GRADUATE STUDENTS, NEGATIVE PERFECTIONISM, PERCEIVED STRESS,

AND DISORDERED EATING BEHAVIORS

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GRADUATE STUDENTS, NEGATIVE PERFECTIONISM, PERCEIVED STRESS, AND DISORDERED EATING BEHAVIORS

Carmilya Wilson

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GRADUATE STUDENTS, NEGATIVE PERFECTIONISM, PERCEIVED STRESS,

AND DISORDERED EATING BEHAVIORS

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Carmilya Amaris Wilson, daughter of Robert Martin and Sadie Wilson was born September 09, 1980, in Pinebluff, Arkansas. She graduated from M^{c}Gehee High School in 1998. She graduated *magna cum laude* from Arkansas State University with a Bachelor of Science in Psychology and a minor in Interdisciplinary Studies. She began her studies at Auburn University in August, 2002. She completed her internship at the counseling center at the University of Memphis during the 2007-2008 academic year. Ms. Wilson will graduate May 09, 2009, with her Doctor of Philosophy Degree in Counseling Psychology.

GRADUATE STUDENTS, NEGATIVE PERFECTIONISM, PERCEIVED STRESS, & DISORDERED EATING BEHAVIORS

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Much of the literature on Disordered Eating Behaviors has examined their relationship with different risk factors. Among those factors examined have been perfectionism and stress. One form of perfectionism, Negative Perfectionism, involves the discrepancy or failure to meet high standards and order. There is also support for the relationship between Disordered Eating Behavior and Perceived Stress. One population presumably affected by Negative Perfectionism and Perceived Stress is graduate students. Yet, many of the existing studies on Disordered Eating Behaviors have either focused on or made primary use of individuals at the undergraduate-level and have neglected graduate student populations. Thus, the current study examined Disordered Eating

Patterns within the graduate population, specifically focusing on Perceived Stress and Negative Perfectionism.

Participants were 108 female, graduate-level students, from two southern universities. The current study proposed that Negative Perfectionism, as measured by the Discrepancy Subscale of the Almost Perfect Scale-Revised (APS-R), would account for significant variation in Disordered Eating Behaviors, as measured by the three subscales (Uncontrolled Eating-UE, Cognitive Restraint-CR, and Emotional Eating-EE) of the Three-Factor Eating Questionnaire (TFEQ-R21), above and beyond variance accounted for by Perceived Stress, As measured by the Perceived Stress Scale (PSS-10). Also, the current study proposed that the PSS-10 would account for significant variation in Disordered Eating Behaviors, as measured by the three subscales (UE, CR, and EE) of the TFEQ-R21, above and beyond variance accounted for by Negative Perfectionism, as measured by the Discrepancy Subscale of the APS-R. Scores on the Discrepancy Subscale accounted for a significant amount of variance on the CR and EE Subscales, above and beyond the variance accounted for by scores on the PSS-10, but not on the UE Subscale. Scores on the PSS-10 predicted a significant amount of variance on the UE and EE Subscales, above and beyond the variance accounted for by the Discrepancy Subscale, but not on the CR Subscale.

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INTRODUCTION

Disordered Eating Behaviors present a pervasive problem. The problem is becoming larger as its prevalence is increasing (Matthews, 2001). Disordered Eating Behaviors have been linked to an increase in drug usage, misconduct, unhealthy sexual behaviors, and suicidal attempts (Matthews). In addition to its link to risky behaviors, Disordered Eating Behaviors can cause substantial physiological damage that at times can be fatal. Disordered Eating Behaviors typically affect electrolytes, the cardiovascular system, the gastrointestinal system, the endocrinal system, and the central nervous system (Robert-McComb, 2001).

Given that Disordered Eating Behaviors present such a great concern and danger, there is an increased need for more research, which is crucial to prevention and intervention. The existing literature has investigated the relationship between Disordered Eating Behaviors and many factors (e.g., age, ethnicity, gender, and psychopathology). Included among those factors that have been examined are stress and perfectionism (Harrington, Crowther, Payne Henrickson, & Mickelson, 2006; Sassaroli et al., 2008). For example, individuals who reported experiencing high amounts of stress were more likely to engage in disturbed eating practices than individuals who did not. Crowther, Sanftner, Bonifazi, and Shepherd (2001) found that stressed individuals were more likely to exhibit disordered eating and to increase their caloric intake. Also, women with eating disorders perceive their lives to be more stressful than women without eating disorders

and believe that they are less capable of handling great amounts of stress (Denisoff & Endler, 2000; Harrington et al., 2006).

