2009

DISORDERED EATING, ANTIFAT ATTITUDES, AND BARRIERS TO TREATMENT IN COLLEGE WOMEN FROM URBAN AND RURAL AREAS

Alison Christine Pepper
The University of Montana

DISORDERED EATING, ANTIFAT ATTITUDES, AND BARRIERS TO TREATMENT IN COLLEGE WOMEN FROM URBAN AND RURAL AREAS

By

ALISON CHRISTINE PEPPER

M.A., California State University San Marcos, San Marcos, CA, 92096
B.A., University of California, San Diego, CA, 92093

Dissertation

presented in partial fulfillment of the requirements
for the degree of

Doctor of Philosophy
in General Psychology, Quantitative Emphasis

The University of Montana
Missoula, MT

Spring 2009

Approved by:

Perry Brown, Associate Provost for Graduate Education
Graduate School

Christine Fiore, Ph.D., Chair
Psychology

Bryan Cochran, Ph.D.
Psychology

Dan Denis, Ph.D.
Psychology

Kathy Humphries, Ph.D.
Rural Institute Center for Excellence in Disability Education, Research, and Service

Cheryl VanDenburg
Curry Health Center, Clinical and Psychological Services

ABSTRACT

Pepper, Alison, Ph.D., Spring 2009 Psychology

Disordered Eating, Antifat Attitudes, and Barriers to Treatment In College Women from Urban and Rural Areas

Chairperson: Christine Fiore, Ph.D.

Abstract Content

Disordered eating (DE) is associated with physical and emotional consequences. Most incidence studies comparing rates in urban and rural regions are international. Only one examined regional differences within the United States, and no significant differences emerged. Additionally, no investigations focus on DE treatment barriers specific to rural regions. In 106 college women with significant DE patterns, this study investigated weight-based prejudices, system-level barriers, and regional status. Despite no significant regional differences in DE or barriers to treatment, results revealed high prevalence of DE and exposed barriers to DE-treatment among college women. Exploratory analyses supplement the dearth of research focusing on DE in rural regions, which may help professionals tailor DE-related services to rural college cultures.

DEDICATION

I dedicate this project to my mom who raised me to believe that I *can* be anything. Thank you for supporting me always and for loving me unconditionally since day one. I also dedicate this project to my dad who exemplifies perseverance, creativity, and compassion. Your strength and humor in the face of life's challenges made me humble and hopeful. Many, many thanks to my siblings, step-parents, extended family, my partner, and my dear friends who joined me on this long, bumpy road. Thank you for standing by me even after I tripped over the same bump more than once. I also want to thank my official and "unofficial" advisors, mentors, and committee members over the last 13 years: Drs. Lacey Barnes, John Polich, Marie Thomas, Sonia Ruiz, Sharon Hammil, Heike Mahler, Wesley Schultz, Chris Fiore, Bryan Cochran, Dan Denis, Kathy Humphries, Rosemary Hughes, Laura Fuller, Mary Neal, and Marcy Bornstein. I am grateful you took a risk on me, provided me with guidance, challenged me, had a lot of patience, and encouraged me. Although the letters Ph.D. are behind my name, I truly would not have ever become "Dr. Pepper" with this network of support.

TABLE OF CONTENTS

Disordered Eating, Antifat Attitudes, and Barriers to Treatment In College Women from Urban and Rural Areas

Disordered Eating, Antifat Attitudes, and Barriers to Treatment In College Women from Urban and Rural Areas

Many college females endorse disordered eating behaviors (Franko, Mintz, Villapiano, Green, Mainelli, & Folensbee, et al., 2005; Schwitzer, Rodriquez, Thomas, & Salimi, 2001; Striegel-Moore, Silberstein, Frensch, & Rodin, 1989; Mintz & Betz, 1988). This is concerning given that disordered eating is associated with serious physical (Pomeroy, 2004) and emotional consequences (Lock, Reisel, & Steiner, 2001; Schwitzer, et al., 2001; Wade, 2007). Furthermore, many studies on disordered eating behaviors include participants primarily from large urban regions. However, Jameson and Blank (2007) argued that the prevalence of mental illness in rural areas does not appear to differ from rates seen in nonrural areas. In addition to a few international studies, only one study has compared prevalence rates of disordered eating patterns between urban and rural regions within the United States (i.e. Bagley, Character, & Shelton, 2003). Consequently, little is known about the prevalence of disordered eating patterns within rural regions.

Even more alarming, however, is that many individuals with disordered eating behaviors do not seek treatment (Garvin & Striegel-Moore, 1999). One explanation is that some individuals with disordered eating patterns deny or minimize the problem and consequently refuse help (Vitousek & Stumpf, 2005). Another explanation is that some individuals with disordered eating patterns encounter barriers to treatment. For example, strongly endorsed reasons for not seeking treatment include shame, believing people should be strong enough to help themselves, being unaware of treatment sources or options, and having insurance or financial concerns (Cachelin, Rebeck, Veisel, &

Striegel-Moore, 2001; Cachelin & Striegel-Moore, 2006). Such barriers may be magnified in small or rural areas (Presidential Commission on Rural Mental Health, 2006). However, there is no empirical evidence documenting the barriers to treatment for disordered eating in rural regions. While Jameson and Blank (2007) suggested comparable prevalence rates, the authors also emphasized that rural regions have fewer quality treatment options compared to urban regions. There is clearly a need to expand the dearth of research on disordered eating behaviors and the associated barriers to treatment in rural regions.

Disordered eating

Defining Disordered Eating

The current edition of the Diagnostic and Statistics Manual (APA, 2000; DSM-IV-TR) classifies eating disorders (ED) into 4 separate clinical categories: Anorexia Nervosa (AN), -Bulimia Nervosa (BN), Eating Disorder-Not Otherwise Specified (ED-NOS), and Binge Eating Disorder (BED). Individuals who do not meet the DSM-IV's (APA, 2000) criteria for a full clinical ED (i.e. AN, BN, ED-NOS, and BED) are often described as having a "subclinical" ED, "partial" ED, or a "disordered eating pattern."

Despite the DSM-IV's (APA, 2000) specific guidelines, confusion often surrounds what it means to have a "clinical eating disorder." Some researchers assess AN and BN, while others investigate additional within group distinctions, including AN- or BN- purging or non-purging subtypes. Furthermore, although the DSM-IV (APA, 2000) recognizes ED-NOS as a full clinical syndrome, it is often inappropriately considered a "residual" category (Fairburn, Cooper, Bohm, O'Conner, Doll, & Palmer, 2006). Consequently, many individuals are lumped into the ED-NOS category, which is equated

to a “subclinical,” “partial,” or “disordered eating” group. Clarifying these terms is also important because researchers often use these or some derivative to refer to similar behaviors. For example, ED-NOS, “partial eating disorder,” “disordered eating,” or “subclinical eating disorder” are labels often used to describe conditions that do not meet the AN or BN criteria outlined by the DSM-IV (APA, 2000) and may include chronic dieting, extreme restricting, infrequent purging, or occasional binge eating. However, research indicates that ED-NOS can be just as severe as BN (Fairburn, et al., 2006).

To further complicate the operationalization of “clinical” and “subclinical” eating disorders, many investigations exclude those who are obese. The reason is the appropriateness of including individuals who are overweight or obese in a “disordered eating group” is questioned. While many people who binge eat may be overweight or obese, being overweight or obese does not always involve binge eating. For example, in their review of the literature, Stunkard and Allison (2003) reported that between 8.9% and 30% of obese individuals who were seeking treatment for their obesity were binge eaters (Stunkard & Allison, 2003). In fact, the current DSM (APA, 2000) does not classify obesity as an “eating disorder” or as a “mental illness.”

Given all the confusion, it is important to clearly explain this study’s denotation of “disordered eating.” In this study, “disordered eating” encompasses clinical eating disorders, including AN, BN, ED-NOS, and the purging or non-purging subtypes. Given the low prevalence of clinical ED’s, participants will not be categorized into these specific groups. “Disordered eating” will also encompass subclinical eating disorders, such as restricting, chronic dieting, binge eating, purging, or any other non-purging behavior geared to lose weight (i.e. excessive exercise or laxative abuse). An individual

who reports a body mass index that implies she is either overweight, underweight, obese or anorexic will not be considered within the "disordered eating" group unless she specifically reveals disordered eating behaviors. An illustration of DE is depicted in Figure 1.

While excluding individuals who may be denying or minimizing unhealthy eating patterns is a risk, it is inappropriate to assume that those who are extremely overweight or underweight have a disordered eating pattern. There are other medical and social causes for such weight disorders. Thus, "disordered eating" (DE) is based on eating behaviors and not weight.

The importance of DE

Even though there are behavioral distinctions between clinical and subclinical ED's (e.g. restricting vs. vomiting), the physical and emotional consequences of clinical and subclinical ED's are both clinically significant. Specifically, clinical and subclinical ED's are associated with serious physical consequences and complex emotions. Therefore, both warrant an investigation into treatment patterns.

Physical Consequences.

When defining AN, the DSM-IV uses the example that an individual may be 85% below his or her expected weight (APA, 2000). However, the behaviors characteristic of AN can have serious physical consequences even if a client's weight is above this noted cutoff. For example, food and fluid restriction, excessive exercise, and overaggressive caloric replacement are associated with bradycardia, hypotension, congestive heart failure, constipation, metabolic disorders, electrolyte imbalances, dehydration,

amenorrhea, respiratory failure, muscle atrophy, osteopenia or osteoporosis, weakened immune system, and an increased mortality rate (Pomeroy, 2004).

Similarly, behaviors associated with BN-purging type are dangerous, regardless of whether or not they occur precisely as often as the DSM-IV's stated cutoff, which is more than twice a week for more than 3 months (APA, 2000). While the physical consequences of vomiting increase as the frequency of vomiting increases (Wolfe, Metger, Levine, & Jimerson, 2001), the exact rate of vomiting required to cause physical harm is unclear (Abbate-Daga, Piero, Gramaglia, & Fassino, 2005). In addition to vomiting, there are other problematic behaviors associated with BN, all of which have serious physical consequences. Intermittent caloric restriction, binge eating episodes, excessive exercise, and abuse of laxatives, diet pills, diuretics, enemas, and ipecac are associated with heart arrhythmias, sudden cardiac arrest, esophageal perforation, delayed gastric emptying, ulcerations, gastrointestinal bleeding, dysmenorrhea, metabolic disorders, electrolyte imbalances, pneumonitis, emphysema, and an increased mortality rate (Pomeroy, 2004).

There are also serious physical consequences associated with the behaviors related to BED. Very low calorie diets, quick binging episodes, alternative medicines for weight loss, and other weight loss "fad" diets are associated with hypertension, atherosclerosis, congestive heart failure, gastric dilation or rupture, Type II diabetes mellitus, metabolic abnormalities, sleep apnea, increased cancer risk, and an increased mortality risk (Pomeroy, 2004).

A final reason why the prevalence of DE is concerning is because the related behaviors seem to be associated with potentially other physically risky behaviors.

Specifically, unhealthy weight loss methods like vomiting and using laxatives, diuretics, and diet pills, have been linked to an increased likelihood of drug use, unprotected intercourse, and suicide attempts (Fairburn & Cooper, 1984; Lock, et al., 2001).

Complex Emotions.

In addition to the physical consequences, individuals with clinical ED and DE patterns are at an increased risk for emotional problems. Clinical ED's are associated with increased rates of depression, anxiety disorders, obsessive-compulsive disorder, and personality disorders (Lock, et al., 2001; Steiner & Lock, 1998). Compared to control samples, individuals with DE behaviors have evidenced higher rates of depression (Lock, et al. 2001; Richards, Casper & Larson, 1990; Schwitzer, et al., 2001), suicidality (Wade, 2007), anxiety (Button, Looan, Davies, & Sonuga-Barke, 1997; Lock, et al., 2001) and lower levels of self-esteem (Lock, et al. 2001; Schwitzer, et al., 2001; Richards et al., 1990). Cohen and Petrie (2005) found that when compared to a asymptomatic comparison group, female undergraduates with clinical ED's and DE patterns reported higher levels of cognitive dysfunctions such as catastrophizing, the sense of being vulnerable to the uncertainties of life, and perfectionism. They also found that the clinical ED group and DE groups reported more sadness, guilt, shame, and stress, as well as less happiness and confidence. However, there were no significant differences on any of these outcome variables between the clinical ED group and those with DE subclinical ED's (Cohen & Petrie, 2005). The authors concluded that women with varying degrees of eating disorder symptomatology share many cognitive, affective, as well as behavioral characteristics (Cohen & Petrie, 2005).

Normal may not be healthy

In light of their physical consequences and complex emotions, it is important to recognize the prevalence of DE. The *DSM-IV-TR* (APA, 2000) estimates that the lifetime prevalence rates of AN and BN in women are .5% and 1-3%, respectively. The *DSM-IV-TR* (APA, 2000) also reports that women with *subclinical* eating disorders (i.e. ED-NOS) are "more commonly encountered" (p. 587).

These rates may appear low compared to other mental illnesses. However, rates of clinical ED's and DE in college females are alarming. When assessing the prevalence of DE on a large university campus, one study found that 57.3% of women were dieting, 33.1% were binge eating, and 8.6% were purging at the beginning and end of the school year (Striegel-Moore, Silberstien, Frensch, & Rodin, 1989). Mintz and Betz (1988) examined rates of disordered eating in a sample of college women at Ohio State. They found that 61% of participants were classified as having some type of DE problem. Specifically, despite 59.8% of the sample being of normal weight, 11.4% endorsed chronic dieting, 15.6% and 10.3% reported either binging or purging alone, and 26.9% met criteria for subthreshold BN. These results led Mintz and Betz (1988) to an especially noteworthy conclusion: "in terms of disturbed eating behaviors, 'normal' is not 'normative' – rather what is normative among college women reflects to at least some degree less than healthy eating behavior" (p. 470).

Although the high prevalence of eating-related problems among college women is well documented (Schwitzer, et al., 2001), current studies continue to suggest that rates may not be declining. For example, Franko and colleagues (2007) examined eating disorder symptoms in a large (N = 5,435), multiethnic sample of college students. The

authors found that over the last 6 months, 35.9 % of participants endorsed binge eating, 23.9% were restricting, 17.7% were over exercising, 8.3% were vomiting, 6.2% were using laxatives, 4.8% were using diuretics, and 3.8% were using more than one form of purging (i.e. vomiting, laxatives, diuretics, or over exercise; Franko, Becker, Thomas, & Herzog, 2007). Gentile and colleagues (2007) assessed DE in an ethnically diverse sample of urban college students. About 12% of women were classified as having either a clinical or "subclinical eating disorder" (Gentile, Raghavan, Valli, & Gates, 2007). Franko and colleagues (2005) found very similar rates when screening college females for an ED. The researchers reported that 12.9% of the women in their sample may have a clinical ED (Franko, Mintz, Villapiano, Green, Mainelli, Folensbee, et al., 2005).

The findings above are consistent with what Vohs and colleagues (2001) recognize, the exact prevalence rates of problematic eating in college females varies (Vohs, Heatherton, & Herrin, 2001). Such variability may be accounted for by inconsistently operationalizing DE or using different measures between studies when assessing DE. Nonetheless, there seems to be a consensus that rates of problematic eating in college women are notably high, and as previously outlined, the high prevalence rates are concerning given that DE is associated with serious physical and emotional consequences. Before examining treatment patterns and associated barriers, it is important to consider an important risk factor in the development of disordered eating patterns.

Body Dissatisfaction

Body dissatisfaction (BD) plays a major role in the development of DE (Byely, Archibald, Graber, & Brooks-Gunn, 2000; Kelly, Ricciardelli & Clark, 1999; Lawrence

& Thelen, 1995; Littleton & Ollendick, 2003; McVey, Pepler, Davis, Flett, & Abdolell, 2002). In fact, after their extensive review of the literature, Stice and Shaw (2002) concluded that there is prospective and experimental evidence supporting the idea that BD increases the risk for later eating pathology. Researchers explain that the negative feelings associated with poor BD may initiate dysregulated eating patterns, such as skipping meals, dieting, and bingeing (Littleton & Ollendick, 2003).

As Schwitzer and colleagues (2001) stated, "College students typically express concerns about body image, body shape, body size, and weight control" (p. 157; Schwitzer, et al., 2001). Mintz and Betz (1988) were the first to acknowledge that BD was a common feature in college women. After their seminal investigation on eating disordered behaviors in college women, they made the strong conclusion that "watching one's weight is the norm for college women" (p. 469; Mintz & Betz, 1988).

Empirical investigations continue to find high rates of BD in women on college campuses. For example, Neighbors and Sobal (2007) first calculated participants' body mass indexes (i.e. BMI), a measure of body fatness, using self-reported height and weight. Based on BMI, participants were categorized into 3 weight categories, under weight, normal weight and overweight. The authors concluded that in general the majority of the participants reported elevated levels of body weight or shape dissatisfaction, and the magnitude of BD appeared to increase with body size. In a large (N = 18,512), international study of body image in university students from 22 countries, Wardle and colleagues (2006) categorized participants into either an underweight, normal, or overweight group based on BMI, which was again gleaned from self-reported height and weight. They found that about 45% of all college women believed that they

were overweight and this overweight perception increased systematically across all weight groups. The researchers also reported that around 51% of all the women reported that they were trying to lose weight. In the United States specifically, 45% of college women perceived herself as overweight while 59% reported that she was trying to lose weight. Overall, many women perceived themselves as overweight and were trying to lose weight despite being underweight, normal weight or overweight. This led the authors to raise their concern about college women 'normalizing' feeling overweight and the behaviors used to compensate for feeling overweight (Wardle, Haase, & Steptoe, 2006).

While BD is one of the strongest predictors of DE behaviors, other important factors influence both BD and DE. These variables are relevant when investigating DE behaviors . Therefore, the purpose of this next section is to review briefly how DE and BD are influenced by body mass index (BMI) and socioeconomic status (SES).

Body mass index. There is evidence that BD and DE are both associated with body mass index (BMI). For example, Candy and Fee (1998) found that higher BMIs were significantly correlated with higher BD in preadolescent girls. These findings have been replicated using samples of adolescent females (Striegel-Moore, Schreiber, Lo, Crawford, Obrzanek, & Rodin, 2001), as well as in prospective studies. For example, Stice and Whitenton (2002) found that "increased adiposity" at baseline predicted increased BD one year later among adolescent girls Paxton and colleagues' (2006) prospective study included 1,386 pre-adolescent and adolescent girls (Paxton, Eisenberg, & Neumark-Sztainer, 2006). Results from their 5 year follow-up confirmed that BMI was a strong and consistent predictor of increased BD in both the pre-adolescent and adolescent girls (Paxton, et al., 2006).

Socioeconomic status. SES has repeatedly appeared in the literature as a risk factor for DE. Specifically, DE was highest in women from higher SES groups (Rogers, Resnick, Mitchell, & Blum, 1997). However, the relation between SES, BD, and DE is controversial. Empirical evidence has fostered the stereotype that eating and weight issues are exclusively a problem among European American females from the middle- to upper- classes (Wildes, Emery, & Simons, 2001). This stereotype exists despite opposing findings. Results revealed that women from the *higher* SES group were *more* likely to be *satisfied* with their bodies than women from the middle and low SES groups (Story, French, Resnick & Blum, 1995). Paxton and colleagues' (2006) study of prospective risk factors for BD included SES. They concluded that Time 1 lower SES predicted Time 2 BD in adolescent girls. Story and colleagues (1995) assessed the relationship between SES status and BD. Other research suggests that there is no true relation between BD, DE and SES. For example, these constructs were examined in a large group of European American and African American adolescents (Striegel-Moore, et al., 2000). There was not a significant association between parental education and BD (Striegel-Moore, et al., 2000). These results were corroborated in a multi-ethnic sample of college women (Kuba & Harris, 2001). SES did not significantly predict BD (Kuba & Harris, 2001). Some authors acknowledge that a higher SES status was a risk factor for BD and DE; however, they argue that because the media has infiltrated all corners of society, BD and DE are no longer exclusive to higher SES groups (Soh, Touyz, & Surgenor, 2006).

Research suggests that BMI and SES are somehow related to BD and DE. Future projects investigating other factors related to BD or DE should control for the potential effects of SES and BMI. Otherwise, any potential differences in BD or DE may be

confounded by BMI or SES, which casts doubt that the independent variable is responsible for the variance. One less investigated demographic variable that may influence BD or DE includes regional status. Before reviewing the empirical evidence, discussing the potential theories for possible regional differences in DE is important to establishing the foundation of the proposed project.

Sociocultural explanations for urban-rural differences

Social Comparison Theory

Several scholars have proposed various sociocultural theories to explain body dissatisfaction and disordered eating symptomatology. Their purpose is not to negate the important roles that biology and psychology play in the etiology and maintenance of body dissatisfaction or disordered eating symptomatology. As Hesse-Biber and colleagues (2006) attested, "these factors alone cannot fully explain the burgeoning increase of disordered eating practices over a forty year span—women and men across boundaries of gender, class, race, ethnicity, age and sexuality—and requires is to take a more in-depth look at the socio-cultural aspect…" (p. 209). Understanding sociocultural theories may help us identify and explain potential differences in disordered eating practices between women residing in urban and rural American communities.

One popular sociocultural theory is Festinger's (1954) Social Comparison Theory (SCT). According to the SCT, people have an inherent drive to evaluate their opinions and abilities. To do so, the SCT suggests that people compare their opinions and abilities to others who may be better (i.e. upward comparison) or worse (i.e. downward comparison) on some dimension. Festinger's (1954) SCT suggests that a decrease or an increase in self-regard may result when the individual appraises his or her abilities or

opinions to be quite different from the upward or downward standard, respectively. Lastly, individuals will take action to reduce any existing discrepancies in abilities (Festinger, 1954).

Since its inception, many researchers have revised Festinger's original SCT (1954) and applied it to an array of issues, including eating disorders (Corning, Krumm, & Smitham, 2006; Wood, 1989). Consistent with Festinger's original SCT (1954), researchers have claimed that individuals typically compare themselves to others who they believe are more attractive in some regard (Hesse-Biber, Leavy, Quinn, & Zoino, 2006; Morrison, Kalin, & Morrison, 2004; Wheeler & Miyake, 1992). Morrison and colleagues (2004) subdivided upward comparisons, distinguishing between "particularistic" comparisons (i.e. intimate person) and "universalistic" comparisons (i.e. media images). Similar to Festinger's (1954) original notion that upward comparisons result in a decreased self-regard, researchers claim that particularistic comparisons can decrease one's notion of her own attractiveness, and universalistic comparisons can increase her pressure to conform (Hesse-Biber, et al., 2006; Morrison, Waller, Meyer, Burditt, Wright, et al., 2003; Morrison, et al., 2004; Wheeler & Miyake, 1992). Botta (2003) eloquently explained this process:

> Social comparison theory asserts that adolescents examine media images to learn what is beautiful, decide how they should look, compare their appearance to what the media set forth as beautiful, and motivate themselves to change how they look to match the models and actors they see in media. It is through this process that adolescents become dissatisfied with their bodies and resort to unhealthy eating behaviors (p. 391).

Although SCT is used often to explain the etiology and maintenance of eating disorder symptomatology, relatively few have investigated this relationship (Becker,

Keel, Anderson-Fye, & Thomas, 2004). However, a number of these studies support the relationship between universalistic comparisons and eating disorder symptomatology (Botta, 2003; Corning et al., 2006; Heinberg & Thompson, 1992; Phinhas, Toner, Ali, et al., 1999; Stice, Schupak-Neuberg, Shaw, & Stein, 1994). For example, in a survey of 297 college students, Heinberg and Thompson (1992) found that celebrity comparisons were significantly linked to increased body dissatisfaction, increased drive for thinness, and increased bulimic behaviors. In another survey of 201 high school and college girls, Botta (2003) found that increased comparisons to celebrities were related to increased anorexic behaviors, increased bulimic behaviors, increased drive to be thin, and decreased body satisfaction. Corning and colleagues (2006) presented images of women from various magazines and fashion catalogues to groups of undergraduate women with and without ED-symptomatology. Those with ED-symptomatology endorsed what the authors described as a "greater tendency to engage in social comparison" (p. 341, Corning, et al., 2006).

Empirical evidence also seems to support the relationship between *particularistic* comparisons and eating disorder symptomatology. In fact, Taylor and colleagues (1997) found that peer emphasis might be even more important than magazine or television images when explaining the desire to be thin among adolescents (Taylor, Sharpe, & Shisslak, 1997). One innovative study contrasted upward and downward particularistic, appearance-based comparisons. Lin and Kulik (2002) randomly assigned a group of college women into three groups, those who viewed photos of thin-peers, oversized peers, and those who did not view any photos. Women who compared themselves to images of thin peers experienced increased body dissatisfaction (Lin & Kulik, 2002).

