1.3. Nutrition, lifestyle and physical activity in the UAE

In the seventies of the last century, the UAE population has been characterized by high levels of under-nutrition (Ng, Zaghoul, Ali, Harrison, Yeatts, Sadig & Popkin, 2011). However, with a rapid transformation towards an over-nutritive and sedentary lifestyle, nearly half of the population is currently overweighted or obese (WHO, 2010). A factor adding to such lifestyle is the fact that exercising is quite restricted due to a generally hot climate, inducing low energy expenditure, with the practice of physical activity being significantly lower in the UAE than in other developed countries (Henry, Lightowler & Al-Hourani, 2004) leading to a high incidence of obesity (McIlvenny et al., 2000). Therefore, inhabitants of UAE are considerably at a high risk of experiencing health problems related to the lack of physical activity and an inappropriate diet (Carter, Saadi, Reed, & Dunn, 2004).

1.4. Physical activity as a mood enhancement factor

As depression and anxiety are linked to the lack of exercise (Brown, Ford, Burton, Marshall & Dobson, 2005), one recognized means of mood enhancement is physical activity (Bartholomew, Morrison, & Ciccolo, 2005; Blumenthal et al., 2007; Faulkner & Biddle, 2004). Little is known however about the mechanisms of how physical activity causes mood change and

mental well-being improvement (Landers & Arent, 2001; Lawlor & Hopker, 2001). Subsequently, the benefits of physical activity are still largely disregarded by mental health specialists (Calaghan, 2004). The identification of such mechanisms is not an easy task, with several mediators commonly proposed, such as environmental factors, group dynamics, self-esteem and self-efficacy (Guszkowska, 2004; Martin Ginis, Burke & Gauvin, 2007).

1.5. The role of physical self-efficacy in mood enhancement

Physical self-efficacy (PSE) is a domain of general self-efficacy, which constitutes a central idea of the social cognitive theory (Bandura, 1989). PSE is defined as the scope of beliefs about one's own capabilities in physical performance (Ormrod, 2006), which can be enhanced through cognitive interventions (Dishman, et al., 2004). It consists of two domains, namely self-regulation and in-task self-efficacy (Ormrod, 2006). Self-regulation is related to the pleasure achieved by the engagement in exercising, while in-task self-efficacy is linked to the mastery of complicated tasks, which in turn stimulates self-worth and mood enhancement (Bodin & Martinsen, 2004). Hence, only particular types of workout, such as structured aerobic or cardiovascular training seem to improve PSE, as opposed to unstructured physical activity at low pace, and in return cause mood enhancement (Fillipas, Oldmeadow, Bailey & Cherry, 2006).

PSE has been shown to have a reciprocal relationship with physical activity, as positive personal beliefs about the physical ability to perform increase physical activity, which in turn improves physical self-efficacy (Strauss, Rodzilsky, Burack & Colin, 2001). Furthermore, PSE has an influence on depressive symptoms through altering the perceived exercise competence (Blumenthal & Ong, 2009; Ryan, 2008). Albeit the recommendations for its utility in the clinical practice as a significant direct mood stimulator (McAuley et al., 2006), the independent

contribution of physical self-efficacy to mood enhancement has been barely explored (Ryan, 2008).

1.6. The present study

The present study aims to explore the underlying mechanism through which physical activity is associated with mood in women living in the UAE. The selection of such population was considered as particularly relevant because mood disturbances are twice more prevalent among females and the level of depression is increasing in the Middle East region, particularly in the UAE (Abou- Saleh, Ghubash & Daradkeh, 2001). It could be suggested that the high prevalence of mood disorders among women in UAE is partly due to the low level of physical activity for the abovementioned reasons, which in turn is related to the low level of physical self-efficacy (Carter et al., 2004; Henry et al., 2004). Specifically, it is hypothesized that higher levels of physical activity predict higher levels of mood, and the relationship is mediated by physical self-efficacy (Figure 1). [Figure 1 near here]

2. Methods

2.1. Participants

160 women were recruited from gym centers in Dubai and Sharjah, UAE displaying varying levels of physical activity. The participants were aged from 18 to 60 years, from various nationalities grouped based on the region of origin, since more detailed stratification has not been considered relevant to the main objective of this study. The research targeted to mirror the actual demographic structure of the women population of the UAE (Tadmouri, Al-Marzouqi, Rizvi & Al-Gazali, 2003).