Perfectionism has also been connected to Disordered Eating Behaviors. For example, underweight women with Anorexia, when compared to women with Anorexia with their weight restored, obtained higher scores on measurements of perfectionism (Bastiani, Rao, Wetlzin, & Kaye, 1995). Furthermore high levels of perfectionism have been associated with Anorexia (Polivy & Herman, 2002). Schwarz, Gairrett, Aruguete, and Gold (2005) believe that perfectionism is a main feature of individuals with Disordered Eating Behaviors. Some individuals believe that the disagreement among researchers regarding the importance of perfectionism stems from the failure to differentiate between the different types of perfectionism. These researchers distinguish between positive perfectionism, or the possession of high standards and order, and between Negative Perfectionism, or the inability to meet those high standards and order (Slaney, Rice, Mobley, Trippi, & Ashby, 2001). These researchers have found that there is a positive relationship between Negative Perfectionism and Disordered Eating Behaviors (Davis, 1997).

Many of the studies on Disordered Eating Behaviors have looked at such behaviors among adolescents and undergraduates and have not looked at these behaviors among graduate students. If there are differences between graduate students and undergraduates, this would raise the question of whether these are two different populations. If they are indeed different populations, it would be logical to extend the existing research on Disordered Eating Behaviors to the graduate student population. In

fact, graduate students have been described as more autonomous, competitive, intrinsically-motivated, and as more likely to possess an internal locus of control (Gardner, 2008; Nordstrom & Segrist, 2009; Vidler & Wood 1981). Graduate school requires that an individual be more proactive and independent. Graduate students typically are solely responsible for many decisions that affect their personal and professional lives, such as courses taken and the management of a household (Fischer & Zigmond, 1998).

Thus, it appears that there are differences between graduate students and undergraduates which indicate that it might be worthwhile to examine Disordered Eating Patterns among graduate students, and there is evidence that Perceived Stress and Negative Perfectionism may contribute to Disordered Eating in general. Furthermore, it seems plausible to argue that stress (whether due to the demands of conducting research, increasing responsibilities, multiple roles as a graduate student, etc.) and perfectionism (whether due to self selection, activated by increased competitiveness with other high achieving students, etc.) are likely present in the lives of many graduate students. Hence, the current study examines the relationship between Disordered Eating Behaviors and Perceived Stress and Negative Perfectionism within the graduate student population.

LITERATURE REVIEW

There are two major types of eating disorders—Anorexia Nervosa and Bulimia Nervosa, according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-4th edition-Text Revised) (American Psychiatric Association [APA], 2000). Individuals who do not meet the diagnostic requirements of the aforementioned eating disorders may fall into a third category of eating disorders known as an Eating Disorder Not Otherwise Specified (EDNOS) (APA). Some, who support the eating disorder continuum model, believe that eating disturbances occur on a continuum, with normal eating-related behaviors on one end, and Disordered Eating Behavior on the other (Gleaves, Brown, & Warren, 2004; Scarano & Kalodner-Martin, 1994; Williamson, Gleaves, & Stewart, 2005). Many of these proponents further believe that there are dimensions, based on symptoms, on which these disturbances occur (Gleaves et al.; Williamson et al.). For example, eating disturbances might vary by severity of symptoms on dimensions of binge eating, fear of fatness/compensatory behaviors, and drive for thinness (Williamson et al., 2002). Based on the previous example, individuals who receive a diagnosis of Bulimia Nervosa might be expected to fall on the high end of the continuum for the binge eating dimension, on the high end of fear of the fatness/compensatory behaviors dimension, and in the middle to high range on drive for thinness. In contrast, individuals with Anorexia Nervosa, depending on their subtype (Restricting Type or Binge-Eating/Purging Type), might be expected to fall on the high or low end of the binge eating continuum, while falling on

the high end of fear of fatness/compensatory behaviors and on the high end of drive for thinness (APA, 2000; Williamson et al.). This was similar to what was found by Williamson et al. (2002), although these researchers found more support for organizing such disturbances based on a latent taxon categorization of symptoms than for the use of dimensionality, or the continuum model.

Although more is known about Anorexia and Bulimia, the more common Disordered Eating Patterns often observed in outpatient psychotherapy settings fall under the criteria for the diagnosis of EDNOS (APA, 2000). Compared to Anorexia Nervosa and Bulimia Nervosa, less is known about these "NOS" disorders (Norring & Palmer, 2005).