However, body dissatisfaction did *not* change when participants compared themselves to images of oversized peers, nor did body dissatisfaction change in the control group (Lin & Kulik, 2002). Therefore, while particularistic, upward comparisons (i.e. images of thin peers) increased body dissatisfaction, particularistic, downward comparisons (i.e. oversized images) did *not* improve body satisfaction, contrary to Festinger's original SCT (1954). Lin and Kulik (2002) called these results "bad news," and they concluded that peer-based upward comparisons might lead to a spiral of negative body image because downward comparisons do not challenge the negative effect of upward comparisons (Lin & Kulik, 2002).

In summary, while downward comparisons may not influence eating disorder symptomatology, particularistic and universalistic upward comparisons seem to increase one of the major predictors of eating disorders, body dissatisfaction (e.g. Stice & Shaw, 2002). However, researchers admit that the direction of the relationship between the media and eating disorder symptomatology is unclear (Becker, et al., 2004). Becker and colleagues (2004) confessed, "it is uncertain whether media simply reflect or create the social preference for slimness." Nevertheless, researchers seem to agree emphatically that sociocultural factors, such as the media, perpetuate the American culture's adoration for thinness (Becker & Hamburg, 1996).

SCT and Potential Regional Differences

Becker and colleagues (2004) acknowledged, "the prevalence of eating disorders varies with historical, social, cultural, and occupational contexts;" yet, one paragraph later, they stated, "the prevalence rates of eating disorders appear to be consistent across English-speaking North America and Western Europe" (p. 83; Becker, et al., 2004). How

can such consistency exist within a nation that is so historically different, socially diverse, multicultural, and, essentially, multidimensional? Can varied historical, social, cultural, and occupational contexts within the United States help identify differences in eating pathology within the United States? In particular, can investigating these contexts through the lens of SCT help identify and explain potential regional differences in eating disorder symptomatology among women? Unfortunately, predictions based on the SCT are inconsistent.

Compared to urban regions, rural areas are less populated and may be less saturated with the media's message that "thin is in" (Becker, et al., 2004). Consequently, women from rural regions may have fewer peers, which translates into fewer upward, *particularistic* comparisons; and, women from rural regions may make fewer, upward, *universalistic* comparisons. However, does the number of friends and amount of media exposure influence eating disorder symptomatology? Participants in Lin and Kulik's (2002) experiment saw only *one* photo of a slim or overweight female body, which compromised their body satisfaction. Phinhas and colleagues (1999) presented college women slides of fashion models, and concluded that exposure *immediately* and negatively affected body satisfaction.

Having a smaller circle of friends and less media exposure may not necessarily protect women from rural regions from the deleterious effects of upward comparisons. Following this line of reasoning, there may not be any significant differences in body dissatisfaction or disordered eating patterns between women from urban and rural regions. Women from urban regions may compare themselves to the barrage of media and wide circle of friends present in the urban culture, consequently increasing their

eating disorder symptomatology. However, is the result similar when women in rural regions consistently compare themselves to the same, albeit fewer, particularistic and universalistic measures?

Ancillary to the SCT, Gerbner and colleagues' (1994) Cultivation Theory proposed that there is an "additive" model of social influences on eating disorder symptomatology (Hesse-Biber, et al., 2006; Holtrom, 2004). Levine and Smolak (1996) theorized that the steady reappearance of certain values and omission of others powerfully influences and "homogenizes" our concept of social reality (Smolak & Levine, 1996, p. 250). Applying the Cultivation Theory to explain body image and eating disorders suggests that the more exposure to images of extremely thin women, the more American women idealize the image *and* believe it is attainable, thus increasing the development of eating disorder symptomatology (Hesse-Biber, et al., 2006; Holstrom, 2004; Tiggeman & Pickering, 1996). Based on the Cultivation Theory, and the notion that women in urban regions endure more media exposure, women from urban regions may endorse more eating disorder symptomatology than women from rural regions.

Becker and colleagues (2004) claimed that "a higher prevalence of eating disorders has been found consistently in urban areas compared with rural areas" (p. 84). Using sociocultural theory, they argued that increased eating disorder symptomatology in urban women is a result of several interacting factors, including urbanization, modernization, and social transitions (Becker, Keel, Anderson-Fye, & Thomas, 2004). They explained that with urbanization, traditional feminine gender roles conflict with more modern roles, ultimately resulting in eating disorders (Becker, et al., 2004). Specifically, the authors stated, "on the one hand, women in the U.S. have gained

increasing social and economic power, while on the other hand the standards for beauty and self-imposed bodily monitoring and discipline have become more stringent" (p. 85; Becker, et al., 2004). With increasing social and economic power, the authors argued that body shape has become essential to women's social positioning (Becker, et al., 2004). They declared that the media define the ideal body shape by conveying messages that "thin is in" and that women can adapt their bodies to these unrealistic standards (Becker, et al., 2004). Furthermore, the authors emphasized that the media's messages become more readily available with increasing urbanization (Becker, et al., 2004; Bordo, 1993). Therefore, because the valued body shape in the American culture is thinness, then the urbanized-induced transition of women's roles may increase urban women's risks for developing eating disorder symptomatology (Becker, et al., 2004).

Other investigators agree that urbanization fosters eating disorder symptomatology but offer various explanations. Van son and colleagues (2006) proposed the "Opportunity Hypothesis," suggesting that eating disorder symptomatology may be higher in urban areas because large, populated cities make it easier to engage in secretive behaviors. For example, it is easier to obtain large amounts of food anonymously in urban regions (Van son, et al., 2006). They also proposed the "Migration Hypothesis," which is based off the well-established findings that eating disorders are most common in adolescents and young adults (Van son, et al., 2006). The authors proposed that eating disorders are more common in urban areas because adolescents tend to migrate to urban areas (Van son, et al., 2006).

Based on the SCT and its ancillaries, eating disorder symptomatology may be higher in urban regions because of the inherent differences between urban and rural areas.

By its very definition, urban regions have more people than rural regions. There exist more schools, professional opportunities, theatres, shopping malls, grocery stores, etc., in urban compared to rural areas. There also is greater social competition, more pressure to modernize, and more exposure to the media (see Becker, et al., 2004; Hesse-Biber, et al., 2006; Holtrom, 2004; Van son, et al., 2006). Consequently, urban women may be at a greater risk for developing eating disorder symptomatology than women from rural areas.

Sociocultural and Individualistic Factors

Some researchers attest that sociocultural theories of eating disorder symptomatology place all the responsibility on the environment and portray individuals as passive media consumers. For example, Botta (2003) investigated media effects using the SCT and a cognitive processing approach. Botta (2003) argued that when predicting eating disordered symptomatology, even more important than *exposure* may be *how* individuals *process* the media. Health and fitness magazines may have fitness, beauty and dieting tips, but the question is whether individuals focus more on the weight-loss promoting advertisements and unrealistically thin models (Botta, 2003). Botta's (2003) survey-data from 201 high school and college girls revealed that reading health/fitness magazines was associated with a stronger drive to be thin and increased anorexic and bulimic behaviors, but *how* participants processed the context and images in the magazines better explained their eating disorder symptomatology (Botta, 2003). In particular, focusing on the central context was associated with fewer eating disorder behaviors, while focusing on a model's body size and shape was associated with more eating disorder behaviors (Botta, 2003). The author admitted that the direction of the relationship remains questionable: do magazines cause eating disorder behaviors, or are

those with eating disorder behaviors more likely to purchase magazines consistent with their image ideals? Despite this limitation, Botta (2003) emphasized the importance of cognitive processes when predicting eating disorder symptomatology. The implication is that aside from any evidence establishing cognitive differences between urban and rural residents, prevalence of eating disorder symptomatology may not differ between women from urban and rural regions.

Becker and colleagues (2004) also implied the importance of cognitive factors. They suggested that some individuals are more "vulnerable" to internalizing the thin ideals promoted by the media, and as a result, they are more likely to develop body dissatisfaction and disordered eating (Becker, et al., 2004). Hesse-Biber and colleagues (2006) concurred and proposed the "Uses and Gratification Theory." The premise is that individuals choose whether to expose themselves to the media's messages, how to interpret the messages, and how to act in response to these messages. Their theory was born from evidence showing that not all women exposed to the media develop eating disorder symptomatology (Hesse-Biber, et al., 2006). The authors introduced the concept of "non-internalization" when explaining why African American girls appear to ignore the "White western message of beauty" (p. 217; Hesse-Biber, et al., 2006). The researchers claimed that an increased racial identity protects African American girls from internalizing White western norms of beauty (Hesse-Biber, et al., 2006). Given that strong community ties and traditional values are popular in rural areas, increased regional identity may also protect rural women from internalizing the Western culture's message of beauty. The implication is that women in urban areas are at an increased risk for eating disorder symptomatology.

To summarize, some sociocultural theories suggest that urban women may be at an increased risk for eating disorder symptomatology compared to rural women. However, in stark contrast to Becker and colleagues' (2004) claim that "a higher prevalence of eating disorders has been found consistently in urban areas compared with rural areas" (p. 84), this literature review found inconsistent results. In fact, many did not find significant differences between those from urban and rural regions (e.g. Jonat & Birmingham, 2004; Kugu et al., 2006; Rathner & Messner, 1993). Furthermore, one study discovered *increased* rates in *rural* regions; unfortunately, Sjostedt and colleagues (2001) were unable to offer any theoretical explanations for the surprising findings. Clearly, further investigation into potential DE patterns between urban and rural women exist, and while sociocultural theories have helped facilitate an understanding of the etiology and maintenance of eating disorder symptomatology, the inconsistencies in the existing literature base hinder any directional hypotheses.

Disordered eating in rural regions

Only a few studies have examined the prevalence of ED or DE in rural regions, and fewer studies have actually compared rates between urban and rural regions. For example, Rathner and Messner (1993) assessed ED's in girls 11-20 years old who lived in a small rural Italian town. Although the study did not include a comparison group, the researchers suggested that the rates from their sample were similar to the rates found in European metropolitan areas, despite lower treatment rates (Rathner & Messner, 1993). Similarly, Jonat and Birmingham (2004) concluded that the prevalence rates of DE in a rural sample of Canadian high school students were comparable to rates in urban samples. Lastly, Kugu and colleagues (2006) found that the frequency of eating disorders

in a rural area of Turkey was very similar to studies conducted in urban areas of Turkey, as well as studies conducted in Western countries (Kugu, Akyuz, Dogan, Ersan, & Izgic, 2006).

Sjostedt and colleagues (2001) examined DE in both rural and urban participants in India. Contrary to their hypothesis, they discovered *more* DE in *rural* Indian students compared to *urban* Indian students (Sjostedt, Schumaker, & Nathawat, 2001). An investigation in The Netherlands produced somewhat similar results. While the incidence of BN was five times higher in cities than rural areas, AN was not associated with degree of urbanization (van Son, van Hoeken, Bartelds, van Furth, & Hoek, 2006). Lastly, Preti and colleagues (2007) compared eating disorder symptoms in 1,324 boy and girl high school students from urban and rural areas in Italy. The authors concluded that the distribution of eating disorder symptoms by regional status is complex (Petri, Pinna, Nocco, Pilia, Mulliri, et al., 2007).

Interestingly, all the studies referenced above were conducted outside of the United States (i.e. Rathner & Messner, 1993; Jonat & Birmingham, 2004; Kugu, et al., 2006; Sjostedt et al., 2001; van Son, et al., 2006). In fact, only one study has examined ED's among urban and rural European American women in the United States. Bagley and colleagues (2003) assessed symptoms related to ED's in women from Atlanta, Georgia (i.e. urban) or Waterloo, Iowa (i.e. rural). The urban group included 109 Black women and 59 White women, and the rural group included 60 Black women and 145 White women. The age range of the total sample was 18-61 years old. DE symptomatology was assessed through self-report instruments. After controlling for key covariates such as years of education and age, the only significant difference in DE behaviors between the

rural and urban regions was the use of laxatives for weight loss. Urban women reported earlier laxative use than rural women. No other significant differences in the quantity of ED symptomatology existed (Bagley, et al., 2003).

Treatment

What is available?

Researchers report that there has been great progress in the development of evidence based treatments and pharmacological interventions for individuals with eating disorders over the last 15 years (Garvin & Striegel-Moore, 1999; Peterson & Mitchell, 1999; Mitchell, Peterson, & Agras, 1999). With respect to BN, Guarda and Heinberg (2004) stated that much research supports the efficacy of outpatient cognitive-behavioral therapy (CBT) and interpersonal therapy (IPT) in decreasing the binging and purging behaviors associated with BN. Garvin and Striegel-Moore (1999) also reported that a few randomized controlled trials (RCTs) have shown that about half of individuals with BN experience a significant reduction in symptoms after a 16-20 week course of cognitive-behavioral therapy (CBT) or interpersonal therapy (IPT). It has been suggested that the other 50% of individuals who do not experience a reduction in symptoms may benefit from intense inpatient treatment. While long-term outcome studies have revealed recovery rates of 40-60%, researchers continue to find that relapses and remissions are very common (Guarda & Heinberg, 2004). Fortunately, there is some evidence that fluoxetine and fluvoxamine may help prevent relapse following successful treatment (Guarda & Heinberg, 2004). Similar findings were reported in Brownley (2007) and colleagues' systematic review of effective treatments for binge eating and weight loss (Brownley, Berkman, Sedway, Lohr, & Bulik, 2007). CBT plus medication (i.e. selective serotonin

reuptake inhibitors; SSRIs) seemed to reduce binge eating and increase weight loss; however, when patients quit using medications, they ceased losing weight (Brownley, et al., 2007).

As for AN, poor motivation for treatment, small sample sizes, and the need for multiple interventions have interfered with RCT's examining effective treatments for AN (Garvin & Striegel-Moore, 1999). Intensive inpatient treatment for AN has been linked to reduced relapse rates (Garvin & Striegel-Moore, 1999). However, such intensive inpatient treatment is expensive (Garvin & Striegel-Moore, 1999; Gowers & Bryant-Waugh, 2004). Researchers are beginning to examine stepped care approaches for eating disorders, which involves initially providing brief, less intense, and inexpensive care, followed by increasingly longer, more intense, costly treatment (Garvin & Striegel-Moore, 1999; Gowers & Bryant-Waugh, 2004). In its infancy, research has yet to show if such an approach is either financially advantageous or more effective than inpatient treatments (Garvin & Striegel-Moore, 1999). Guarda and Heinberg (2004) acknowledge that both partial hospitalization and inpatient treatments are multidisciplinary. Typical components primarily include weight restoration, along with nutritional rehabilitation, CBT, IPT, family therapy, group therapy, and dialectical behavioral therapy (Guarda & Heinberg, 2004). As for psychopharmacology, research results indicate poor efficacy in weight restoration, but like with BN, psychopharmacology may be helpful with relapse prevention once treatment has been completed (Guarda & Heinberg, 2004). However, also like BN, relapse and remission rates are very common in those with AN, and recovery tends to take an uneven course for over several years (Guarda & Heinberg, 2004).

Does the treatment work?

Despite these recent developments in the treatment of eating disorders, little is known about effective treatments outside of the laboratory (Garvin & Striegel-Moore, 1999). What is known is that many individuals with DE do not seek treatment (Garvin & Striegel-Moore, 1999). One explanation is that individuals with DE commonly deny or minimize their eating problems (Geller, Drab-Hudson, Whisenhunt, & Srikameswaran, 2004; Vitousek & Stumpf, 2005). In fact, research shows that denial and minimization seem to be strongly related to the severity of the illness, wherein those with severe AN or BN are more likely to refuse or drop out of treatment (Geller, et al., 2004; Herzog, Nussbaum, & Marmor, 1996; Herzog, Keller, Strober, & Yeh, 1992; Howard, Evans, Quintero-Howard, Bowers, & Andersen, 1999).

To increase treatment adherence, many researchers have begun to focus on individuals' readiness or motivation to change their DE behaviors (Geller, et al., 2004; Geller & Drab, 1999; Geller, Williams, & Srikameswaran, 2001; Rieger, Touyz, Schotte, Beumont, Russell, Clarke, et al., 2000; Treasure & Schmidt, 2001; Vitousek, Watson, & Wilson, 1998). For example, Blake, Turnbull, & Treasure, (1997) adapted the original stages of change questionnaire (McConnaughy, Prochaska, & Velicer, 1983) to eating disorders to define the four stages presented in the transtheoretical model of change (TTM; DiClemente & Prochaska, 1998; Prochaska, DiClemente, & Norcross, 1992). People in the earliest stage of the TTM, precontemplation, are either unaware of the problem or unwilling to change the problem (DiClemente & Velasquez, 2002). During the second stage, contemplation, individuals acknowledge the problem and may be aware of its consequences. Even though they may begin to seriously think about changing the

problem, they are not ready to make a commitment to change (DiClemente & Velasquez, 2002). Those in the next stage, action, are actively working to change (DiClemente & Velasquez, 2002). In the final stage, maintenance, people are working to maintain the changes achieved during the action stage (DiClemente & Velasquez, 2002).

The TTM's stages of change seem to reflect individuals' willingness to change unhealthy behaviors. It is possible that one's willingness to change may be strongly related to his or her perceived barriers to treatment. For example, individuals in the precontemplation stage may be less willing to seek treatment, and as a consequence, may identify more barriers to treatment. Individuals in the contemplation stage seem to be aware of the problem but are reluctant to commit to change. Thus, they may identify fewer barriers to treatment than those in the precontemplation stage. Individuals in the action stage are more motivated to change and may identify even fewer barriers to change than those in the previous two stages.

Although there are a number of investigations on the significant relationship between stages of change and individuals' willingness to seek treatment, there does not seem to be any evidence documenting the relationship between the stages of change and perceived barriers to treatment. Specifically, searching keywords including "stages of change," "motivation to change," "transtheoretical model," "treatment," "therapy," "hospitalization," "barriers," "explanations," and "reasons," as well as their stems, in various combinations, and in a variety of data bases (i.e. PsychINFO, Medline, PsychBOOKS, PsychARTICLES, Sage-Full Text and PubMed), produced no studies on the relationship between the stages of change and perceived barriers of treatment.

Motivation to change behavior seems to be an important factor to consider when assessing individuals' perceived barriers to treatment. It is possible that individuals who are less motivated to change report more barriers to treatment as a way to justify their avoidance of treatment. This is quite a different situation than individuals who do want treatment, but confront true barriers inherent to their community or culture. Thus, this study will take careful consideration of individuals' stages of change when assessing perceived barriers to treatment.

As just mentioned, many individuals with eating disorders do not seek treatment (Garvin & Striegel-Moore, 1999) because they may encounter barriers that exist within their community or culture. For example, Cachelin and colleagues (2001) claimed that treatment barriers can be considered as either an individual- or system- level barrier. The authors explained that individual barriers include feelings of shame and fear of stigma; cultural perceptions of psychiatric disturbance; the belief that seeing a therapist is a sign of character weakness; turning to family or other informal support systems; turning to alternative forms of therapy; discomfort about being separated from family; not viewing counselors as credible sources of help; expectation that counselors will be hostile or cold; and, unfamiliarity with mental health services. System barriers included language barriers; financial difficulties; lack of health insurance; inaccessible health care facilities; time conflicts and long waits; lack of transportation, child care, and ethnically representative professional staff (Cachelin, et al., 2001). In an urban community sample of women who met criteria for an eating disorder, Cachelin and colleagues (2001) found that 85.2% wanted treatment for an eating problem, 57% had actually made treatment contact at some time, and 43% had never sought treatment. The authors concluded that of those who

sought treatment, only 8% actually received treatment for their eating disorder. Of those who had never sought treatment, financial difficulties were the most frequently endorsed barrier (58.6%), followed by lack of insurance (48.3%), the belief that other people cannot help (37.9%), fear of being labeled (34.5%), feelings of shame (31%), fear of discrimination (20.7%), turning to other sources (20.7%), not believing there is a problem (13.8%), counselors not of the same ethnic background (10.3%), and lack of transportation (10.3%).

In a follow-up study examining help seeking behaviors in a community sample of women with eating disorders, Cachelin and Striegel-Moore (2006) found that less than one third had ever sought treatment. Reasons for not seeking treatment included feelings of shame, not knowing where to go for help, believing that one should be able to help oneself, minimization of the seriousness of the problem, fear of being labeled, and financial or health insurance concerns (Cachelin & Striegel-Moore, 2006).

Crises in rural regions

Barriers to treatment

Jameson and Blank (2007) claimed that there is a "mental health service crisis in rural areas" (p. 283). They asserted that while mental health issues are as prevalent as in urban regions, rural regions suffer from a lack of quality care (Jameson & Blank, 2007). In their review on substance abuse in rural communities, Cellucci and colleagues (2004) speak to this mental health service crisis. They reported that alcohol abuse is modestly related to geographical regions and degree of urbanization, yet rural communities typically lack specialized treatment services (p. 55; Cellucci, Vik, & Nirenberg, 2004). Jameson's and Blank (2007) assertion may apply to ED's and DE. That is, while the

prevalence of DE in urban and rural regions may be similar, rural regions may confront more barriers to treatment. After reviewing the literature, results are equivocal. The question remains, similar to alcohol abuse, do rural communities also face a disproportionate amount of barriers to specialized care for DE patterns?

Using PyschINFO, PsychARTICLES, PubMed, Medline, and Social Services Abstracts, a thorough literature review dating back from 1960 found no published studies investigating the barriers to the treatment of DE in rural communities within the United States or internationally. Nevertheless, certain treatment barriers may be especially relevant in rural regions given 1) the environmental limitations, and 2) the ideology inherent to rural regions. For example, DeLeon and colleagues (2004) described prolonged distances, costly health insurance, bereft hospitals, and delayed access to scientific advances as “unique” and “impressive” barriers faced by rural residents (p. 23; DeLeon, Wakefield, & Hagglund, 2004). The authors identified other significant service problems, including little knowledge of available treatment resources, confidentiality concerns, as well as a division between health care that is affordable and accessible (DeLeon, et al., 2004). Jameson and Blank (2007) claimed that “one of the most serious issues facing mental health care in rural areas today is the difficulty in recruiting and retaining qualified personnel to provide services,” and, they added, “providers who do practice in rural communities experience very high rates of burnout” (pp. 284-85).

A second reason why certain treatment barriers may be especially relevant in rural communities has to do with popular rural ideology. Cachelin and Striegel-Moore (2006) found that shame, believing that one should be able to help oneself, minimization of the seriousness of the problem, and the fear of being labeled were major treatment barriers

for women with ED's. Consistent with the language introduced by Cachelin et al. (2001), these "individual-level" barriers may be particularly popular in rural regions. Although controversial, there is evidence that compared to urban ideology, rural values emphasize self-reliance, conservatism, skepticism of outsiders, religion, work-orientation, family, individualism, and fatalism (p. 37; Wagenfeld, 2004). Elder and Quillen (2007) discussed similar rural values, and they highlighted how a few rural residents still uphold the perspective that mental illness is a "sin" (p. 301; Elder & Quillen, 2007).

Weight-based stigma in rural regions

The values supporting weight-based stigmas are very similar to the rural values outlined above (e.g. Wagenfeld, 2004). For example, Crandall (1994) coined the term "antifat attitudes" to refer to weight-based stereotypes. In a series of seven studies, Crandall (1994) and Crandall and Martinez (1996) found empirical support for his theory that antifat attitudes imitate the classic Protestant work ethic, an ideology he characterized as individualistic, self-governed, just, industrious, conservative, and authoritarian (Crandall, 1994). By demonstrating that antifat attitudes reflected the classic Protestant ideology, the tendency to blame the person for their weight was considered to be a primary component of antifat attitudes (Crandall, 1994; Crandall & Martinez, 1996). The authors suggested that when an individual is held responsible for a negative outcome like weight, he or she is typically stigmatized and socially rejected because excess weight is seen as a violation of self-control (Crandall & Martinez, 1996). The researchers extended their investigations to include participants from five other nations, including Australia, Poland, India, Turkey, and Venezuela (Crandall, D'Anello, Sakalli, Laxarus, Wieczorkowska, & Feather, et al., 2001). Their empirical efforts resulted in strong,

international support for a positive correlation between antifat attitudes and the Protestant (i.e. individualistic) ideology (Crandall, et al., 2001), which as discussed below, may be an ideology more representative in rural settings.

Rural values and treatment barriers

The possibility that people from rural regions endorse an individualistic ideology is important because the internal characteristics of rural residents may influence whether or not he or she seeks psychological care (Elder & Quillen, 2007; p. 301). In fact, Stamm and colleagues (2004) underscored how individual-level barriers like shame, fear, and stigma can prevent rural residents from seeking help for socially unacceptable problems, such as a mental illness (p. 7; Stamm, Metrik, Kenkel, Davenport, Davenport, Hundnall et al., 2004). They added that rural women are particularly influenced by popular social values when making choices or adopting behaviors (Stamm, et al., 2004). Therefore, it is important to determine whether rural women have internalized weight-based stigma and their influence on treatment seeking behavior.

