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Relationships Among Loneliness, Interpersonal Dependency, and Disordered Eating in Young Adults

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Summary

Previous studies on loneliness and interpersonal dependency suggest a shared relation with eating disorders. Previous findings of the relation of interpersonal dependency with eating disorders may have misestimated the importance of interpersonal dependency by not including loneliness. Measures of loneliness, interpersonal dependency, and disordered eating (drive for thinness, bulimic symptoms, body dissatisfaction) were given to 176 college students. Mediation models were used to test the relative influence of interpersonal dependency and loneliness on body dissatisfaction. Loneliness mediated the relation between interpersonal dependency and body dissatisfaction; no other mediation models could be tested.

Keywords: interpersonal dependency, disordered eating, loneliness, mediation

Introduction

Individuals suffering from clinically diagnosed eating disorders (e.g., anorexia nervosa, bulimia nervosa) or disordered eating attitudes and behaviors (e.g., unhealthy eating behaviors such as restricting caloric intake, over-exercising, or purging) often lead secret and lonely lives. As they emotionally separate themselves from friends and family, their obsessions with these unhealthy behaviors may become their sole companion. A likely result of this is that individuals will report feeling socially isolated even if they are not physically isolated from others. In recent years, self-reported social isolation has increased. For example, McPherson, Smith-Lovin, and Brashears (2006) observed that over the past two decades fewer persons reported having someone to talk to about matters that are important to them and that the average number of discussion partners has fallen by approximately one person. Furthermore, more than twice as many individuals (25% vs. 10%) reported having no confidant and of those who had at least one confidant, 9% reported that their spouse is their only confidant.

Loneliness does not necessarily relate to the physical aspect of social isolation, but rather results from perceptions of being socially isolated. Loneliness may be aggravated during college as students struggle to adjust to the changes and loss of some of their social support. Loneliness in college students negatively correlates with self-esteem and self-rated physical attractiveness (Stephan, Fäth, & Lamm, 1988) resulting in negative self-perceptions and harsher self-criticism especially in regard to one's evaluation of one's body, sexuality, health and appearance (Goswick & Jones, 1981).

However, there have been limited studies assessing a relation between eating disorders and loneliness or between disordered eating and loneliness. The majority of the studies conducted focus primarily on loneliness and binge eating, characterized by recurrent episodes of binge eating without the use of inappropriate compensatory behaviors that are characteristic of bulimia nervosa (APA, 2000). These studies have shown that such a relation exists in bulimic patients (Masheb & Grilo, 2006), as well as individuals who report bulimic symptomology on the EAT (Rotenberg & Flood, 1999). As such, feelings of

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loneliness often lead to increased consumption of food in restrained eaters (Rotenberg & Flood, 1999) and a desire to binge in bulimic patients (Tuschen-Caffier & Vögele, 1999).

Loneliness may also be a factor contributing to relapse in patients seeking treatment for anorexia nervosa and bulimia nervosa (Stewart, 2004). Anorexia nervosa is an eating disorder characterized by a refusal to maintain a body weight over 85% of what is expected and a fear of losing control over body weight or of becoming 'fat.' Those with anorexia nervosa control their weight either by restricting the overall intake of food and/or regularly engaging in binging and purging. Bulimia nervosa is an eating disorder in which those with the disorder binge on large quantities of food and then partake in some form of compensatory behavior (i.e., forced vomiting, excessive use of laxatives, periods of fasting, or excessive exercise). These binge/ purge episodes occur on average at least twice a week for three months. Bulimia nervosa differs from anorexia nervosa-binge/purge subtype in that patients may be of normal weight or even overweight (APA, 2000)

Early onset of experiences with loneliness may act as an impetus in the development of eating disorders. In retrospective accounts of feelings of loneliness during adolescence, women with a history of bulimia nervosa and anorexia nervosa-binge/purge subtype reported having more feelings of loneliness as children than did control groups. Further, women with anorexia nervosa-binge/purge subtype reported more feelings of loneliness than did any other group (Troop & Bifulco, 2002).