Due to the fact that so little is known about these additional disorders, individuals may display related problematic eating behaviors that go unnoticed or their consequences may be minimized. However, these maladaptive and often destructive behaviors are still of concern. The current study is concerned with all disordered patterns of eating related behaviors, including those that have been formally recognized as eating disorders (i.e., Anorexia Nervosa and Bulimia Nervosa), as well as those maladaptive eating-related behaviors or thoughts of clinical concern that fail to meet the criteria for a formal diagnosis or which fall under the EDNOS diagnosis. All of these disturbed eating-related behaviors may be subsumed under the term "Disordered Eating Behavior" (Mutterperl & Sanderson, 2002; Trattner & Thompson, 2001). For the purpose of the current study, unless otherwise indicated, all disturbed eating patterns will be referred to hereafter as Disordered Eating Behaviors or Disordered Eating Patterns.

Williamsons et al. (2002) separated participants into six groups: Bulimia Nervosa, Anorexia Nervosa, Eating Disorder Not Otherwise Specified, Binge Eating Disorder, Obesity, and normal-weight. These groups provide useful examples of different types of Disordered Eating Behaviors. The following is an overview of some of the literature examining relationships between Disordered Eating Behaviors and other factors, ending with an examination of the relationships between perfectionism and stress and Disordered Eating Behaviors.

Factors Related to Disordered Eating Behaviors

The literature on Disordered Eating Behaviors is extensive. Much of the literature is concerned with risk factors associated with the development of Disordered Eating Behaviors as well as with particular populations in which eating disorders are most prevalent. For example, among other risk factors, low self-esteem, emphasis on being thin, unhealthy attempts at dieting, and preoccupation with size, shape, and appearance have all been identified as risk factors for Anorexia (Dobmeyer & Stein, 2003; Robert-McComb, 200;). Desire to be accepted socially, low tolerance for and inability to deal with conflict, difficulty articulating and getting needs met, deficiency in coping skills, and increased levels of distress have been shown to be factors that have been linked to Bulimia (Miller, Schmidt, Vaillancourt, McDougall, & Laliberte, 2006; Robert-McComb). Similar risk factors have been associated with Disordered Eating Behaviors which meet the DSM-IV-TR description of Eating Disorder Not Otherwise Specified (Robert-McComb). Some of these factors and their relationship to disordered eating are discussed in detail below.

Age. The usual onset of Anorexia Nervosa is during middle to late adolescence. Bulimia Nervosa typically has an onset which occurs during late adolescence and early adulthood. Because eating disorders are most common among adolescents and young adults, much of the existing literature has focused on these populations. However, disorders may also occur within younger and older age groups (Matthews, 2001; Michel, 2003; Vander Wal and Thelen, 2000). Even pre-school children seem to be cognizant of differences in size and weight, tending to associate negative characteristics with being overweight (Turnbull, Heaslip, & McLeod, 2000; Vander Wal and Thelen, 2000).

Younger individuals are not alone in exhibiting Disordered Eating Patterns. In addition to preadolescents and adolescents, adult populations have been found to exhibit Disordered Eating Behaviors or to be at risk for the development of Disordered Eating Behaviors later in life. In fact, elderly women have also been shown to engage in bingeing and purging (Matthews, 2001; Michel, 2003). In a separate study, ManejÍas-Parke, Yager, and Apfeldorf (2008) examined a case of a 72 year-old man with an EDNOS. Thus, it is important that more attention be given to the study of Disordered Eating Behaviors throughout different stages of life.

Ethnicity and culture. Although originally thought to primarily affect Caucasian women, interest has grown in examining Disordered Eating Behaviors in other ethnic groups. Some have proposed that White women are more at risk for developing an eating disorder than women from other culture groups (Smith, 1995). Individuals who have subscribed to this view have stated that White women are more vulnerable to society's pressure and to society's view of the thin body as ideal (Smith). It has been further

proposed that because African-American and Hispanic women come from cultures that place less importance on weight or being thin, they are less likely to be affected (Smith).

In a study by DiGioacchino, Sargent, and Topping (2001), the role of ethnicity in perceptions of ideal body was examined. Participants were African-American and White college students. The results revealed that White females were more likely to possess a distorted perception of their weight and were more likely to view a smaller weight and size as desirable.

Gluck and Geliebter (2002) studied differences among White, African-American, and Asian women in reference to perceptions of actual and ideal body as well as Disordered Eating Patterns. White women's ideal body differed greatly from their actual body. The difference for the White women in the study was greater than for either of the other two groups. African-American women's ideal body was larger than that of either White or Asian women.