In summary, the goal of this study is to determine if internalized individualistic beliefs influence treatment seeking beliefs. Specifically, does a woman's weight-based stigma influence the relationship between her motivation to change existing DE and perceived treatment barriers? It is possible that a woman with a DE problem may be motivated to seek treatment; however, her weight-based stigmas may increase her perceived barriers to treatment. Given the strong connection between weight-based stigma and individualistic ideology, and if rural regions tend to embrace individualistic ideology, it is possible for this relationship to be stronger for rural compared to urban women.

Statement of the Problem

DE includes binge eating and chronic dieting, and may be triggered by BD (Littleton & Ollendick, 2003). DE is also associated with serious physical (Pomeroy, 2004) and emotional (Wade, 2007) consequences, which is concerning given that DE and BD commonly occur in college females (Franko, et al., 2005; Schwitzer, et al., 2001). Other demographic variables associated with DE include SES, BMI and ethnicity. However, one demographic variable that has received less attention in the literature is regional status. Sociocultural theories can help facilitate a theoretical understanding of DE symptomatology in urban and rural areas. The Social Comparison Theory and its derivatives suggest that increased media exposure, urbanization, and social roles may explain why rates of DE may be higher in urban regions compared to rural regions. Those who have adapted sociocultural theories by adding a more individualistic component (e.g. cognitive factors) suggest that no regional differences exist. Such theoretical inconsistencies hinder any directional hypotheses.

A few studies have compared the prevalence rates of DE between urban and rural regions. However, most were conducted outside the United States and found no incidence distinction. Only one study has compared DE rates between urban and rural regions in the United States, and when controlling for socioeconomic status (SES), no significant differences were detected (Bagley, et al. 2003).

The inconsistencies in the theoretical and empirical literature base suggest that DE symptomatology may not differ among women in rural and urban areas. This is concerning given that individuals in rural areas may experience more barriers to treatment. For example, given that rural cultures may foster such values as self-reliance,

work-orientation, individualism, and fatalism (Wagenfeld, 2004), individual-level barriers to treatment (i.e. weight-based prejudices, or antifat attitudes, AFA) may be more common in rural versus urban areas. Internalizing AFA is concerning because such individual-level barriers can prevent rural residents from seeking treatment (Stamm, et al., 2004) or psychological care (Elder & Quillen, 2007; p. 301) for an eating-related concern. In other words, individual-barriers may decrease an individual's motivation to change disordered eating patterns and perhaps augment her perceived system-level barriers to treatment (i.e. inaccessible facilities; lack of confidentiality; and, financial concerns; Cachelin & Striegel-Moore, 2006).

The primary goal of this study was to assess a three-way interaction between regional status, motivation to change, and antifat attitudes when predicting system-level barriers to treatment. It was hypothesized that among those who endorse DE, women who are motivated to change but endorse high levels of AFA will report more system-level barriers compared to women who are also motivated to change but report low AFA levels. Furthermore, it was hypothesized that this relationship will be stronger among rural women with DE patterns compared to urban women with DE patterns.

This study is important for several reasons. First, this study will supplement the dearth of research focusing on DE in rural regions. Second, investigating system-level barriers to the treatment of DE, specifically in rural regions, may help professionals tailor services to the unique rural culture. Third, identifying that high AFA may decrease an individual's motivation to seek treatment may encourage popular culture and the professional fields to challenge weight-based stigma.

Hypotheses.

Hypothesis 1. It was hypothesized that when controlling for SES and BMI, there would be significant differences in DE between participants from urban compared to rural regions.

Hypothesis 2. When controlling for SES and BMI, it was hypothesized that individuals from rural regions would endorse more system-level barriers than individuals from urban regions.

Hypothesis 3. When controlling for SES and BMI, it was hypothesized that among those with DE patterns, those who endorsed high AFAs would be less motivated to seek treatment than those who reported low AFAs (see Figure 2).

Hypothesis 4. It was hypothesized that when controlling for SES and BMI, regional status would moderate the relationship between AFA and motivation to seek treatment (see Figure 3). Specifically, the negative correlation between AFA and motivation to seek treatment would be stronger among those from rural compared to urban regions.

Hypothesis 5. It was hypothesized that there would be a three-way interaction between regional status, motivation to change, and antifat attitudes when predicting system-level barriers to treatment (see Figure 4). Specifically, rural women who were motivated to change but endorsed high levels of AFA would report more system-level barriers compared to rural women who were also motivated to change but reported low AFA levels. Furthermore, this relationship would be stronger among rural women compared to urban women.

Methodology

Participants.

This study included college females who were 18 and older and who endorsed a significant level of DE. This study focused on college women because the prevalence of DE is particularly high in college women (Vohs, et al., 2001), and college may be a significant environmental risk factor for the onset or exacerbation of DE (Striegel-Moore, et al., 1986; Vohs, et al., 2001). This study also focused on those with significant DE because of primary interest was their motivation to change DE patterns and the potential barriers they identified should they have sought help for their eating-related concerns.

Procedure.

Self-report data was collected from female students in undergraduate Psychology courses during the Spring 2009 semester at The University of Montana. To estimate the required total sample size, a power analysis was conducted based on the following 2 criteria: 1) the plan to conduct multiple regressions with 4 predictor variables (i.e. motivation to change, antifat attitudes, regional status, and the interaction terms), and 2) the goal to attain 95% power and at least a medium effect size (i.e. $r = .20$; Cohen 1992) with alpha set at .05 (i.e. $\alpha = .05$). The power analysis recommended a necessary sample size of 105 to meet these objectives.

Data collection occurred in two phases. The first phase was the screening phase. Participants were recruited during the Spring 2009 "Screening Day" held by the Psychology Department. Consenting participants completed a 3-page screener. Participants were asked to return to participate in the second phase of the study if 1) she scored at or above the significant cut-off on the screener, and 2) she granted us

permission to contact her for future participation. Each consenting participant completed an 11-page survey individually but in a group setting.

Measures.

Demographics.

Important demographic questions were included on the screener (see Appendix A) and the survey (see Appendix B). Specifically, the screener asked participants to report her regional status. Example items included, "Where were you born?," and "Where did you spend the majority of your developmental years?" The screener also asked participants if they were interested in participating in the second phase of the study. If they agreed, they were asked to provide their names, contact information, most convenient times to be contacted, and when they were available to participate. To protect her privacy, potential participants were asked if the researchers could refer to themselves as "UM Research" when leaving messages. As part of the survey, other questions assessing demographics included age, grade in school, ethnicity, and SES status.

BMI.

As part of the disorder eating assessment (*see* Eating Disorder Diagnostic Scale below or Appendix D), participants were asked to report height and weight. While these 2 items were figured into the overall disordered eating score, these two items were extracted and used to also calculate each participant's body mass index (BMI).

BMI is the preferred index of relative body weight and degree of fatness (Davis & Gergen, 1994). It is calculated by the following formula: weight (lbs.)/[(height (in)*height (in))]*703 (Jacobson & DeBock, 2001). BMIs can be used to categorize body compositions into 4 groups: a BMI less than 18.5 is Underweight, 18.5-24.9 is Normal,

25.0-29.9 is Overweight, and a BMI above 30.0 is considered Obese (Jacobson & DeBock, 2001). In the current study, BMI was treated as a continuous variable with lower numbers representing less fatness. In order to avoid any confounding effect of BMI when examining BD, DE, or barriers to the treatment of DE, BMI was also treated as a covariate.

Self-reported heights and weights have been both criticized and praised as an accurate means of obtaining BMIs. There is some evidence that self-reported height and weight may be inaccurate, which leads to a miscalculation of a BMI (Jacobson & DeBock, 2001). For example, European American college females were first asked to report their height and weight and then experimenters measured their heights and weights. Although there were no significant differences between self-reported height and measured height, there was a significant difference between self-reported weight and measured weight. This resulted in a significant difference between self-reported and measured BMIs (Jacobson & DeBock, 2001). The authors concluded that self-reported heights and weights are inaccurate means of assessing BMIs (Jacobson & DeBock, 2001).

However, there is also evidence that self-reported height and weight are accurate. For example, in a large population whose ages ranged from 14-61, there was a high degree of accuracy in self-reported weight and height (Stewart, Jackson, Ford, & Beaglehole, 1987). In a sample of Latino adolescents aged 12-19, self-reported and measured heights and weights were highly correlated. The authors concluded that self-reported BMIs could be used as a continuous variable in multivariate analysis resulting in only small errors (Davis & Gergen, 1994). Given this evidence, and the fact that BMI is

not a main variable of interest, in this study self-report measures of BMI were deemed sufficient.

SES.

Education and income will serve as two proxies for SES (see Appendix B). Each participant was asked to report whether she is the primary household caretaker, or if she is a dependent of her parents or guardians. If the participant is the primary caretaker, she was instructed to report her and, if applicable, her spouse's highest level of education. If she reported that she is not the primary caretaker and is a dependent of her parents or guardians, she was asked to report both caretakers' highest education levels. In both situations, the participant was asked to report total household income. Consistent with previous research that examined body dissatisfaction in European American and African American adolescents, education was categorized into 4 levels: completion of graduate or medical school; completion of college or vocational/technical school; completion of high school; and, 1 completion of 11^{th} grade or less (Kemper, Sargent, Drane, Valois, & Hussey, 1994). Household income was categorized into 5 categories. A 1 represents those who earned less than or equal to $7,000; 2 represented $7,000-31,999 per year; 3 represented $32,000-72,499; 4 represents $72,500-100,000; and, 5 represented those over $100,000. If participants reported on two primary caretakers, the education scores were averaged (Cirino, Chin, Sevicik, Wolf, Lovete, & Morris, 2002). SES was a continuous variable with lower scores indicating lower SES.

Region.

Several items were used to determine participants' residential regions (see Appendix A), including "Where were you born?, "Where did you spend the majority of

your developmental years?," and "Where are you currently from?" For each question, participants were asked to provide the name of the city or town, the state, and to report the corresponding zip code. As recommended by Jameson and Blank (2007), regions was defined using the guidelines from the United States Department of Agriculture Economic Research Service (USDA, 2003). Jameson and Blank (2007) stated that the USDA's method is probably one of the most popular methods for defining rurality (p. 284). Based on population and proximity to urban regions, the USDA uses Federal Information Processing Standards (FIPS) codes to indicate a county's degree of rurality (Jameson & Blank, 2007). The scale ranges from 1-9, with 1 representing most urban and 9 representing most rural (Jameson & Blank, 2007). Counties coded 1-3 can then be considered urban and counties coded 4-9 can be considered rural (Jameson & Blank, 2007). While this study used the dichotomous rural-urban variable, the USDA's method allows for post-hoc exploration of region as a continuous variable.

Body dissatisfaction.

The body dissatisfaction subscale from the Eating Disorder Inventory (EDI; Garner, Marion Olmstead, & Polivy, 1983) was used to assess BD (see Appendix C). This subscale has 9 items and measures the extent to which individuals are satisfied with specific parts of the body. Example items include: "I feel satisfied with the shape of my body," "I think that my stomach is too big," and "I think that my hips are too big." Responses were based on a 6-point Likert scale and include always, usually, often, sometimes, rarely, and never. Some items were reversed scored to avoid response bias. A Cronbach's alpha of .91 was reported by Garner, et al. (1983) when assessing a sample of female controls. The internal consistency of the EDI was also assessed in a sample of

African American, Asian American, European American, and Latinos. Results revealed a Cronbach's alpha of .91 (Altabe, 1998). Finally, the use of the EDI was examined in a large number of 3 different nonclinical populations (Klemchuk, Hutchinson, & Frank, 1990). Findings supported the use of the EDI as an excellent tool to assess eating disorder symptomatology in nonclinical samples of young university women.

Eating Behaviors.

The Eating Disorder Diagnostic Scale (EDDS) was used to assess disordered eating behaviors (Stice, Telch, & Rizvi, 2000; see Appendix D). The EDDS is comprised of 22 items that assess the DSM-IV symptoms for all three EDs, AN, BN, and BED, as well as subclinical behaviors. The scale was scored using a computer algorithm, which generates a continuous eating disorder symptom composite, as well as categories for clinical and subclinical ED's (Stice, Fisher, & Martinez, 2004). The SPSS scoring code is detailed in the Appendix of Stice et. al., (2004). The EDDS has shown high internal consistency, convergent validity, test-retest reliability across clinical and nonclinical samples of women (Stice et al., 2000; Stice et al., 2004). Given that the items do not have consistent response options, all items were standardized to ensure they were equally weighted before creating the composite.

Motivation to Change.

A modified version of the University of Rhode Island Change Assessment Scale (URICA; McConnaughy, DiClemente, Prochaska, & Velicer, 1989) assessed each participant's willingness to change her eating behaviors (Dunn, Neighbors, & Larimer, 2003; see Appendix E). The URICA consists of 32 items, with 8 items assessing each of the 4 stages of change: Precontemplation, Contemplation, Action, and Maintenance

(McConnaughy et al., 1989). Items were scored on a 5-point Likert scale ranging from 1 (i.e. strong disagreement) to 5 (i.e. strong agreement). Sample items from include "As far as I'm concerned, my eating behaviors do not need changing" for the Precontemplation stage, "I have been thinking that I might want to change my eating behaviors" for the Contemplation stage, "I am really working hard to change my eating behaviors for the Action stage, and "I have been successful in changing my eating behaviors but I am not sure I can keep up the effort on my own" for the Maintenance stage (p. 309, Dunn, et al., 2003). The URICA consistently proves to be a valid measure of readiness to change (Dunn, et al., 2003).

Barriers to treatment.

Following the procedures outlined by Cachelin and Striegel-Moore (2006), participants were first asked if they had previously or currently sought treatment for any disordered eating pattern. Participants who answered yes were directed to answer the following questions: 1) What are the reasons for seeking treatment?, 2) What diagnosis, if any, was given?, 3) What did treatment consist of?, 4a) Was treatment helpful (yes/no), 4b) why or why not?, and, 5a) Did the experience make them unwilling to seek further treatment (yes/no), and 5b) why. Responses to the open-ended questions (i.e. 1, 2, 3, 4b, and 5b) were coded into categories defined by Cachelin and Striegel-Moore (2006). Participants who reported that they have never sought treatment for an eating problem and those participants who became unwilling to seek treatment were asked to complete two sets of a 26-item scale that assessed possible barriers to treatment (see Appendix F). The first set asked participants about past DE patterns and treatment-seeking behaviors. The second set asked participants about current DE patterns and treatment-seeking

behaviors. All the items were scored on a 5-point Likert scale, representing the degree to which each participant agreed or disagreed with each barrier. Example items included: I have not sought treatment for an eating problem because I have not known where to go; I have not sought treatment for an eating problem because of a lack of finances; and, I have not sought treatment for an eating problem because I do not have transportation to the provider (Cachelin & Striegel-Moore, 2006). Based on Cachelin and Striegel-Moore's (2006) descriptions, each of the 26 items were then classified as either an "individual-level barrier" (i.e. items 1, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 15, and 17) or a "system-level barrier" (i.e. items 2, 7, 14, 16, 18, 19, 20, 21, 22, and 23). Therefore, there were four barrier-to-treatment variables: past system-level barriers, past individual-level barriers, current system-level barriers, and current individual barriers.

Antifat Attitudes

Crandall (1994) developed the Antifat Attitudes Questionnaire (AFA) to evaluate attitudes toward overweight and obese individuals (see Appendix G). The measure consists of three subscales, and reliability coefficients were determined from men and women psychology undergraduates. The first is the Dislike subscale ($\alpha = .84$; Crandall, 1994), which is a measure of antipathy toward overweight and obese people (Crandall & Martinez, 1996). The second subscale assesses a self-relevant concern about weight and is called Fear of Fat ($\alpha = .79$; Crandall, 1994; Crandall & Martinez, 1996). The third subscale is Willpower ($\alpha = .66$), and it measures beliefs about controllability of weight and fat (Crandall, 1994; Crandall & Martinez, 1996). The questionnaire consists of 13 items. Examples include, "Fat people make me feel somewhat uncomfortable," "I feel disgusted with myself when I gain weight," and "People who weigh too much could lose

at least some part of their weight though a little exercise." Answers were reported on 0-9 Likert scale with higher scores corresponding to a more negative value for fatness.

Consequences of DE

The Short-Form Health Survey (SF-36; Ware & Sherbourne, 1992) was used to assess health-related quality of life, or the extent to which health affects an individual's ability to function and her perceived mental, physical, and social well-being (Hays & Morales, 2001). The 36-item scale was originally constructed as a tool for the Medical Outcome Study (MOS; as cited in Ware & Sherbourne, 1992). Since then, items have been standardized and scoring procedures have been revised; when these procedures are used, the SF-16 is referred to as the RAND-36 (Hays & Morales, 2001; see Appendix H). The RAND-36 has been referred to as the "the most widely used (health-related quality of life) survey instrument in the world today" (p. 350; Hays & Morales, 2001). The 36-item scale assesses 8 health concepts, including physical functioning, physical health, emotional health, energy and fatigue, emotional well-being, social functioning, pain, and general health. Because the Likert-scales associated with many of the items vary, responses were standardized and then used to create the 8 subscales. Higher scores reflect better health functioning.

While the RAND-36 assesses how general health impacts different domains, four unstandardized questions were constructed to assess how DE impacts the physical, emotional, academic, and social domains directly (Appendix I). Items are scored from 1 (strongly disagree) to 5(strongly agree). Participants were also presented with open-ended questions to explain how they were impacted by DE.

Planned Analyses.

Descriptive statistics illustrate the patterns of DE and BE in the total sample, as well as by region of origin (i.e. urban and rural). Descriptive statistics also assessed important demographic variables, such as age, BMI, and SES in the total sample and by region.

Hypothesis 1a. When controlling for BMI and SES, it was hypothesized that there would be a significant difference in DE between participants who spent the majority of their developmental years in urban regions compared to participants who developed in rural regions. Using a Univariate Analysis of Covariance (ANCOVA), developmental region was entered as a dichotomous, independent variable, DE patterns was the continuous dependent variable, and BMI and SES were entered as covariates.

Hypothesis 1b. When controlling for BMI and SES, it was hypothesized that there would be significant differences in DE between those who identify with the urban culture compared to those who identify with the rural culture. Using a Univariate Analysis of Covariance (ANCOVA), regional identity was entered as a dichotomous, independent variable, DE patterns was the continuous dependent variable, and BMI and SES were entered as covariates.

Hypothesis 2a. An ANCOVA assessed the hypothesis that independent of BMI and SES, participants who spent the majority of her developmental years in rural regions would endorse more *past* system-level barriers than participants who developed in urban regions. Developmental region was entered as a dichotomous, independent variable, *past* system-level barriers was the designated continuous dependent variable, and SES and BMI were identified as covariates.

Hypothesis 2b. An ANCOVA assessed the hypothesis that independent of BMI and SES, participants who identified with the rural culture will endorse more *current* system-level barriers than participants who identified with the urban culture. Regional identity was entered as a dichotomous, independent variable, current systems-level barriers was the continuous dependent variable, and SES and BMI were identified as covariates.

Hypothesis 3. It was hypothesized that when controlling for SES and BMI, those who endorse high AFAs will be less motivated to seek treatment than those who report low AFAs. A correlation analysis will be used to determine if there is a significant negative correlation between AFA and motivation to seek treatment.

Hypothesis 4a. It was hypothesized that developmental regional status would moderate the relationship between AFA and motivation to seek treatment. Specifically, the negative correlation between AFA and motivation to seek treatment would be stronger among participants from rural compared to urban regions. This hypothesis was tested using a hierarchical regression. Preliminary analyses first were conducted to determine if the results were threatened by multicollinearity, that is, a significant correlation between a predictor and moderator. The reason is because multicollinearity can confound results because it would not be clear which variable is accounting for potential variance in the outcome variable. Therefore, before conducting the hierarchical regression, correlation analyses tested the association between the predictor, AFA, and the moderator, developmental regional status. Should a significant correlation between the predictor and moderator exist, then centering procedures outlined by Aiken and West (1991) would have been used to reduce multicollinearity. On the first step of the

regression, the continuous covariate variables (i.e. BMI and SES) were entered and motivation to seek treatment was designated as the continuous outcome variable. On the second step, AFA was entered as the predictor variable and motivation to seek treatment was the outcome variable. The interaction term (i.e. Regional status x AFA) was entered on the third step of the regression.

Hypothesis 4b. It was hypothesized that regional identity would moderate the relationship between AFA and motivation to seek treatment. Specifically, the negative correlation between AFA and motivation to seek treatment would be stronger among participants who identified with the rural culture compared to those who identify with the urban culture. This hypothesis was tested using a hierarchical regression and similar procedures described in the previous hypothesis were followed. Preliminary correlation analyses assessed multicollinearity by testing the correlation between the predictor, AFA, and the moderator, regional identity. Given a significant correlation, Aiken and West's (1991) centering procedures would be used to reduce multicollinearity. The covariate variables, BMI and SES, then were entered on the first step of the analysis. The continuous predictor variable, AFA, was entered on the second step with motivation to seek treatment entered as the continuous outcome variable. The interaction term (i.e. Regional identity x AFA) was entered on the third step of the regression.

Hypothesis 5. It was hypothesized that there would be a three-way interaction between regional status, motivation to change, and antifat attitudes when predicting system-level barriers to treatment. Specifically, rural women who are motivated to change but endorse high levels of AFA would report more system-level barriers to treatment compared to urban women who are motivated to change and do not endorse

antifat attitudes. Hypothesis five was assessed using two multiple regressions. As described in Hypothesis 4, centering procedures outlined by Aiken and West (1991) would have been followed should there be evidence of multicollinearity (i.e. a significant correlation between the predictor and moderator). The first regression was conducted using participants only from rural regions. The second regression was conducted using participants only from urban regions. For both regressions, BMI and SES were entered as covariates on the first step. Motivation to change eating patterns was entered on the second step, and the interaction term between motivation to change and AFA was entered on the third step. The quantity of system level barriers was designated as the outcome variable. The unstandardized beta values associated with the interaction terms (i.e. motivation to change x antifat attitudes) and the effect sizes (R^2) from both the urban and rural analysis were compared. It was hypothesized that the interaction term between motivation to change and AFA from the rural sample would be stronger than the interaction term from the urban sample.

Results

Characteristics of the Sample

Descriptives

Two-hundred and two college females completed the screener. Based on their EDDS scores and willingness to participate in the second phase of the study, participants fell into 4 groups (see Figure 3). Of the 202 who completed the screener, 133 (66.2%) endorsed clinically significant disordered eating patterns. Out of this group, 27 (i.e. 13.4% of 202) indicated that they either would not be interested in returning to complete the second phase of the study, or they were unable to be contacted to schedule a second

session. Thus, the total sample size was 106 (i.e. 52.3% of 202). There were 68 (i.e. 33.7% of 202) participants whose EDDS scores were not clinically significant, and therefore, they were not eligible to participate in the second phase. However, 40 of the 68 (i.e. 19.9% of 202) were willing to participate in the second phase, and 28 (i.e. 13.9% of 202) were not willing to participate. One additional ineligible participant did not indicate whether she was willing to return for the second phase (i.e. .5% of 202).

Given that all 202 participants completed the screener, a one-way ANOVA assessed whether there were significant differences in standardized EDDS scores and BMI's between the 4 groups. Means and standard deviations for standardized EDDS and BMI's are presented in Table 1. As expected, there were significant group differences in the standardized EDDS scores (F (3, 197) = 55.37, $p < .0001$). A Tukey's post hoc analysis revealed that eligible participants who consented had significantly higher scores on the EDDS (M = 5.25, SD = 8.28) than both the ineligible participants who consented (M = *-9.54*, SD = 5.10) and the ineligible participants who did not consent (M = *-9.47*, SD = 4.04). There were no significant differences in EDDS score between eligible participants who consented (M = 5.25, SD = 8.28) or eligible participants who did not consent to the second phase (M = 3.00, SD = 9.59; *n.s.*). A one-way ANOVA also revealed significant group differences in BMI (F (3, 197) = 2.69, p = .05). However, Tukey's post hoc analyses did not reveal any specific differences between the individual groups. The Tukey's post-hoc analysis is considered more conservative then another post-hoc analysis, the Newman-Keuls. The Newman-Keuls has more power than Tukey's and may reveal statistically significant group differences in BMI despite insignificant findings from the Tukey's test. Thus, a Newman-Keuls post-hoc analysis was conducted

to determine if there were significant differences in BMI between the four groups (i.e. eligible/ineligible vs. willingness to participate/refused to participate). Despite the increased power of the Newman-Keuls, results were consistent with the Tukey's post-hoc analyses. There were no significant differences in BMI's between any of the groups.