Loneliness is often a component of an inner desire to have closer connections to others. Early research proposed that certain personality vulnerabilities may underlie this desire and increased experiences of loneliness (Saklofske & Yackulic, 1989). For example, a personality characterized by high interpersonal dependency is related to increase feelings of loneliness (Mahon, 1982; Overholser, 1992). Interpersonal dependency is defined as a person's need to "associate closely with, interact with, and rely upon valued other people" (Hirschfeld et al., 1977, p. 610). It is comprised of three underlying dimensions: emotional reliance on others, lack of social self-confidence, and assertion of autonomy. More recently, research has shown that degrees of interpersonal dependency tend to covary with emotional distress (Nietzel & Harris, 1990; Santor & Patterson, 2004) and like with other distressed emotional states, it may be possible that loneliness aggravates maladaptive social functioning in individuals exhibiting excessive dependency on others (Overholser, 1996).

Individuals with dependent personalities may be at risk for other psychological disorders (Bornstein & Greenberg, 1991; Nietzel & Harris, 1990; Skodol, Gallagher, & Oldham, 1996; Vaillant, 1980). However, research is inconclusive about whether any personality trait predisposes or is a risk factor for developing disordered eating or a clinically diagnosable eating disorder or if such traits are merely a symptom of these disorders. Regardless of the direction of causality and the possibility that both are caused by a third set of independent factors, studies have demonstrated higher prevalence rates of certain personality traits in individuals with both clinically diagnosed eating disorders as well as individuals who met the cutoff scores on various measures of disordered eating (e.g., EAT, EDI) (Cassin & von Ranson, 2005; Johnson, Cohen, Kasen, & Brook, 2006; Lilenfeld, Wonderlich, Riso, Crosby, & Mitchell, 2006).

Interpersonal dependency has been found to be greater in individuals suffering from clinically diagnosed eating disorders (Narduzzi & Jackson, 2000; Wold, 1983), as well as individuals who scored above the cutoff on the EDI (Oates-Johnson & DeCourville, 1999). For example, Speranza et al. (2004) found that although dependency correlated with several addictive behaviors, eating disorder patients scored significantly higher overall than drug addicts on each of the dimensions. However, a prior meta-analysis of research studies assessing the influence of interpersonal dependency on both individuals with clinically diagnosed eating disorders and individuals who met the cutoff scores on various measures of disordered eating (e.g., EAT, EDI, BULIT-R) found that dependency scores account for only 6% of the variation in eating disordered symptomology and vary depending on the type of symptoms present (Bornstein, 2001). The possibility that the disorder may aggravate interpersonal dependency was noted by Bornstein in his reporting that as eating disorder symptoms diminish dependency scores decrease.

One possible explanation for the modest link between interpersonal dependency and both eating disorders and disordered eating suggested by Bornstein (2001) is that the relationship is indirect and may be influenced by other factors such as interpersonal stress and personality variables. Other research has demonstrated this indirect relationship through gender. Gender appears to moderate the relationship between interpersonal dependency and disordered eating (as measured by the EAT). Females who exhibit disordered eating exhibit more interpersonal dependency than do females who do not suffer from disordered eating attitudes and behaviors; however the same was not true for males (Huprich, Stepp, Graham, & Johnson, 2004).

Interpersonal dependency has been found to act as a diathesis through which high levels of interpersonal stress lead to increased symptoms of depression and illness (Blatt, Cornell, & Eshkol, 1993; Bornstein, 1995). A study seeking to confirm this model hypothesized that excessive dependency may be a psychological diathesis for bulimic symptomology (as measured by the BULIT), and that interpersonal stress may stem from inadequate social support resulting in increased symptoms of bulimia (Jacobson & Robins, 1989). However, the lack of a significant finding suggests that other stressors may be the impetus through which the eating disorder manifests. Striegel-Moore, Silberstein, and Rodin (1986) suggested that inability to regulate mood may influence whether a person adopts some type of disordered eating pattern to cope with stress. Thus it is possible that mood may help explain this relation between disordered eating and interpersonal dependency; however such a relation has not been studied conclusively.

The review of literature has provided evidence that individuals who have been diagnosed with clinical eating disorders as well as those who score above the cutoff on various measures of disordered eating (e.g., EAT, EDI, BULIT-R) experience higher rates of both interpersonal dependency (Bornstein, 2001; Huprich et al., 2004; Narduzzi & Jackson, 2000; Oates-Johnson & DeCourville, 1999; Speranza et al, 2004; Wold, 1983) and loneliness (Masheb & Grilo, 2006; Rotenberg & Flood, 1999; Stewart, 2004; Troop & Bifulco, 2002; Tuschen-Caffier & Vögele, 1999) and that dependency may foster feelings of loneliness (Mahon, 1982; Overholser, 1992). However, to date, no study has measured the nature of relation among all three variables.