Although the results of many studies have indicated that body dissatisfaction and other Disordered Eating Behaviors occur less frequently in minority females, researchers now realize that all ethnic backgrounds are affected by Disordered Eating Behaviors (Cummins, Simmons, & Zane, 2005). For example, Vander Wal (2004) completed a cross-sectional study comparing overweight and obese fourth and fifth-grade African-American and Hispanic girls with normal weight girls from the same ethnic backgrounds. In contrast to what is typically found in reports of studies involving White youth and young minorities, minority participants in this study also reported experiencing pressure to lose weight. There are even some indications that specific Disordered Eating Behaviors occur just as frequently in minority groups as in groups of majority. For

example, Smith (1995) reviewed studies which indicated that Binge Eating Disorder (BED) occurs in African-American women at rates similar to that of White women. Smith proposes that other ethnic minorities such as Native Americans and Hispanics are susceptible as well. It is even believed that Binge Eating Disorder (BED) occurs in young African-Americans and Hispanics at a higher rate than in White youth (Smith).

Further understanding regarding the prevalence of Disordered Eating Behavior among different cultural groups comes from studies that examine disordered eating in non-Western populations. For example, Cummins et al. (2005) reviewed studies on the prevalence of Disordered Eating Behaviors among different Asian populations which resided outside of Western countries and among those Asians which lived in Western countries. The studies which examined the prevalence of Disordered Eating Patterns in Asians inside Western countries compared these individuals with other populations residing inside the same Western countries.

Asian groups studied included individuals from Pakistan, India, Japan, Hong Kong, Singapore, and China. Results differed based on the location of the Asian population highlighted. Although the occurrence of diagnosable eating disorders was lower among Asian women in non-Western locations, the occurrence of eating disorder symptoms among non-Western Asians was comparable to or greater than the occurrence in Asian populations of Western countries (Cummins et al., 2005).

When the prevalence of diagnosable eating disorders was compared between Asian and White adolescents of Great Britain, one study revealed that Asian adolescents were more likely to be diagnosed with bulimia. Also, Asian adolescents displayed either comparable or exceedingly higher levels of symptoms than White adolescents.

In addition to adolescents, differences between Asian and White women from Great Britain were examined. Although studies revealed greater levels of restrained eating in White women from Great Britain, as compared to Asian women from Great Britain, no studies were found that examined any differences between Asian and White females from Great Britain in the prevalence of diagnosable eating disorders (Cummins et al., 2005).

Asian adolescents in the United States, compared to White adolescents in the United States, produced scores greater on measures of body dissatisfaction and uncontrollable eating behaviors. For White and Asian women in the United States, the majority of the studies reviewed concluded that Asian women had lower rates of diagnosable disorders (Cummins et al., 2005). However, some questions have been raised about studies that have examined the prevalence of eating disorders and/or symptoms in non-Western populations such as in Asians (Cummins et al.). One of the concerns is that some of the instruments used to collect data might not be valid measures of eating disorders in these populations. In addition, some of the symptoms used to diagnose individuals from Western countries may not be generalizable or present accurate information about the presence of these disorders and symptoms in non-Western populations (Cummins et al.).

Thus based on Cummins et al.'s (2005) review of previous studies, it seemed that White women from the United States and Asian adolescents from Great Britain were more likely to have diagnosable eating disorders. Asian women demonstrated greater dissatisfaction with their bodies than White females from the United States (Cummins et al.). Even though females from minority groups are diagnosed with eating disorders less

often, they seem to be susceptible to undiagnosed Disordered Eating Behaviors. Therefore, despite differences in susceptibility and rates of prevalence of specific Disordered Eating Behaviors, all ethnic and culture groups seem to be affected.

Gender. Although diagnosable eating disorders do not occur in large rates within the general population, as previously stated, the occurrence is increasing (Matthews, 2001). Eating disorders occur most often in females. The prevalence of Anorexia Nervosa within the female population is 0.5%. The prevalence of Bulimia Nervosa among females is 1% - 3%. In fact, 90 percent of cases of persons with diagnosed Anorexia and Bulimia are female (APA, 2000).

Some also believe that there is a relationship between sexual orientation, at least for males, and Disordered Eating Behaviors (Matthews, 2001; Yelland & Tiggemann, 2003). Although females, as compared to males, receive more pressure from society to conform to an idealized thinness, there is indication that gay males receive similar pressures as heterosexual females to be thin and as a result, also, possess low self-esteem and dissatisfaction with their own bodies (Andersen, 1995; Siever, 1994).

