

Emotional Intelligence, Perceived Control, and Eating Disorders

SAGE Open
July-September 2013: 1–7
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DOI: 10.1177/2158244013500285
sgo.sagepub.com


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Abstract

Studies on Emotional Intelligence (EI) have demonstrated the concept's potential in accounting for a broad range of health-related outcomes. Preliminary evidence associates measures of EI with disordered eating and other related behaviors. This study proposed a mediation effect of perceived control in the above association. We hypothesized that (a) EI will positively associate with perceived control and (b) perceived control will associate positively with Anorexia and negatively with Bulimia symptomatology. One hundred and thirty young adults residing in Israel filled out measures assessing Anorexia (drive for thinness), Bulimia, perceived control, and EI (two measures). The results lent only partial support to the hypotheses: EI showed a nonlinear association with control, which in turn showed nonlinear association with Anorexia scores, and contrary to our hypothesis, positive association with Bulimia scores. A Sobel test supported the mediation models for both eating disorder measures. The results are discussed and future research is proposed to further examine this hypothesized mechanism.

Keywords

emotional intelligence, eating disorders, Anorexia, Bulimia, perceived control, student sample

Introduction

Eating disorders (EDs) are a family of conditions characterized by excessive preoccupation with food, typically resulting in abnormal eating behavior, food intake (either insufficient or excessive), and/or compensatory behaviors (American Psychiatric Association, 2006). These conditions pose serious physical health threats as the emotional and psychological consequences of these behaviors undermine the individual's well-being (e.g., Stice & Shaw, 2004). Clinically diagnosed EDs are traditionally categorized roughly into three types: (a) Anorexia Nervosa (AN), a family of disorders sharing a component of excessive control and limitation of food intake, (b) Bulimia nervosa (BN), a family of disorders typically characterized by bingeing and compensatory behaviors (purging, laxative abuse, vigorous physical activity) and (c) EDs not otherwise specified (NOS; Allen & Dalton, 2011). EDs afflict up to 5% of the general population in the U.S. and similar proportions of the Israeli population (assessed at 6%-8%), where the current study is set (Worgaft, 2011).

The scientific study of EDs is a relatively new field, gaining momentum in the 1960s, and revealing alarming spread and increasing prevalence of the phenomenon (Hudson, Hiripi, Pope, & Kessler, 2007; Polivy & Herman, 2002). Often considered a teenager condition, research now provides worrying evidence suggesting EDs can be a lifelong burden and afflict persons of all ages (Collier & Treasure, 2004). Moreover, recent surveys show most EDs, especially Anorexia and Bulimia (in all of their versions and types), can be seen more as a continuum of behavioral patterns rather

than a specific pathological condition (Fairburn & Bohn, 2005; Hudson et al., 2007). In other words, a tendency toward ED can express itself in a very broad range of manners, from exaggerated worries or thoughts about food and food consumption, all the way to clinically diagnosed and life-threatening EDs. This means that beyond diagnosed individuals, many more suffer patterns and symptoms causing psychological and physical distress, and are potentially at risk, without being diagnosed or properly attended to.

Studies have concentrated on identifying correlates and risk factors of EDs. Gender and age are the most prevalent factors associated with disordered eating: EDs are dramatically more prevalent among women. Puberty and adolescence are the life periods most often associated with the onset of EDs (Hudson et al., 2007; Polivy & Herman, 2002). Social norms promoting thinness and their expression in the media and youth culture were also frequently associated with higher incidence of EDs or disordered eating (Harrison & Cantor, 1997; Levine & Smolak, 1996).

Personality traits and other personal characteristics have also been associated with proneness to EDs: Fragile self-esteem and distorted self-image, neuroticism, perfectionism, and one of its correlates, perceived control, have been often

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associated with patterns of disordered eating (Cervera et al., 2003; Lavender & Anderson, 2010). The literature suggests high levels of control are associated with Anorexia, leading restrictive eating behaviors as inefficient expression of self-control and at times—control of others (e.g., Jarman, Smith, & Walsh, 1997). Additional evidence also link low levels of control to Bulimia/binge eating patterns: Emotional and social pressures express themselves in uncontrolled eating behavior, again—in an inadequate attempt to keep emotions at bay (Matheson et al., 2012; Osborn et al., 2013; Williams, Arnold, & Millar, 1990; Williams et al., 1993).