Previous research suggests a shared relationship between loneliness and interpersonal dependency (Mahon, 1982; Overholser, 1996). Thus, it would be useful to determine what is unique and what is shared in their relationship with disordered eating. As prior research has only examined the role of loneliness separately, there exists the possibility that previous research findings illustrating the relation between interpersonal dependency and disordered eating may have misestimated the importance of interpersonal dependency by not including measures of loneliness in the analysis. A finding of a different pattern of relationships may provide insight into the underlying causes of disordered eating as measured by the EDI (drive for thinness, bulimic symptoms, and body dissatisfaction). Furthermore, most prior research has examined these relations only in women. It would be beneficial to examine whether the relations among the variables are the same for men. We hypothesize that loneliness will mediate the relation between interpersonal dependency and disordered eating behaviors (drive for thinness, bulimic symptoms, body dissatisfaction).

Method

Participants

Two hundred forty-five participants (147 females, 98 males) from an introductory psychology course volunteered to participate in exchange for course credit. Eighty-eight percent of the participants were White, 6% were Hispanic, 2% were African American, 1% was Asian, and 3% responded other. The average age of students was 21.02 years (*SD*=5.32).

Materials

Disordered eating. Created by Garner, Olmsted, and Polivy (1983), the Eating Disorder Inventory (EDI) is a self-report measure consisting of eight subscales including three that measure attitudes and behaviors related to eating and shape and five scales to assess different traits thought to be related to the psychopathology. To be consistent with the research cited above, the original EDI measure was used rather

than one of the two revised versions. For this study, only the three subscales related to eating and body shape (Drive for Thinness, Bulimic Symptoms, Body Dissatisfaction) were used. The scale is internally consistent and has good convergent validity with other measures of eating disorders. In the present study, Cronbach's alphas were 0.85, 0.74, and 0.90 for drive for thinness, bulimic symptoms, and body dissatisfaction, respectively.

Loneliness. The UCLA Loneliness Scale (Version 3) is the most current version of the scale originally developed by Russell and colleagues (1996). It is a unidimensional 20-item questionnaire measuring global loneliness. Items were scored on a 4-point scale (*I often feel this way, I sometimes feel this way, I rarely feel this way, I never feel this way)*. Some items are reversed coded. Loneliness score is based on a sum of all twenty items, such that a higher total score indicate greater levels of loneliness. The test has high concurrent and convergent validity. Measures of internal consistency ranged from a coefficient alpha of 0.89 to 0.94 and test-retest reliability was 0.73 for a 1-year period (Russell, 1996). Cronbach's alpha for this study was 0.92.

Interpersonal dependency. Interpersonal dependency was assessed through the Interpersonal Dependency Inventory (Hirschfeld et al., 1977). This 48-item questionnaire consists of three subscales of interpersonal dependency; Emotional reliance on others (ER; e.g. "*I must have one person who is very special to me."*), Lack of social self'-confidence (SSC; e.g. "*I have a lot of trouble making decisions by myself*."), and Assertion of autonomy (AA; e.g. "*I don't need much from people*."). For this study only 18 items were selected (5 items for ER; 7 items for SCC; 6 items for AA). Items selected were the highest loading items from a factor analysis conducted by Loas, Verrier, Gayant, and Guelfi (1998) designed to avoid overlapping constructs and thereby increase reliability and validity of the measure. Items were rated on a 4-point scale (*Very characteristic of me, Quite characteristic of me, Somewhat characteristic of me, Not characteristic of me*). Some items were negatively coded. Scores may be obtained for each of the subscales as well as a global or total dependency score. The interpersonal dependency inventory is a psychometrically sound instrument with split-half reliabilities on the three scales of 0.86, 0.76, and 0.84 for ER, SCC, and AA, respectively (Hirschfeld et al.). The Cronbach's alphas in this study were 0.66, 0.62, and 0.58 for ER, SCC, and AA, respectively.

Procedures

Participants volunteered to participate in a study about eating habits, childhood experiences, and personality as part of a course requirement. Questionnaires were completed individually, in a large classroom, in the presence of student members of the research team who read the instructions aloud. The Institutional Review Board approved all procedures before the study began.