Siever found that gay males exhibited greater body dissatisfaction than lesbian females, heterosexual males, and heterosexual females. Although in Siever's study, heterosexual females scored the highest on measures of dissatisfaction, after accounting for gay males, other studies found that even when compared to gay males, body dissatisfaction and lowered self-esteem seem to be more pronounced in heterosexual females (Yelland & Tiggermann, 2003). For example, in a study of gay men, heterosexual men, and heterosexual women, lower esteem among females was observed

(Yelland & Tiggermann). In fact, men were found to hold higher body esteems than females, regardless of sexual orientation (Yelland & Tiggemann).

In a study consisting of male body-builders and of women diagnosed with Anorexia, researchers found that although both groups were similar in the degree to which they valued and obsessed over physical appearance, the male body-builders were more likely than the women with Anorexia to have higher self-worth (Davis & Scott-Robertson, 2000).

In addition to lower body satisfaction and self-worth, females tend to possess more negative attitudes related to dieting and weight. For example, Peñas-Lledó, Sancho, and Walker found that females' rationale for exercise was motivated by negative factors, such as fear of weight gain, more so than males who were more concerned with being in good health.

Although there is a greater propensity for females to engage in disturbed eating practices and to hold maladaptive attitudes surrounding weight and size, males also suffer from eating-related difficulties (APA, 2000). The prevalence of Anorexia Nervosa and Bulimia Nervosa among males is about one-tenth of that among females (Murnen & Smolak, 1997). However, there is some evidence that rates of eating disorders among members in this population are rising (Matthews, 2001).

Differences between men and women, in relation to prevalence of Disordered Eating Behaviors, may be due to the differences in how eating disorders are exhibited between males and females. The differences in presentation are in part due to societal pressures. Whereas females receive social pressures to be thin, heterosexual males tend to receive pressure to be larger in stature as it is associated with strength and power

(Matthews, 2001). Thus, males might engage in weight building, instead of weight decreasing behaviors as is common in females (Davis & Scott-Robertson, 2000). This adherence to societal standards might be seen as early as adolescence for some males (Smolak**,** Murnen, & Thompson, 2005).

Also, differences exist between males and females in risk factors. One difference is that males tend to exhibit eating disorders at a later age than females (Matthews, 2001). In addition, it has been suggested that males with eating disorders might have the following characteristics: being overweight as a child, dieting, involvement in sports or professions that require low weight or thinness, and/or being gay (Matthews). In pointing out psychologically-related factors associated with eating disorders in adolescent males, Ricciardelli and McCabe (2004) included perfectionism, a decreased sense of self-esteem, a lack of trust in others, lack of self-awareness, and drug usage.

The pressure placed on males by society to obtain and maintain a larger build can also be seen in the results of the findings of Leit, Pope, and Gray (2001). Leit et al. were interested in how society's opinion of the ideal male figure had evolved over the years. Pictures of Playgirl male models from 1973 to 1997 were examined and compared. These researchers observed that male models have become more muscular and concluded that society desires and encourages men to be more muscular (Leit, et al.).

In summary, although males and females seem to differ in prevalence, risk factors, and presentation, both are susceptible to Disordered Eating Patterns. It also appears that heterosexual females and gay males receive similar pressure to adhere to idealized thin body types, resulting in low body satisfaction and self-esteem. Heterosexual males also appear to receive pressure, yet of a different sort.

Peer, family, and media influence. In a study by Lieberman, Gauvin, Bukowski, and White (2001), the influence of peer-related factors on body esteem and eating behaviors in girls was examined. Lieberman and his associates found that such peer-related influences as teasing and the amount of value placed on weight and shape were related to participants' views of their body and their tendencies to engage in problematic eating behaviors.

Young, McFatter, and Clopton (2001) looked at how aspects of family functioning, peer attitudes, and media exposure influenced eating behaviors and feelings associated with their bodies. Media and peer attitudes were found to be related to an increased probability of Disordered Eating Patterns and beliefs (Young et al.).

In a study of elementary girls, Vander Wal and Thelen (2000) found that these young girls' low scores on measures of body esteem were shaped by parental and peer influence. More specifically, girls' perception of teasing by peers and parental urging to control or lose weight were found to be correlated with body dissatisfaction.

