Running head: DUAL PATHWAY MODEL

An Extension of the Dual Pathway Model of Bulimia

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Abstract

The dual pathway model of bulimia proposes that dietary restraint and negative affect are the final pathways in the development of bulimia. Although previous research confirms the dual pathway model, it is unclear why some females are at an increased risk of developing bulimia. Therefore, the additions of sociotropy and diffuse/avoidance identity style are proposed as moderators in the dual pathway model. Analyses used structural equation modeling. Questionnaires completed by 184 female undergraduates provide additional support for the dual pathway model. Further, findings indicate that individuals high in sociotropy have an increased risk of developing bulimic symptomatology. Diagnostic categories and implications for treatment and prevention are discussed.

An Extension of the Dual Pathway Model of Bulimia

Bulimia nervosa is a complex eating disorder characterized by episodes of uncontrollable binge eating, which are regularly proceeded by vomiting, fasting or laxative use in order to counteract the overeating. Females are consistently over represented among the identified cases of bulimia, with the average age of onset ranging from 16.5 to 20.9 years (see Stice, 1994). Prevalence rates of 1% to 3% are indicated in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association [APA], 1994). These numbers however, reflect only those individuals who seek treatment and meet the strict diagnostic criteria. Alternately, it has been argued that many cases go undiagnosed and that a broad range of eating disordered behavior exists in society (Fairburn & Beglin, 1990). It is therefore equally important to consider individuals showing symptoms of bulimia as it is to consider those with a clinical diagnosis when examining the etiology of this disorder.

Although several risk factors for bulimia have been recognized, the development of the disorder is still unclear. Recent research has begun to unravel the process by which women seem to be increasingly affected. It has been suggested that the increase in eating disorders among young women in the past two decades may be due to appearance-based sociocultural pressures (Stice, 1994; Striegel-Moore, Silberstein & Rodin, 1986). This increase parallels the decrease in the weight of the ideal female body as depicted in the media (Wiseman, Gray, Mosimann, & Ahrens, 1992). Other factors relating to bulimia that have been identified include ideal-body internalization, body mass, body dissatisfaction, negative affect and restrained eating. A sociocultural model incorporating these factors has since been proposed by Stice (1994) in an effort to explain the process by which bulimic symptoms emerge. This model is focused around negative affect and restrained eating as the final predictors of bulimic symptomatology and is thus labeled the dual pathway model. The dual pathway model proposes that perceived sociocultural

pressures to have a thin body, which emanate from family, peers and the media, create an internalization of the thin-as-ideal body and body dissatisfaction which are then mediated by both restrained eating and negative affect to produce bulimic behaviors. In addition body mass is proposed to influence perceived sociocultural pressures and body dissatisfaction. In a longitudinal study of the dual pathway model, each of the variables showed an indirect or direct relation to bulimic behavior and the model was able to account for 33% of the variance in future bulimic symptomatology (Stice, Shaw, & Nemeroff, 1998).

Building on this model, the present study explored the possible moderating effects of personality and cognitive factors in determining why some females are at an increased risk. Specifically, sociotropy and diffuse/avoidance identity style as moderators in the dual pathway model are proposed.

Perceived Pressure for a Thin Body

It is hypothesized by Stice (1994) that recurrent social messages of the value of a slim body lead to the internalization of this belief. This, in turn, produces body dissatisfaction because of the discrepancy between one's own body and the esteemed thin-as-ideal body. The dissatisfaction then promotes restrained eating behaviors as an effort to reduce the discrepancy. Sociocultural messages are also thought to be powerful enough to contribute directly to both body dissatisfaction and restrained eating. Indeed, recent studies confirm the hypothesis that social pressures from the media, family and peers for a thin body precede the internalization of the thin-as-ideal body, body dissatisfaction and restrained eating (Stice, Nemeroff, & Shaw, 1996; Stice & Shaw, 1994; Stice et al., 1998). In addition, Irving (1990) found that females with more bulimic symptoms reported experiencing greater pressure to be thin from family, peers and media then did females with less bulimic symptoms.

Ideal Body Internalization

As the thin-ideal body does not reflect the body size of most women, the dual pathway model proposes that ideal-body internalization will produce body dissatisfaction. In support, Heinberg, Thompson and Stormer (1995) found that an internalization of appearance related social pressures was positively associated with body dissatisfaction and disturbances in eating. Longitudinal and cross-sectional studies also confirm that the ideal body internalization mediates the effects of sociocultural pressures on body dissatisfaction (Stice, Schupak-Neuberg, Shaw, & Stein, 1994; Stice et al., 1998). Further, adolescent females who scored high on the Eating Disorder Inventory scale measuring drive for thinness, were most at risk for developing an eating disorder (Leon, Fulkerson, Perry, & Early-Zald, 1995). Finally, compared to non-eating disordered individuals, bulimics exhibited greater endorsement of the thin body that is emphasized in society (Williamson, Cubic, & Gleaves, 1993).