Means and standard deviations of the sample's demographics (N = 106) are displayed in Table 2. Participants' ages ranged from 18.0-45.0, and the mean age was 20.08 (SD = 3.59) years. Freshmen (64.8%) comprised most of the sample, followed by sophomores (22.2%), juniors (7.4%), seniors (1.9%), post-baccalaureates (1.9%), and 1.9% did not report a grade-level. The majority of the sample were also Caucasian (88.9%), followed by American Indian or Native American (3.7%), Mexican American (1.9%), African American (.9%), Asian (.9%), Middle Eastern (.9%), and .9% endorsed "other." The mean weight of the total sample was 147.59 (SD = 33.80) pounds, with a range from 101 to 280 pounds. BMI's ranged from 17.89-46.07 with a mean of 24.03 (SD = 5.06), which according to Jacobson and DeBock (2001), falls at the high end of the "normal" BMI range.

SES.

Because only 3 participants did not report education or income, mean replacement was used to account for missing values and to maintain the integrity of the sample size. The means and standard deviations for the total sample are presented in Table 3. The average participant education score for the total sample was 2.55 (SD = .73), suggesting that most of the participants had completed high school or a college/vocational school. The average income score for the total sample was 2.94 (SD = 1.14), suggesting that most participants earned at the upper end of $7,000-$31,999 range.

Also of interest were potential differences in education and income between those who were primary caretakers (i.e. “independent”) and those are not the primary caretakers (i.e. dependent;” see Table 3). About twenty percent (n = 22) of the total sample (N = 106) reported that they were the primary caretaker, and 77.1% (n = 83) reported that they were financially dependent upon their parents or a primary caretaker. Two independent sample *t*-tests compared education and income scores between those who are and are not primary caretakers. Due to the unequal sample sizes, a Levene’s test was conducted to determine whether variances should be assumed equal or unequal. In terms of education, the Levene’s test was not significant, suggesting that variances were equal (F = 1.18, p > .05). The corresponding *t-test* revealed that education scores were significantly *higher* among those who were not the primary caretakers (M = 2.78, SD = .57, σ^2 = .32; i.e. completed high school to college) than those who are the primary caretakers (M = 1.73, SD = .63, σ^2 = .40; i.e. completed high school or less; $t(103)$ = 7.13, p < . 0001). As for income, a significant Levene’s test suggested variances were not equal (F = 86, p < .01), and the corresponding *t-test* revealed that those who were not the primary caretakers also reported *higher* income scores (M = 3.23, SD = 1.07, σ^2 = 1.14; i.e. $32,000-$72,499) than those were the primary caretakers (M = 1.86, SD = .64, σ^2 = .41; i.e. $7,000 or less; $t(56)$ = 7.58, p < .0001). Given the empirical evidence that establishes a significant association between SES, DE, and access to treatment, the significant differences between those who are and are not primary caretakers suggested that SES could be a significant covariate. Thus, consistent with the proposed procedure, SES was treated as a covariate in prospective analyses.

EDDS and associated consequences.

Exploratory analyses examined the relationship between DE and health. When controlling for SES and BMI, partial correlations first assessed whether there was a significant relationship between standardized EDDS scores and standardized RAND-36 scores. Higher DE scores were significantly related to *fewer* role limitations due to physical health ($r = .27$, $p < .05$), *fewer* role limitations due to emotional health ($r = .27$, $p < .05$), more problems with social functioning ($r = .27$, $p < .05$), and worse general health ($r = -.28$, $p < .05$). Higher DE scores were associated with more social problems ($r = .46$, $p < .001$), emotional difficulties ($r = .37$, $p < .001$), problems at school ($r = .32$, $p < .01$), and medical problems ($r = .25$, $p < .05$).

Regional Status.

Developmental region. To assess developmental regional status, participants were asked to report where she lived for most of the time when she was between 3 and 18 years old. Based on the provided town/city, state, and zip code, we ascertained the corresponding county of development and Federal Information Processing Standards (FIPS) codes developed by the United States Department of Agriculture (USDA). As stated in the procedures section, these codes represent a participant's degree of urbanization, with 1 representing most urban and 9 representing most rural (Jameson & Blank, 2007). The mean regional score for the total sample was 4.42 ($SD = 2.28$), and both the mode and median were five. Participants were asked to report where they lived for the majority of time during the ages 3-18. Although the maximum score should have been 15 years, participants' responses ranged from 1-29 years, with a mean of 15.18 ($SD = 4.76$).

Based on the recommendations by Jameson and Blank (2007), participants' continuous regional scores were used to categorize participants as either developing in a rural or urban region. FIPS scores 1-3 were considered urban and FIPS scores 4-9 were rural. Results revealed that 61 (57%) of the total sample spent the majority of her developmental years in rural regions, and 45 (42.5%) spent the majority of these years in urban regions. Independent sample *t*-tests, along with their corresponding Levene's tests, were used to ascertain significant demographic differences between those who developed in rural and urban regions (see Table 4a). Overall, the only significant differences between the regional groups were in education and income. When assuming equal variances, participants from rural regions reported significantly lower education scores (M = 2.39, SD = .73) than participants from urban regions (M = 2.77, SD = .68; $t(104) = 2.70$, $p = .01$). When assuming equal variances, participants from rural regions also reported lower income scores (M = 2.69, SD = .99; i.e. $7,001-31999) than participants from urban areas (M = 3.29, SD = 1.22; i.e. $32,000-$72,499; $t(104) = 2.78$, $p < .01$). There were no statistically significant regional differences in the duration participants lived in their respective region, age, grade, or BMI. As proposed, during hypothesis testing, developmental regional status was treated as a categorical, independent variable.

Regional identity. Participants were asked 3 separate questions about their regional identity (e.g. "please indicate the degree to which you identify with the big city or small town culture"). These questions were averaged to obtain a single variable, the overall regional identity index. Only 2 participants did not respond to one of the questions (i.e. "Please circle the one number that best represents how much you identify with the urban or rural culture"; thus, mean replacement was used to maintain the

integrity of the sample size. The regional identity index ranged from .67 to 8.3, with a mean of 4.06 (*SD* = 1.81), and a median of 4.0. To maintain consistency with the developmental regional variable, participants were placed in either the rural or urban identification group based on the median split. Of the total sample (*N* = 106), 50 (47.2%) identified with rural culture while 56 (52.8%) identified with urban culture (see Table 4b). As proposed, during hypothesis testing, regional identity was treated as a categorical, independent variable.

Hypothesis Testing

Hypothesis 1a

An ANCOVA assessed the hypothesized difference in DE patterns between those participants who spent the majority of her developmental years in urban areas and rural areas, independent of any effects from the covariates, SES or BMI. Results revealed no significant effect of SES ($F(1, 102) = .27$, *n.s.*); however, BMI emerged as a significant covariate ($F(1, 102) = 8.90$, $p < .01$). Results did not support the hypothesized difference in DE between those who developed in urban areas ($M = -.29$, $SD = 7.67$) compared to rural areas ($M = .22$, $SD = 8.94$; $F(1, 102) = .07$, *n.s.*; see Table 5).

Hypothesis 1b

A second ANCOVA assessed the hypothesized difference in DE patterns between those participants who identify with urban culture compared to those who identify with the rural culture, independent of any effects from the covariates, SES or BMI. Although there was no significant effect for SES ($F(1, 102) = .26$, *n.s.*), BMI emerged as a significant covariate ($F(1, 102) = 11.36$, $p < .001$). Results did not support the hypothesized difference in DE between those who identify with urban culture ($M = .77$,

SD = 7.75) compared to those who identify with the rural culture (*M* = -.86, *SD* = 9.05; *F*(1, 102) = 3.50, *n.s.*; *see* Table 5).

A post-hoc ANCOVA assessed for a difference in AFA patterns between those participants who spent the majority of her **developmental years** in urban areas and rural areas, independent of any effects from the covariates, SES or BMI. Results revealed no significant effect of SES (*F*(1, 102) = .02, *n.s.*); however, BMI emerged as a significant covariate (*F*(1, 102) = 7.53, $p < .05$). There was not a significant difference in AFA between those who developed in urban areas (*M* = 4.21, *SD* = 1.36) compared to rural areas (*M* =4.10, *SD* = 1.42; *F*(1, 102) = .01, *n.s.*; see Table 5).

A second post-hoc ANCOVA assessed for a difference in AFA between those participants who **identified** with urban culture compared to those who identified with the rural culture, independent of any effects from the covariates, SES or BMI. Although there was no significant effect for SES (*F*(1, 102) = .04, *n.s.*), BMI emerged as a significant covariate (*F*(1, 102) = 4.98, $p < .05$). Results revealed a significant difference in AFA (*F*(1, 102) = 5.19, $p < .05$). Those who identified with the urban culture (*M* = 4.50, *SD* = 1.40) reported significantly more AFA compared to those who identified with the rural culture (*M* = 3.75, *SD* = 1.28; *see* Table 5).

Hypothesis 2a

An ANCOVA assessed the hypothesized difference in past system-level barriers between those participants who spent the majority of her developmental years in urban areas and rural areas, independent of any effects from the covariates, SES or BMI. Results revealed no significant effect of SES (*F*(1, 88) = .86, *n.s.*) or BMI (*F*(1, 88) = 3.10, *n.s.*). Results did not support the hypothesized difference in past system-level

barriers between those who developed in urban areas (M =19.38, SD = 7.19) compared to rural areas (M =19.84, SD = 7.17; $F(1, 88) = .75$, *n.s.*).

An additional exploratory analysis investigated whether there was a significant difference between past system- and past individual-level barriers (see Figure 4a). A paired samples *t-test* revealed that participants rated past system-level barriers (M = 19.75, SD = 7.11) significantly lower than past individual-level barriers (M = 31.61, SD = 9.06), suggesting that participants endorsed significantly more past individual-level barriers than system-level barriers ($t(1, 87) = 19.56$, $p < .0001$).

Hypothesis 2b

Another ANCOVA assessed the hypothesized difference in current system-level barriers between those participants who identify with the urban culture compared to those who identify with the rural culture, independent of any effects from the covariates, SES or BMI. There was no significant effect for SES ($F(1, 94) = .94$, *n.s.*) or BMI ($F(1, 94) = 3.14$, *n.s.*). Results did not support the hypothesized difference in current system-level barriers between those who identify with urban culture (M = 29, SD = 7.67) compared to those who identify with the rural culture (M = .22, SD = 8.93; $F(1, 105) = 3.50$, $p = .06$).

An additional exploratory analysis investigated whether there was a significant difference between current system- and current individual-level barriers for people who were designated as rural or urban based on regional identity. A paired samples *t-test* revealed that participants rated current system-level barriers (M = 19.02, SD = 7.20) significantly lower than current individual-level barriers (M = 30.76, SD = 9.27), suggesting that participants endorsed significantly more current individual-level barriers than system-level barriers ($t(1, 93) = 19.94$, $p < .0001$; see Figure 4b).

Figure 5a illustrates the means for each item in the past system- and current system-level barrier variables. “I don’t know where to go” (*M* = 2.56, *SD* = 1.33) and “I am unaware of treatments” (*M* = 2.46, *SD* = 1.38) were the top two past system-level barriers, followed by “The providers do not share my background” (*M* = 2.23, *SD* = 1.09) and “My insurance does not cover where I want to go for help” (*M* = 2.15, *SD* = 1.23). A similar pattern followed for current system-level barriers. “I don’t know where to go” (*M* = 2.38, *SD* = 1.23) and “I am unaware of treatments” (*M* = 2.38, *SD* = 1.20) were the top two current system-level barriers, followed by “My insurance does not cover where I want to go for help” (*M* = 2.14, *SD* = 1.22) and “There aren’t any facilities that specialize in disordered eating” (*M* = 2.01, *SD* = .95).

Figure 5b illustrates the means and standard deviations for each past individual- and current individual-level barrier. The highest rated past individual-level barriers, included “It isn’t serious enough (*M* = 3.71, *SD* = 1.24),” “I should be able to help myself (*M* = 3.67, *SD* = 1.22),” “I looked to others for support (*M* = 2.90, *SD* = 1.08),” and “I am afraid of being labeled (*M* = 2.59, *SD* = 1.38).” The highest rated current individual-level barriers, included “It isn’t serious enough (*M* = 3.77, *SD* = 1.26),” “I should be able to help myself (*M* = 3.58, *SD* = 1.28),” “I looked to others for support (*M* = 2.90, *SD* = 1.22),” and “I am afraid of being labeled (*M* = 2.37, *SD* = 1.30).”

Hypothesis 3

The hypothesis that AFA would be negatively correlated with the motivation to seek treatment when SES and BMI were held constant was tested using a partial correlation. Opposite of the hypothesis, result revealed a small, but a statistically

significant positive correlation between motivation to change and AFA ($r = .23$, $p < .05$; see Figure 6a).

Exploratory analyses were conducted to determine if there were significant differences in AFA between participants' stages of change when controlling for BMI and SES. The continuous, motivation to change score was transformed to create four discrete Stage of Change groups: Precontemplation, Contemplation, Action, and Maintenance. Stage of Change was entered as the categorical independent variable, AFA was entered as the continuous dependent variable, and the designated covariates were BMI and SES. Figure 7 shows the sample sizes, means, standard deviations, and of the independent variable. Results from the ANCOVA revealed that while SES was not a significant covariate ($F(1, 105) = .01$, *n.s.*), BMI accounted for a significant amount of the variance in AFA ($F(1, 105) = 10.03$, $p > .002$). In addition, the overall *F*-test was significant ($F(1, 105) = 2.97$, $p < .05$). Pairwise comparisons revealed that the only group differences in AFA were between participants in the Precontemplation and Action Stages. Specifically, participants in the Action Stage ($M = 5.15$, $SD = 1.31$) reported significantly higher levels of AFA than participants in the Precontemplation State ($M = 4.08$, $SD = 1.35$; $F(1, 105) = 2.97$, $p < .05$).

Exploratory analyses assessed the 4 Stage of Change groups to determine if there were significant differences in the **3 AFA subscales**, Dislike, Fear of Fat, and, Willpower (Crandall, 1994; Crandall & Martinez, 1996). First, 90 of the 106 participants were in the Precontemplation stage of change (see Figure 7). Thus, while all participants were screened for clinically significant DE, 85% were denying or minimizing their DE cognitions and behaviors. When controlling for BMI and SES, the MANCOVA revealed

that participants in the Action Stage (M = 6.89, SD = .91) endorsed significantly greater Willpower scores than participants in the Precontemplation Stage (M = 5.94, SD = 1.97). Participants in the Action Stage (M = 8.67, SD = .82) endorsed significantly greater Fear of Fat scores than individuals in the Precontemplation Stage (M = 6.89, SD = 1.92).

Because BMI emerged as a significant covariate when testing the relationship between AFA and motivation to change, additional exploratory analyses assessed whether there were significant differences between the 4 BMI groups (i.e. underweight, normal, overweight and obese) in overall AFA, its three subscales (i.e. Dislike, Far of Fat, and Willpower), and motivation to change when controlling for SES. There were significant overall group differences in each of the 5 dependent variables. Means and standard deviations for these variables are presented in Table 7. There were several interesting findings. Of special note was that Fear of Fat was lowest among participants in the underweight group (M = .82, SD = .75) compared to those in both the normal weight (M = 7.15, SD = .24) and overweight groups (M = 7.45, SD = .38). The obese group did not differ statistically from any other group. Individuals who were obese reported significantly lower Willpower scores (M = 3.62, SD = 2.55) than those in either the normal (M = 6.42, SD = 1.75) or the overweight groups (M = 5.49, SD = 1.66). There were no significant differences in Willpower scores between those in the obese or underweight groups. Lastly, individuals in the obese group (M = 1.88, SD = .83) were more motivated to change than the overweight (M = 1.15, SD = .37), normal (M = 1.19, SD = .61), and underweight groups (M = 1.00, SD = .01).

Hypothesis 4a.

A hierarchical regression assessed whether **developmental regional status** moderated the relationship between AFA and motivation to seek treatment. A visual analysis of the data using histograms and scatterplots illustrated no serious threats to the assumption of linearity. Preliminary analyses examined the correlations between covariates, predictors, moderators, and criterion variables, as well as Chronbach's alpha for AFA, motivation to change, and barriers to treatment (see Table 6). Multicollinearity was found to not be a threat given that the partial correlation between AFA and developmental regional status was not statistically significant (r = -.01, *n.s.*).

The regression model featured SES and BMI as continuous covariates, motivation to change as the continuous criterion variable, and AFA, developmental regional status, and their interaction as continuous predictor variables. In the first step of the model, the R^2 change of .17 was significant (F (2, 103) = 10.21, p < .0001), indicating that BMI and SES explained a significant proportion of the variance in motivation to change. The R^2 change of .05 at the second step was also significant (F (2, 101) = 6.92, p = .05), indicating that adding developmental regional status and AFA into the model helped explain more of the variance in motivation to change. However, adding the interaction term on the third step did not result in a significant change in R^2 (R^2 *Change* = .002, *n.s.*), suggesting that by itself, the interaction term did not significantly increase the proportion of variance in motivation to change. The overall prediction model was significant (R = .47, R^2_{adj} = .22, F (5, 100) = 5.56, p < .0001). BMI emerged as a significant covariate (B = .25, t = 5.03, p < .0001), indicating that those with higher BMI scores were more motivated to change (r = .41, p < .0001). However, as suggested by the non-statistically

significant change in R^2 at the third step in the model, the interaction term was not significant.

Hypothesis 4b.

A second hierarchical regression assessed whether **regional identity** moderated the relationship between AFA and motivation to seek treatment. Histograms and scatterplots illustrated no serious threats to the assumption of linearity. Preliminary analyses examined the correlations between predictors, moderators, and criterion variables (see Table 6). A partial correlation assessed the relationship between AFA and regional identity with SES and BMI held constant. Results were not statistically significant (r = .12, *n.s.*), reducing potential threat of multicollinearity.

The regression model featured SES and BMI as continuous covariates, motivation to change as the continuous criterion variable, and AFA, regional identity, and their interaction as continuous predictor variables. In the first step of the model, the R^2 *change* of .17 was significant (F (2, 103) = 10.21, $p < .0001$), indicating that BMI and SES explained a significant proportion of the variance in motivation to change. The R^2 change of .05 at the second step was also significant (F (4, 101) = 6.81, $p < .0001$), indicating that adding regional identity and AFA into the model helped explain more of the variance in motivation to change. However, adding the interaction term on the third step did not result in a significant change in R^2 (R^2 *Change* = .01, *n.s.*), suggesting that by itself, the interaction term did not significantly increase the proportion of variance in motivation to change. The overall prediction model was significant (R = .47, R^2_{adj} = .19; F (5, 100) = 5.78, $p < .0001$). BMI emerged as a significant covariate (B = .26, t = 5.14, $p < .0001$), indicating that those with higher BMI scores were more motivated to change (r = .41, $p <$

.0001). However, as suggested by the non-statistically significant change in R^2 at the third step in the model, the interaction term was not significant.

Hypothesis 5a.

Women from rural regions. A hierarchical regression assessed whether AFA moderated the relationship between motivation to seek treatment and **past system-level barriers** among **rural** women only. Histograms and scatterplots illustrated no serious threats to the assumption of linearity. Preliminary analyses examined the correlations between predictors, moderators, and criterion variables (see Table 6). A partial correlation assessed the relationship between past system-level barriers and AFA with SES and BMI held constant. Results were not statistically significant, reducing potential threat of multicollinearity.

The regression model featured SES and BMI as continuous covariates, past system-level barriers as the continuous criterion variable, and motivation to change, AFA, and their interaction as continuous predictor variables. In the first step of the model, the R^2 *change* of .03 was not significant (F (2, 47) = .75, *n.s.*), indicating that BMI and SES did not explain a significant proportion of the variance in system-level barriers. However, the R^2 *change* of .15 at the second step was significant (F (2, 45) = 2.53, p = .05), indicating that adding motivation to change and AFA into the model helped explain more of the variance in past system level of barriers. Adding the interaction term on the third step did not result in a significant change in R^2 (R^2 *Change* = .05, *n.s.*), suggesting that by itself, the interaction term did not significantly increase the proportion of variance in motivation to change. Nevertheless, the overall prediction model remained significant (R = .48, R^2_{adj} = .23; F (5, 44) = 2.69, $p < .05$). As suggested by the non-statistically

significant change in R^2 at the third step in the model, the interaction term was not significant.

Hypothesis 5b.

A hierarchical regression assessed whether AFA moderated the relationship between motivation to seek treatment and **current system-level barriers** among **rural** women only. Histograms and scatterplots illustrated no serious threats to the assumption of linearity. Preliminary analyses examined the correlations between predictors, moderators, and criterion variables (see Table 6). A partial correlation assessed the relationship between the predictors, motivation to change and AFA, with SES and BMI held constant. Results were not statistically significant, reducing potential threat of multicollinarity.

In the regression model, SES and BMI were entered as continuous covariates, past system-level barriers was the continuous criterion variable, and motivation to change, AFA, and their interaction as continuous predictor variables. In the first step of the model, the R^2 *change* of .03 was not significant (F (2, 51) = .75, *n.s.*), indicating that BMI and SES did not explain a significant proportion of the variance in system-level barriers. The R^2 *change* of .11 at the second step was significant (F (2, 49) = 2.06, p = .05), indicating that adding motivation to change and AFA into the model helped explain more of the variance in current system level of barriers. Adding the interaction term on the third step did not result in a significant change in R^2 (R^2 *Change* = .00, *n.s.*), and the overall prediction model was not significant (R = .38, R^2_{adj} = .06; F (5, 48) = 1.64, *n.s.*).

Hypothesis 5c.

Women from urban regions. A hierarchical regression assessed whether AFA moderated the relationship between motivation to seek treatment and **past system-level barriers** among **urban** women only. Histograms and scatterplots illustrated no serious threats to the assumption of linearity. Preliminary analyses examined the correlations between predictors, moderators, and criterion variables (see Table 6). A partial correlation revealed that correlation between motivation to change and AFA, with SES and BMI held constant, was not significant.

In the regression model, SES and BMI were continuous covariates, past system-level barriers was the continuous criterion variable, and motivation to change, AFA, and their interaction were continuous predictor variables. In the first step of the model, the R^2 *change* of .03 was not significant (F (2, 36) = 3.02, *n.s.*), indicating that BMI and SES did not explain a significant proportion of the variance in system-level barriers. On the second step, the R^2 *change* of .21 was significant (F (2, 34) = 4.67, $p < .01$), indicating that adding motivation to change and AFA into the model helped explain more of the variance in past system level of barriers. Adding the interaction term on the third step did not result in a significant change in R^2 (R^2 *Change* = .001, *n.s.*), suggesting that by itself, the interaction term did not significantly increase the proportion of variance in motivation to change. Nevertheless, the overall prediction model remained significant (R = .60, R^2_{adj} = .26; F (5, 33) = 3.64, $p < .05$). As suggested by the non-statistically significant change in R^2 at the third step in the model, the interaction term was not significant.

Hypothesis 5d.

A hierarchical regression assessed whether AFA moderated the relationship between motivation to seek treatment and **current system-level barriers** among **urban**

women only. Histograms and scatterplots illustrated no serious threats to the assumption of linearity. Preliminary analyses examined the correlations between predictors, moderators, and criterion variables (see Table 6). A partial correlation assessed the relationship between motivation to change and AFA with SES and BMI held constant. Results were not statistically significant, reducing potential threat of multicollinarity.

In the regression model, SES and BMI were entered as continuous covariates, current system-level barriers was the continuous criterion variable, and motivation to change, AFA, and their interaction as continuous predictor variables. In the first step of the model, the R^2 *change* of .11 was not significant (F (2, 38) = 2.32, *n.s.*), indicating that BMI and SES did not explain a significant proportion of the variance in system-level barriers. The R^2 *change* of .28 at the second step was significant (F (2, 36) = 5.66, $p <$ .01), indicating that adding motivation to change and AFA into the model helped explain more of the variance in current system level of barriers. Adding the interaction term on the third step did not result in a significant change in R^2 (R^2 *Change* = .004, *n.s.*). Although the overall prediction equation was significant (R = .62, R^2_{adj} = .39; F (5, 35) = 4.47, $p <$ .01), there was not a significant interaction.

Hypothesis 5e.

Rural identity and current barriers. A hierarchical regression assessed whether AFA moderated the relationship between motivation to seek treatment and **current system-level** barriers among women who currently identify with the **rural** culture. Histograms and scatterplots illustrated no serious threats to the assumption of linearity. Preliminary analyses examined the correlations between predictors, moderators, and

criterion variables (see Table 6). A partial correlation revealed that correlation between motivation to change and AFA, with SES and BMI held constant, was not significant.

In the regression model, SES and BMI were continuous covariates, past system-level barriers was the continuous criterion variable, and motivation to change, AFA, and their interaction were continuous predictor variables. In the first step of the model, the R^2 *change* of .10 was not significant (F (2, 40) = 2.17, *n.s.*), indicating that BMI and SES did not explain a significant proportion of the variance in system-level barriers. On the second step, the R^2 *change* of .07 was not significant (F (2, 38) = 1.91, *n.s.*), indicating that adding motivation to change and AFA into the model did not help explain more of the variance in current system-level barriers. Adding the interaction term on the third step also did not result in a significant change in R^2 (R^2 *Change* = .01, *n.s.*), suggesting that by itself, the interaction term did not significantly increase the proportion of variance in motivation to change. Furthermore, the overall prediction model was not significant (R = .42, R^2_{adj} = .07; F (5, 37) = 1.62, *n.s.*).