A relatively new concept relating to emotional function introduced into the study of EDs is that of Emotional Intelligence (EI). One prevalent conceptualization of EI describes it as a group of abilities allowing individuals to identify, process, and integrate emotion in reasoning. It also refers to individual's ability to effectively manage and regulate their emotional responses (Mayer, Roberts, & Barsade, 2008; Mayer, Salovey, & Caruso, 2000). This definition illustrates a link between EI and emotional regulation and coping, but does EI offers added value in accounting for EDs beyond regulation? Only a few studies dealt with the role of EI in disordered eating and EDs, revealing the potential contribution of the concept on the theoretical and practical levels (Markey & Vander Wal, 2007; Zysberg, 2013; Zysberg & Rubanov, 2010). These studies however did not provide evidence to the process by which EI may be related to EDs and disordered eating.

The current study sought to further examine the role of EI in ED symptomatology by first moving from the discussion of EI and “disordered eating” or “emotional eating” to specific ED symptomatology and by proposing a mediation mechanism: We propose that perceived sense of control mediates the association between EI and ED symptomatology. As EI represents among others, the ability to identify and regulate one's emotional responses and as emotional regulation plays a major role in ED symptomatology we hypothesized that (a) EI will be positively associated with perceived control and (b) perceived control will show a differential association with ED measures, more specifically, (b1) perceived control will positively associate with tendency toward Anorexia, and (b2) perceived control will negatively associate with tendency toward Bulimia.

We tested our hypotheses in a sample of Israeli young adults in an attempt to not only look at clinically diagnosed groups but also observe behaviors ranging from normative to severe EDs and their associations with our variables of interest.

Method

This study used a correlational design to examine the potential associations between the two EI measures, a measure of perceived control and measures of tendency toward Anorexia and Bulimia.

Sample

One hundred and thirty young adults living in Israel (ages = 21–31; $M = 26.67$; $SD = 3.47$), of whom 93 (71.5%) were women were recruited through online websites and social networks. Participants were excluded from the study if they had any health condition that influences appetite, or require medication that alters appetite or food consumption. The sample size was determined using G-power (Erdfelder, Faul, & Buchner, 1996), setting minimum power at .90 with alpha set at .05, considering the number of main variables in the model.

Measures

Tendency for ED was assessed using the Eating Disorder Inventory II (EDI II; Garner, 1991). This is a self-report 91-item questionnaire assessing behavioral and cognitive patterns associated with EDs. The original measure produces 11 subscales, but in this study, only the subscales concerning drive for thinness representing Anorexia, and Bulimia were included in our preliminary analysis. These scales show acceptable reliability and construct validity in previous studies, as well as in studies which translated the measure into Hebrew (Garner, 1991; Niv, Kaplan, Mitrani, & Shiang, 1998). In the current study, Cronbach's alpha was .90 for the Anorexia scale and .83 for the Bulimia scale. The scale is ranked on a scale from 1 to 6 to denote increasing agreement with statements.

Perceived Control was assessed using the Perceived Control Scale (Hobfoll & Walfish, 1984), a 7-item questionnaire based on the work of Pearlin and Schooler (1978). This scale assesses the extent to which people feel they are in control over events in their life. A 7-point Likert-type scale allows participants to mark their level of agreement with each statement. The scale has established evidence of reliability and validity. In the current study, its Cronbach's alpha was .67.

EI was assessed using two separate measures, representing two approaches to the concept: a test approach (where participants are presented with problems they need to answer correctly) and a self-report approach (where participants report their behaviors and perceptions).

The Audio-Visual Test of Emotional Intelligence (AVEI) is a 27-item computer-based test of EI following the ability approach to EI (Zysberg, Levy, & Zisberg, 2011). Participants are presented with still and video captures in which they are asked to identify the emotion experienced by a target person. The test has shown adequate reliability, and criterion-related validity in previous studies (e.g., Zysberg, 2013; Zysberg et al., 2011).

The Schutte Emotional Intelligence Scale (SEIS) is a 33-item self-report measure of EI, designed within the ability approach to EI. It has shown evidence of good reliability and is common in current studies on EI (Schutte et al., 2001;

Table 1. Descriptive Statistics and Intercorrelations for the Main Study Variables ($N = 130$).