Body Dissatisfaction

Body dissatisfaction has been found to be a powerful predictor of eating disorders (Leon, Fulkerson, Perry, & Cudeck, 1993). Similarly, eating disordered subjects were found to be dissatisfied with their body shape and concerned with the pursuit of thinness and dieting (Killen et al., 1994). Accordingly, Stice (1994) posits that body dissatisfaction promotes both restrained eating and negative affect which in turn precede bulimic behaviors.

Restrained eating is viewed as a mechanism to decrease body dissatisfaction through weight loss. In support, researchers have found that body image disturbance and body dissatisfaction are predictive of restrained eating in young females (Thompson, Coovert, Richards, Johnson, & Cattarin, 1995; Gleaves, Williamson, & Barker, 1993). Several studies also support the proposed relationship between body dissatisfaction and negative affect (Cash & Hick, 1990; Gleaves, Williamson, & Barker, 1993; Stice & Shaw, 1994).

Finally, longitudinal research found body dissatisfaction to have direct positive effects on both negative affect and restrained eating (Stice et al., 1998).

Dietary Restraint

The dual pathway model contends that restrained eating increases the probability of bulimic behaviors such as binge eating. In support, individuals with bulimic symptoms have been found to follow restrictive eating patterns (Thompson et al., 1995) and have been found to be excessively concerned with dieting (Killen et al., 1994). These findings are consistent with previous research by Polivy and Herman (1985), who found that dieting precedes bingeing. Restrained eating is also thought to promote negative affect. Concordantly, dieting behavior was significantly associated with depression and social anxiety and it is suggested that weight reduction may have a negative psychological impact on adolescent females (Rosen, Tacy & Howell, 1990). Both dietary restraint and negative affect were in fact, found to mediate the relationship among body dissatisfaction and bulimic behaviors (Shepherd & Ricciardelli, 1998; Stice et al., 1996). Further, longitudinal research found restrained eating to have a direct positive effect on both negative affect and bulimic symptomatology (Stice et al., 1998).

Negative Affect

According to the dual pathway model, negative affect is hypothesized to predict the onset of bulimic behaviors as bingeing is thought to reduce this dysphoric state. In support, negative affect was found to be predictive of eating disorder risk in 7th to 10th grade females (Leon, Fulkerson, Perry, & Cudeck, 1993). Evidence that feelings of depression, shame, and guilt are associated with an increase in bulimic behaviors has been reported by Stice and Shaw (1994). Similarly, bulimic subjects have higher levels of depression, anxiety and guilt when compared with non-dieting controls (Ruderman & Besbeas, 1992). Recently, both longitudinal and cross-sectional data indicate that negative affect partially mediated the relationship between body dissatisfaction and

bulimic behaviors (Shepherd & Ricciardelli, 1998; Stice et al., 1998).

Sociotropy

Sociotropy characterizes an individual who is dependent on others for approval, is determined to escape social rejection and is intent on preserving personal attachments (Beck, 1983). Thus, they have strong desires for acceptance and affection. It has been suggested that sociotropy is a cognitive bias that may influence the development of bulimic behaviors (Friedman & Whisman, 1998). Related to the dual pathway model, sociotropy may be important in explaining why some individuals are more vulnerable to cultural pressures to be thin. In an attempt to please others and avoid rejection, sociotropic individuals would be more accepting of society's ideals of a thin body (internalization) and thus be more likely to become dissatisfied with one's body and engage in rigid dieting (Striegel-Moore et al., 1986). In support, it has been found that bulimic female undergraduates are more concerned about approval from others than are non-bulimic female undergraduates (Jacobson & Robins, 1989). Recently, Friedman and Whisman (1998) found that sociotropy was significantly related to depressive and bulimic symptomatology. Indeed, Beck (1983) posited that sociotropy is a risk factor for the development of depression in the event of interpersonal loss or conflict. If an individual who highly values social approval feels socially unacceptable (not thin enough), loss of social status or fear of social rejection may lead to a negative affective state. Therefore, in relation to the dual pathway model, it is hypothesized that sociotropy will predict both ideal-body internalization and negative affect.