Urban identity and current barriers. A hierarchical regression assessed whether AFA moderated the relationship between motivation to seek treatment and **current system-level** barriers among women who currently identify with the **urban** culture. Histograms and scatterplots illustrated no serious threats to the assumption of linearity. Preliminary analyses examined the correlations between predictors, moderators, and criterion variables (see Table 6). A partial correlation revealed a significant positive correlation between motivation to change and AFA with SES and BMI held constant (r = .30, $p < .05$). However, based on recommendations from Aiken and West (1992), this small correlation is not sufficient to warrant concern about multicollinearity.

In the regression model, SES and BMI were continuous covariates, current system-level barriers was the continuous criterion variable, and motivation to change, AFA, and their interaction were continuous predictor variables. In the first step of the model, the R^2 *change* of .04 was not significant (F (2, 49) =.92, *n.s.*), indicating that BMI and SES did not explain a significant proportion of the variance in system-level barriers. On the second step, the R^2 *change* of .22 was significant (F (2, 47) = 4.08, $p < .01$), indicating that adding motivation to change and AFA into the model helped explain more of the variance in current system-level barriers. Adding the interaction term on the third step also did not result in a significant change in R^2 (R^2 *Change* = .01, *n.s.*), suggesting that by itself, the interaction term did not significantly increase the proportion of variance in motivation to change. The overall prediction model was significant (R = .51, R^2_{adj} = .26; F (5, 46) = 3.30, $p < .05$). However, there was not a significant interaction between motivation to change and AFA.

Given that none of the regression equations for the rural or urban women were significant, comparing effects is not required.

Discussion

Among 202 college females, 66.2% endorsed significant DE patterns, which may have included binge eating, restricting, or compensatory behaviors, as well as an ongoing fear of becoming fat. The frequency of DE in this sample supports Mintz and Betz's (1988) noteworthy conclusion: "in terms of disturbed eating behaviors, 'normal' is not 'normative'" (p. 470). Consistent with Franko and colleagues' (2007) assertion that DE rates may not be decreasing, this project suggests that DE patterns among women in college remain quite prevalent. To exacerbate the concern, DE is associated with

significant emotional, mental, and physical effects. As illustrated in this study, DE is also associated with more social problems, emotional difficulties, academic problems, medical problems, and worse general health.

The prevalence of DE on college campuses and the harmful effects of DE are well-known. Also well-documented is the notion that DE occurs primarily among urban college females (Becker, et al., 2004). Festinger's (1954) ever-evolving Social Comparison Theory (SCT) may support the assumption that DE is more common in girls from urban regions than rural regions. For example, an ancillary of SCT, the Cultivation Theory, explains that increased exposure to extremely thin women in the media may increase the likelihood that American women will idealize the image and believe it is attainable, which ultimately increases their risk of developing DE patterns (Hesse-Biber, et al., 2006; Holstrom, 2004; Tiggeman & Pickering, 1996). Furthermore, because women in urban regions are thought to be exposed to more media than women in rural regions, DE patterns may be higher in women from urban compared to rural regions.

One of the first aims of this project was to determine if there were differences in EDDS scores between college women who spent the majority of their **developmental years** in urban or rural regions. Similarly, differences in EDDS scores between college women who **identify** with either the rural or urban culture were tested. When participants were categorized by developmental regional or by regional identity, no statistically significant differences in DE patterns were detected after statistically controlling for an influence of BMI or SES. These data support findings from other investigators who found no significant differences in DE between those from urban or rural communities (e.g. Jonat & Birmingham, 2004; Kugu et al., 2006; Rathner & Messner, 1993). This study

also supplements the existing literature base by demonstrating that DE between those who **identify** with the urban or rural culture may not exist either. Although the results from this study did not reveal whether there are more or less DE patterns in college women from rural or urban regions, one key conclusion is that DE patterns are evident for women in rural regions.

Although there were no differences in **DE patterns** by **developmental region** or **regional identity,** there were significant differences in another weight-related outcome variable. Specifically, those who **identified** with the urban culture reported significantly more **AFA** compared to those who identified with the rural culture (see *Table 5*). These results suggest that college women who identify more with the urban culture also endorsed more weight-based prejudices than those who identify with the rural culture. Concluding that weight-based prejudices should be assumed under the "urban" label is premature because this study did not operationalize the "urban" or "rural identity" variables. However, as these results imply, and the Social Comparison (Festinger, 1954) and Cultivation Theories (*see* Hesse-Biber, et al., 2006; Holstrom, 2004; Tiggeman & Pickering, 1996), would support, future research should explore whether women who identify more with the urban culture hold more negative attitudes towards those who are overweight or obese.

A second aim of this project was to assess whether those participants who spent the majority of their **developmental** years in rural regions would report significantly **more past system-level barriers** than individuals who spent the majority of their developmental years in urban regions. Also assessed was whether participants who **identified more with the rural culture** would report **more current system-level**

barriers than those who identified more with the urban culture. The notion that certain barriers may be especially relevant in rural regions was based upon the environmental limitations and popular ideology inherent to rural regions. However, results from this project did not support either hypothesis. There were no significant differences in past or current, system-level barriers between urban and rural college women.

One possible reason why a statistically significant difference in system-level barriers was undetected relates to the independent variable, regional status. First, there may have been a problem with how the variable was treated in the analysis. This project followed the procedures outlined by Jameson and Blank (2006), who defined regional status by first assigning participant's county a FIPS code (USDA, 2003). Each FIPS code was then assigned a rank of 1 to 9, which corresponds to the most urban to most rural regions. Finally, groups 1-3 were labeled urban and 4-9 were rural. It is possible that some of the variability in the dependent variable (i.e. system-level barriers) was lost when the continuous independent variable (regional status) was categorized. In other words, by collapsing the continuous FIPS scores into two distinct groups (i.e. rural and urban), subtle differences between the FIPS groups may have become blurred. Significant regional barriers may have been exposed if the analyses had treated both the independent and dependent variables as continuous measures.

A second methodological problem that may explain the non-statistically significant results is a potential problem with how regional status was operationalized. Although Jameson and Blank (2007) refer to their method as "popular" (p. 284), there are other ways to define a region as either rural or urban. While the USDA's definition is based on population size and distance from metropolitan areas, the Census Bureau and

the Office of Management and Budget define an urban area based on whether there is continuous development in the area and a particular density of the population. All other areas are considered rural. It is quite possible that a region will be considered rural using one method and urban using a different method, and vice versa. Furthermore, the criteria used to define a region as urban or rural (i.e. distance from metropolitan areas or degree of continuous development) may be particularly relevant when comparing DE among young women from urban and rural regions.

Unfortunately, there does not seem to be one "gold standard" measure of regional status, which is understandable given its complexity. Results from this study support the notion the construct of regional status may encompass more than an individual's residence. Developmental regional scores were significantly and negatively correlated with regional identity scores (i.e. $r = -.59$, $p < .0001$). In other words, those participants who reported that they had spent the majority of their developmental years in *rural* regions reported that they now identified *more* with the *urban* culture. At the same time, participants who reported that they had spent the majority of their developmental years in urban regions reported that they now identified more with the rural culture.

Referring back to the sample's geographic characteristics enables an interpretation of this surprising finding. Out of the 106 eligible participants who completed the second phase of the study, 73 (68.9%) spent the majority of their developmental years in **Montana**. Also, Missoula's FIPS code is 5, reflecting Missoula's nonmetropolitan status. Interestingly, 53 of the 73 (72.6%) participants were from regions that were, based on their FIPS codes, categorically "as rural" or "more rural" than **Missoula** (i.e. FIPS = 5 or greater). The majority of participants may have been either

from Missoula, or a similar sized county, and thus accustomed to a small-town culture, or when participants moved to Missoula to attend college, they were exposed to a "more" urban culture. Although according to the USDA, Missoula is nonmetropolitan, Missoula may be perceived as "more" urban than the developmental regions of many of the participants. During their transition to college, and given that this project was conducted during the Spring semester, many of the rural participants may have adopted what they perceive to be a "more" urban culture. Likewise, individuals who had spent the majority of their developmental years in urban regions may perceive Missoula's culture as more "rural." In summary, inaccurate measurement of the key independent variable, regional status, may explain why no significant differences in system-level barriers were detected.

Another explanation for failing to find statistically significant difference in system-level barriers between rural and urban participants is that a true difference does not exist. In other words, the lack of statistical significance accurately reflects the comparable quantity of system-level barriers between urban and rural regions. College women may perceive similar system-level barriers, independent of regional development or regional identity. To better understand these barriers, exploratory analyses probed past and current, system- and individual-level barriers. College women endorsed significantly more past individual-level barriers than past system-level barriers, as well as significantly more current individual- compared to system-level barriers. These results suggest that internal values, like attributions of controllability, underestimating unhealthy behaviors, feelings of shame, and the belief in self-reliance, may discourage college women from seeking professional treatment more so than the geographic limitations inherent to rural communities.

An alternative explanation is that **system-level barriers** were underestimated. In the current project, the most common system-level barriers endorsed by participants, independent of regional status, were not knowing where to go and an unawareness of possible resources specific to DE. Participants may not have agreed that system-level barriers are strong deterrents to DE-specific treatment because they are unaware of system-level barriers. Participants would have to be knowledgeable about resources in order to identity their associated system-level barriers. A college woman who does not know about the psychological services on campus will not be aware that the counselor may not share her background. A college woman who does not know that there is a specialized residential treatment center out of state will not be aware of the limitations of her, or her primary caretaker's, insurance policy. Considering that the majority of this study's sample were freshman, one possible explanation is that as college women transition from their primary caregiver's household to college dorms, the responsibility for their health care shifts. For the majority of their lives, their parents or primary caregivers located physicians and scheduled necessary appointments. Now in the college community, young, relatively autonomous college women who are still financially dependent upon their caregivers may not be familiar with health care options. Following this line of thought, system-level barriers may have been underestimated because there are other key variables, like who is responsible for finding treatment or at what age individuals become responsible for their own health care, that influence perceived system-level barriers, which were not measured in the current project.

Other empirical evidence implies that people in rural areas face more barriers to treatment than individuals in urban regions (Presidential Commission on Rural Mental

Health, 2006; Jameson & Blank, 2007; Cellucci, et al., 2004; DeLeon, et al., 2004). While Cellucci and colleagues (2004) focus on the treatment of alcohol abuse, they conclude that rural communities typically lack specialized treatment services (Cellucci, et al., 2004). One question is whether their findings generalize to DE.

Anecdotal evidence also suggests that barriers to the treatment of DE are disproportionate among women from rural and urban regions. For example, consider the geographical demographics of the participants in this study. UM students are part of a relatively rural community. Based on Missoula's FIPS code of 5, Missoula is considered a "nonmetropolitan community," with an urban region of 20,000 people or more not adjacent (USDA, 2003). In this study, 142 of the 202 (i.e. 70.3%) participants reported that they spent the majority of their developmental years in Montana. Out of these 142 students, 111 (i.e. 78.2%) spent the majority of their developmental years in nonmetropolitan counties (i.e. FIPS score of 4-9). If a student in Missoula were to seek specialized treatment for a DE pattern, they would have to travel 340 miles to the nearest treatment program aimed at treating addictions and co-occurring disorders. Although this treatment center will work with individuals with DE patterns, they do not specialize in the treatment of DE. The individual would have to travel 492 miles to Seattle, WA, 548 miles to Portland, OR, 562 miles to Ogden, UT, or 894 miles to Denver, CO in order to receive specialized residential treatment. Thus, compared to urban residents, rural residents are more likely to face system-level barriers to treatment, including availability and accessibility of resources. Yet, these likely differences were not perceived or experienced by college women who participated in this study.

Another surprising finding from this project was the small but statistically significant positive correlation between motivation to change and AFA, independent of BMI or SES (i.e. Hypothesis 3; see Figure 6a). This result suggests that regardless of BMI or SES, participants who were more motivated to change their DE behaviors had a tendency to endorse higher AFA, or weight-based prejudices. Exploratory analyses investigated potential differences in AFA between participants who were categorized into the four discrete stages of change (i.e. Precontemplation, Contemplation, Action, and Maintenance). First, BMI emerged as a significant covariate, exposing an important relationship between BMI and AFA. Specifically, individuals with low BMI scores endorsed high AFA, and those with high BMI scores endorsed low AFA ($r = -.26$, $p < .05$; see Figure 6b). When this effect of BMI was statistically controlled, individuals in the Precontemplation Stage endorsed significantly lower AFA than those in the Action Stage, which was the only significant difference between the 4 stages of change (see Figure 7).

While these results should be interpreted cautiously given their exploratory nature and disparate sample sizes, they expose an interesting relationship between weight-based prejudices, motivation to change DE, and BMI. Specifically, setting aside the effects of BMI, some individuals in the Precontemplation Stage, who are characterized by a denial of their DE patterns or an unwillingness to change their DE patterns, may also deny or minimize other people's DE patterns. Some individuals in the Action Stage, who are actively working to change their DE pattern, may be more likely to believe that other people should be changing their DE patterns. However, these relationships may depend on an individual's BMI.

A closer examination of the AFA constructs helps explicate how BMI may mediate the relationship between weight-based prejudices and motivation to change. Three subscales comprise the AFA scale (Crandall, 1994; Crandall & Martinez, 1996). The Dislike subscale measures an individual's dislike of overweight or obese individuals; the Fear of Fat subscale measures an individual's fear of gaining weight; and, the Willpower subscale measures beliefs about controllability of weight and fat (Crandall, 1994; Crandall & Martinez, 1996). Table 7 reports the means, standard deviations, and the significance testing, including effect sizes. One interesting result was that participants in the Action Stage endorsed greater Willpower scores than participants in the Precontemplation Stage, suggesting that individuals who believe they can change their weight (i.e. increased Willpower) may be more likely to engage in behaviors to change their weight (i.e. Action stage). This assertion is supported by Bandura's notion of self-efficacy, or that a strong belief in accomplishing a task increases the likelihood that an individual will confront the task. Individuals who believe that they can change their weight may be more motivated to try to change compared to individuals who do not believe they have control over their weight. The second interesting finding was that individuals who are very afraid of becoming overweight or obese (i.e. increased fear of fat) may also be more likely to engage in behaviors to change her weight (i.e. Action stage). Consistent with the Transtheoretical Model of Change, individuals who are more motivated to change DE recognize there are more advantages (e.g. health or less discrepant from thinness standard) to changing DE patterns (e.g. binge eating) than those less motivated to change.

One lingering question, however, is whether the relationship between Willpower, Fear of Fat, and motivation to change is related to an individual's BMI (see Figure 8a). First, does the relationship between willpower and motivation to change DE differ between the underweight, normal, overweight, and obese groups? Second, does the relationship between an individual's fear of becoming fat and motivation to change differ between the four BMI groups? Exploratory analyses tested whether there were significant differences between the 4 BMI groups (i.e. underweight, normal, overweight and obese) in overall AFA, its three subscales (i.e. Dislike, Far of Fat, and Willpower), and motivation to change. There were significant overall group differences in each of the 5 dependent variables (see Table 7). There were several interesting findings. Of special note was that Fear of Fat was lowest among participants in the underweight group compared to those in both the normal weight and overweight groups. In other words, individuals who were in the normal- and overweight groups endorsed a greater fear of becoming fat compared to those in the underweight groups. This is surprising given that one characteristic of anorexia-related symptomatology is an extreme fear of fatness, despite having a very low BMI. However, this does not suggest that those who are underweight do not have a fear of becoming fat. Individuals who are underweight may still have a significant fear of fatness, but those in the normal- and overweight groups have a statistically greater fear of becoming fat. Interestingly, fear of fat scores from the obese group did not differ statistically from any other group. A lack of significance may be a result of methodological limitations, such as unequal sample sizes, or practical limitations, such as relatively low prevalence of AN. As suggested by the hypothesized

moderation model (see Figure 8a), those individuals with low BMI's in the Precontemplation Stage may have an extreme fear of becoming fat.

Results from these exploratory analyses also revealed that those with higher BMI's were also more motivated to change (see Figure 8b). Yet, individuals who were obese reported significantly lower willpower scores than those in either the normal or the overweight groups. Obese individuals may endorse lower willpower scores because individuals may believe their weight disorder is genetic, or beyond their capacity for change. Gently enhancing their willpower, or helping them recognize that they do have some control over their eating and weight may increase their motivation to change the DE behaviors.

The relationship between willpower and motivation to change may differ in individuals who are extremely underweight. Individuals with such AN-symptomatology often know they have control over their food. For them, controlling food is often a symptom that everything else in life feels out of control. Those who have little motivation to change probably will not have any *desire* to change DE patterns. Increasing their motivation to change DE is not about increasing their belief that they can control their food, but actually changing their belief that they can control other things in life. As individuals with AN-like symptoms develop more *general* self-efficacy, the need to control food likely decreases.

In sum, obese individuals reported fewer negative attitudes toward overweight or obese individuals, decreased attributions of weight-based controllability, and a higher motivation to change DE patterns than individuals in the overweight, normal, or underweight groups. Although these are post-hoc results, with unequal sample sizes and

an increased risk of error, a cautious implication of these results suggests that Bandura's notion of self-efficacy may help explain the positive relationship between AFA and motivation to change DE behaviors in women who are obese. Despite lower willpower scores, they reported higher motivation to change scores than individuals in the overweight, normal, or underweight groups.

These results are also consistent with the Social Comparison Theory (SCT). Given that our culture has set the standard that "thin is in," then, arguably, women who are obese are the furthest from this standard. Consistent with Festinger's traditional SCT (1954), women who are obese will take action to reduce this discrepancy. Even though their Fear of Fat scores were not statistically different than the other weight groups, it is still possible they had clinically significant Fear of Fat scores. In fact, all the participants, regardless of weight, had high Fear of Fat scores. Post-hoc analyses confirmed that of the 3 AFA subscales, participants endorsed significantly more Fear of Fat than either Dislike or Willpower.

The next objective of this project was to determine whether the significant relationship between AFA and motivation to change DE behaviors was influenced by developmental regional status or regional identity. Neither hypothesis was statistically supported, suggesting that the positive correlation between AFA and motivation to change DE patterns does not differ between participants who spent the majority of their developmental years in urban or rural regions. As previously discussed, the lack of a significant difference may be due to inaccurately operationalizing regional status. The prediction that AFA and motivation to change would differ between participants who identify with the urban compared to the rural culture was not supported. Also as

previously discussed, this insignificant result may be related to participants' inconsistent conceptualizations of the urban and rural culture. The potential lack of variability in the key moderating variable (i.e. region) may obscure any potential differences in the association between AFA and motivation to change.

An alternative explanation is that there are no true regional differences in the association between AFA and motivation to change. The association between high AFA and an increased motivation to change DE behaviors may be consistent across individuals who develop in primarily urban and rural regions, as well as consistent between those who currently identify with the urban or rural cultures. Such a conclusion speaks to the pervasiveness of SCT and the ubiquitous effect of the media. Where individuals were raised or their regional identity may be irrelevant. Universally, individuals who perceive themselves to be discrepant from our culture's standard of thinness are more likely to change their DE behavior to reduce the discrepancy. Fortunately, obese women who binge eat may take steps to become more healthy. However, when the steps become extreme (e.g. surgery, diet pills, and unhealthy compensatory methods), there is cause for concern. Trying to meet our culture's standard of thinness may not be the best motivator to help obese women change weight-related DE behaviors.

The final goal of this project was to assess whether there was a three-way interaction between regional status, motivation to change, and antifat attitudes when predicting system-level barriers to treatment. Regardless of developmental region or regional identity, AFA did not influence the relationship between motivation to change and the quantity of system-level barriers.

Future Research.

While further investigation into individual-level barriers is warranted, this project focused primarily on **system**-level barriers. Despite finding no regional differences, exposing system-level barriers, regardless of regional status, is imperative. Identifying system-level barriers can inform community prevention efforts, guide public policy, and promote state-specific earmarks. Future projects should also continue exploring regional differences in system-level barriers. Potential projects can investigate whether college women who **grew-up** in rural and urban regions, or who **identify** with the rural or urban culture, are more or less knowledgeable about DE-related treatment options. In addition, is such knowledge related to perceived system-level barriers to treatment? Significant findings would speak to the importance of psychoeducation during, for example, freshman orientation, especially at universities that attract many rural students.

In addition, future research should focus on developing an accurate and reliable measure of regional status. Regional status seems to include more than where an individual lives or the size of her city. At the etic level, regional status may also include the culture with which an individual identifies with most. Regional status seems to be a relative term. It may be helpful to operationalize regional status using ethnic identity as a model. For example, despite an individual's ethnicity, his or her degree of acceptance of that particular ethnic culture may be different. Psychologists developed the concepts of acculturation to reflect differences in acceptance, and researchers have developed tools in an attempt to assess acculturation. These measures often include practical constructs related to ethnicity. For example, an individual may identify as Latino. The General Acculturation Index (GAI; Castro, Cota, & Vega, 1999) assesses the frequency with

which an individual speaks and reads Spanish. Acculturation measures also include latent constructs. The GAI includes items to assess the individual's level of pride in the Latino culture (Castro et al., 1999). Similar to ethnicity, regional status may be comprised of such latent constructs like pride. In addition, it may be worthwhile exploring differences between "regional status" and "regional identity."

Future research should continue to explore the relationship between AFA and motivation to change. Dissecting the AFA scale and perhaps focusing on the latent Willpower construct may help explain the variance in motivation to change. Furthermore, assessing how willpower and motivation to change is influenced by BMI, or by eating disorder diagnosis (i.e. AN, BN, BE, & ED-NOS) can help tailor intervention so they are appropriate for the individual's stage of change and DE pattern. For example, the emphasis on willpower, or self-efficacy, may differ between those who are under and overweight. Focusing on control, or self-efficacy, with overweight individuals may not be the optimal approach to induce change. However, while AN-symptomatology is often about controlling food, these individuals often feel that most other things in life are out of their control.

It may be important for future research to investigate the motives behind an individual's desire to change DE behaviors. Do the motives behind changing DE patterns influence the outcome? A woman who changes her eating patterns to fit society's standards may be more likely to engage in DE behaviors and ultimately suffer more emotional, physical, and social consequence than a women who changes her eating patterns because she is committed to being healthy.

Limitations.

Several limitations of this study warrant careful interpretations of the results. As previously discussed, inaccurate measurement of regional status may have reduced our accuracy of regional status. Second, data was collected through self-report measures and the face validity of many of the items may have been apparent to the participants. Consequently, the potential for participants to respond in a socially-desirable pattern was high. Although all participants were reminded that all responses were anonymous and kept confidential, participants may have underreported true DE symptoms, antifat attitudes, or BMIs. This is possible even considering that 67% endorsed clinically significant DE. It is possible that participants endorsed what they perceived to be "normal" eating patterns. However, restricting, engaging in compensatory behaviors, and a fear of becoming fat are clinically considered problematic, at the very least.

Third, this is a study of college women, results do not generalize across other populations. However, future research projects could examine similar hypotheses in various populations including men, older or younger participants, or those from different ethnic backgrounds.

Fourth, many individuals who deny or minimize unhealthy eating patterns may have been unintentionally excluded in the sample. Participants with serious DE patterns may have purposely falsified their screeners to be excluded or they may have refused to return for the second phase. Therefore, this study was influenced by a selection bias on willingness to volunteer for the study.

Conclusion

Research has established that DE is common among college women. However, much of this research has been conducted using students from large urban college campuses. Although regional differences were not significant in any analyses, this project provides more information about DE and barriers to treatment and supplements the dearth of research documenting that DE occurs among **rural** college women, as well. In fact, given the many physical, social, and emotional consequences related to DE, the high prevalence found in this study is reason for concern. This concern is magnified when the many barriers to treatment, such as an unawareness of resources, not knowing where resources are located, and limited insurance coverage, are considered. Despite evidence suggesting the pervasiveness of system-level barriers in rural areas (i.e. Jameson & Blank, 2007), this project did not detect statistically more system-level barriers to treatment in rural compared to urban regions. Possible differences may have been clouded by problematic or limitations to regional measurement. However, it is interesting to highlight that 85% of this sample of college women with clinically significant DE were in the Precontemplation Stage of change (i.e. $n = 90$; $N = 106$). These women did not define their DE as problematic. Therefore, it is not surprising that the majority of the sample, regardless of region, did not know where to get help for DE because perhaps they believed they did not need help. Consequently, expecting a regional difference in system-level barriers is premature given that most the sample may not have considered their eating behavior disordered. On the other hand, women reported significantly more **individual-level** barriers than system-level barriers to DE treatment, suggesting, at some level, they have an awareness of problematic eating patterns. Perhaps many of these

women did not consider their behaviors serious enough to justify professional, system-level services. This speaks to the importance and potential impact of psychoeducation regarding DE on college campuses. One important message may be de-pathologizing therapy or counseling. Students may need to appreciate that mental health care is not reserved for the "sickest" patients. Students also may need to permission from health care providers to lower their help-seeking standard. This may be especially relevant on college campuses where students are often moving away from home for the first time and have yet to establish a social network. Seeking services for DE thoughts and behaviors early may prevent the disease's progression to a full clinical eating disorder.