	Minimum-Maximum	<i>M</i> (<i>SD</i>)	Anorexia	Bulimia	Control	AVEI	SEIS
Anorexia	0-17	8.67 (3.85)	—				
Bulimia	2-21	13.56 (4.67)	.54*	—			
Control	8-33	20.93 (5.66)	.24**	.27**	—		
AVEI	8-23	17.00 (2.62)	.01	.06	.11	—	
SEIS	44-115	74.10 (13.26)	.17*	.13	.39**	-.02	—

Note. The original scaling of the SEIS was reversed to match the other scales' direction: higher grades represent higher levels of self-reported emotional intelligence. AVEI = Audio-Visual Test of Emotional Intelligence; SEIS = Schutte Emotional Intelligence Scale.

* $p < .03$. ** $p < .01$.

Schutte et al., 1998; Schutte, Malouf, Thorsteinsson, Bhullar, & Rooke, 2007). In the current study, Cronbach's alpha coefficient was .88.

Demographic information regarding gender, age, and additional background variables was collected using a short demographic questionnaire designed for this study.

Procedure

The study was approved by the Institutional review board (IRB) of the authors' academic institution. Participants were approached online in various social media targeting young adults. The researchers presented the study as one focusing on "eating-related habits and thoughts." Online completion of the questionnaire packet took about 40 min according to some of the participants' reports. One of the authors was available via email in case questions or issues were raised by participants. The online administration system allowed only participants who fully completed the procedure to submit their data, so there were no missing values in the database; however, the system did not keep record of participants dropping out during the procedure.

Data Analysis

The lack of a substantial body of evidence regarding the association between EI and our focal variables led us to use a series of regressions fitting various models (linear and nonlinear) to our data and compare the coefficients to identify the models offering most explained variance. We also tested for mediation using Sobel's test (Sobel, 1982) to account for the general model proposed in this study.

Results

Descriptive Statistics

We first examined the distributions of the main variables in our study. Table 1 summarizes central tendency and dispersion indices for the main variables, as well as simple Pearson's correlations between them.

The statistics suggest a proper distribution of the study variables, well within their reported range in the literature.

The preliminary associations found between the variables only partially supported our hypotheses: Only one of the measures of EI associated positively with control. The same measure also showed a moderate positive association with Anorexia score. Control associated positively with Anorexia and Bulimia scores.

Hypothesis Testing

We used a series of regression and curve estimation analyses. To reduce the effects of capitalization of chance, we used a significance level of .03 determined according to Bonferroni's formula (e.g., Abdi, 2007). We first examined the associations between the two measures of EI with perceived control, while controlling for age and gender (both demographics associated with EDs). In a linear regression analysis, both EI measures showed significant positive association with self-reported control (for the AVEI, $\beta = .18$; $t = 2.07$; $p < .03$, for SEIS, $\beta = .35$; $t = 4.85$; $p < .01$, while gender and age remained nonsignificant. We then continued to fit two models of regression: linear versus quadratic, using both the above measures of EI as factors and control as the dependent variable. For both EI factors, the quadratic model showed better fit indices suggesting a "U"-shaped association between EI and perceived control, for AVEI, $\beta = .26$; $F = 4.32$ ($df = 2$); $p < .02$, for SEIS, $\beta = .41$; $F = 13.84$ ($df = 2$), $p < .001$. This deviated from our original hypothesis, and may suggest the association between EI and control is nonlinear. For a graphic representation of the curve-fit results, see Figure 1.

We then examined the associations between perceived control and Anorexia and Bulimia symptom scores using a curve estimation analyses to compare two models: linear versus quadratic. According to our hypothesis, we expected the quadratic association to show better fit to our data. The results of the analyses conducted separately for Anorexia and Bulimia scores are presented in Figures 2 and 3.

The results provide only partial support to our hypothesis: The association between perceived control and Anorexia scores fitted our hypothesis but further examination of the association pattern revealed a nonlinear relationship we did not hypothesize about. Bulimia scores however associated

