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## The Effects of Personal, Psychological, and Sociocultural Influences on Binge Eating Among Lebanese High School Students

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### Abstract

The current research sought to examine how gender, self-esteem, body mass index, emotional eating, weight loss history, body esteem, thin-internalization, and perceived pressure to lose weight relate to binge eating in male and female Lebanese high school students. A sample of 212 girls and 214 boys completed self-report questionnaires measuring the mentioned concepts. Hierarchical linear regressions were performed to test the proposed models and Student's t-tests were used to examine gender differences in binge eating risks. Results indicated that being a female, dieting frequently, having lower body esteem and higher emotional eating and thin-internalization ratings, and perceiving greater pressures to lose weight were associated with students' binge eating behaviors even after controlling for body mass index and self-esteem. Implications for school-based intervention and prevention programs that incorporate sociocultural influences and are sensitive to gender differences were discussed.

Keywords: binge eating; sociocultural influences; body esteem; social pressure; thin ideal internalization

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## 1. Introduction

High school years coincide with middle (15 to 16 years) and late (17 to 19 years) adolescence in most modern societies. Throughout these years, adolescents remain very sensitive to issues related to body and weight concerns (Bee & Boyd, 2013). Research suggests that body image dissatisfaction and related disordered eating behaviors such as binge eating are prevalent among high school students (Ackard, Neumark-Sztainer, Story & Perry, 2003; Lawler & Nixon, 2010). Binge eating is a central criterion for the diagnosis of bulimia nervosa and the provisional diagnosis of binge eating disorder in the Diagnostic and Statistical Manual of Mental Disorders (4th ed., text rev. [DSM-IV-TR] (APA, 2000), and is defined in the Diagnostic and Statistical Manual as the consumption of a large quantity of food within a restricted period of time and associated with feelings of loss of control over eating and emotional distress among adults. Further, subclinical levels of binge eating have been found to be prevalent among adolescents (Ross & Ivis, 1999) and university students (Napolitano & Himes, 2011).

Binge eating behavior is an important issue to study because it is implicated in the development of obesity and eating disorders (French, Jeffery, Sherwood & Neumark-Sztainer, 1999). Binge eating among college students has been associated with depression, body image dissatisfaction, lower self-esteem, greater dietary restraint, and anxiety (Webb & Forman, 2012). Similarly, binge eating among adolescents was found to be related to lower self-esteem, drive for thinness, body dissatisfaction, frequent dieting, and greater stress on the importance of weight and shape (Ackard et al., 2003; Wertheim et al. 1992). A correlation between binge eating and emotional eating was also found in a sample of overweight subjects (Ricca et al., 2009). Binge eating seems to occur in both males and females though some research suggests greater prevalence among females (Ross & Ivis, 1999; Spitzer et al., 1992, 1993). Furthermore, eating disorders, once considered an American phenomenon, have become more prevalent throughout the Western and non-Western countries (Leavy, 2004; Makino, Tsuboi & Dennerstein, 2004). Studies conducted in Egypt (Ford, Dolan, & Evans, 1990; Nasser, 1994), Jordan (Madanat, Brown & Hawks, 2007), and Lebanon (Afifi-Soweid, Najem-Kteily, & Shediak-Rizkallah, 2002) highlighted the powerful effects of Westernization in Arab countries concerning disordered eating and body shape.

In addition to the potential role of personal attributes such as gender, obesity, self-esteem, dietary restraint, depression, body image dissatisfaction, and emotional eating in the explanation of disordered eating, the contribution of sociocultural influences to the etiology of disordered eating have been well documented (e.g. Halliwell & Harvey, 2006; Pokrajac-Bulian, Ambrosi-Randić & Kukić, 2008). According to the sociocultural view of adolescent disordered eating, boys and girls have been internalizing unrealistic ideals portrayed and promoted in the globalized media and reinforced by parents and friends (Shroff & Thompson, 2006). Consequently, a large number of youth experience dissatisfaction with their appearance leading them to engage in shape-altering behaviors that may involve disordered eating (Pokrajac-Bulian et al., 2008). However, boys and girls seem to respond differently to these sociocultural influences. Girls, compared with boys, were found more likely to internalize thin ideals, perceive more pressure to be thin, and consequently experience body image dissatisfaction and disordered eating over time (Harrison & Hefner, 2006; Knauss, Paxton & Alsaker, 2007; Levine & Smolak, 2002; Polce-Lynch, Myers, Kliever & Kilmartin, 2001; Smolak, Levine, & Thompson, 2001). In addition, a previous study conducted in Lebanon involving the same sample used in this study found that girls, compared to boys, were more likely to engage in binge eating and emotional eating, receive social pressure to be thin, and attempt to lose weight in the past (Sukariyah & Sidani, 2014).