Stice, Presnell, and Spangler (2002) examined risk factors associated with binge eating in girls, ages 13 to 17 years-old. In addition to other factors (i.e., discontentment with one's body, greater body mass, increased perceived importance of appearance, negative emotion, depressive symptoms, and high dieting behaviors), individuals' view of pressure to be thin, received from family, friends, and significant others, was shown to increase susceptibility to binge eating. In addition, Disordered Eating Behaviors of family, friends, and significant others were also associated with an increased tendency to binge eat (Stice et al.).

However, peer and family may also serve as positive influences as well. In particular, family and peer can influence an individual's development of good values related to eating behaviors and attitudes and can also serve as buffers. Social support is thought to be essential in preventing, intervening against, and/or neutralizing the effects of society's pressure to adopt an idealized view of the thin body (Stice & Whitenton, 2002). Furthermore, lack of social support is thought to be linked to problematic eating behaviors and distorted body image (Gerner & Peter, 2005; Stice & Whitenton, 2002). More specifically, Stice and Whitenton (2002) found a direct relationship between level of peer support, distorted body image, and disturbed eating behaviors. Mainly, as peer support increased, distortions in body image decreased.

It appears that external influences, such as peer, family, and media all impact individuals' beliefs about their bodies and have the capability of increasing or decreasing susceptibility to Disordered Eating Behaviors. When external influences such as peers, family, and media attribute increased importance to body image, individuals tend to have lowered self-esteem, lowered body satisfaction, and to engage in maladaptive eating behaviors (Meno, Hannum, Espelage, & Low, 2008). Yet these same external influences can be instrumental in preventing and protecting individuals from the development of disordered eating patterns.

Emotional and physiological factors. The roles of emotional and physiological factors have received quite a bit of attention. Perhaps, nowhere else is it more evident that there are common ideas about a relationship between eating and emotions than in the frequently used phrase of "emotional eater". Given the current increased availability of dieting information and dieting advice, the relationship between physiological cues and

eating may also be recognized common knowledge. After all, it is not uncommon to hear nutritional and diet professionals advise individuals to become more aware of their physiological cues and to avoid eating when one is not hungry.

Vanderlinden, Dalle Grave, Vandereycken, and Noorduin (2001) conducted a study in which they examined factors related to binge eating patterns in females. The results indicated that binge eating was associated with emotional cues, such as boredom, depression, and anxiety, and with physiological cues, such as sensations of hunger and desire to eat sweets.

Alpers and Tuschen-Caffier (2001) examined the relationship between negative emotions (e.g., sadness, anxiety, etc.) and eating. These researchers were interested in the extent to which negative emotions induced desire to eat in individuals diagnosed with Bulimia Nervosa, individuals with Panic Disorder, and nonclinical individuals. These researchers found that individuals with Bulimia experience a great amount of negative emotional discomfort both preceding and following binge episodes (Alpers & Tuschen-Caffier). Milligan, Waller, and Andrews (2002) looked at the role of anger in Disordered Eating Behaviors. They observed that angry individuals ate more.

Stice et al. (2002) arrived at a different conclusion. Among factors assessed by these researchers was the extent to which depression, anxiety, anger, and emotional eating predicted binge eating. Although depression predicted onset of binge eating, anxiety and anger did not.

In conclusion, it is often accepted knowledge that physiological and emotional cues are related to patterns of disordered eating. However, the accuracy of this accepted knowledge may be questionable. Some believe that Disordered Eating Behaviors are

increased as a result of physical and emotional cues while others have not observed this relationship.

Psychopathology. There is some indication that there is a relationship between psychopathology and Disordered Eating Behaviors (Spindler & Milos, 2007). That is, some psychological disorders may co-occur with and, in some instances, precede a diagnosis of eating disorders and/or symptoms in some individuals. In fact, some believe that "while maladaptive eating patterns stem from concerns about body image and attractiveness, full-blown clinical eating disorders occur only when body concerns co-exist with other psychopathology" (Robert-McComb, 2001, p. 43).

Obsessiveness is often seen in women with eating disorders (Anderluh, Tchanturia, Rabe-Hesketh, & Treasure, 2003; Jiménez-Murcia et al., 2007; Polivy & Herman, 2002). In fact, obsessive tendencies appear to be precursors to eating disorders and appear to predate eating disorders by about five years (Robert-McComb, 2001; Vitousek & Manke, 1994).

Speranza et al. (2001) assessed for Obsessive Compulsive Disorder (OCD) in individuals with an eating disorder diagnosis and individuals without a diagnosis. Results revealed differences in diagnosis and type of eating disorder based on whether or not individuals also received a diagnosis of OCD.