2.2. Procedure

After receiving approval from the Ethics Committee of a British University Offshore Campus, Fitness clubs across Dubai and Sharjah, UAE, were contacted and approached for permission to recruit participants through opportunistic sampling, during the period March-June 2014. Agreeing participants were informed about the purpose of the study, signed an informed consent and filled a booklet with questions on their demographic data and three instruments [Godin's Leisure-Time Exercise Questionnaire (GLTEQ; Godin & Shephard, 1985); Physical Self-Efficacy Scale (PSES; Ryckman, Robins, Thorton & Cantell, 1982) and Profile of Mood States (POMS; McNair, Lorr & Dropplemann, 1971)]. The process took about half an hour and after that, participants were thanked and debriefed.

2.3. Measures and Variables

2.3.1. Sociodemographic characteristics

Data on age, nationality, and residence duration in the UAE were collected through a socio-demographic questionnaire.

2.3.2. Independent Variable: Physical activity

Godin's Leisure-Time Exercise Questionnaire (GLTEQ) (Godin & Shephard, 1985) was used to measure the self-reported weekly physical activity (PA). The final score was computed by adding weekly frequencies of strenuous, moderate and mild activities multiplied by factors of nine, five, and three, respectively.. The sample distribution of PA levels was based on the Godin (2011) guidelines where a score of 24 or more indicates a physically active person, 14-23 points a moderately active and less than 14 an insufficiently active person.

2.3.3. Mediator: Physical Self-Efficacy

The Physical Self-Efficacy Scale (PSES) (Ryckman et al., 1982) was used to measure perceived physical self-efficacy. The instrument consists of 22 items, scored on a 6-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree), resulting in a possible score range between 22 to 132, with low scores suggesting low and high scores high level of physical self-efficacy, respectively. Grouped frequencies of low, medium and high self-efficacy were calculated for our sample in order to provide information on the sample distribution of self-efficacy. The 22 items represent 2 subscales: perceived physical ability (PPA, 10 items) and physical self-presentation confidence (PSPC, 12 items). The Cronbach alpha for the PPA is .76, for PSPC is .42, whilst for the total PSES has a value of .72 suggesting good overall reliability.

2.3.4. Dependent Variable: Mood

The Profile of Mood States (POMS) by Mc Nair et al. (1971) was used to measure mood. This is a self-reporting measure which allows quick assessment of fluctuating feelings and enduring affecting states. Distinct moods are grouped in separate factors, namely vigor, tension, depression, anger, fatigue and confusion. The participants were asked to rank 65 adjectives describing their mood on a scale from 0 (not at all) to 4 (extremely). The total score is calculated by subtracting the scores of the vigor scale from the sum of raw scores of all other factors, indicated the Total Mood Disturbance (TMD) level and ranges from -24 to 177 with no established cut-off point. In order to provide information on the sample distribution of mood levels, grouped frequencies in three categories of low, medium and high mood disturbance based on the participants' scores were calculated. Higher scores are related to a depressive mood and lower scores indicate a more stable mood. The scale has high internal consistency ($\alpha = .91$).

POMS is being regarded as one of the most popular instruments used in studies on relationships between exercising and mood (Buckworth, Dishman, O'Connor & Tomporowski, 2013).

2.4. Data Analyses

The data analyses were carried out using the SPSS Statistics v.21.

Mediation model analysis

This study used the mediation model as proposed by Baron and Kenny (1986) to assess whether physical self-efficacy acts as a mediator between physical activity and mood. The model requires that three assumptions are met (Judd & Kenny, 2010): the existence of i) a significant correlation among all three variables ii) an association between physical activity as independent variable and mood as the dependent variable and iii) an association between physical activity as independent variable and physical self-efficacy as the dependent variable.

After confirming the existence of correlations, the mediation model (Figure 1), consisted of a four-step analysis with three simple regressions followed by one multiple regression based on four equations. The first step based on the equation $Y = b_{01} + cX + e_1$ assessed the direct association between physical activity (X) and mood (Y) (path c), ignoring physical self-efficacy. The second step based on the equation $M = b_{02} + aX + e_2$ examined the association of physical activity (X) and physical self-efficacy (M) (path a). The third step based on the equation $Y = B_0 + B_1 M + e_3$ examined whether physical self-efficacy (M) had an association with mood (Y) (path b) and the final step based on the equation $Y = b_{03} + bM + c'X + e_4$ examined whether the direct association between physical activity (X) and mood (Y) (path c) became non-significant or less significant when controlling for the influence of physical self-efficacy (M) as the mediator.