Diffuse/Avoidance Identity Style

Berzonsky (1990) proposed three identity styles that reflect differences in the way individuals create and preserve their sense of identity through problem solving and decision making. Thus, identity style is related to the manner in which individuals cope with stressors and personal threats (Nurmi, Berzonsky, Tammi, & Kinney, 1997).

Specifically, the diffuse/avoidance identity style is characterized by procrastination and by a propensity to avoid coping directly with problems (Berzonsky, 1992; Grotevant & Adams, 1984). These same characteristics have been found to describe individuals with bulimia. For example, use of avoidance coping was related to self-reports of bulimic behaviors in a non-clinical sample (Shatford & Evans, 1986). Further, a clinical sample of bulimic women were found to feel more threatened in stressful situations and employ escape-avoidance coping more often than non-bulimic women who exercised frequently (Neckowitz & Morrison, 1991). It has also previously been suggested by Hawkins and Clement (1984) that eating disorders may be a manifestation of maladaptive coping styles.

With respect to the dual pathway model, it is proposed that a diffuse/avoidance identity style will influence the outcome of bulimic behaviors. The sociocultural explanation contends that bulimic behaviors result from urges to binge due to dietary restraint, and they also serve to regulate negative affective states which are essentially the products of pressure to achieve a slim body (Stice, 1994). Polivy, Herman and McFarlane (1994) and Beebe (1994) agree that binge eating is functional, in that it temporarily masks emotional distress. Thus, the binge-purge cycle may be viewed as a deficient coping mechanism in and of itself. Its purpose is to avoid or escape negative affect and the stress associated with restrained eating. Therefore, an individual characterized by a diffuse/avoidance identity style is thought to be at an increased risk of developing bulimic behaviors.

Furthermore, it is hypothesized that a diffuse/avoidance identity style will influence negative affect. Individuals who rate high on depression and who cope poorly with stress are more likely to be bulimic (Shatford & Evans, 1986). Such findings support the notion that depression is itself a source of stress for bulimic individuals. Due to the deficiency in coping skills the depression and associated stress may remain unresolved.

This, in turn, will result in increased distress, anxiety and depression for the individual employing avoidance or escape behaviors. Thus, the proposed relationships may also provide useful information concerning the perpetuation of bulimic behaviors.

Overview of Proposed Model

Although recent research supports the dual pathway model, there are additional factors that may improve the understanding of bulimic pathology. Important cognitive and personality factors that predict the mediational pathways are included in this study. Therefore, the present study is intended to replicate and expand upon previous findings.

It is hypothesized (see Figure 1) that an awareness of the sociocultural pressures to have a thin body aid in the internalization of the thin-ideal body, body dissatisfaction and restrained eating. Internalization of the thin-ideal body is also thought to directly predict body dissatisfaction. Body dissatisfaction, in turn, is predicted to be mediated by both restrained eating and negative affect to produce bulimic behaviors. Further, it is hypothesized that sociotropy will show a positive relation to internalization of the thin-ideal and negative affect. It is also hypothesized that a diffuse/avoidance identity style will show a positive relation to both negative affect and bulimic behaviors.

Method

Subjects

Participants were 184 female undergraduate students attending the University of Guelph, in Guelph, Ontario. Approximately half of the subjects completed the study to fulfill course requirements. The majority (90%) were 18 to 22 years of age and in their first (40.9%) or second (37.1%) year of studies. The student's academic majors included social science (40.5%), science (21%), arts (13%), and other areas (25%). The participants were primarily North American (61.8%) and European (29.9%) in ethnic origin. It was indicated that approximately two thirds of the participants' parents had achieved a college level of education or greater.

Procedure

The study was presented as an investigation of various student behaviors and attitudes relating to body image, eating patterns and personal style. Group sessions were held where approximately half of the participants completed a questionnaire designed to measure each of the variables contributing to the model. The rest of the participants were given the questionnaire in class and permitted to complete it at home and return it next class. Subjects were assured that the obtained information would remain completely anonymous and confidential. Participants were also requested to answer as honestly and sincerely as possible in order to increase confidence in the self-reports. Upon completion of the questionnaire subjects were provided with a debriefing form which explained the specific nature of the study. The form also provided information about food and body image issues along with available on campus support services. Participants were also given the option to receive written feedback concerning the results of the study.

Measures

Perceived sociocultural pressure. The Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ; Heinberg, Thompson, & Stormer, 1995) contains a 6 item recognition/awareness subscale which is designed to measure an individual's awareness of society's emphasis on appearance. Subjects respond on a 5-point Likert scale (completely disagree to completely agree) to statements such as "People think that the thinner you are, the better you look in clothes". The authors report good internal consistency (alpha = .71) using a cross-validation procedure. The awareness subscale was also determined by regression analysis to explain unique variance associated with other measures of body image and eating disorders (Heinberg et al., 1995).