McLaren, Gauvin, and Steiger (2001) observed significant interaction effects between body esteem and personality. More specifically, the interactive effects of narcissism and heightened concern with weight and appearance proved to be more indicative of Disordered Eating Patterns than either narcissism or preoccupation with weight and appearance alone.

In another study, Davis and Scott-Robertson (2000) compared women with Anorexia and competitive male body-builders to the general population. These researchers found that both groups of participants displayed a higher degree of obsession over their food intake, exercise regimen, and body image than in the general population. Additionally, the male body-builders and the women with anorexia possessed more narcissistic tendencies than in the general population. Thus, there may be an important relationship between Disordered Eating Behaviors, obsessiveness, and narcissism.

In addition to obsessiveness and narcissism, the relationship between disordered eating and depression has been examined. For example, among participants in Hrabosky, Masheb, White, and Grilo's (2007) study, those who indicated that their self-evaluation was at least moderately overly influenced by weight and shape obtained higher scores on a measure of eating disorders than did individuals who indicated minimal to no influence of their weight and shape on their self-evaluation. The participants who indicated that their self-worth was determined largely by their shape and weight also scored higher on a measure of depression than did individuals who reported that their weight and shape had little to no influence on their self-worth (Hrabosky et al.). Marmorstein, von Ranson, Iacono, and Malone (2008) suggested that eating disorder pathology predicted depressive pathology.

In a study by Williamson, Kelley, Davis, Ruggiero, and Blouin (1985), obese individuals and individuals with Bulimia obtained higher scores on the 7(Pt) and 8(Sc) scales of the Minnesota Multiphasic Personality Inventory (MMPI) than individuals without Bulimia or obesity. Participants with Bulimia obtained significantly higher scores on scale 4(Pd) than controls. Individuals with Bulimia also obtained significantly

higher scores than individuals with obesity or than individuals without either Bulimia or obesity on a measure of depression, on scales 1(Hs), 2(D), and 3(Hy) of the MMPI, and on all subscales (Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Phobic Anxiety, Paranoid Ideation, and Psychoticism) of the Symptom Checklist-90 (SCL-90), other than the Hostility subscale.

In summary, psychopathology and Disordered Eating Behavior appear to be related. Individuals who engage in Disordered Eating Behaviors often also show a variety of additional symptomology, including obsessiveness, narcissism, and depression. Another clinical symptom which has received substantial empirical support for its role as a predictor of disordered eating is perfectionism. The next section of this review discusses this variable in more detail.

Perfectionism, Stress, and Disordered Eating Behaviors

Perfectionism. Perfectionism is the possession of unusually and often irrationally high expectations for one's self (Robert-McComb, 2001). The connection between perfectionism and Disordered Eating Behaviors has been discussed numerous times throughout the literature (Garner, Olmstead, & Polivy, 1983; O'Connor & O'Connor, 2004; Sassaroli et al., 2008; Vohs, Bardone, Joiner, Abramson, & Heatherton, 1999). However, until more recently there seemed to be limited empirical support for a relationship between perfectionism and Disordered Eating Behaviors (Franco-Paredes, Mancilla-Diaz, Vásquez-Arévalo, López-Aguiler, & Álvarez-Rayón, 2005; Striegel-Moore & Bulik, 2005; Vohs et al.). For example, a study involving both male and female undergraduates revealed that perfectionism was related to various Disordered Eating Behaviors (e.g., fasting, bingeing, and abuse of diuretics and laxatives) (Forbush,

Heatherton, & Keel, 2007). The literature on eating disorders also seems to be divided in terms of how much importance is attributed to perfectionism as a risk factor. According to Polivy and Herman (2002), perfectionism is not considered a determining factor. Joiner, Heatherton, Rudd, and Schmidt (1997) only found perfectionism to be a risk factor for women with bulimic symptoms when these women also possessed beliefs that they were overweight.

Others have proposed that perfectionism is a core characteristic of individuals with Disordered Eating Behaviors (Hewitt, Gordon, & Ediger, 1995; Landa & Bybee, 2007; Schwarz et al., 2005; Striegel-Moore & Bulik, 2005). For example, underweight women with Anorexia, as compared to women with Anorexia who had weight restored, scored higher on most measurements of perfectionism (Bastiani et al., 1995). Also, women with Anorexia who had returned to a normal weight scored higher on measurements of perfectionism than control individuals without Anorexia (Bastiani et al.). Kiemle, Slade, and Dewey (1987) found that individuals who obtained higher scores on a measurement of perfectionism also scored higher on a measure of Disordered Eating Behaviors.