References

Abbate-Daga, G., Piero, A., Gramaglia, C. & Fassino, S. (2005). Factors related to severity of vomiting behaviors in bulimia nervosa. *Psychiatric Research, 134*, 1, 75-84.

Aiken, L. S., & West, S. G., (1991). Multiple regression: Testing and interpreting interactions. Sage Publications, Newbury Park, CA.

Altabe, M. (1998). Ethnicity and body image: Quantitative and qualitative analysis. *International Journal of Eating Disorders, 23*, 153-159.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed. Text Revision). Washington, DC: Author.

Bagley, C.A., Character, C.D., & Shelton, L. (2003). Eating disorders among urban and rural African American and European Women, *Women & Therapy*, *26*, 1-2, 57-80.

Becker, A.E. & Hamburg, P. (1996). Culture, the media, and eating disorders, *Harvard Rev Psychiatry, 4*, 163-167.

Becker, A.E., Keel, P., Andersen-Fye, E.P., & Thomas, J.J. (2004). Genes and/or jeans?: Genetic and socio-cultural contributions to risk for eating disorders. *Journal of Addictive Diseases, 23,* 3, 81-103.

Blake, W., Turnbull, S., & Treasure, J. (1997). Stages and processes of change in eating disorders: Implications for therapy. *Clinical Psychology and Psychotherapy*, *4*, 186–191.

Bordo, S. (1993). *Unbearable weight: Feminism, Western Culture, and the Body.* Berkley, CA: University of California.

Botta, R.A. (2003). For your health? The relationship between magazine reading and adolescents' body image and eating disturbances. *Sex Roles, 48,* 9/10, 389-399.

Brownley, K.A., Berkman, N.D., Sedway, J.A., Lohrn, K.N., & Bulik, C.M (2007). Binge eating disorder treatment: A systematic review of randomized controlled trials. *International Journal of Eating Disorders, 40,* 337-348.

Button, E.J., Looan, P., Davies J., Sonuga-Barke, E. (1997). Self-esteem, eating problems and psychological well-being in a cohort of schoolgirls aged 15–15: A questionnaire and interview study. *International Journal of Eating Disorders,* 21, 39–47.

Byely, L., Archibald, A.B., Graber, J., & Brooks-Gunn, J. (2000). A prospective study of familial and social influences on girls' body image and dieting. *International Journal of Eating Disorders, 28,* 155-164.

Cachelin, F.M., & Striegel-Moore, (2006). Help seeking and barriers to treatment in a community sample of Mexican American and European American women with eating disorders. *International Journal of Eating Disorders, 39,* 2, 154-161.

Cachelin, F.M., Rebeck, R., Veisel, C., & Striegel-Moore, R.H. (2001). Barriers to treatment for eating disorders among ethnically diverse women. *International Journal of Eating Disorders, 30,* 269-278.

Candy, C. M., & Fee, V. E. (1998). Underlying dimensions and psychometric properties of eating behaviors and body image test for preadolescent girls. *Journal of Clinical Child Psychology, 27*(1), 117-127.

Castro, Cota, & Vega, (1999). Health promotion in Latino Populations: A sociocultural model for program planning, development, and evaluation. In R.M. Huff & .V.

Kline (Eds.), *Promoting health in multicultural populations: A handbook for practitioners,* 137-168. Thousand Oaks, CA: Sage.

Cellucci, T. Vik, P., & Nirenberg, T (2004). Substance abuse in the rural community. In B. Hudnall Stamm (Ed.), *Rural Behavioral Health Care* (pp. 53-66). Washington D.C.

Cirino, P. T., Chin, C. E., Sevicik, R. A., Wolf, M., Lovete, M., & Morris, R. D. (2002). Measuring socioeconomic status: Reliability and preliminary validity for different approaches. *Assessment, 9*(2), 145-155.

Cohen, D. L. & Petrie, T.A. (2005). An examination of psychological correlates of disordered eating among undergraduate women. *Sex Roles, 52*, 29-42.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155-159.

Compas, B.E., Wagner, B.M., Slavin, L.A., &Vannatta, K. (1986). A prospective study of life events, social support, and psychological symptomatology during the transition for high school to college. *American Journal of Community Psychology, 14*, 241-257.

Corning, A.F., Krumm, A.J., & Smitham, L.A. (2006). Differential social comparison processes in women with and without eating disorder symptoms, *Journal of Counseling Psychology, 53,* 3, 338-349.

Crandall, C.S. (1994). Prejudice against fat people: Ideology and self-interest. *Journal of Personality and Social Psychology, 66*(5), 882-894.

Crandall, C.S., & Martinez, R. (1996). Culture, ideology, and antifat attitudes. *Personality and Social Psychology Bulletin 22*(11), 1165-1176.

Crandall, C.S., D'Anello, S., Sakalli, N., Laxarus, E., Wieczorkowska, G., & Feather, N.T. (2001). An attribution-value model of prejudice: Anti-fat attitudes in six nations. *Personality and Social Psychology Bulletin, 27*(1), 30-37.

Davis, H. & Gergen, P.J. (1994). The weights and heights of Mexican-American adolescents: The accuracy of self-reports. *American Journal of Public Health, 84*, 3, 459-462.

DeLeon, P.H., Wakefield, M., & Hagglund, K.J. (2004). The behavioral health care needs of rural communities. In B. Hudnall Stamm (Ed.), *Rural Behavioral Health Care* (pp. 23-32). Washington D.C.

DiClemente, C.C. & Velasquez, M.M. (2002). Motivational interviewing and the Stages of Change. In W.R. Miller & S. Rollnick (Eds.), *Motivational Interviewing: Preparing People for Change*,(2nd ed., pp. 201-216). New York: The Guilford Press.

DiClemente, C.C., & Prochaska, J.O. (1998). Toward a comprehensive, transtheoretical model of change: Stages of change and addictive behaviors. In W.R. Miller & N. Heather (Eds.), *Treating addictive behaviors* (2nd ed., pp. 3-24). New York: Plenum Press.

Dunn, E.C., Neighbors, C., & Larimer, M. (2003). Assessing readiness to change binge eating and compensatory behaviors. *Eating Behaviors, 4*, 3, 305-314.

Elder, M., & Quillen, J.H. (2007). A reason for optimism in rural mental health care: Emerging solutions and models of service delivery. *Clinical Psychological Science and Practice*, 14, 299-303.

Fairburn C.G. & Cooper, P.J. (1984). Clinical features of bulimia nervosa. *British Journal of Psychiatry,144*, 238–246.

Fairburn, C.G., Cooper, A., Bohn, D., O'Connor, M.E, Doll, H.A., & Palmer, R.L. (2006). The severity and status of eating disorder NOS: Implications for DSM-V. *Behaviour Research and Therapy, 45*, 1705-1715.

Fallon, A. E., & Rozin, P. (1985). Sex differences in perceptions of desirable body shape. *Journal of Abnormal Psychology, 94*(1), 102-105.

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7,* 117-140.

Franko, D.L., Becker, A.E., Thomas, J.J., & Herzog, D.B. (2007). Cross ethnic differences in eating disorder symptoms and related distress. *International Journal of Eating Disorders, 40,* 156-164.

Franko, D.L., Mintz, L.B., Villapiano, M., Green, T.C., Mainelli, D., Folensbee, L. et al. (2005). Food, mood, and attitude: Reducing risk for eating disorders in college women. *Health Psychology, 24,* 6, 567-578.

Garner, M.D., Marion, M.P., Olmstead, M.A., & Polivy, J. (1983). Development and validation of multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders, 2*(2), 15-34.

Garvin, V. & Striegel-Moore, R.H. (1999). Health Services research for eating disorders in the United States: A status report and call to action. In R.H. Striegel-Moore & L. Smolak, (Eds.), *Eating Disorders: Innovative Directions In Research and Practice,* New York: Oxford University Press, 135-152.

Geller, J., & Drab, D. L. (1999). The Readiness and Motivation Interview: A symptom specific measure of readiness for change in the eating disorders. *European Eating Disorders Review, 7*, 259–278.

Geller, J., & Drab, D.L. (1999). The readiness and motivation interview: A symptom-specific measure of readiness for change in the eating disorders. *European Eating Disorders Review, 7,* 4 259-278.

Geller, J., Drab-Hudson, D.L., Whisenhunt, B.L., & Srikameswaran, S. (2004) Readiness to change dietary restriction predicts outcomes in the Eating Disorders. *Eating Disorders: The Journal of Treatment and Prevention, 12,* 3, 209-224.

Geller, J., Drab-Hudson, D.L., Whisenhunt, B.L., & Srikameswaran, S. (2004). Readiness to change dietary restriction predicts outcomes in the Eating Disorders, *Eating Disorders, 12,* 209-224.

Geller, J., Williams, K.D., & Srikamenswaran, S. (2001). Clinician stance in the treatment of chronic eating disorders. *European Eating Disorders Review, 9,* 6, 365-373.

Gentile, K., Raghavan, C., Valli, R. & Gates, K. (2007). It doesn't happen here: Eating disorders in an ethnically diverse sample of economically disadvantaged, urban college students. *Eating Disorders: The Journal of Treatment and Prevention, 15,* 5 405-425.

Gowers, S., & Bryant-Waugh, R. (2004). Management of child and adolescent eating disorders: The current evidence base and future directions. *Journal of Child Psychology and Psychiatry, 45,* 1, 63-83.

Guarda, A.S., & Heinberg, L.J. (2004). Inpatient and partial hospital approaches to the treatment of eating disorders. In J.K. Thompson *Handbook of Eating Disorders and Obesity.* John Wiley & Sons (Ed.) Hoboken, NJ. 297-320.

Hays, R.D., & Morales, L.S. (2001). The RAND-36 measure for health-related quality of life. *Ann. Med.,* 33, 350-357.

Herzog, D. B., Nussbaum, K. M., & Marmor, A. K. (1996). Comorbidity and outcome in eating disorders. *Psychiatric Clinics of North America, 19*, 843–859.

Herzog, D.B., Keller, M.B., Strober, M. & Yeh, C.J. (1992). The current status of treatment for anorexia nervosa and bulimia nervosa. *International Journal of Eating Disorders, 12,* 2, 215-220.

Herzog, D.B., Nussbaum, K.M., & MArmore, A.K. (1996). Comorbidity and outcome in eating disorders. *Psychiatric Clinics of North America, 19,* 4, 843-859.

Hesse-Biber, S., Leavy, P., Quinn, C.E., & Zoino, J. (2006). The mass marketing of disordered eating and Eating Disorders: The social psychology of women, thinness, and culture, *Women's Studies International Forum, 29*, 208-224.

Holstrom, A.J. (2004). The effects of the media on body image: A meta-analysis. *Journal of Broadcasting and Electronic Media, 48*, 2, 196-218.

Howard, W. T., Evans, K. K., Quintero-Howard, C. V., Bowers, W. A., & Andersen, A. E. (1999). Predictors of success or failure of transition to day hospital treatment for inpatients with anorexia nervosa. *American Journal of Psychiatry, 156*,1697–1702.

Howard, W.T., Evans, K.K., Quintero-Howard, C.V., Bowers, W.A., & Andersen, A.E. (1999). Predictors of success or failure of transition to day hospital treatment for inpatients with anorexia nervosa. *American Journal of Psychiatry, 156,* 11, 1697-1702.

Jacobson, B. H., & DeBock, D. H. (2001). Comparison of body mass index by self-reported versus measured height and weight. *Perceptual and Motor Skills, 92,* 128-132.

Jameson, J.P., & Blank, M.B. (2007). The role of clinical psychology in rural mental health services: Defining problems and developing solutions. *Clinical Psychology Scientific Practice, 14,* 283-298.

Jonat, L.M., & Birmingham, L.C. (2004). Disordered eating attitudes and behaviors in the high-school students of a rural Canadian community. *Eating and Weight Disorders, 9,* 4, 285-289.

Keller, M. B., Herzog, D. B., Lavori, P. W., Bradburn, I. S., & Mahoney, E. M. (1992). The naturalistic history of bulimia nervosa: Extraordinarily high rates of chronicity, relapse, recurrence, and psychosocial morbidity. *International Journal of Eating Disorders, 12,* 1–9.

Kelly, C., Ricciardelli, L.A., & Clarke, J.D. (1999). Problem eating attitudes and behaviors in young children. *International Journal of Eating Disorders, 25,* 281-286.

Kemper, K. A., Sargent, R. G., Drane, J. W., Valois, R. F., & Hussey, J. R. (1994). Black and White females' perceptions of ideal body size and social norms. *Obesity Research, 2,* 117-126.

Klemchuk, H. P., Hutchinson, C. B., & Frank, R. I. (1990). Body dissatisfaction and eating-related problems on the college campus: Usefulness of the eating disorder inventory with a nonclinical population. *Journal of Counseling Psychology, 37*(3), 297-305.

Kuba, S. A., & Harris, D. J. (2000). Eating disturbances in women of color: An exploratory study of contextual factors. In: The development of disordered eating in Mexican American women. *Health Care for Women International, 22*, 281-298.

Kugu, N., Akyuz, G., Dogan, O., Ersan, E., & Izgic, F. (2006). The prevalence of eating disorders among university students and the relationships with some individual characteristics. *Australian and New Zealand Journal of Psychiatry, 40*, 2, 129-135.

Lawrence, C.M., & Thelen, M.H. (1995). Body image, dieting and self-concept: Their relation in African American and Caucasian children. *Journal of Clinical Child Psychology, 24*, 41-48.

Levine, M.P. & Smolak, L. (1996). Media as a context for the development of disordered eating. In Linda Smolak, Michael P. Levine & Ruth Striegel-Moore (Eds.), *The Developmental Psychopathology of What Disorders—Implications for Research, Prevention, and Treatment* (pp. 235-257). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers New York: Oxford.

Lin, F. L., & Kulik, J.A. (2002). Social comparison and women's body satisfaction. *Basic and Applied Social Psychology, 24*, 2, 115-123.

Littleton, H.L., & Ollendick, T. (2003). Negative body image and disordered eating behavior in children and adolescents: What places youth at risk and how can these problems be prevented? *Clinical Child and Family Psychology Review, 6*, 1, 51-66.

Lock, J. Reisel, B., & Steiner, H. Associated health risks of adolescents with disordered eating: How different are they from their peers? Results from a high school survey. *Child Psychiatry & Human Development, 31*, 3, 249-265.

McConnaughy, E. A., Prochaska, J. O., & Velicer, W. F. (1983). Stages of change in psychotherapy: Measurement and sample profiles. *Psychotherapy, 20,* 368–375.

McConnaughy, E.A., DiClemente, C.C., Prochaska, J.O., & Velicer, W.F. (1989). Stages of change in psychotherapy: A follow-up report. *Psychotherapy: Theory, Research, Practice, Training, 26,* 4, 494-503.

McVey, G.L., Pepler, D., Davis, R., Flett, G.L., & Abdolell, M. (2002). Risk and protective factors associated with disordered eating during early adolescence. *Journal of Early Adolescence, 22,* 75-95.

Mintz, L.B., & Betz. N.E. (1988). Prevalence and correlates of Eating Disordered behaviors among undergraduate women. *Journal of Counseling Psychology, 35,* 4, 463-471.

Mitchell, J.E., Peterson, C.B., & Agras, S. (1999). Cost-effectiveness of psychotherapy for eating disorders. In: Miller, N.E. & Magruder, K.M. *Cost-effectiveness of Psychotherapy: A Guide for Practitioners, Researchers, and Policymakers.* Oxford University Press (Eds). New York, NY. 270-278.

Morrison, T., Waller, G., Meyer, C., Burditt, E., Wright, F., Babbs, M., & Gilbert, N. (2003). Social Comparison in the Eating Disorders, *The Journal of Nervous and Mental Disease, 91,* 8, 553-555.

Morrison, T.G., Kalin, R., & Morrison, M.A. (2004). Body-image evaluation and body-image investment among adolescents: A test of sociocultural and social comparison theories. *Adolescence,* 39, 155, 571-593.

Neighbors, L.A., & Sobal, J. (2007). Prevalence and magnitude of body weight and shape dissatisfaction among university students. *Eating Behaviors,* 8, 429-439.

Paxton, S. J., Eisenberg, M.E., Neumark-Sztainer, D. (2006). Prospective predictors of body dissatisfaction in adolescent girls and boys: A five-year longitudinal study. *Developmental Psychology, 42*, 5, 888-899.

Peterson, C.B., & Mitchell, J.E. (1999). Psychosocial and pharmacological treatment of eating disorders: A review of research findings. *Journal of Clinical Psychology, 55*, 6, 685-697.

Pomeroy, C. (2004). Assessment of medical status and physical factors. In *The Handbook of eating disorders and obesity.* (pp. 81-111). Hobooken, NJ: John Wiley & Sons.

Presidential Commission on Rural Mental Health, 2006

Preti, A., Pinna, C., Nicco, S., Pilia, S., Mulliri, E., Micheli, V., Casta, C., Petretto, D.R., & Masala, C. (2007). Rural/urban differences in the distribution of eating disorder symptoms among adolescents from community samples. *The Royal Australian and New Zealand College of Psychiatrists,* 41, 525-535.

Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change. *American Psychologist, 47*(9), 1102–1114.

Rathner, G., & Messner, K. (1993). Detection of eating disorders in a small rural town: An epidemiological study. *Psychological Medicine, 23,* 1, 175-184.

Richards M.H., Casper, R.C., & Larson R. (1990). Weight and eating concerns among pre- and young adolescent boys and girls. *Journal of Adolescent Health Care, 11*, 203–209.

Rieger, E., Touyz, S., Schotte, D., Beumont, P., Russell, J., Clarke, S., et al. (2000). Development of an instrument to assess readiness to recover in anorexia nervosa. *International Journal of Eating Disorders, 28*, 4, 387-396.

Rieger, E., Touyz, S., Schotte, D., Beumont, P., Russell, J., Clarke, S., Kohn, R., & Griffiths, R. (2000). Development of an instrument to assess readiness to recover in anorexia nervosa. *International Journal of Eating Disorders, 28*, 387–396.

Robinson, T.N., Resnick, M.D., Mitchell, J.E., & Blum, R.W. (1997). The relationship between socioeconomic status and eating-disordered behaviors in a community sample of adolescent girls. *International Journal of Eating Disorders, 22*, 15-23.

Schwitzer, A.M., Rodriquez, L.E., Thomas, C., & Salimi, L. (2001). The Eating Disorder-NOS profile among college women. *Journal of American College Health, 49*, 157-166.

Sjostedt, J. P., Schumaker, J.F., & Nathawat, S.S. (2001). Eating disorders among Indian and Australian university students. *The Journal of Social Psychology, 138*, 3, 351-357.

Soh, N.L., Touyz, S.W., & Surgenor, L.J. (2006). Eating and body image disturbances across cultures: A review. *European Eating Disorders Review, 14*, 54-65.

Stamm, B.H., Metrick, S.L., Kenkel,. M.B., Davenport, J.A., Davenport, J., Hundall, A.C. et al. (2004). *Introduction*. In B. Hudnall Stamm (Ed.), *Rural Behavioral Health Care* (pp. 3-10). Washington D.C.

Steiner, H., & Lock, J. (1998). Anorexia Nervosa and Bulimia Nervosa in children and adolescents: A review of the past 10 years. *Journal of the American Academy of Child & Adolescent Psychiatry, 37* 4, 352-359.

Stewart, A. W., Jackson, R. T., Ford, M. A., & Beaglehole, R. (1987). Underestimation of relative weight by use of self-reported height and weight. *American Journal of Epidemiology, 125*, 122-126.

Stice, E. & Shaw, H.E. (2002). Role of body dissatisfaction in the onset and maintenance of eating pathology: A synthesis of research findings. *Journal of Psychosomatic Research,* 53, 985-993.

Stice, E., Fisher, M., & Martinez (2004). Eating Disorder Diagnostic Scale: Additional evidence of reliability and validity. *Psychological Assessment, 16,* 1, 60-71.

Stice, E., Telch, C., & Rizvi, S.L. (2000). Development and validation of the Eating Disorder Diagnostic Scale: A brief self-report measure of Anorexia, Bulimia, and Binge-Eating Disorder, *Psychological Assessment, 12,* 2, 123-131.

Striegel-Moore, R., McAvay, G., & Rodin, J. (1986). Psychological and behavioral correlates of feeling fat in women. *International Journal of Eating Disorders, 5*, 5, 935-947.

Striegel-Moore, R.H., Schreiber, G.B., Lo, A., Crawford, P., Obrzanek, E. & Rodin, J. (2000). Eating disorder symptoms in a cohort of 11 to 16-year-old black and white girls: the NHLBI growth and health study. *International Journal of Eating Disorders*, *27*, 49-66.

Striegel-Moore, R.H., Silberstein, L.R., Frensch, P., & Rodin, J. (1989). A prospective study of disordered eating among college students. *International Journal of Eating Disorders, 8, 5, 499-509.*

Story, M., French, S. A, Resnick, M. D., & Blum, R.W. (1995). Ethnic/racial and socioeconomic differences in dieting and body image perceptions in adolescents. *International Journal of Eating Disorders*, *18*(2), 173-179.

Stunkard, A., Sorensen, T., & Schulsinger, F. (1983). Use of the Danish adoption register for the study of obesity and thinness. *Genetics of Neurological and Psychiatric Disorders*, 115-120.

Stunkard, A.J., & Allison, K.C. (2003). Two forms of disordered eating in obesity: binge eating and night eating. *International Journal of Obesity, 27*, 1-12.

Taylor, C.B., Sharpe, T., & Shislak, C. (1997). Factors associated with weight concerns in adolescent girls. *International Journal of Eating Disorders, 24*, 31-42.

Thompson, J. K., & Altabe, M. N. (1991). Psychometric properties of the figure rating scale. *International Journal of Eating Disorders, 10*, 15-19.

Tiggeman, M. & Pickering, A.S. (1996). Role of television in adolescent women's body dissatisfaction and drive for thinness. *International Journal of Eating Disorders, 20*, 2, 199-203.

Treasure, J., & Schmidt, U. (2001). Ready, willing and able to change: Motivational aspects of the assessment and treatment of eating disorders. *European Eating Disorders Review*, 9, 4–18.

Treasure, J., & Schmidt, U. Ready, willing and able to change: Motivational aspects of the assessment and treatment of eating disorders. *European Eating Disorders Review, 9*, 1, 4-18.

United States Department of Agriculture Economic Research Service. (2003). *Measuring rurality: Rural-urban continuum codes.* Retrieved November 11, 2004, from http://www.ers.usda.gov/briefing/rurality/RuralUrbCon/

The University of Montana (2007) http://www.umt.edu/DiscoverUM/AboutUM/. Last accessed 4/25/2009.

van Son, G.E., van Hoeken, D., Bartelds, A.I.M., van Furth, E.F., & Hoek, H.W. (2006). Urbanization and the incidence of eating disorders. *British Journal of Psychiatry, 189,* 6, 562-563.

Vitousek, K. B., Watson, S., Wilson, G. T. (1998). Enhancing motivation for change in treatment-resistant eating disorders. *Clinical Psychology Review, 18,* 391–420.

Vitousek, K., Watson, S., & Wilson, T.G. (1998). Enhancing motivation for change in treatment-resistant eating disorders. *Clinical Psychology Review. Special Issue: Neglected Topics in Eating Disorders: Guidelines for Clinicians and Researchers, 18,* 4, 391-420.

Vitousek, K.M. & Stumpf, R.E. (2005). Difficulties in the assessment of personality traits and disorders in Eating-Disordered Individuals. *Eating Disorders, The Journal of Treatment & Prevention, Special Issue: Personality Disorders and Eating Disorders, 13,* 1, 37-60.

Vitousek, V., K.M., & Stumpf, R.E. (2005). Difficulties in the assessment of personality traits and disorders in Eating-Disordered individuals. *Eating Disorders: The Journal of Treatment and Prevention, 13,* 1, 37-60.

Vohs, K.D., Heatherton, T.F., & Herrin, M. (2001). Disordered eating and the transition to college: A prospective study. *International Journal of Eating Disorders, 29,* 280-288.

Wade, T.D. (2007). A retrospective comparison of purging type disorders: Eating Disorder Not Otherwise Specified and Bulimia Nervosa. *International Journal of Eating Disorders, 40,* 1-6.