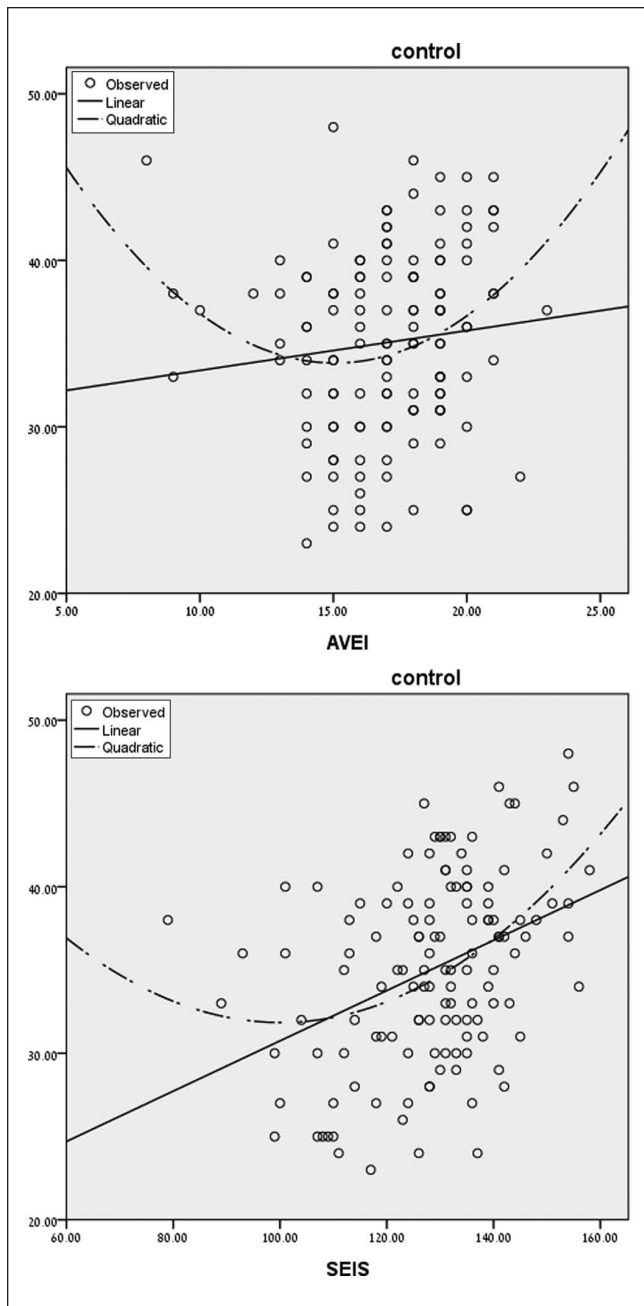


Figure 1. Curve estimate analyses for measures of EI with perceived control.

Note. Linear model: $\beta = .18$; $t = 2.07$; $p < .03$. Quadratic model: $\beta = .26$; $F = 4.32$ ($df = 2$); $p < .02$. The difference between the models is significant: $t = -7.229$; $df = 129$; $p < .01$. AVEI = Audio-Visual Test of Emotional Intelligence. Linear model: $\beta = .35$; $t = 4.85$; $p < .01$. Quadratic model: $\beta = .41$; $F = 13.84$ ($df = 2$); $p < .001$. The difference between the models is significant: $t = -6.01$; $df = 137$; $p < .02$. SEIS = Schutte Emotional Intelligence Scale. EI = emotional intelligence.

with control in a linear manner showing a moderate positive association, contrary to our original hypothesis.

Last, we tested for mediation of perceived control of the association between EI and Anorexia/Bulimia scores. We used the Sobel test (Sobel, 1982; Soper, 2012) that provided support for mediation effects in both cases (Sobel test

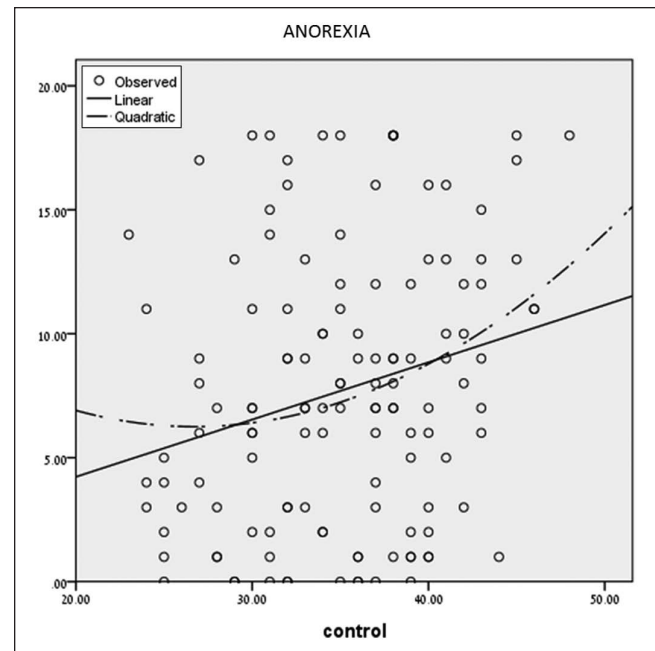


Figure 2. Comparison of linear and quadratic associations between control and Anorexia scores.