Internalization of the thin ideal. The Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ; Heinberg et al., 1995) contains an 8 item internalization subscale which assesses the acceptance of socially sanctioned standards of appearance.

The authors found the internalization subscale to have good internal consistency (alpha = .88) and it was able to account for unique variance related to eating pathology and body image. Subjects rate statements such as "I tend to compare my body to people in magazines and on TV" using a 5 point Likert scale (completely disagree to completely agree).

Body dissatisfaction. The body dissatisfaction subscale of the Eating Disorder Inventory (EDI; Garner, Olmstead, & Polivy, 1983) contains 9 items assessing an individuals contentment with the size and/or shape of various body parts. Subjects respond to statements such as "I think that my thighs are just the right size" on a 6-point scale ranging from always to never. This subscale produced a reliability coefficient of .90 based on cross-validation trials using subjects diagnosed with anorexia nervosa and a reliability coefficient of .91 using a comparison group of female university students (Garner et al., 1983). For the purposes of the present study the rating scale was reduced to a 5-point scale by removing often from the scale. This was due to limitations on the materials available for data collection and analysis.

Dietary restraint. The Dietary Intent Scale (DIS; Stice, 1998) is a 9-item measure of dietary restraint that examines eating behavior in the previous 6 months. Subjects respond on a 5-point scale ranging from never to always to items such as "I skip meals in an effort to control my weight" and "I eat low-calorie foods in an effort to avoid weight gain". A pilot study found the DIS to be reliable with a one month test-retest coefficient of .92 and also to have good internal consistency (alpha = .94) (Stice, 1998).

Negative affect. The shortened version of the Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1993) contains 21 items assessing negative emotional states. All scales were used to provide a single measure of negative affect. Subjects indicate the extent to which the statements applied to them over the last week using the following 4-point scale: Did not apply to me at all (0), Applied to me some degree, or

some of the time (1), Applied to me a considerable degree, or a good part of the time (2), Applied to me very much, or most of the time (3). High internal consistencies have been reported for each dimension (Lovibond & Lovibond, 1995).

Bulimic behavior. The BULIT-R (Bulimia Test Revised; Thelen, Farmer, Wonderlich, & Smith, 1991) is a 36 item multiple choice measure of DSM-III-R (American Psychiatric Association, 1987) criteria for bulimia nervosa. Thelen, Mintz and Vander Wal (1996) have found the measure to also be valid with the DSM-IV (American Psychiatric Association, 1994) criteria and report an alpha level of .98. Cross-validation with clinical and nonclinical populations indicates the BULIT-R has good predictive capability. High test-retest reliability over a two-month interval has been demonstrated (see Thelen et al., 1991).

Sociotropy. The Revised Personal Style Inventory (Revised-PSI; Robins et al., 1994) contains a 24-item measure of sociotropy. Sociotropy encompasses both an individual's need for approval and fear of social rejection. Subjects responded on 5-point scales ranging from "strongly disagree" to "strongly agree" to items such as "I am very sensitive to criticism by others". The original 6-point scale was altered by replacing "slightly agree" and "slightly disagree" with "uncertain" due to limitations in data collection materials. The test developers have documented the Revised-PSI to have good internal consistency and temporal stability (Robins et al., 1994).

Diffuse/avoidance identity style. The Identity Style Inventory, third revised edition (ISI-3; Berzonsky, personal communication, 1997) gauges the extent to which subjects are characterized by three identity styles: (1) informational style (2) diffuse/avoidance style and (3) normative style. The diffuse/avoidance scale consists of 10-items with a coefficient alpha of .76. Subjects respond on a scale ranging from "not at all like me" to "very much like me" to items such as "I'm not really thinking about my future now; it's still a long way off" and "Sometimes I refuse to believe a problem will happen, and

things manage to work themselves out". Berzonsky (1997) reported a two week test-retest reliability coefficient of .83.

Results

The purpose of the present study is to determine the relationships between emotional states, sociocultural pressures, eating behaviors and personal style in the development of bulimic behavior. Linear structural equation analysis (LISREL VIII; Jöreskog and Sörbom, 1993) was employed to test the hypothesized model. The exogenous variables (independent) include sociotropy and perceived sociocultural pressure and the endogenous variables (dependent) include internalization of a thin-ideal body, body dissatisfaction, diffuse/avoidance identity style, negative affect, restrained eating and bulimic behavior. These variables are presented in Table 1, accompanied by the respective observed variables, number of items in each scale, their means, standard deviations, standard errors of the mean, and alpha coefficients. One item was eliminated from the BULIT-R scale due to an error in the questionnaire. All of the measures produced alpha coefficients that represent high internal consistency with the exception of the awareness scores on the SATAQ (alpha = .53).

