



## Research report

## Psychological distress as a mediator in the relationships between biopsychosocial factors and disordered eating among Malaysian university students

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## ABSTRACT

The mechanism linking biopsychosocial factors to disordered eating among university students is not well understood especially among Malaysians. This study aimed to examine the mediating role of psychological distress in the relationships between biopsychosocial factors and disordered eating among Malaysian university students. A self-administered questionnaire measured self-esteem, body image, social pressures to be thin, weight-related teasing, psychological distress, and disordered eating in 584 university students (59.4% females and 40.6% males). Body weight and height were measured. Structural equation modeling analysis revealed that the partial mediation model provided good fit to the data. Specifically, the relationships between self-esteem and weight-related teasing with disordered eating were mediated by psychological distress. In contrast, only direct relationships between body weight status, body image, and social pressures to be thin with disordered eating were found and were not mediated by psychological distress. Furthermore, multigroup analyses indicated that the model was equivalent for both genders but not for ethnic groups. There was a negative relationship between body weight status and psychological distress for Chinese students, whereas this was not the case among Malay students. Intervention and prevention programs on psychological distress may be beneficial in reducing disordered eating among Malaysian university students.

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## Introduction

Disordered eating can be defined as a constellation of unhealthy eating and weight related behaviors and attitudes that do not meet the criteria for an eating disorder, but that have medical and/or psychological consequences (Ackard, 2004). University students are at risk of unhealthy eating behaviors when the pressures of independence and hurried lifestyles in university may impact on their eating behaviors (Barker & Galambos, 2007). A majority of the studies on disordered eating were conducted within Western cultures. However, recent studies have begun to compare disordered eating between Western and non-Western societies (Madanat, Hawks, & Novilla, 2006; Mond, Chen, & Kumar, 2010) and the results of these studies have been mixed. For example, a recent study comparing disordered eating among Singaporean and Australian female university students revealed that no differences were found in these two groups (Mond et al., 2010). Another study showed that Filipino university students were more likely than American university students to have disordered eating (Madanat et al., 2006). Thus, disordered eating is no longer a Western problem but a problem that is already present among university stu-

dents in non-Western societies which is fast spreading due to increasing globalization and exposure to Western culture and media on the ideal body shape (Makino, Tsuboi, & Dennerstein, 2004). Malaysia does not escape from this phenomenon.

The development of disordered eating is not associated with any one risk factor, rather it is likely to be multifactorial in nature that includes biological, psychological, and sociocultural factors (Ball & Lee, 2002). Realizing the close association between disordered eating and a wide range of psychopathological and psychosocial concerns, Herpertz-Dahlmann et al. (2008) recommended that mental problems should be explored in university students who engaged in disordered eating. Psychological distress such as depression, anxiety, anger, stress, sadness and other moods have been known to have a negative impact on eating behaviors (Vince & Walker, 2008). Overlooking the psychological distress problems may neglect investigation into its vital role in the development of disordered eating among university students.

Previous studies also found that disordered eating and psychological distress share some similar risk factors. A number of studies have found that biological factors such as body weight status, psychological factors such as low self-esteem and body image, and sociocultural factors such as social pressures to be thin and weight-related teasing increased both the risk of disordered eating (Kugu, Akyuz, Dogan, Ersan, & Izgic, 2006; Striegel-Moore & Bulik, 2007) and psychological distress (Ozen, Ercan, Irgil, & Sigirli, 2010;

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Shortt & Spence, 2006). However, these risk factors are often studied individually with disordered eating. Little is known about the relative importance of the various risk factors and how they might interact. On the other hand, despite the abundance of previous studies examining the relationship between psychological distress and disordered eating and their contributing factors, very few examined its mediating effect in the development of disordered eating. Consequently, a thorough understanding of the role of psychological distress is crucial in determining the development of disordered eating.

Stice (1994) proposed a dual pathway model of bulimic behavior among female adolescents in which body dissatisfaction and bulimic behavior are linked through dietary restraint and negative affect as mediators. The first pathway is the pathway of dietary restraint where body dissatisfaction results in dietary restraint which in turn leads to binge eating or overeating. The second pathway is the pathway of negative affect where body dissatisfaction results in negative affect which in turn leads to bulimic behavior. Several longitudinal (Blodgett Salafia & Gondoli, 2011; Spoor et al., 2006; Stice, 2001) and cross-sectional studies (Shepherd & Ricciardelli, 1998) in female university students and adolescents from Western countries supported the second pathway. However, the application of this pathway in an Asian culture is yet to be determined. Studies showed that the tested models accounted for less than 30% of the variance in the development of disordered eating (Ricciardelli & McCabe, 2001; Stice, 2001), suggesting that there are additional factors that may be associated with the development of disordered eating. Additionally, this model is predominantly focused and tested on females but not males.