Prior studies have provided evidence that gender, self-esteem, body mass index, dietary restraint, body dissatisfaction, emotional eating, thin-internalization, and perceived pressure to lose weight may be associated with disordered eating practices. However, a main limitation of this research is that most studies of binge eating have focused mainly on clinical samples (Bulik & Reichborn-Kjennerud, 2003) and involved mostly white females from Western countries (Atta, Ludden & Lally, 2007; Wolfe, Baker,

Smith & Kelly-Weeder, 2009). The current study extends prior research by using a non-clinical sample of high school boys and girls who come from Lebanon, an Arab and Middle Eastern country. In addition, the current study contributes to the growing literature on binge eating by examining a multivariate model incorporating personal, psychological, and sociocultural influences associated with binge eating in adolescent males and females.

In summary, this study aimed to examine a multivariate model using gender, self-esteem, body mass index, emotional eating, dietary restraint, body esteem, thin-internalization, and perceived pressure to lose weight as predictors of binge eating practices in Lebanese high school boys and girls. Another aim of the present research was to examine how boys and girls with high risk for binge eating differ from their peers of the same sex who are less at risk in terms of psychological and sociocultural characteristics. It was hypothesized that weight loss history and body esteem were more predictive of binge eating than body mass and self-esteem respectively. Body esteem, the strongest predictor for global self-esteem for adolescent girls and boys (DuBois, Tevendale, Burk-Draxton, Swenson, & Hardesty, 2000), is expected to account for the effects of self-esteem while weight loss history is expected to explain the effects of body mass on binge eating (Ackard et al., 2003; Wertheim et al. 1992). A second hypothesis was that perceived social pressure and internalization of the thin ideal would be associated with binge eating even after controlling for gender, self-esteem, body mass index, emotional eating, weight loss history, and body esteem.

## **2. Methods**

### **2.1. Participants**

Participants (N = 426) included tenth through twelfth grades Lebanese students divided into 214 males aged between 15 and 23 years (M = 18.1, SD = 1.53), and 212 females aged between 15 and 21 years (M = 17.32, SD = 1.34). In addition, 376 students came from public schools (88.5%) and 50 students came from private schools (11.5%). Data analyzed in this study are part of a larger data set assessing several aspects of body-image concerns and eating-related behaviors among Lebanese high school students. The convenience sample for this study was drawn from over 15 high schools in Lebanon geographically dispersed with some participating schools being drawn from urban, suburban, and rural districts. The data were collected between November 2010 and May 2012 after obtaining appropriate consent from students' guardians. The questionnaire was self-administered and trained cooperating school teachers remained in the classroom to facilitate administration and answer any questions.

### **2.2 Measures**

Binge eating was measured using 6 items rated on a 5-point Likert-scale ranging from 1 = never to 5 = always. The 6 binge eating items assessed binge eating thoughts, behaviors, and associated feelings. In the present study, internal consistency of the scale was acceptable (Cronbach's alpha 0.80 for girls and 0.73 for boys).

Emotional eating was measured using 12 items rated on a 5-point Likert-scale ranging from 1 = never to 5 = always. The 12 emotional eating items assessed the desire to eat in response to emotional conditions such as fear, anger, sadness, happiness, loneliness, depression, anxiety, and disappointment. In the present study, internal consistency of the scale was acceptable (Cronbach's alpha 0.75 for girls and 0.73 for boys). Emotional eating and binge eating items were adapted from Rodin (1992).

Body image dissatisfaction has been operationalized in many different ways, including body esteem, body image, appearance satisfaction, and weight satisfaction (Grogan, 2010). In the current study, body-esteem was used as a measure of body dissatisfaction and was measured using an

adapted version of the Body Esteem Scale for Adolescents and Adults (BESAA) (Mendelson, Mendelson, & White, 2001). This body esteem scale, which contains 23 items, was translated from English to Arabic by two bilingual university professors to ensure the accuracy of the translation. Each one of the 23 items was rated on a 5-point Likert scale ranging from 1 = never to 5 = always. However, item 5 was dropped out from analysis because it was left blank by a large number of respondents. After reviewing its content (I think my appearance would help me get a job), item 5 was judged as culturally irrelevant because the prospect of getting a job is not typical among most high school students in Lebanon. Negative items were reverse scored so that a high score always reflects a positive value judgment of body-esteem. The BESSA has been shown to have good reliability and validity (Mendelson, Mendelson & White, 2001). In the present study, internal consistency of the scale was acceptable (Cronbach's alpha 0.90 for girls and 0.87 for boys).