Results

Similar to previous research (see Pritchard, 2008 for a review), gender differences in all three measures of disordered eating were found. Means and standard deviations for each gender can be found in Table 1. Before testing possible mediation, it was important to confirm that there were relationships among loneliness, interpersonal dependency, and the three disordered eating measures (drive for thinness, bulimic symptoms, and body dissatisfaction subscales of the EDI; see Table 2). To examine whether the influence of loneliness would mediate the relation between interpersonal dependency and disordered eating, in accordance with Baron and Kenny's (1986) theory on mediation models, Hypothesis 2 was tested using three path analyses based on a set of regressions using both loneliness and interpersonal dependency as correlates of disordered eating (drive for thinness, bulimic symptoms and body dissatisfaction. However, because mediation assumes that there are significant relationships between the independent variables (in this case interpersonal dependency) and the dependent variable (in this case drive for thinness, bulimic symptoms and body dissatisfaction), for men, mediation could only be tested for the relation between interpersonal dependency and body dissatisfaction. Similarly, because mediation models assume a significant relationship between the mediator (loneliness) and the dependent variable, for women, mediation could also only be tested for body dissatisfaction (see Table 3).

The path diagrams are shown in Figures 1a and 1b. As previously mentioned, interpersonal dependency was found to significantly affect loneliness for both men and women. Interpersonal dependency was also significantly related to body dissatisfaction for both genders. In addition, variations in loneliness significantly accounted for variations in body dissatisfaction, when controlling for effects of interpersonal dependency for both men and women. By incorporating the influence of loneliness into the hypothesized model, the effect of interpersonal dependency dropped to a nonsignificant level. Thus, there is evidence that loneliness mediates the relation between interpersonal dependency and body dissatisfaction in both men and women. We had originally hypothesized that loneliness would provide some mediating effect for all three scales (body dissatisfaction, bulimic symptoms, drive for thinness). We could not fully test this hypothesis as we were only able to run mediation models for body dissatisfaction due to the data constraints mentioned above.

Discussion

This research represents the first attempt to study the joint effects of interpersonal dependency and loneliness on disordered eating (as measured by three subscales of the EDI - drive for thinness, bulimic symptoms, body dissatisfaction). Previous studies indicated a relationship between loneliness and bulimia in both patients diagnosed with bulimia nervosa and in individuals who report bulimic symptomology on the EAT (e.g., APA, 2000; Masheb & Grilo, 2006; Rotenberg & Flood, 1999). In the present study, loneliness related to all three measures of disordered eating in men, but only to body dissatisfaction in women. This relation between loneliness and body dissatisfaction has been noted in other studies (Goswick & Jones, 1981; Stephan et al., 1988) where researchers found loneliness negatively correlated with self-reports of physical attraction. This finding may suggest that because individuals feel dissatisfied with their body and appearance they may think others will share such negative attitudes, thus they isolate themselves from others. However, it is interesting that regardless of such negative body perceptions, women with higher loneliness did not have an increased drive for thinness (and drive for thinness is much more common in women than in men; thus the lack of a relation is telling). It is unclear why the present study did not replicate previous findings of a relationship between bulimia and loneliness. It might be that we measured bulimic symptoms whereas most previous studies concerned bulimic patients.

Previous studies indicated a relationship between interpersonal dependency and disordered eating (Cassin & von Ranson, 2005; Johnson et al., 2006; Lilenfeld et al., 2006); however, we found this was only true for women. Interpersonal dependency was only related to body dissatisfaction in men. As most previous research examined only women, this gender difference in the relationship between key variables in the present study highlights the importance of examining these associations separately in men and women. In addition, this pattern of gender differences in findings may support Bornstein (2001), who noted that the relation was modest and varied across disordered eating symptoms. In addition, interpersonal dependency correlated with loneliness, supporting the findings of Mahon (1982) and Overholser (1992). Thus, interpersonally dependent personalities may be aggravated by both disordered eating (Bornstein) and loneliness (Nietzel & Harris, 1990; Santor & Patterson, 2004).

Regardless, because loneliness and interpersonal dependency are moderately positively correlated with each other in both men and women, these direct associations are based on common aspects and thus may misestimate the relative influence. Analyses including interpersonal dependency and loneliness support Bornstein's (2001) view. Controlling for loneliness significantly reduced the influence of interpersonal dependency on body dissatisfaction. Thus, while individuals who are more interpersonally dependent may appear to have greater body dissatisfaction, this relation is largely the result of feelings of loneliness. However, contrary to the hypothesized model, we were unable to test whether loneliness mediated the relation for drive for thinness and bulimic symptoms. Body dissatisfaction was certainly the most common of the disordered eating behaviors exhibited by our sample and also had the greatest amount of variability in scores. Thus, perhaps we simply did not have enough power to detect a mediation relationship for the other two variables given the small sample sizes for each of our groups (men, women).