Wagenfeld, M.O. (2004). A snapshot of rural and frontier America. In B. Hudnall Stamm (Ed.), *Rural Behavioral Health Care* (pp. 33-40). Washington D.C.

Wardle, J., Haase, A.M., & Steptoe, A. (2006). Body image and weight control in young adults: International comparisons in university students from 22 countries. *International Journal of Obesity*, 30, 644-651.

Ware, J.E., & Sherbourne, C.D. (1992). The MOS 36-item Short-Form health survey (SF-36): I. Conceptual framework and item selections, *Medical Care, 30*, 473-483.

Wheeler, L., & Miyake, K. (1992). Social comparison in everyday life. *Journal of Personality and Social Psychology, 62*, 5, 760-773.

Wildes, J.E., Emery, R.E., & Simons, A.0. (2001). The roles of ethnicity and culture in the development of eating disturbance and body dissatisfaction: a meta-analytic review. *Clinical Psychology Review, 21*(4), 521-551.

Wolfe, B.E., Metger, E.D., Levine, J.M., & Jimerson, D.C. (2001). Laboratory screening for electrolyte abnormalities and anemia in bulimia nervosa: a controlled study. *International Journal of Eating Disorders 30*, 288–293.

Wood, J.V. (1989). Theory and research concerning social comparison of personal attributes. *Psychology Bulletin, 98,* 106, *231-248.*

Table 1.
Characteristics of Total Sample (N = 202)

	Eligible & Consented *n* = 106	Eligible & Refused *n* = 27	Ineligible & Consented *n* = 40	Ineligible & Refused *n* = 28
Variable	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
EDDS	5.25 (8.28)[a]	3.00 (9.59)[a]	-9.54 (5.10)[b]	-9.47(4.04)[b]
BMI	24.02 (5.06)[a]	24.73 (5.35) [a]	22.84 (2.98) [a]	21.84 (2.75) [a]

Note: EDDS = Eating Disorder Diagnostic Scale; EDDS scores are standardized. EDDS Chronbach's α = .84 (*N* = 202). BMI = body mass index. Significant differences exist between superscripts that differ. $p < .0001$.

Table 2.
Descriptives of Eligible and Consented Participants (N = 106)

Variable	*Frequencies*	*Mean*	*SD*
Age	-	20.08	3.59
Weight	-	147.59	33.80
BMI	-	24.03	5.06
Grade			
Freshman	64.8%		
Sophomore	22.2%		
Junior	7.4%		
Senior	1.9%		
Post-Bac	1.9%		
Missing	1.9%		
Ethnicity			
Caucasian	89.9%		
American Indian or Native American	3.7%		
Mexican American	1.9%		
African American	.9%		
Asian	.9%		
Middle Eastern	.9%		
"Other"	.9%		

Table 3.
Primary Caretakers and SES (N = 106)

	Not the Primary Caretakers *n = 84*	Primary Caretakers *n = 22*
Variable	*M (SD)*	*M (SD)*
Education		
Participant	n/a	2.32 (.48)
Partner	n/a	1.14 (1.21)
Mother	2.83 (.66)	n/a
Father	2.73 (.75)	n/a
Average	2.78 (.56)[a]	1.73(.63)[b]
Income	3.23 (1.06)[a]	1.86 (.64)[b]
Total SES Score	2.93 (.58)[a]	1.77 (.53)[b]

Note: Significant differences exist between superscripts that differ. $p < .0001$

Table 4a.
Developmental Regional Status (N = 106)

	Urban *n = 45*	Rural *n = 61*
Variable	*M(SD)*	*M(SD)*
Years spent in region	15.85 (4.5)	14.73 (4.91)
Age	19.73 (4.0)	20.33 (3.27)
BMI	23.22 (3.64)	24.62 (5.85)
SES	2.95 (.74)[a]	2.50 (.68)[b]

Note: Significant differences exist between superscripts that differ. $p < .05$.

Table 4b.
Regional Identity Status (N = 106)

	Urban *n = 56*	Rural *n = 50*
Variable	*M(SD)*	*M(SD)*
Age	20.04 (3.21)	20.11 (3.93)
BMI	22.89 (3.05) [a]	25.30 (6.42) [b]
SES	2.74 (.84)	2.63 (.61)

Note: Significant differences exist between superscripts that differ. $p < .05$.

Table 5.
Regional Comparisons in EDDS scores

Developmental Region	Rural *n = 61*	Urban *n = 45*
	M(SD)	*M(SD)*
EDDS	.22 (8.94)	-.29 (7.67)
AFA	4.10 (1.42)	4.21 (1.39)

Regional Identity	Rural *n = 50*	Urban *n = 56*
	M(SD)	*M(SD)*
EDDS	-.86 (9.05)	.77 (7.75)
AFA	3.75 (1.28) [a]	4.50 (1.40)[b]

Notes: EDDS = Eating Disorder Diagnostic Scale; EDDS scores are standardized; EDDS Chronbach's α = .76 (N =106); SES and BMI covaried; AFA = Antifat Attitudes; AFA Chronbach's α = .85 (N = 106); BMI significant covariate in both ANCOVA; groups with different superscripts are significantly different ($p < .05$).

Table 6.
Correlations between predictors, covariates, moderators, and criterion variables

Variable	α	1	2	3	4	5	6	7	8
1. Developmental Status	n/a	1							
2. Regional Identity	n/a	-.59**	1						
3. SES	n/a	-.28**	.12	1					
4. BMI	n/a	.09	-.13	-.22*	1				
5. AFA	.85	-.03	.15	.05	-.27**	1			
6. Motivation to Change	.90	-.05	.03	-.02	.41**	.09	1		
7. Past System Barriers	.87	-.07	.14	-.12	.21*	.10	.42**	1	
8. Current System Barriers	.90	-.15	.15	-.04	.17	.11	.42**	.94**	1

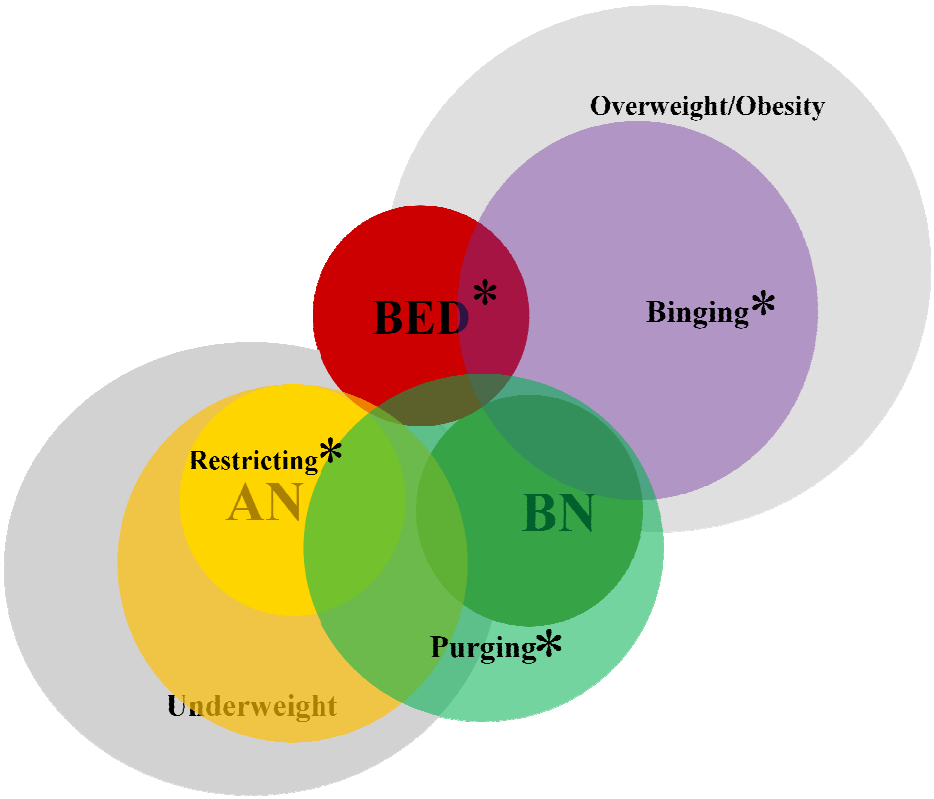
Notes: ** $p = .01$; *$p = .05$

Table 7.
Differences between BMI groups in AFA Subscales

AFA Subscale	BMI Group	*n*	Mean	SD	*F(df), p, partial eta²*
Dislike	Underweight[a]	5	.82	.75	
	Normal weight[b]	67	2.51	1.81	
	Overweight[a,c]	26	1.72	1.34	*F*(3, 101)= *3.65*, *p* < .05, .10
	Obese[a,c]	8	1.16	1.48	
Fear of Fat	Underweight[a]	5	4.80	3.18	
	Normal weight[b]	67	7.15	1.82	
	Overweight[b]	26	7.45	1.54	*F*(3, 101)= *3.12*, *p* < .05, .09
	Obese[a,b]	8	6.22	2.95	
Willpower	Underweight[a,b,c]	5	5.53	2.02	
	Normal weight[a]	67	6.42	1.75	
	Overweight[b]	26	5.49	1.66	*F*(3, 101)= *6.11*, *p* < .01, .15
	Obese [c]	8	3.63	2.55	

Notes: SES covaried; AFA = Antifat Attitudes; groups with different superscripts are significantly different ($p < .05$).

Figure 1
Defining Disordered Eating



** Notes those participants with DE patterns.*

Figure 2a
Hypothesis 3

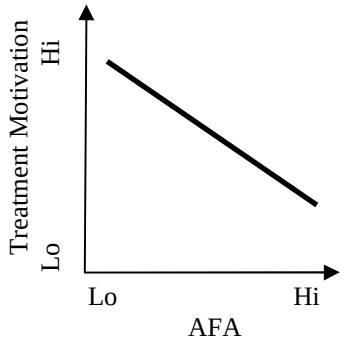


Figure 2b
Hypothesis 4

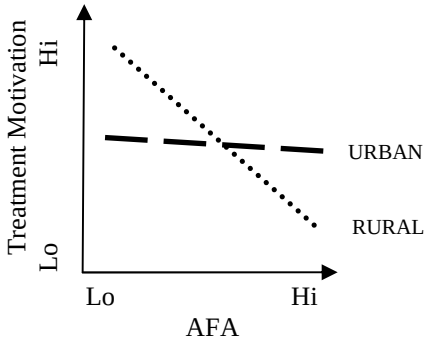


Figure 2c
Hypothesis 5

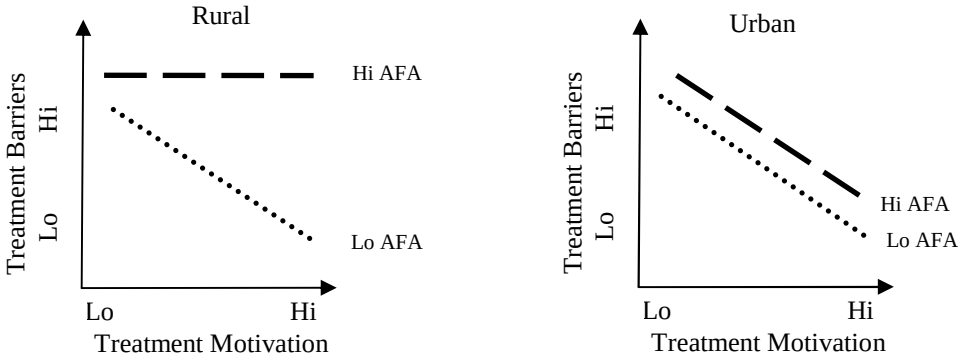


Figure 3
Composition of the Sample (N = 202)

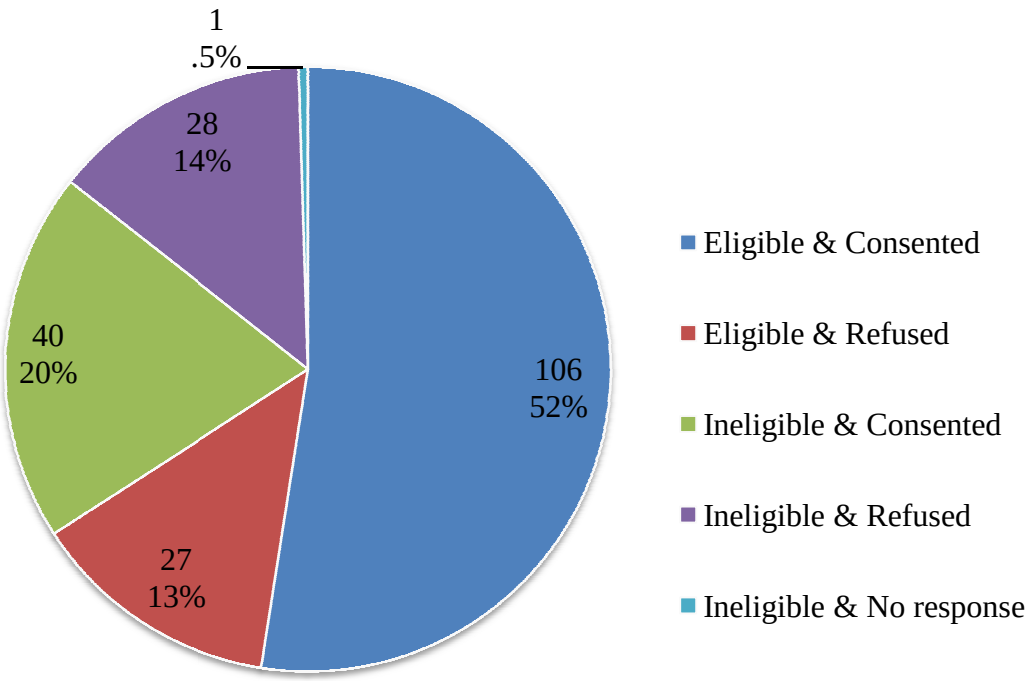
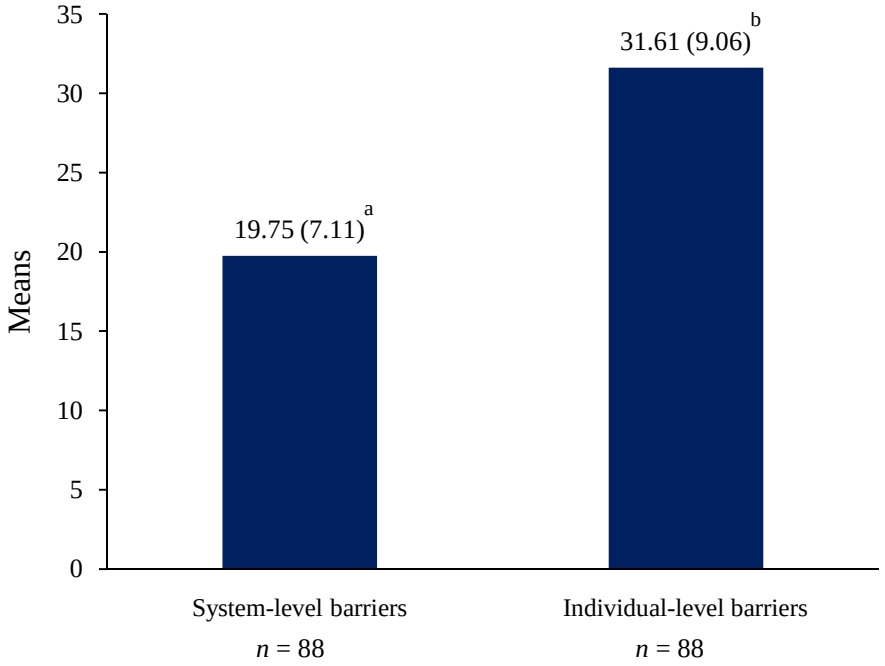


Figure 4a

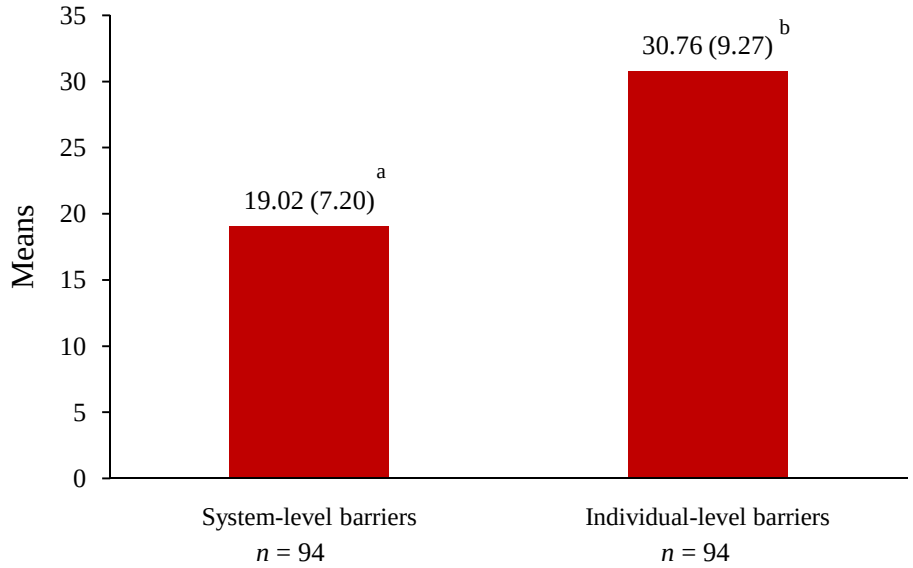
***Past** Barriers to DE Treatment (N = 106)*



Note: Significant differences exist between superscripts that differ. $p < .0001$

Figure 4b

***Current** Barriers to DE Treatment (N = 106)*



Note: Significant differences exist between superscripts that differ. $p < .0001$

Figure 5a
*Current and Past **System-Level** Barriers*

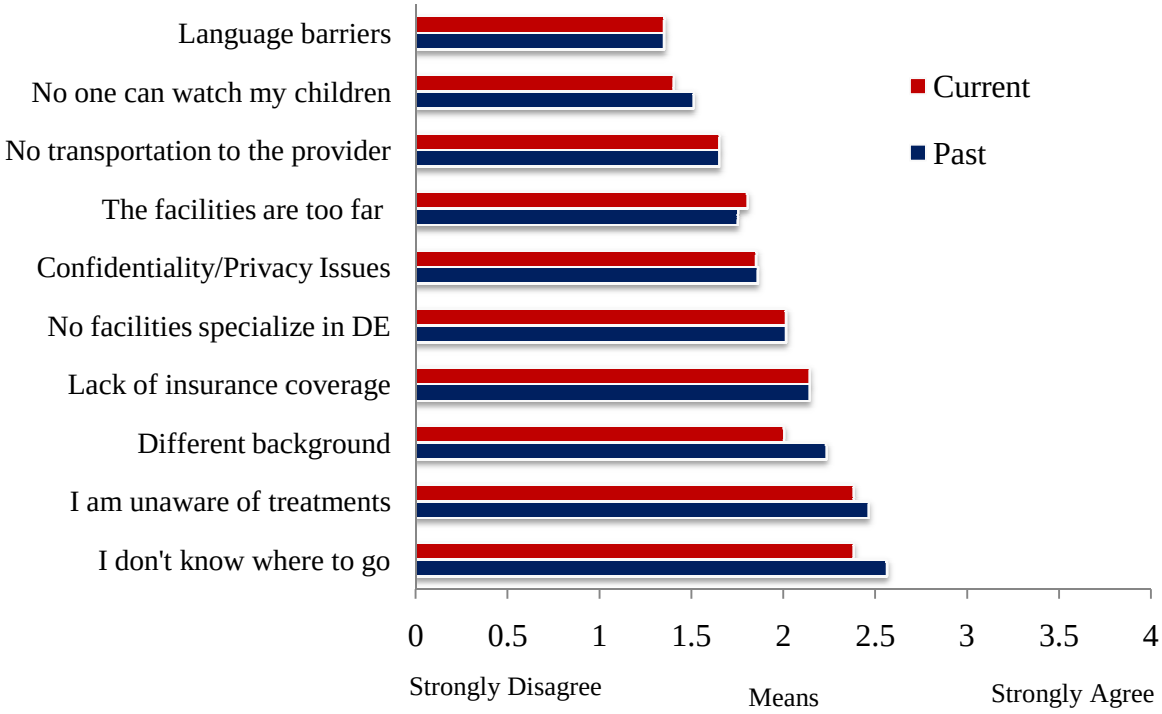


Figure 5b
*Current and Past **Individual-Level** Barriers*

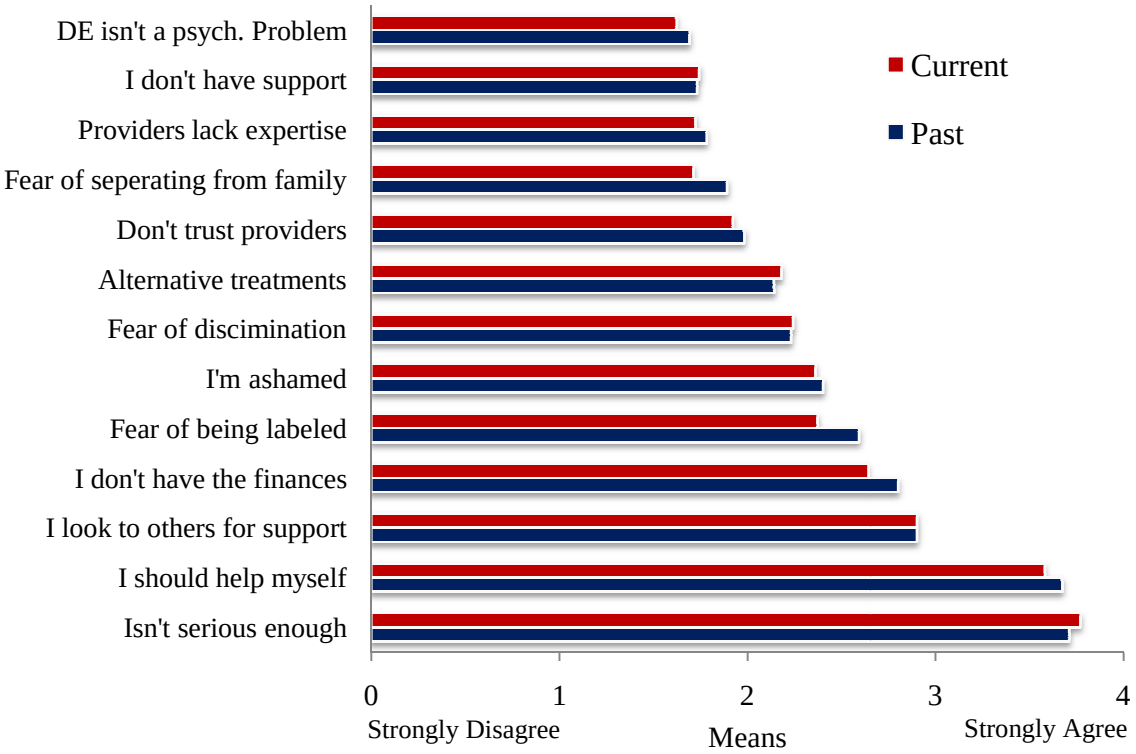
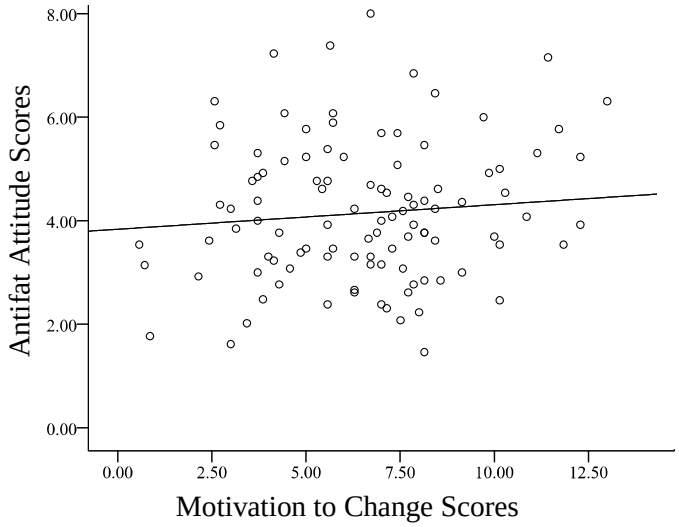