3. Results

3.1. Characteristics of the sample

Half of the participants (56.3%) were between 26 and 40 years old and 60.1 percent were residing in the UAE for no longer than nine years. Participants were of diverse origins, in their majority from the MENA region or Asians. The physical activity levels ranged from 0 – 117 with the majority of the participants displaying an active physical activity profile. The mood levels ranged from -24 to 125, with the majority of participants having low levels of mood disturbance and the physical self-efficacy levels ranged from 47 to 127 indicating that the majority displayed moderate levels of self-efficacy. Further details can be seen at Table 1. [Table 1 near here]

3.2. Pearson correlations between levels of physical activity, physical self-efficacy and mood

Pearson correlation analyses revealed that all variables showed significant correlations pairwise. As it can be observed at Table 2, physical activity showed a weak positive relationship with physical self-efficacy and a moderate negative relationship with mood, whilst physical self-efficacy showed a negative moderate correlation with mood. [Table 2 near here]

3.3. Physical self-efficacy as a mediator between physical activity and mood.

As it can be observed at Figure 2, in the first step of the mediation model the regression analysis of the physical activity on mood, ignoring physical efficacy, was significant ($\beta = -.262$, $t(146) = -3.267$, $p = .001$), confirming the existence of a direct association (path c). The second step showed that the regression of physical activity on physical self-efficacy was also significant ($\beta = .182$, $t(154) = 2.278$, $p < .05$). This analysis confirmed the existence of path a. The third

step showed that the mediator (physical-self efficacy) was significantly predicting mood ($\beta = -.400$, $t(145) = -5.257$, $p < .001$), confirming the existence of path b.

In the fourth step, as both paths a and b were significant, which according to Baron and Kenny (1986) fulfills the conditions of mediation analysis, a multiple regression of physical activity on mood when controlling for physical self-efficacy as the mediator was performed. The results showed a decrease of standardized beta coefficients and of strength of the association between physical activity and mood ($\beta = -.192$, $t(143) = 2.528$, $p = .013$). Therefore the analysis confirmed a partial mediation (path c'), since the predictive value of physical activity was decreased slightly, still not to the point of becoming non-significant, therefore disqualifying a full mediation. [Figure 2 near here]

4. Discussion

Our study confirms the association between physical activity and mood, showcasing at the same time the mediating role of physical self-efficacy. Such results have important implications for the clinical practice as they indicate that physical activity and physical self-efficacy are crucial elements when designing interventions destined to women at risk of mood disorders. Importantly, this study explores this relationship based on a sample of women residing in the unique context of the United Arab Emirates. Notably, our results shed light to a potential underlying mechanism of the association between physical activity and mood, indicating the mediational influence, although partial, of self-efficacy.

4.1. Physical Activity, Physical Self-Efficacy and Mood

The association between physical activity and mood suggested by our results adds to the existing literature that considers physical inactivity as a risk factor for mood disturbance (Penedo

& Dahn, 2005; Warburton, Katzmarzyk, Rhodes & Shephard, 2007). Thus, people aiming to diminish such risk should employ their time in exercising.

Moreover, we found that mood is associated with the levels of physical self-efficacy, in line with Blumenthal et al. (2007). Indeed, the importance of the relationship between physical self-efficacy and psychological well-being was highlighted early by Bandura (1991) who stated that physical self-efficacy has a power to predict the effects of behavior and emotive states. Additionally, the level of physical self-efficacy may constitute a complementary mechanism of mood regulation and thus may be a significant contributor to general and mental well-being (McAuley et al., 2006).

4.2. The mediational role of physical self-efficacy

Taking the relationship between physical activity and mood a step further, we hypothesized that physical self-efficacy could perhaps explain the underlying mechanism of how exercising is related to mood enhancement. In this vein, our findings evidenced that the level of physical self-efficacy actually mediates the relationship between physical activity and mood. Consequently, stimulating interventions aiming at increasing physical self-efficacy may result in a stronger association between physical activity and mood. Our study demonstrates that strong beliefs over one's ability in physical performance are necessary to provoke changes in mood through physical activity. Yet, the mediation was shown to be partial, suggesting that the mood changes related to physical activity are probably not only due to that dimension of self-efficacy but other dimensions or other factors might also play a role (Ryan, 2008).

4.3. Practical Implications

The results of the present study further encourage targeting physical self-efficacy in interventions designed to enhance mood through physical activity among women. The self-efficacy concept suggests that people are more prompt to exercise if they are more confident about their performance. Consequently, people with higher physical self-efficacy performing structured exercise would attempt a more tough variation of a particular task and implement it for a longer period, possibly leading to a better mood enhancement effect. Furthermore, it is suggested that if a low level of physical self-efficacy is identified, this should be boosted through the corresponding interventions before women engage themselves on any physical activity (Annesi, 2011;), in order to achieve an effective impact on mood (Dishman et al., 2004).