The results of this study provide evidence that loneliness may contribute to a more general negative perception of self. Because individuals who are interpersonally dependent rely significantly on others,

when they experience loneliness they may be more likely to internalize those feelings into self-loathing. It is further possible that body dissatisfaction may be a component of a more general negative self perception.

Limitations

Despite the significant findings of the present study, several limitations may have influenced the results. First, the nature of the sample was restricted by the use of college students. The average age of the sample tends to be significantly lower than the general population, and the majority of the sample was Caucasian. The cross sectional nature of the sample also limits the ability to generalize such findings. Secondly, using self-report measures may cause problems with social desirability bias, fatigue, and recall bias. Further, using an abridged version of the interpersonal dependency scale reduced its reliability. In addition, not using a clinical sample with diagnosed eating disorders may skew the relation because it only shows a relation between those in the midrange of the distribution for the various measures of disordered eating. Finally, breaking the students into two gender groups reduced our sample size, which had a negative impact on the power to find statistically significant relationships among variables. Future studies utilizing a larger sample size may wish to investigate this issue further.

Despite this bias against the findings, this study suggests a possible mediating relation of loneliness in the relation between body dissatisfaction and interpersonal dependency. Further research should continue to explore this relation in a longitudinal sample with a more diverse population.

Conclusion

The present study suggested that the relation between interpersonal dependency and body dissatisfaction may be mediated by loneliness. Future research should also consider that simple models relating an individual personality trait to a single indicator of disordered eating may obscure the complex relationships among traits, thoughts and behaviors that affect individuals with disordered eating. It would also be desirable to employ longitudinal surveys to determine the cause and effect relationships among these variables. In this study, it was assumed that loneliness and interpersonal dependency are relatively stable characteristics that affect the disordered thoughts and eating behaviors. However, it is possible that there may be some causation in the opposite direction such that individuals with disordered thoughts and eating behaviors may become lonelier and more dependent on others. The nature of the present study does not allow for testing the direction of causality.

Because loneliness is related to body dissatisfaction, it is important that loneliness be addressed when designing treatment programs for those suffering from body dissatisfaction. Although many outpatient programs include support groups, such support needs to be more continual. Efforts should be made to create ongoing support networks that allow individuals to always be able to connect to others, including people who have not been diagnosed as eating disordered. By reducing loneliness through therapy or group work, interpersonal dependency may also be reduced.

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Table 1

Means (and Standard Deviations) of Disordered Eating by Gender

.	DFT	Bulimic Symptoms	BD
Men (N=98)	2.20 (2.86)	1.29 (2.27)	5.91 (5.45)
Women (N=147)	5.69 (5.63)	1.96 (3.17)	11.33 (7.81)

Note: DFT = Drive for Thinness, BD = Body Dissatisfaction

Table 2

Correlation Coefficients among Variables by Gender

	Loneliness	Interpersonal Dependency
Men (N=98)		
Interpersonal Dependency	.43***	
Drive for Thinness	.27**	.18
Bulimic symptoms	.32**	.15
Body Dissatisfaction	37***	.28**
Women (N=147)		
Interpersonal Dependency	.48***	
Drive for Thinness	.08	.19*
Bulimic symptoms	.14	.33***
Body Dissatisfaction	.32***	.24**