Figure 6a

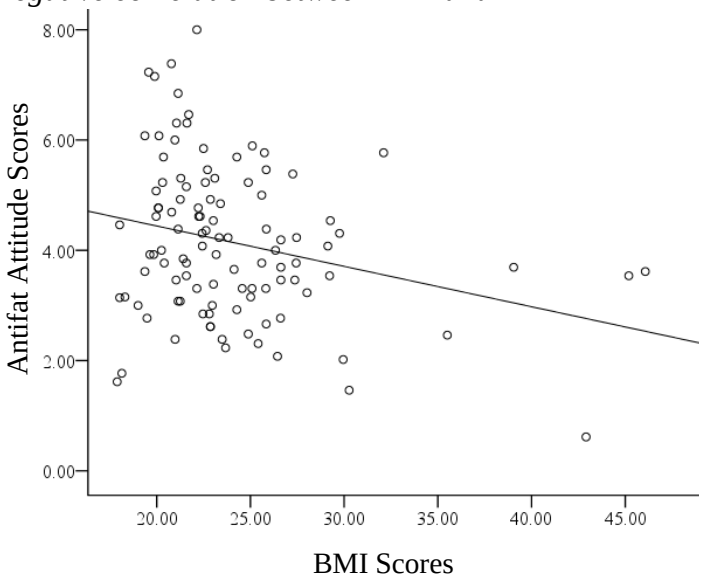
Positive Correlation between Motivation to Change and AFA



Note: BMI and SES are covaried in statistical analysis, which is not represented in the scatterplot

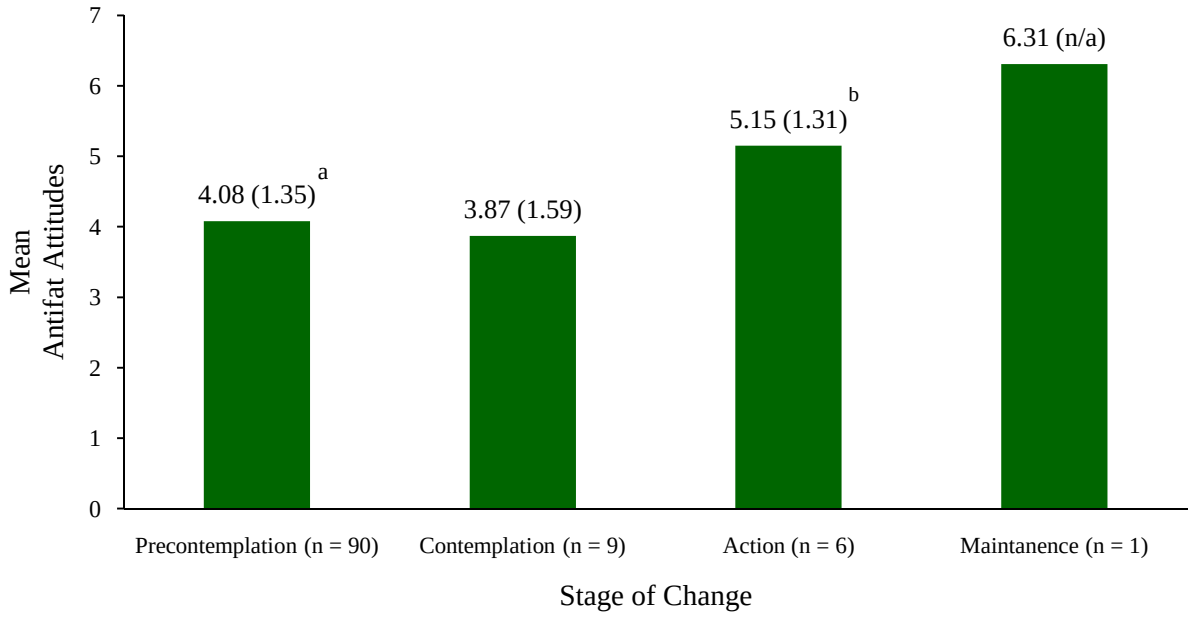
Figure 6b

Negative correlation between BMI and AFA



Note: BMI and SES are covaried in statistical analysis, which is not represented in the scatterplot

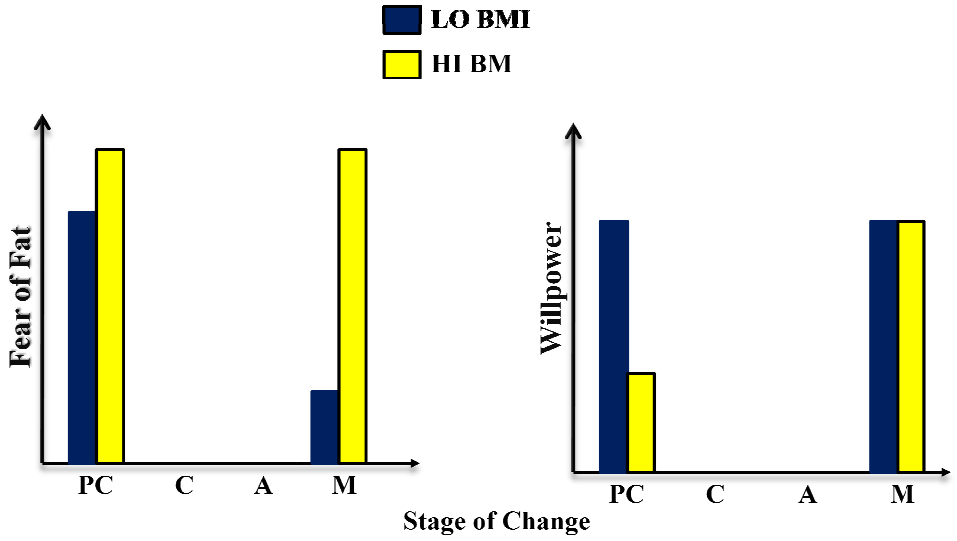
Figure 7
AFA Comparisons Between Stages of Change



Note*:* Groups with different superscripts are significantly different. $p < .05$

Figure 8a and b

Hypothesized Moderation of BMI on Fear of Fat (a) and Willpower (B) and Motivation to Change



Appendices

Appendix A

Screener: Demographic Questions

PART 1:

1. Today's date: _____/____/_____
   (month / day / year)

2. Where were you born? _____ (town/city) _____ (state) _____(zip code)

   a. How long did you live there? Or, how long have you lived here? _____years

3. Where did you live ***most of the time*** from when you were 3-18 years old? _____ (town/city) _____ (state) _____(zip code)

   a. How long did you live here? Or, how long have you lived here? _____years

4. Where did you go to high school? _____ (name of school)

   _____ (town/city of school) ____ (state of school) _____(zip code)

   a. About how big was your graduating class? _____

5. On the following scale, *please circle one number* that best represents how much you identify with the urban or rural culture.

Totally RURAL				RURAL/URBAN						Totally URBAN
0	1	2	3	4	5	6	7	8	9	10

PART 2

We are interested in learning more about people's attitudes about weight and beliefs about treatment. We may be interested in contacting you to see if you would be interested in returning to complete a 30 minute paper-and-pencil survey for 2 more research credits.

1. Would you be interested in returning to complete a 30 minute paper-and-pencil survey? YES NO

If no, please return this screener and thank you for your participation.
If yes, please continue… **And, please remember, all information is kept strictly confidential. This page will be separated from the data you provided on the previous pages so your answers will NOT be associated with your name or contact information.**

2. Please print your name so we can contact you: _____

3. What is the best way to contact you?

☐ Call me. My number is… (____)____-_____ or (____)____-_____

☐ Email me. My email is… _____

☐ Send me a letter. My address is… _____
_____
_____

4. When is the best time to contact you?
☐ Morning ☐ Noon ☐ Afternoon ☐ Evening

5. When are the most convenient days and times for you to come to the Psychology Department to complete a 30 minute survey?
   a. Day: _____ Time: _____
   b. Day: _____ Time: _____
   c. Day: _____ Time: _____

6. To protect your privacy, any voice mail or email will be vague and request that you attend an "informational meeting" at a certain day or time. When we contact you, may we identify ourselves as "UM Research"?
   ☐ Yes
   ☐ No. Please specify how we may best identify ourselves: _____

Thank you for your participation! Please note that we may contact you for future participation. This decision largely depends on your regional status and eating behavior. We really appreciate your continued interest.

Appendix B

Survey: Demographics Questions

1. What is today's date? ____/____/_____
2. How old are you? _____
3. Please circle which year you are in school: **Freshman** **Sophomore** **Junior** **Senior** **Post-grad**
4. What is your ethnic origin or decent? Please circle the corresponding number and select only ***one*** option.

   1 – Mexican American, Mexican, or Chicano

   2 – Cuban, Puerto Rican, Central or South American

   3 – White, European American

   4 – African American, Black

   5 – American Indian or Native American

   6 – Asian

   7 – Middle Eastern (Arabian, Iranian, Jordanian, etc.)

   8 – Other: _____

   9 – Don't know

5. Are you the head of household?

__ Yes. If yes, please **answer part A** and skip part B.
__ No. If no, please skip part A and **answer part B**.

PART A	**PART B**
Yes, I am the head of the household *Please read the following and select the one best answer:*	No, I am not the head of the household *Please read the following and select the one best answer:*
1. What is your highest level of education *completed*? 1. 11th grade or less 2. High school 3. College or vocational/technical school 4. Graduate or medical school	1. What is your mother's (or maternal guardian's) highest level of education *completed*? 0. Not applicable 1. 11th grade or less 2. High school 3. College or vocational/technical school 4. Graduate or medical school
2. If you live with your partner, what is their highest level of education *completed*? 0. I do not live with a partner 1. 11th grade or less 2. High school 3. College or vocational/technical school 4. Graduate or medical school	2. What is your father's (or paternal guardian's) highest level of education *completed*? 0. Not applicable 1. 11th grade or less 2. High school 3. College or vocational/technical school 4. Graduate or medical school

3. What is your total household income, per year? 1. Less than or equal to $7,000 2. $7,001 - $31,999 3. $32,000 - $72,499 4. $72,500 - $100,000 5. Over $100,000	3. What is your total household income, per year? 1. Less than or equal to $7,000 2. $7,001 - $31,999 3. $32,000 - $72,499 4. $72,500 - $100,000 5. Over $100,000

6. On the following scale, *please circle one number* that best represents how much you identify with the "small town" or "big city" culture.

Totally "Small Town"				Mixture						Totally "Big City"
0	1	2	3	4	5	6	7	8	9	10

7. If I were to introduce myself to a stranger, I would say that I am from
   a. the "country"
   b. a small town
   c. a medium sized town
   d. a small city
   e. a large city

Appendix C

Body Dissatisfaction

DIRECTIONS: Please circle the number that most accurately represents your feelings.

1. I think that my stomach is too big.	Always	Usually	Often	Sometimes	Rarely	Never
2. I think that my thighs are too large.	Always	Usually	Often	Sometimes	Rarely	Never
3. I think that my stomach is just the right size.	Always	Usually	Often	Sometimes	Rarely	Never
4. I feel satisfied with the shape of my body.	Always	Usually	Often	Sometimes	Rarely	Never
5. I like the shape of my buttocks.	Always	Usually	Often	Sometimes	Rarely	Never
6. I think my hips are too big.	Always	Usually	Often	Sometimes	Rarely	Never
7. I think that my thighs are just the right size.	Always	Usually	Often	Sometimes	Rarely	Never
8. I think that my buttocks are too large.	Always	Usually	Often	Sometimes	Rarely	Never
9. I think that my hips are just the right size.	Always	Usually	Often	Sometimes	Rarely	Never

Appendix D

Eating Disorder Diagnostic Scale (EDDS)

Please carefully complete all questions:
Over the past 3 months:

1. Have you felt fat?

Not at all Slightly Moderately Extremely
0 1 2 3 4 5 6

2. Have you had a definite fear that you might gain weight or become fat?

Not at all Slightly Moderately Extremely
0 1 2 3 4 5 6

3. Has your weight influenced how you think about (judge) yourself as a person?

Not at all Slightly Moderately Extremely
0 1 2 3 4 5 6

4. Has your shape influenced how you think about (judge) yourself as a person?

Not at all Slightly Moderately Extremely
0 1 2 3 4 5 6

5. During the past 6 months have there been times when you felt you have eaten what other people would regard as an unusually large amount of food (e.g. a quart of ice-cream) given the circumstances? YES NO

6. During the times when you ate an unusually large amount of food, did you experience a loss of control (feel you couldn't stop eating or control what or how much you were eating)? YES NO

7. How many DAYS per week on average over the past 6 MONTHS have you eaten an unusually large amount of food and experienced a loss of control? 0 1 2 3 4 5 6 7

8. How many TIMES per week on average over the past 3 MONTHS have you eaten an unusually large amount of food and experienced a loss of control? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

During these episodes of overeating and loose of control did you…

9. Eat much more rapidly than normal? YES NO
10. Eat until you felt uncomfortably full? YES NO
11. Eat large amounts of food when you didn't feel physically hungry? YES NO
12. Eat alone because you were embarrassed by how much you were eating? YES NO
13. Feel disgusted with yourself, depressed, or very guilty? YES NO

14. Feel very upset about your uncontrollable overeating or resulting weight gain? YES NO

15. How many times per week on average over the past 3 months have you made yourself vomit to prevent weight gain or counteract the effects of eating? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

16. How many times per week on average over the past 3 months have you used laxatives or diuretics to prevent weight gain or counteract the effects of eating? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

17. How many times per week on average over the last 3 months have you fasted (skipped at least 2 meals in a row) to prevent weight gain of counteract the effects of eating? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

18. How many times per week on average over the past 3 months have you engaged in excessive exercise specifically to counteract the effects of overeating episodes? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

19. How much do you weight? If uncertain, please give your best estimate. _____ lbs.

20. How tall are you? _____ ft. _____in.

21. Over the past 3 months, how many menstrual periods have you missed? 1 2 3 4 *na*

22. Have you been taking birth control pills during the past 3 months? YES NO

Appendix E

University of Rhode Island Change Assessment Scale

		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1.	As far as I'm concerned, my eating problems do not need changing. P	1	2	3	4	5
2.	I have been thinking that I might want to change my eating behaviors. C	1	2	3	4	5
3.	I am really working hard to change my eating behaviors. A	1	2	3	4	5
4.	It might be worthwhile to work on my eating problems. C	1	2	3	4	5
5.	I do not have any eating problems. P	1	2	3	4	5
6.	It worries me that I may slip back on a eating problem that I have already changed, so I would like help. M	1	2	3	4	5
7.	I am finally doing some work on my eating problem. A	1	2	3	4	5
8.	I've been thinking that I might want to change my eating behaviors. C	1	2	3	4	5
9.	I have been successful in working on my eating problem but I'm not sure I can keep up the effort on my own. M	1	2	3	4	5
10.	At times my eating problem is difficult but I'm working on it. A	1	2	3	4	5
11.	Getting help for an eating problem is a waste of time for me because the problem doesn't have to do with me. P	1	2	3	4	5
12.	I'm hoping that I can get help with my eating behavior. C	1	2	3	4	5
13.	I guess I have a problem with eating but there's nothing that I really need to change. P	1	2	3	4	5
14.	I am really working hard to change my eating behaviors. A	1	2	3	4	5
15.	I have a problem with eating and I really think I should work at it. C	1	2	3	4	5
16.	I'm not following through with what I had already changed as well as I hoped, and I hope treatment would help prevent a relapse of the problem. M	1	2	3	4	5
17.	Even though I'm not always successful in changing my eating behaviors, I am at least working on my problem. A	1	2	3	4	5
18.	I thought once I had resolved my eating problem I would be free of it, but sometimes I still find myself struggling with it. M	1	2	3	4	5
19.	I wish I had more ideas on how to solve my eating problems. C	1	2	3	4	5
20.	I have started working on my eating problems but I would like help. A	1	2	3	4	5
21.	Maybe treatment would be able to help me with my eating problem. C	1	2	3	4	5

		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
22.	I may need some encouragement right now to help me maintain the changes I've already made with my eating behaviors. M	1	2	3	4	5
23.	I may be part of my eating problem but I really don't think I am. P	1	2	3	4	5
24.	I hope that someone will have some good advice for me to change my eating problem. C	1	2	3	4	5
25.	Anyone can talk about changing their eating problem; I'm actually doing something about it. A	1	2	3	4	5
26.	Why can't people just forget about their eating problems? P	1	2	3	4	5
27.	I would like to get help for my eating problem. M	1	2	3	4	5
28.	It is frustrating, but I feel I might have an eating problem. M	1	2	3	4	5
29.	I have worries about my eating patterns but so does everyone. P	1	2	3	4	5
30.	I am actively working on my eating problem. A	1	2	3	4	5
31.	I would rather cope with my eating problem than try to change it. P	1	2	3	4	5
32.	After all I have done to try to change my eating problems, every now and again it comes back to haunt me. M	1	2	3	4	5

Appendix F

Barriers to Treatment Seeking

PART 1:

1. Have you ever sought treatment for an eating problem or are you currently in treatment for an eating problem?

   ☐ Yes ☐ No

2. If no, please skip to Part 2. If yes, please answer the following questions:

   a. What are the reasons for seeking treatment?

   b. What diagnosis, if any, was given?

   c. What did treatment consist of?

   d. Did you think the treatment was helpful? ☐ Yes ☐ No

      Why or why not?

   e. Did the experience make you unwilling to seek further treatment? ☐ Yes

      ☐ No

      Why or why not?

PART 2

If you have never sought treatment for an eating problem or became unwilling to seek treatment, please read the statement below, then, using the scale to the right, indicate the degree to which you agree or disagree with each potential barrier to seeking treatment.

"I have not sought treatment for an eating problem because…"					
1. …I am ashamed.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
2. …I do not know where to go.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
3. …I should be able to help myself.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
4. …I am afraid of being labeled.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
5. …it is not serious enough.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
6. …I do not have the finances.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
7. …I am unaware of treatments.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
8. …I don't trust the providers.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
9. …I will look to others for support.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
10. …I don't have any support.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
11. …the providers lack expertise with this problem.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
12. …disordered eating isn't a psychological problem.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
13. …I'm afraid of discrimination.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
14. …the providers do not share my background.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
15. …I am afraid of separating from my family.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
16. …no one can watch my children.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
17. …I use alternative treatments.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree

18. …I don't have transportation to the provider.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
19. …of language barriers.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
20. …confidentiality/privacy issues	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
21. …there aren't any local facilities that specialize in body dissatisfaction or disordered eating.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
22. …my insurance does not cover where I want to go for help.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
23. …even though I have transportation, the facilities are too far away.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree

Please list any other barriers that have affected you?

24.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
25.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
26.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree

Appendix G

Antifat Attitudes Scale

DIRECTIONS: For the following questions, please circle the number that best expresses your *opinion*. Use the scale below:

Strongly Disagree 0 1 2 3 Neutral 4 5 6 7 8 9 Strongly Agree

1. I really don't like fat people much.	0	1	2	3	4	5	6	7	8	9
2. I don't have many friends that are fat.	0	1	2	3	4	5	6	7	8	9
3. I tend to think that people who are overweight are a little untrustworthy.	0	1	2	3	4	5	6	7	8	9
4. Although some fat people are surely smart, in general, I think they tend not to be quite as bright as normal weight people.	0	1	2	3	4	5	6	7	8	9
5. I have a hard time taking fat people too seriously.	0	1	2	3	4	5	6	7	8	9
6. Fat people make me feel somewhat uncomfortable.	0	1	2	3	4	5	6	7	8	9
7. If I were an employer looking to hire, I might avoid hiring a fat person.	0	1	2	3	4	5	6	7	8	9
8. I feel disgusted with myself when I gain weight.	0	1	2	3	4	5	6	7	8	9
9. One of the worst things that could happen to me would be if I gained 25 pounds.	0	1	2	3	4	5	6	7	8	9
10. I worry about becoming fat.	0	1	2	3	4	5	6	7	8	9
11. People who weigh too much could lose at least some part of their weight through a little exercise.	0	1	2	3	4	5	6	7	8	9
12. Some people are fat because they have no willpower.	0	1	2	3	4	5	6	7	8	9
13. Fat people tend to be fat pretty much through their own fault.	0	1	2	3	4	5	6	7	8	9

Appendix H

RAND-36

1. In general, would you say your health is:

4	3	2	1
Excellent	Very Good	Fair	Poor

2. *Compared to one year ago,* how would you rate your health in general now?

5	4	3	2	1
Much better now than one year ago	*Somewhat* better now than one year ago	*About the same* as one year ago	*Somewhat worse* now than one year ago	*Much worse* than one year ago

3. The following items are about activities you might do during a typical day. Does *your health now limit you* in these activities? If so, how much?
    a. *Vigorous activities,* such as running, lifting heavy objects, participating in strenuous sports

1	2	3
Yes, limited A LOT	Yes, limited a LITTLE	No, not limited at all

    b. *Moderate activities,* such as moving a table, pushing a vacuum cleaner, bowling, or playing golf

1	2	3
Yes, limited A LOT	Yes, limited a LITTLE	No, not limited at all

    c. Lifting or carrying groceries

1	2	3
Yes, limited A LOT	Yes, limited a LITTLE	No, not limited at all

    d. Climbing *several* flights of stairs

1	2	3
Yes, limited A LOT	Yes, limited a LITTLE	No, not limited at all

    e. Climbing *one* flight of stairs

1	2	3
Yes, limited A LOT	Yes, limited a LITTLE	No, not limited at all

    f. Bending, kneeling, or stooping

1	2	3
Yes, limited A LOT	Yes, limited a LITTLE	No, not limited at all

    g. Walking *more than a mile*

1	2	3
Yes, limited A LOT	Yes, limited a LITTLE	No, not limited at all

    h. Walking *several blocks*

1	2	3
Yes, limited A LOT	Yes, limited a LITTLE	No, not limited at all

i. Walking *one block*

1	2	3
Yes, limited A LOT	Yes, limited a LITTLE	No, not limited at all

j. Bathing or dressing yourself

1	2	3
Yes, limited A LOT	Yes, limited a LITTLE	No, not limited at all

4. During the *past 4 weeks,* have you had any of the following problems with your work or other regular daily activities *as a result of your physical health*?
   a. Cut down the *amount of time* you spent on work or other activities. Yes No
   b. *Accomplished less* than you would like. Yes No
   c. Were limited in the *kind* of work or other activities. Yes No
   d. Had *difficulty* performing the work or other activities (for example, it took extra effort). Yes No

5. During the *past 4 weeks,* have you had any of the following problems with your work or other regular daily activities *as a result of any emotional problems* (such as feeling depressed or anxious)?
   a. Cut down the *amount of time* you spent on work or other activities. Yes No
   b. *Accomplished less* than you would like. Yes No
   c. Didn't do work or other activities as *carefully* as usual. Yes No

6. During the *past 4 weeks,* to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?

4	3	2	1
Not at all	Slightly	Moderately	Extremely

7. How much *bodily* pain have you had during the *past 4 weeks*?

6	5	4	3	2	1
None	Very Mild	Mild	Moderate	Severe	Very severe

8. During the *past 4 weeks,* how much did *pain* interfere with your normal work (including both work outside the home and housework)?

1	2	3	4	5
Not at all	A little bit	Moderately	Quite a bit	Extremely

9. These questions are about how you feel and how things have been with you *during the past 4 weeks.* For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the *past 4 weeks*
   a. Did you feel full of pep?

6	5	4	3	2	1
All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time

   b. Have you been a very nervous person?

6	5	4	3	2	1
All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time

   c. Have you felt so down n the dumps that nothing could cheer you up?

6	5	4	3	2	1
All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time

d. Have you felt calm and peaceful?

6	5	4	3	2	1
All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time

e. Did you have a lot of energy?

6	5	4	3	2	1
All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time

f. Have you felt downhearted and blue?

6	5	4	3	2	1
All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time

g. Did you feel worn out?

6	5	4	3	2	1
All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time

h. Have you been a happy person?

6	5	4	3	2	1
All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time

i. Did you feel tired?

6	5	4	3	2	1
All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time

10. During the *past 4 weeks*, how much of the time has your physical health or *emotional problems* interfered with your social activities (like visiting with friends, relatives, etc.)?

5	4	3	2	1
All of the time	Most of the time	Some of the time	A little of the time	None of the time

11. How TRUE or FALSE is *each* of the following statements for you?

a. I seem to get sick a little easier than other people

1	2	3	4	5
Definitely true	Mostly True	Don't know	Mostly false	Definitely false

b. I am as healthy as anybody I know

1	2	3	4	5
Definitely true	Mostly True	Don't know	Mostly false	Definitely false

c. I expect my health to get worse

1	2	3	4	5
Definitely	Mostly	Don't know	Mostly false	Definitely

true True false

d. My health is excellent

1	2	3	4	5
Definitely true	Mostly True	Don't know	Mostly false	Definitely false

Appendix I

1. I have experienced **medical complications** related to a disordered eating pattern (e.g. dehydration, *electrolyte imbalance, cardiac/digestive problems, type 2 Diabetes, etc…).*

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

Specify:

_____

2. I have experienced **social complications** related to a disordered eating pattern (e.g. isolation, relationship problems, lying to friends/family about eating behaviors, avoiding functions involving food, etc…).

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

Specify:

_____

3. I have experienced problems at **school** related to a disordered eating problem (e.g. missed class, lack of focus, decreasing grades, leave of absence or withdraw, etc…).

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

Specify:

_____

4. A disordered eating pattern has affected my **mental** well-being (e.g. sadness, depression, anxiety, etc…).

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

Specify:

_____