Gender differences were observed in the relationships between negative body image, psychological distress and disordered eating. For instance, Liao et al. (2010) found that although correlations between body dissatisfaction, anxiety, depression, and disordered eating were observed, the most significant correlate of disordered eating for female students was body shape concerns, whereas, anxiety and concerns with muscle size and shape were the most significant correlates of disordered eating for male students. Similarly, several studies showed that BMI and depression were associated but this association was moderated by gender (Dragan & Akhtar-Danesh, 2007; Park, 2009). Obesity was associated with past-month depression in females but not in males (Onyike, Crum, Lee, Lyketsos, & Eaton, 2003). A recent prospective study found that BMI significantly predicted disordered eating in both genders, but more prominently in female than in male adolescents (Ferreiro, Seoane, & Senra, 2011). Likewise, the relationship between self-esteem and depression was also significant for both genders but this association was stronger in female than in male adolescents (Ferreiro et al., 2011). In terms of gender differences in the relation between pressures to be thin and disordered eating, gender did not emerge as a moderator in this relationship (Shomaker & Furman, 2009). A Canadian population-based study found that pressures to be thin was directly associated with depression in females but not in males (Chaiton et al., 2009). However, gender differences in these relationships were unknown among Malaysian university students.

Published studies in the local context focusing on problems of psychological distress and disordered eating are limited and their contributing factors still remain unclear. A few studies have focused on the mediating role of psychological distress in the relationships between biopsychosocial factors and disordered eating. Nonetheless, support for these relations is limited at present especially among Asians as most of the studies were conducted in Western countries given a different cultural background. Testing the mediation model in an Asian culture would provide valuable knowledge and in-depth information on disordered eating among Asians. Therefore, the current study attempted to extend Stice's

(1994) research by developing a comprehensive model as a potential framework in explaining and understanding the development of disordered eating among Malaysian university students. First, we hypothesized that psychological distress was a possible mediator in the relationships between biopsychosocial factors and disordered eating among university students. Second, we hypothesized that gender and ethnicity would affect the strength of the relationships between biopsychosocial factors and psychological distress and disordered eating, thus moderating the relationships. More specifically, we hypothesized that the relationships between body weight, self-esteem, body image, pressures to be thin and weight-related teasing with psychological distress and disordered eating would be stronger among females than among males.

## Methods

### Participants

A total of 584 university students (59.4% females and 40.6% males), with age ranging from 18 to 24 years ( $M = 20.6$ ,  $SD = 1.4$ ) were recruited from four universities in the Klang Valley, Malaysia for participation. Participants were of various ethnicities (44.7% Malay, 44.5% Chinese, 9.9% Indian, and .9% others) with about half of them (52.2%) recruited from the public universities. Additionally, about 41.3% of the students were from the arts, 31.0% from the sciences, and the remaining 27.7% were from the technical field of study.

### Procedures

Prior to the commencement of the study, ethical clearance was sought from the Medical Research Ethics Committee, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia and the Ministry of Higher Education Malaysia. Permission to conduct the survey was also granted from each of the selected universities. Students were approached in undergraduate course classrooms with the permission of lecturers. Data were collected from October to December 2009 by using a Malay language self-administered questionnaire. After providing informed consent, participants spent about 30–40 min to complete the entire questionnaire.

### Measures

#### Back translation

The Malay version of Depression, Anxiety and Stress Scale-21 (Ramli, Mohd Ariff, & Zaini, 2007), Rosenberg Self-esteem Scale (Mohd Jamil, 2006), Multidimensional Body Image Scale (Chin, Mohd Nasir, Zalilah, & Khor, 2008) and Eating Attitudes Test-26 (Chin et al., 2008) which have all been validated among Malaysians were used in this study. All other scales used in our study were translated into the Malay language by two postgraduate students who are fluent in both the English and Malay languages and back-translated into English by another bi-lingual postgraduate student. This English back-translation was compared with the original English version of the scales and appropriate amendments were made.

#### Eating Attitudes Test (EAT-26)

The EAT-26 is a 26-item used to assess "eating disorder risk" (Garner, Olmsted, Bohr, & Garfinkel, 1982). It consists of three subscales: dieting (e.g., aware of the calorie content of foods that I eat), bulimia and food preoccupation (e.g., find myself preoccupied with food), and oral control (e.g., avoid eating when I am hungry). Items are rated on a 6-point Likert scale rating from always, usually,

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