Note. Linear model: $\beta = .25$; $F = 7.62$ ($df = 1$); $p < .01$. Quadratic model: $\beta = -.36$; $F = 9.67$ ($df = 2$); $p < .01^*$.

*Difference between models is significant ($t = -1.94$; $df = 129$; $p < .02$).

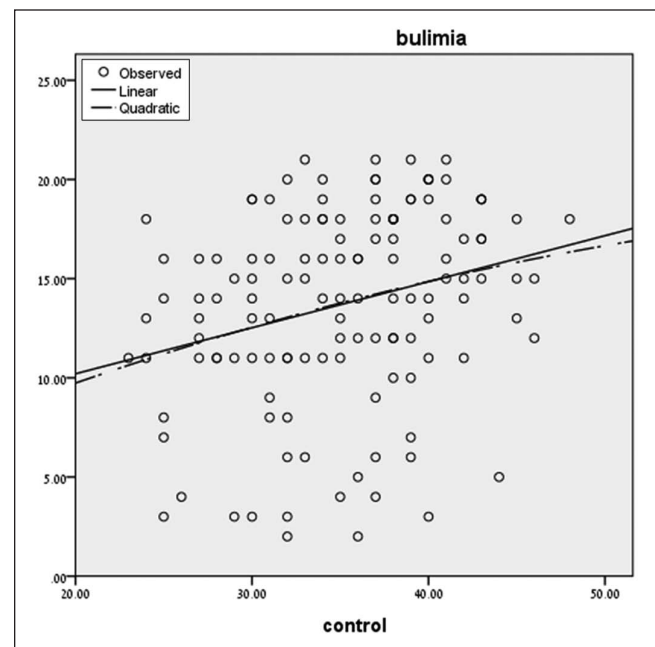


Figure 3. Comparison of linear and quadratic associations between control and Bulimia scores.

Note. Linear model: $\beta = .27$; $F = 10.07$ ($df = 1$); $p < .01$. Quadratic model: $\beta = .27$; $F = 5.02$ ($df = 2$); $p < .01^*$.

*Difference between models is nonsignificant.

statistics = $2.47/2.34$; $p < .02$ for both models). See the appendix for graphic representations of the mediation models.

Discussion

Thus far only preliminary evidence is in existence linking EI with disordered eating and even less deals with diagnosed EDs (e.g., Markey & Vander Wal, 2007; Zysberg, 2013; Zysberg & Rubanov, 2010). In this study, we sought to deepen our understanding of the above association in two ways: first, looking at the ED symptomatology range rather than emotional eating of disordered eating in general (as previous studies did). Second, we proposed a mediation model in which self-perceived control may account for associations between EI and ED. Control is a known psychological component in EDs etiology (e.g., Fairburn et al., 1998; Waller, 1998). Perceived control is also positively associated with EI, a concept revolving around effective management and regulation of emotional reactions (Johnson, Batey, & Holdsworth, 2009; Salovey, Hsee, & Mayer, 1993). Results from a sample of 130 Israeli young adults, demonstrating a range of ED symptomatology (normative to disordered) supported a mediating model, though only partially congruent with our original model. Perceived control mediated the associations between EI and ED scores for Anorexia and Bulimia.

Contrary to our original hypothesis, which proposed a positive linear association between EI and perceived control, we found (despite a significant moderate linear association) that a quadratic model showed better fit to the data. In other words: higher levels of perceived control were associated with either low or high EI. This may reflect a more complex manner in which EI is associated with perception and sense of control. We propose that people with lower EI's report of perceived control could be reflecting a different essence than that reported by people with higher EI (e.g., false sense of control vs. perceived control based on more accurate self-perception?). Additional research is required, however, to test such a proposal. Perceived control, in turn, showed a nonlinear association with Anorexia scores where moderate levels of control were associated with lower Anorexia, while lower or higher control corresponded with higher Anorexia scores. For Bulimia we found a positive linear association with perceived control, a deviation from our hypothesis. This finding is also a deviation from the trend reported in the literature associating bulimic behavior with lack of control (e.g., Colles, Dixon, & O'brien, 2012). These results may be accounted for by the nature of our sample that included individuals representing the full range of eating behaviors. The proposed simple associations between control and ED symptomatology is often based on comparison of clinically diagnosed