For weight and height measurement, students were informed one day before responding to the research questionnaire to take exact measurements of their weight and height with the help of someone else. Further, in order to enhance the accuracy of reported values for weight and height, the cooperating teachers provided students with a stand up weight scale and a height measuring tape on the day of data collection. Using participants' self-reported measures of weight and height, body mass index was computed using the formula: BMI = weight in kilograms divided by the square of height in meters ( $\text{kg/m}^2$ ). Weight loss history was assessed by asking participants to specify the frequency of attempts to lose weight in the past ranging from "none" to "more than 5 times".

Self-esteem was measured using the Rosenberg Self-Esteem Scale (Rosenberg, 1965). The scale comprised 10 self-appraisal statements. Each one of the 10 items was rated on a 4-point Likert scale ranging from 1 = "not at all true of me" to 4 = "very true of me". Negative items were reverse scored so that a high score always reflects a positive value judgment of self-esteem. The Rosenberg Self-Esteem Scale has been widely used in measuring self-esteem among adolescents (Abell & Richards, 1996; Schmitt & Allik, 2005). Its reliability and validity are well documented (Fleming & Courtney, 1984). In the present study, internal consistency was acceptable (Cronbach's alpha 0.76 for girls and 0.73 for boys).

Social pressure was measured through three items adapted from Thompson et al. (1999). Participants were asked to indicate how often they experienced pressure from friends, family, and media to lose weight. A 5-point scale ranging from 1 = never to 5 = always was used. Higher scores indicate higher experiencing of social pressure. In the present study, internal consistency was acceptable despite the small number of items (Cronbach's alpha 0.71 for girls and 0.72 for boys).

Internalization of the thin ideal was measured through 10 items adapted from Rodin (1992). The items represent perception of thinness as related to fitness, attractiveness, appearance, opposite-sex preference, feeling happy, and social, romantic, and occupational success. Participants were instructed to rate their degree of agreement on a 5-point scale ranging from 1 = strongly disagree to 5 = strongly agree, with higher scores indicating stronger internalization of the thin ideal. In the present study, internal consistency was acceptable (Cronbach's alpha 0.77 for girls and 0.67 for boys).

### **2.3 Data analysis**

The first and second hypotheses were tested using hierarchical linear regressions where gender, body mass index, self-esteem, and emotional eating, (Model 1); weight loss history and body esteem (Model 2); and perceived social pressure, and thin ideal internalization (Model 3) were entered in separate steps to explain variance in the binge eating measure. Data entry and analysis were performed using the Statistical Package for Social Sciences (IBM SPSS, version 20).

### 3. Results

Hierarchical multiple regression was performed to determine the best linear combination of gender, body mass index, self-esteem, emotional eating, weight loss history, body esteem, thin-internalization, and perceived pressure to lose weight for predicting binge eating in male and female Lebanese high school students. The means, standard deviations, and intercorrelations can be found in Table 1.

**Table 1** Pearson Correlation Coefficients, Means and Standard Deviations of Predictor and Binge eating Variables for Adolescent Boys and Girls

Variable	1	2	3	4	5	6	7	8
1. Binge Eating	--	.269**	-.207**	.568**	-.567**	.410**	.493**	.263**
2. Body Mass Index	.259**	--	-.015	.499**	-.420**	-.016	.520**	-.060
3. Self-Esteem	-.118	.068	--	-.098	.389**	-.060	-.140*	-.170*
4. Weight Loss	.428**	.433**	.015	--	-.485**	.197**	.495**	.107
5. Body Esteem	-.344**	-.157*	.374**	-.391**	--	-.199**	-.560**	-
6. Emotional eating	.357**	.011	-.033	.095	-.056	--	.241	
7. Social Pressure	.427**	.414**	.087	.537**	-.331**	.116	--	.027
8. Internalization	.085	-.134*	-.072	.035	-.037	.095	.021	--
<b>M (SD) Boys</b>	10.83(4.36)	22.52(3.85)	29.62(4.05)	.64(1.07)	67.74(10.87)	29.34(7.85)	4.40(2.49)	
<b>M (SD) Girls</b>	12.98(5.59)	21.19(2.98)	30.95(4.22)	1.31(1.35)	69.50(11.69)	31.58(9.15)	4.86(2.68)	

**Note.** Correlation coefficients for boys (N = 214) are below diagonal; correlation coefficients for girls (N = 212) are above diagonal.  
\*  $p \leq .05$ ; \*\*  $p \leq .01$ .

Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. The correlations among the predictor variables (gender, body mass index, self-esteem, emotional eating, weight loss history, body esteem, thin-internalization, and social pressure) included in the study were weak to moderate, ranging between  $r = .019, p = .351$  to  $r = .521, p < .001$ . This indicates that multicollinearity was unlikely to be a problem (see Tabachnick & Fidell, 2007). All predictor variables were statistically correlated with binge eating which indicates that the data was suitably correlated with the dependent variable for examination through multiple linear regression to be reliably undertaken. The correlations between the predictor variables and the dependent variable (binge eating) were all weak to moderately strong, ranging from  $r = .170, p < .001$  to  $r = .548, p < .001$ .

In the first step of hierarchical multiple regression (see Table 2), four predictors were entered: Gender, body mass index, self-esteem, and emotional eating. This model was statistically significant ( $F(4, 419) = 40.46; p < .001$ ) and explained 27.9 % of variance in binge eating (Table 2). In this first step (Model 1), female adolescents and those who were heavier, had lower self-esteem, and ate more in response to emotional cues were more likely to report binge eating behaviors.

**Table 2.** Standardized Beta Coefficients from the Hierarchical Regression Analysis for Variables Predicting Binge Eating in Adolescent Girls (N=211) and Boys (N=213).

Variable	Model 1	Model 2	Model 3
Gender	.240***	.117**	.117**

Body mass index	.267 <sup>***</sup>	.043	.015
Self-esteem	-.156 <sup>***</sup>	-.040	-.048
Emotional eating	.376 <sup>***</sup>	.295 <sup>***</sup>	.268 <sup>***</sup>
<b>Model 1 R<sup>2</sup> change</b>	<b>.279<sup>***</sup></b>	---	---
Weight loss history	---	.345 <sup>***</sup>	.298 <sup>***</sup>
Body esteem	---	-.251 <sup>***</sup>	-.197 <sup>***</sup>
<b>Model 2 R<sup>2</sup> change</b>	---	<b>.180<sup>***</sup></b>	---
Social pressure	---	---	.152 <sup>**</sup>
Thin-internalization	---	---	.084 <sup>*</sup>
<b>Model 3 R<sup>2</sup> change</b>	---	---	<b>.020<sup>***</sup></b>
<b>Total R<sup>2</sup></b>	<b>.279<sup>***</sup></b>	<b>.451<sup>***</sup></b>	<b>.469<sup>***</sup></b>

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

After entry of weight loss history and body esteem at step 2, the total variance explained increased to 45% ( $F(6,417) = 58.93; p < .001$ ). The introduction of weight loss history and body esteem explained additional 18 % variance in binge eating after controlling for gender, body mass index, and self-esteem, and emotional eating ( $R^2$  Change = .180;  $F(2, 417) = 69.44; p < .001$ ). Including weight loss history and body esteem explained the body mass index and self-esteem effects from the previous model such that they were no longer significant. These results in the second step (Model 2) suggest that weight loss history and body esteem may explain why those with larger body mass index and lower self-esteem are more likely to report disordered binge eating behaviors. Adolescents reporting lower levels of body esteem and greater weight loss attempts were more likely to engage in binge eating behaviors regardless of gender, body mass, self-esteem, and emotional eating.

Following entry of social pressure and thin-internalization in step 3, the total variance explained by the model as a whole was 46.9% ( $F(8,415) = 47.73; p < .001$ ). The introduction of thin-internalization and social pressure explained additional 2% variance in binge eating, after controlling for gender, body mass index, self-esteem, emotional eating, weight loss history, and body esteem ( $R^2$  Change = .02;  $F(2, 415) = 8.10; p < .001$ ). In this third step (Model 3), adolescents reporting greater perceived social pressures to lose weight and higher levels of the thin ideal internalization were more likely to engage in binge eating behaviors regardless of gender, body mass, self-esteem, emotional eating, weight loss history and body esteem.