Health promotion programs should therefore implement interventions that stimulate physical self-efficacy, since individuals who would gain an increased level of physical self-efficacy would not only perform higher levels of physical activity but also benefit from its mood enhancing effect (Abu-Aladeeb, & Qazaq, 2000; Carter et al., 2004; Musaiger, 2000). Such interventions are particularly relevant in the UAE, where the population is especially prompt to mood instability due to its unusual demographic structure and fast cultural changes, as well as the fact that physical activity is limited and low value is given to its practice (Berger & Peerson, 2009).

4.4. Limitations and Suggestions for Further Research

Some limitations need to be taken into account when interpreting our results, inviting for further research. First, our participants were from diverse origins with prevalence of Arabs, Asians and Europeans, and a potential influence of their cultural backgrounds on our results cannot be excluded. Second, the use of the Baron and Kenny (1986) mediation model has itself

some limitations such as a low statistical power and inability to conclude on true causal mediation. Adding upon this, the cross-sectional nature of our study has made impossible to establish causal relationships and check for long-term associations. Further research should replicate our results using longitudinal designs (MacKinnon, Fairchild, & Fritz, 2007). Third, the use of self-reported measures might have generated biased results because of participants reporting wishful or distorted answers. For instance, people with mood disturbance might have a damaged perception of self-efficacy (Schwarzer, 2014). Fourth, our analysis revealed a partial mediation only; therefore additional explorations of other types of self-efficacy such as social or academic self-efficacy (Ryan, 2008) or other variables such as environmental factors and group dynamics (Martin Ginis, et al., 2007) could add robustness to the model. Last, a replication with a male population would provide valuable information on how this model can be consistently applicable across sexes. In general, men tend to have higher levels of physical self-efficacy, which increases their physical activity (Spence et al., 2010). On the other hand, associations between physical self-efficacy and physical activity show a much higher significance for women. Taking also into account the sex differences in prevalence of mood disorders and in the use of coping strategies (Nolen-Hoeksema, 2001) the replication of our study would provide valuable results for the clinical practice.

4.5. Conclusion

In conclusion, it is suggested that physical activity may result in better mood when enhancing physical self-efficacy. Therefore, our results propose to address physical self-efficacy when designing mood enhancing interventions that include physical activity, in order to promote mental health among populations at high risk of mood disorders, such as the one of the United Arab Emirates.

5. References

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Table 1. Sociodemographic characteristics of the sample

| Variable | | Frequency (%) |
|-------------------------------------|-----------------------|---------------|
| Age Groups (N=158) | <25 | 45 (28.5%) |
| | 26-40 | 89 (56.3%) |
| | 41-55 | 24 (15.2%) |
| Region of Origin (N=155) | MENA | 63 (40.6%) |
| | Asian | 32 (20.6%) |
| | European | 48 (31%) |
| | North American | 6 (3.9%) |
| | South American | 2 (1.3%) |
| | Australian | 3 (1.9%) |
| | African | 1 (0.6%) |
| Residence in UAE (N=158) | Less than 9 years | 95 (60.1%) |
| | 10-30 years | 45 (28.5%) |
| | All my life | 18 (11.4%) |
| Physical Activity (GLES) (N=159) | Insufficiently active | 17 (10.7%) |
| | Moderately active | 30 (18.9%) |
| | Active | 112 (70.4%) |
| Mood Disturbance (N=147) | Low | 121 (82.3%) |
| | Medium | 25 (17.0%) |
| | High | 1 (0.7%) |
| Physical Self-Efficacy (N=155) | Low | 2 (1.3%) |
| | Medium | 113 (72.9%) |
| | High | 40 (25.8%) |

Table 2. Means, Standard Deviations and Correlations of Physical Activity, Physical Self-Efficacy and Mood

| Variables (N=147) | M (SD) | GLTEQ | PSES | POMS |
|-------------------------------|---------------|-------|-------|---------|
| Physical Activity (GLTEQ) | 37.25 (23.10) | - | .181* | -.261** |
| Physical Self Efficacy (PSES) | 86.86 (13.55) | | - | -.400** |
| Mood (POMS) | 21.63 (29.32) | | | - |

*p<0.05; ** p<0.01

GLTEQ: Godin's Leisure-Time Exercise Questionnaire; PSES: Physical Self-Efficacy Scale; POMS: Profile of Mood States

Figure Captions

Figure 1: Mediational Model of Physical Activity and Mood

Figure 2: Physical Self-Efficacy as a Mediator Between Physical Activity and Mood