samples with normative sample, ignoring the potential range of behaviors spreading across the full spectrum of eating behaviors (e.g., Dalglish et al., 2001). Our results suggest that the association may be more complex than that proposed in the classic literature (e.g., Sim & Ziman, 2006; Waller, 1998). Such a suggestion should be treated cautiously until future studies provide more support or refute it. The notion of control and the way it is assessed vis-à-vis the tendency toward EDs often varies across studies, posing a methodological hurdle to generalization regarding this association.

To the best of our knowledge, this is the first empirical attempt to support an explanatory model of EI's involvement in EDs. Some limitations, however, should be considered when interpreting our results: Our sample was taken from a functional, nonclinical population. Though we did find a good range of our outcome measures in the data collected, future studies may look into the nature of these associations in clinically diagnosed and treated samples. Our results suggest that essential differences may exist in the dynamics of personal factors associated with behaviors on the EDs range in clinical and nonclinical samples. Additional studies may wish to adopt a comparative approach to this question. The use of an Israeli sample may raise future questions regarding culture and other population-related variables involved in our results. Again, future studies may look at these variables in various cultural settings. Last, the use of a correlational design limits our ability to discuss causation in our results. Experimental designs may be used in future research attempts along these lines to strengthen our model's causal and potentially predictive nature.

The above limitations acknowledged, this study points in a direction providing promising yet challenging preliminary evidence to the associations between EI, perceived control, and EDs. Should future research support it, such a model can be of use in our theoretical understanding of the nature of EI and its associations with various eating-related behaviors. An additional benefit of this proposed model is the potential for guiding future screening, and intervention with individuals suffering from EDs.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research and/or authorship of this article.

Appendix

Model Representations of the Mediation Effect of Control in the Association Between Emotional Intelligence and Tendency Toward Eating Disorder

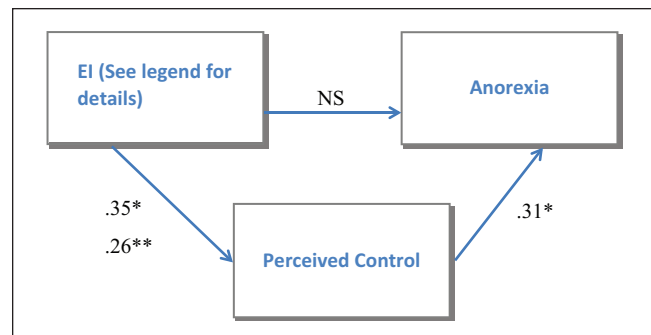


Figure A1. Mediation model testing for Anorexia ($N = 130$). Note. Sobel statistic = 2.47; $p < .02$. SEIS = Schutte Emotional Intelligence Scale; AVEI = Audio-Visual Test of Emotional Intelligence. *Coefficient for SEIS. **Coefficient for AVEI.

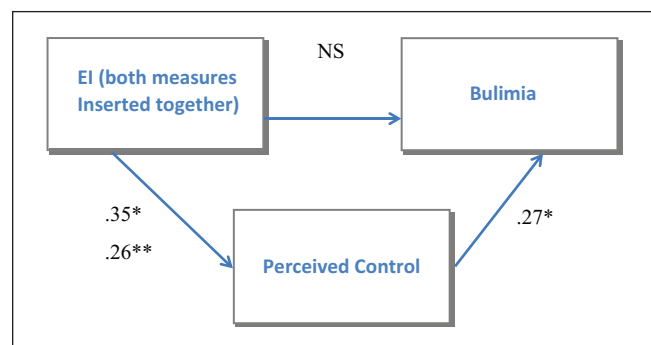


Figure A2. Mediation model for Bulimia ($N = 130$). Note. Sobel statistic = 2.34; $p < .02$. SEIS = Schutte Emotional Intelligence Scale; AVEI = Audio-Visual Test of Emotional Intelligence. *Coefficient for the SEIS. **Coefficient for AVEI.

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Einav Tell recently obtained her Masters Degree in Art therapy from the University of Haifa in Israel. Her research interest focuses on the emotional side of eating disorders. This study was authored while she was a graduate student at the above institution.