Table 2 shows the correlation matrix derived for the indicator variables. Next, the a priori structural model was tested by LISREL. The resulting model is presented in Figure 2, indicating the determined paths between variables with their standardized ß weights. All significant path coefficients are positive. The resulting nonsignificant chi-square value, x^2 (11) = 7.07, p = .79, suggests that this model is feasible in the population. In addition, the final model represents an adequate fit to the sample data as indicated by a Goodness-of-Fit Index (obtained by the comparison between the estimated population covariance matrix and the sample covariance matrix; Fassinger, 1987) of .99. Root mean square residual equals .01 and the Norm Fit Index = .98.

As hypothesized, sociotropy showed a direct relation to ideal-body internalization, which predicted body dissatisfaction. In turn body dissatisfaction predicted restrained eating which also predicted bulimic behavior. Unexpectedly, sociotropy and body dissatisfaction had direct associations with bulimic symptoms. Sociotropy also predicted bulimic symptoms through negative affect. Diffuse/avoidance identity style mediated the relationship between sociotropy and bulimic behavior. Additionally, a path from restrained eating to bulimic behavior is mediated by negative with restrained eating also having a direct association with bulimic behavior.

Perceived pressure was predicted to be associated with ideal-body internalization , body dissatisfaction and restrained eating; however, it did not predict restrained eating directly. An indirect association between perceived pressure and bulimic behavior was observed. Perceived pressure predicted body dissatisfaction. Body dissatisfaction predicted restrained eating, which in turn was associated with bulimic behavior. Unexpectedly, perceived pressure also evidenced a direct relation to bulimic behavior. Finally, ideal-body internalization was unforeseen to be directly related to restrained eating.

Overall, the constructs in this model were able to account for 59% of the variance in bulimic behavior.

Discussion

The dual pathway model of bulimia offered by Stice (1994), is supported by the findings. Ideal-body internalization, which is associated with perceived pressure, predicted body dissatisfaction which is consistent with the view that the ideal-body is incompatible with most women's bodies. Perceived pressure also predicted body dissatisfaction which lends support to Stice's (1998) notion that even if an individual consciously rejects the ideal body, it is possible that society's recurrent messages of the value of thinness can lead to body dissatisfaction.

Not evidenced in the dual pathway model is the relationship detected between ideal body internalization and restrained eating. Perhaps the internalization of the extreme thinness, that is promoted by society as preferable, is automatically associated with restrained eating because this body shape would rarely occur naturally. Additionally, dieting has become such a normative behavior among young women (Polivy & Herman,1985) that it may be akin to a rite of passage, whether or not body dissatisfaction is involved.

The direct effect of both negative affect and restrained eating on bulimic behavior support a central tenet of the dual pathway model. Stice (1994) refers to these variables, which are posited to mediate the effects of the other variables, as the final proximal predictors of bulimic symptoms. However, contrary to a primary assertion of the dual pathway model, body dissatisfaction was also found to have a direct positive influence on bulimic behavior as opposed to being completely mediated by restrained eating and negative affect (Stice et al., 1996; Stice et al., 1998). This emphasizes the apparent strength of body dissatisfaction, as it appears in the present study, to aid in the development of bulimic behavior without the mediation of negative affect. Perhaps this is evidence that some university-aged females may be trying to ameliorate their body dissatisfaction directly through purging (i.e. by vomiting, using laxatives and/or diuretics) or excessive exercise. It is likely that some of the subjects in the present study have previously dieted unsuccessfully in their early teen years. Thus, purging behaviors may be an alternate weight loss strategy for some individuals.

Alternately, for others, as suggested by Stice et al. (1998), body dissatisfaction may promote restrained eating due to the belief that this will successfully lead to weight loss. This in turn may lead to binge eating and/or negative affect because of the physical and psychological effects associated with caloric deprivation. The current findings are also consistent with previous findings indicating that binge eating may be an attempt to

regulate the ensuing negative affect (see Beebe, 1994; Brock & Adams, 1998; Stice, 1994). Therefore, the present study offers considerable support to the dual pathway model, while introducing some unique findings.