In the final model, six out of eight predictor variables were statistically significant, with weight loss history recording the highest *Beta* value ( $\beta = .298, p < .001$ ), followed by emotional eating ( $\beta = .268, p < .001$ ), body esteem ( $\beta = -.197, p < .001$ ), social pressure ( $\beta = .152, p < .01$ ), gender ( $\beta = .117, p < .01$ ), and internalization ( $\beta = .084, p < .05$ ). The effects of body mass index and self-esteem from the previous models remained insignificant in the final model. Gender was associated with binge eating in all of the models though its effect on binge eating was reduced substantially from step 1 ( $\beta = .240$ ) to step 2 ( $\beta = .117$ ) indicating that gender effect was partly explained by adolescents' weight loss history and body esteem. Emotional eating was associated with binge eating in all of the models though its effect on binge eating was reduced from step 1 ( $\beta = .376$ ) to step 2 ( $\beta = .295$ ) to step 3 ( $\beta = .268$ ) indicating that emotional eating effects could be partly explained by adolescents' weight loss history, body esteem, social pressure, and internalization of the thin ideal. The effects of weight loss history and body esteem were also reduced from step 2 ( $\beta = .345$  and  $\beta = -.251$  respectively) to step 3 ( $\beta = .298$  and  $\beta = -.197$  respectively) suggesting that these effects could be partly explained by adolescents' social pressure and internalization of the thin ideal.

#### 4. Discussion

The current research aimed to explore the contributions of personal, psychological, and sociocultural influences to binge eating in male and female Lebanese high school students. The findings contribute to the growing literature on binge eating by revealing psychological and



sociocultural risk patterns associated with binge eating for adolescent males and females. In support of our first hypothesis, weight loss history and body esteem were more predictive of binge eating than body mass and self-esteem respectively. The effects of weight loss history and body esteem rendered the effects of body mass and self-esteem on binge eating insignificant, suggesting that the links between body mass and binge eating and between self-esteem and binge eating may be mediated by the perception of one's body to be overweight rather than the actual body size and by body-specific esteem rather than global self-esteem. The finding that frequent dieting is associated with binge eating even after controlling for body mass index is consistent with previous research (Ackard et al., 2003; Wertheim et al. 1992). Girls and boys who think they are overweight engage in more dietary restraint activities which in time increase the probability of developing disordered eating behaviors. Similarly, being unhappy about one's body shape would motivate youth to adopt practices that may in time involve disordered eating behaviors. These results are in line with previous research stressing on the importance of body dissatisfaction in the development of disordered eating (Stice & Shaw, 2002). In support of our second hypothesis, even after the earlier entries had removed the variation among participants on gender, BMI, self-esteem, emotional eating, weight loss history, and body esteem, the unique effects of social pressure and internalization remained significant, explaining an additional 2% of the variance in binge eating. These results are in line with the sociocultural view of adolescent disordered eating emphasizing the role of social pressure, internalization, and body dissatisfaction as mechanisms through which social factors may lead to disordered eating (e.g. Halliwell & Harvey, 2006; Pokrajac-Bulian, Ambrosi-Randić & Kukić, 2008).

## 5. Conclusions and implications

A main strength of this study is its use of a non-clinical sample of high school boys and girls who come from Lebanon, a non-Western country. Its results provide a cross-cultural perspective to better understand the effects of Westernization on body image and related eating practices among boys and girls. In addition, the current study contributes to the growing literature on binge eating by examining a multivariate model integrating personal, psychological, and sociocultural influences associated with binge eating for adolescent males and females. This study provides additional evidence supporting the sociocultural view emphasizing the role of sociocultural influences in the etiology of binge eating and other related eating disorders. However, the cross-sectional nature of the data collected in this research precludes inferences of causality. Longitudinal studies are essential to determine the direction of influence between binge eating and its correlates. Students in private high schools were underrepresented in this study, which may limit the generalizability of the results. In addition, the study relied on self-report measures, which may affect the accuracy of information reported by participants. Future research would benefit from using a more representative sample, using more objective methods for collecting data, and conducting longitudinal research in order to better understand the factors and processes involved in the study of binge eating practices.

The current findings have important implications for the identification of at risk students and for designing health promotion and prevention programs for those students exhibiting signs of unhealthy eating behaviors. For example, educators, guidance counselors, and school psychologists may want to be more watchful of their students who show signs of body image dissatisfaction and disordered eating. Moreover, health promotion programs designed to educate students about body changes during adolescence, healthy eating, and the importance of an active lifestyle would be beneficial to reduce body image dissatisfaction and disordered eating (Kater, Rohwer, & Londre, 2002; Massey-Stokes, 2000). In addition, programs aimed at developing critical thinking skills in order to enable students to examine media messages related to thinness, fashion, and unhealthy nutritional practices are probably the best preventive approach to body image dissatisfaction and disordered eating (Bardick et al., 2004; Choate, 2007).

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