Note. *$p < 0.05$ ** $p < 0.01$, *** $p < .001$

Table 3

Regression Analyses by Gender

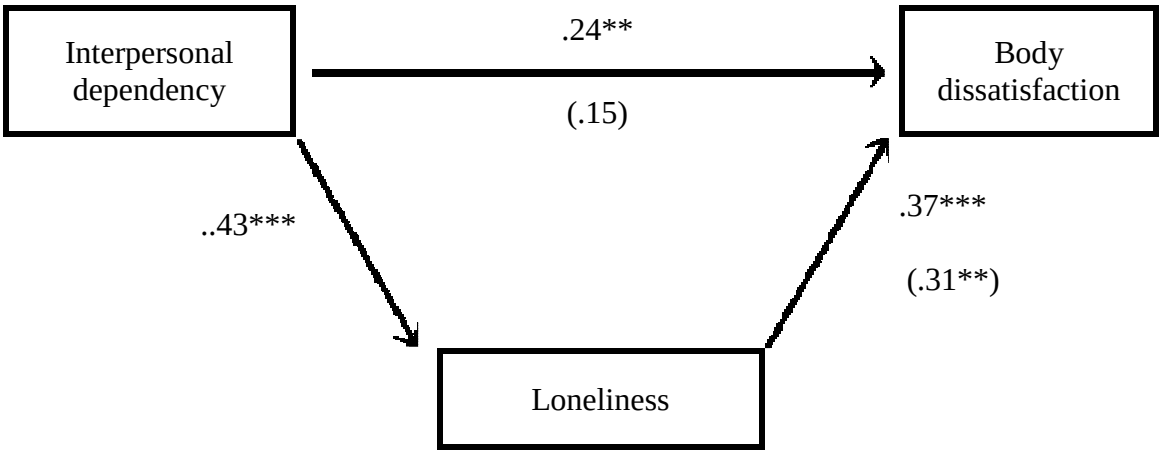
	Constant	Loneliness (LON)	Inter Dep (ID)	β_{LON}	β_{ID}
Men					
Model 1	23.46	0.25		0.43***	
(Interpersonal Dependency)	(2.21)	(0.05)			
Model 2	16.44	0.16	0.13	0.31**	0.15
(Body Dissatisfaction)	(2.88)	(0.05)	(0.09)		
Women					
Model 1	22.43	0.30		0.48***	
(Interpersonal Dependency)	(1.85)	(0.05)			
Model 2	23.37	0.20	0.13	0.27**	0.11
(Body Dissatisfaction)	(3.26)	(0.06)	(0.10)		

Note. Top numbers represent the regression coefficients, standard errors of the estimate are in parenthesis. For men, $R^2 = 0.18$ for Model 1; $R^2 = 0.16$ for Model 2; For women, $R^2 = 0.23$ for Model 1; $R^2 = 0.12$ for Model 2.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Figures 1a and 1b

Path Diagrams for Relationships between Loneliness, Interpersonal Dependency and Body Dissatisfaction for Men and Women

Men



Women

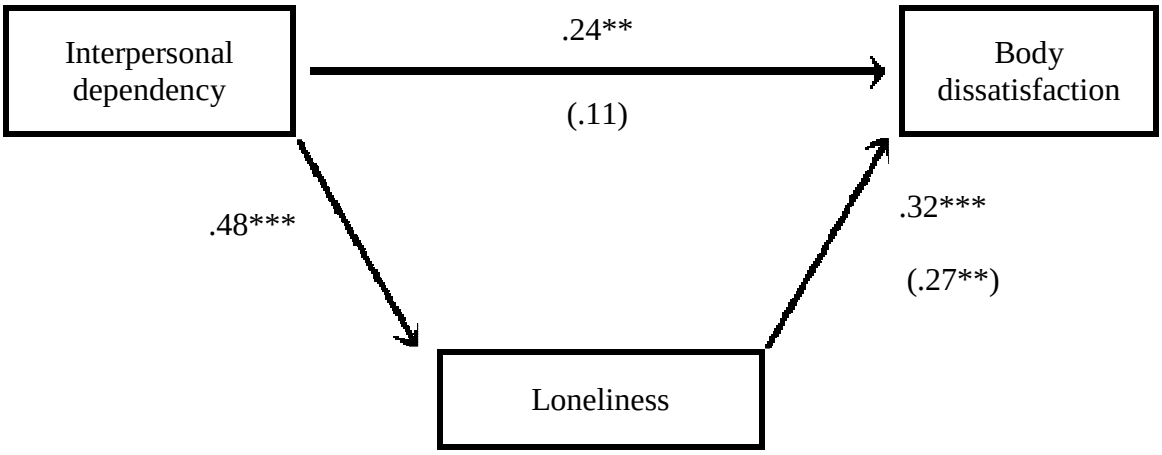


Figure Caption

Figure1. Path diagrams: The illustrations show the relationship between loneliness, interpersonal dependency and body dissatisfaction for men and women. Two sets of beta weights are shown representing the direct and indirect influence of interpersonal dependency on the disordered eating measures. The beta weights in parenthesis represent those computed after the mediator has been included in the regression equation.
$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$