Sociotropy was incorporated into the dual pathway model in an attempt to determine why some females, although exposed to similar sociocultural messages, are more likely to develop bulimic behaviors than others. In line with what Striegel-Moore et al. (1986) proposed, sociotropy was found to directly influence the internalization of society's emphasis on appearance. Therefore, it appears that sociotropic characteristics (strong desires for acceptance and affection, a need to please others and avoid rejection) influence an individuals vulnerability to culture pressure which in turn has an indirect influence on the development of bulimic behavior.

As hypothesized, negative affect mediated a path between sociotropy and bulimic behavior. This is congruent with recent research by Friedman and Whisman (1998) suggesting that placing an overemphasis on social approval increases the likelihood of negative emotional states. These emotions, which may result from excessive worry, loss of social status or fear of rejection, may lead to distress induced binge eating. Likewise, interpersonal stress in comparison to other stressors has been found to be more likely to lead to a desire to binge (Cattanach, Malley, & Rodin, 1988) This path also corresponds to what Polivy et al., (1994) described as the "functional explanation" of binge eating.

Sociotropy also unexpectedly showed a direct relation to bulimic behavior. This indicates that individuals who are dependent on others for approval, are at an increased risk for developing bulimic behaviors, even if they have not internalized society's beliefs about a thin body and are not experiencing negative affect. Perhaps for these individuals, binge eating is a physical attempt to fulfill a psychological hunger (e.g. for approval or affection) that is not being satisfied.

Finally, sociotropy predicted a diffuse/avoidance identity style which in turn predicted bulimic behavior. It may be that sociotropic individuals, who are fearful of social rejection, avoid situations where there is a potential for rejection to occur. Thus, instead of dealing with and resolving their needs and fears, some individuals may employ maladaptive coping styles through the use of escape or avoidance. Further, because the issues do not get resolved (i.e. one cannot gain social approval and acceptance if social situations are avoided), one may engage in bulimic behaviors in a subsequent attempt to fulfill the heightened need for approval and affection.

Although the results of the present study support previous research, some limitations need to be acknowledged. As the study was nonexperimental it would not be wise to make any causal inferences. Further, because a questionnaire was the means of data collection, there is always the possibility that some participants may have falsified their answers. Under the circumstances all attempts were made to ensure anonymity and confidentiality however, due to the personal nature of some questions and the stigma associated with eating disorders, validity of the findings cannot be guaranteed. Finally, it is important to note that while structural equation modeling determined the hypothesized model to be plausible in the population, it is equally plausible that other models may also fit the data (Fassinger, 1987).

In summary, the various paths which emerged in the resulting model provide evidence for five explanations of the function of bulimic behaviors. These can be differentiated according to the distal factors from which they initiate. First, the possible explanations for the purpose of bulimic behaviors stemming from external factors (sociocultural pressures, value of a thin body) will be considered. One interpretation is that binge eating is a means to regulate mood state. It has been proposed that negative feelings are reduced via distraction through eating (see Beebe, 1994; Brock & Adams, 1998; Stice, 1994). Additionally, this may explain the maintenance of bulimia in that the binge-purge cycle

does not resolve underlying issues related to the negative affect (i.e. failure to diet successfully or failure to achieve/maintain social acceptance) and may even increase these emotions due to guilt or shame. A second possible function is that purging is an attempt to lose or refrain from gaining weight which may or may not progress to include other bulimic behaviors. As knowledge of this disorder has become more commonplace, individuals may specifically engage in purging as a weight loss/maintenance strategy. Third, restrained eating, as predicted by sociocultural pressures and body dissatisfaction, is thought to lead to binge eating due to intense carbohydrate cravings and a mentally (as opposed to physically) regulated eating style that increases one's susceptibility to disinhibition (Polivy & Herman, 1985).

Similarly, the purpose of bulimic behaviors which stem from internal factors (sociotropy, identity style) may also include the regulation of emotional states. In relation to sociotropy, binge eating may represent an attempt to fill an extreme need for social acceptance and interpersonal relationships. Further, bulimic behaviors may be a means for the diffuse/avoidance oriented person to escape or avoid dealing with problems.

It appears therefore, that bulimic behaviors may be the result of emotional, physical and/or psychological factors which are the consequences of both external and internal messages. Support for the many possible functions of bulimic behaviors suggest that diagnostic categories which reflect these diversities would assist in determining appropriate treatment. This categorization may also be useful in identifying individuals, who would benefit from treatment, but aren't meeting the current clinical requirements for diagnosis.

In terms of prevention efforts, the findings advocate teaching young women to challenge cultural standards regarding thinness and to accept the unique shapes of their own bodies. Specifically, helping individuals characterized by sociotropy to increase their self-confidence and be less dependent on others for approval may lower their risk of

developing bulimic behaviors. In line with Stice et al. (1998), a parental education factor that focuses on the adverse effects of society's emphasis on appearance may also be beneficial. As Striegel-Moore et al. (1986) point out, families teach little girls that their appearance is associated with praise, attention, and love. Accordingly, it would be useful for future research to look at the socialization of girls at home and the possible connections to ideal-body internalization and sociotropic characteristics. This may lend insight into why females are over represented in terms of disordered eating and help to identify variables that increase resilience to bulimic behaviors.

In addition, the media needs to be held more accountable for it's messages and should be pressured to portray more diverse body shapes in a positive manner. Some progress is being made, but change is slow. It is essential that these small shifts be embraced and acknowledged.

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Table 1

Number of Items, Mean, Standard Error of the Mean, Standard Deviation, and Alpha Coefficient for each Observed Measure.

Note. SATAQ = Sociocultural Attitudes Towards Appearance Questionnaire; EDI = Eating Disorder Inventory; PSI = Personal Style Inventory; DASS = Depression, Anxiety Stress Scales; BULIT-R = Bulimia Test-Revised

Table 2

Correlation Matrix of all Scales Used in Path Analysis

	AWARE	INTER	SOCIO	EDI-BD	DIS	DASS	DIF/AV	BULIT
AWARE	1.000							
INTER	0.247**	1.000						
SOCIO	0.248**	0.480**	1.000					
EDI-BD	0.251**	0.530**	0.370**	1.000				
DIS	0.169*	0.545**	0.345**	0.617**	1.000			
DASS	0.120	0.228**	0.403**	0.202**	0.290**	1.000		
DIF/AV	-0.009	0.143	0.155*	-0.007	0.107	0.080	1.000	
BULIT	0.255**	0.517**	0.482**	0.567**	0.618**	0.384**	0.181*	1.000

Note. AWARE = Awareness Scale of Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ); INTER = Internalization scale of SATAQ; SOCIO = Sociotropy scale of Revised Personal Style Inventory; EDI-BD = Body dissatisfaction scale of Eating Disorder Inventory; DIS = Dietary Intent Scale; DASS = Depression Anxiety Stress Scales – shortened version; DIF/AV = Diffuse/Avoidance Identity Style Inventory; BULIT = Bulimia Test-Revised

**$p < .01$, two-tailed. *$p < .05$, two-tailed.

Figure Captions

Figure 1. Hypothesized model for the present study.

Figure 2. Resulting structural model with standardized path coefficients and squared multiple correlations. X^2 (11)=7.07, p=.79, GFI=.99, Root Mean Square Residual=.01; Adjusted GFI=.97; Norm Fit Index=.98

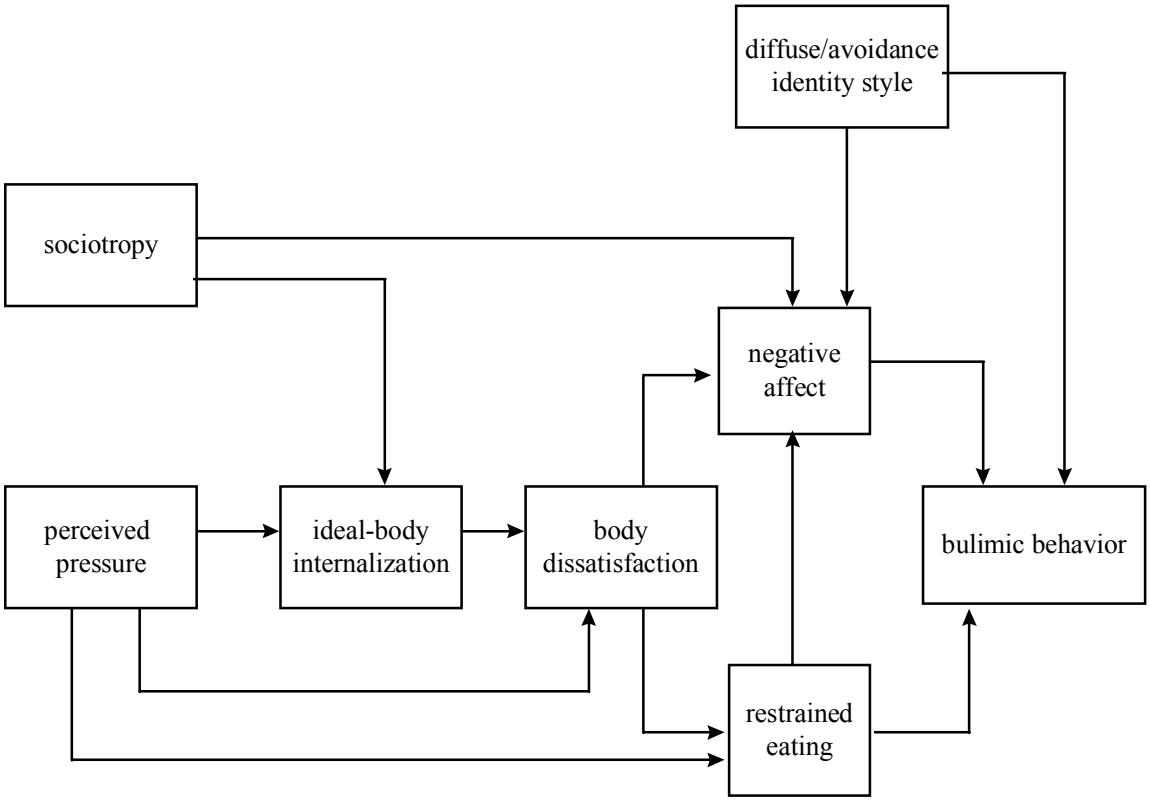

Figure 1. Hypothesized model for the present study.

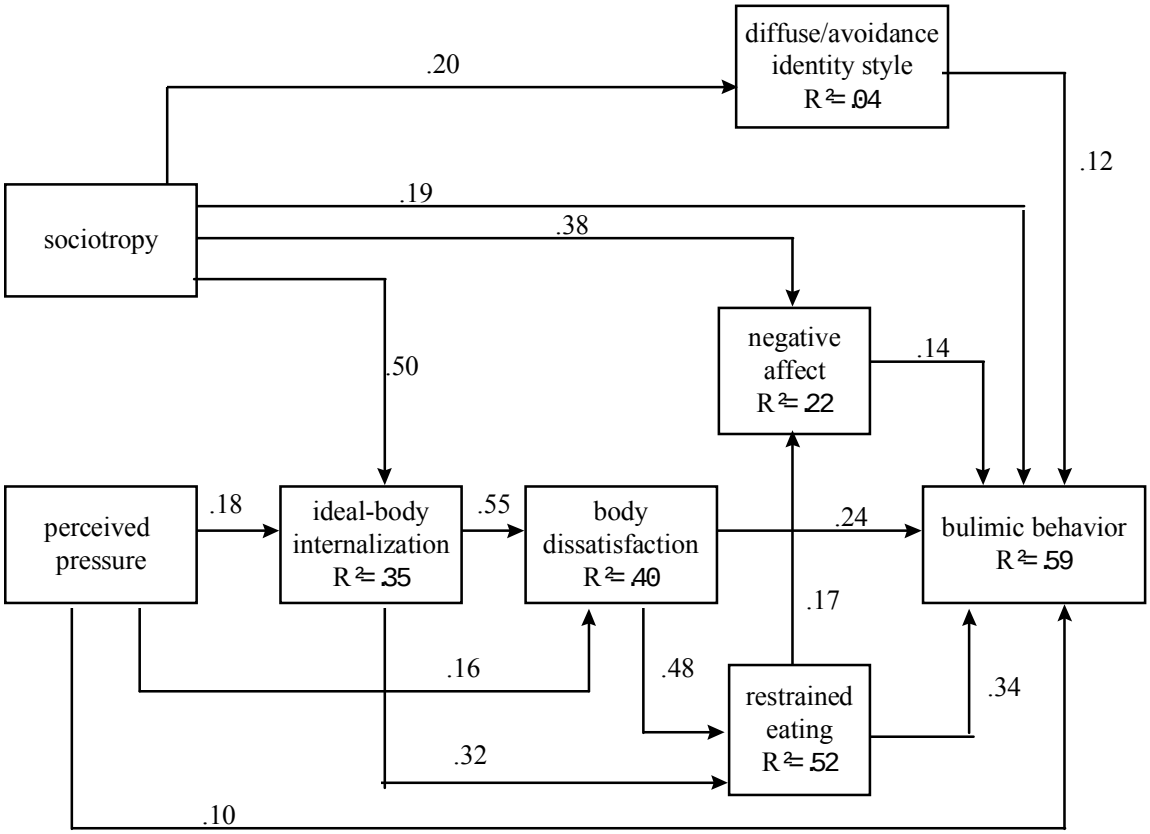

Figure 2. Resulting structural model with standardized path coefficients and squared multiple correlations. $X^2(11) = 7.07, p = .79$, GFI = .99, Root Mean Square Residual = .01; Adjusted GFI = .97; Norm Fit Index = .98.