Still others propose that differences in beliefs about the extent of the role of perfectionism are due to failure to properly operationalize what is meant by perfectionism (Franco-Paredes et al., 2005; Hewitt et al., 1995). For example, Hewitt et al. differentiate between three different forms of perfectionism: self-oriented perfectionism (involving those expectations and/or pressures that individuals place on themselves), other-oriented perfectionism (involving those expectations individuals place on others), and socially prescribed perfectionism (which are those demands placed on individuals by others).

Individuals with eating disorders have been shown to possess self-formed beliefs that they must perfect everything that they do (Hewitt et al.). Hewitt et al. described how an individual's overwhelming desire to present one's self as perfect, to avoid being seen as imperfect and to avoid discovery of one's actual imperfection can contribute to Disordered Eating Behaviors.

Using three different measurements to assess perfectionism, including both self-report instruments and an interview, Cockell et al. (2002) found an association between various dimensions and aspects of perfectionism and Anorexia Nervosa. They found that women who met the criteria for Anorexia scored higher than women with mood disorders and women without mood disorders on the self-oriented and socially-prescribed dimensions of the Multidimensional Perfectionism Scale (MPS), on the Interview for Perfectionistic Behavior (IPB), and on the Nondisclosure of Imperfection Scale of the Perfectionistic Self-Presentation Scale (PSPS).

Lafferty and Lafferty (1996) make several distinctions between perfectionism and similar constructs. For example, these authors differentiate between being perfectionistic and being achievement-oriented. According to these authors:

> The concepts of achievement and perfectionism are close in theory but worlds apart in action. It is the difference between effectiveness and ineffectiveness, health and illness. Although both aim for excellence, the perfectionist sets impossible goals, while the achiever sets sights on realistic and achievable standards. And although both are driven, the perfectionist has a nervous quality, stemming from an abject fear of failure, with the desire for success tied to self-worth. The achievement-

> oriented individual, on the other hand, seeks excitement, and is invigorated by the fun and challenge of the task, and the opportunity to learn from failures when they occur. (p. 8)

Portraying a perfect self is of utmost importance to perfectionists. When perfectionists encounter challenges to their sense of perfectionism, they tend to become anxious and experience lowered self-esteem (Nagel, 2002). In fact, perfectionists often project a false sense of superiority in an attempt to mask their actual low sense of self-worth (Lafferty & Lafferty, 1996). Additionally, they tend to attribute great importance to seemingly small things and to have an ongoing fear of failure and that their true imperfections will be discovered (Lafferty & Lafferty). They tend to believe that if they fail they are worthless (Lafferty & Lafferty). According to Nagel, "since perfectionists tend to place a value on any action, they catastrophize any outcome which they perceive as a failure or a threat to their self-esteem….therefore, perfectionists strive to reach high standards to validate their ego" (Nagel, p. 328). High levels of perfectionism have especially been linked to Anorexia (Polivy & Herman, 2002; Striegel-Moore & Bulik, 2005; Tyrka, Waldron, Graber, & Brooks-Gunn, 2002).

Differences in opinion about the role of perfectionism as a risk factor for disordered eating may also stem from failure in the literature to differentiate between negative and positive perfectionism. Whereas possessing high standards and order are considered positive perfectionism, the discrepancy or failure to actually meet those high standards and order is considered Negative Perfectionism (Slaney et al., 2001). Davis (1997) found that, although there was a positive relationship between normal

perfectionism (positive perfectionism) and greater body esteem, when neurotic perfectionism (Negative Perfectionism) increased body esteem decreased.

As pointed out by Landa and Bybee (2007), in some instances perfectionism may be useful as it "may prompt individuals to set realistic goals, provide motivation for achievement, and result in self-satisfaction and success" (p. 85). Yet, perfectionism may evolve into unrealistic and self-sabotaging expectations as the reality experienced falls short of one's exceptionally high expectations, as is the case with Negative Perfectionism (Robert-McComb, 2001). Thus, although a perfectionistic approach may sometimes be healthy and may lead to productivity, in some instances, when these standards become too high and irrational, individuals face the possibility of failure and disappointment (Robert-McComb). High levels of perfectionism have been associated with Anorexia (Polivy & Herman, 2002; Striegel-Moore & Bulik, 2005; Tyrka, Waldron, Graber, & Brooks-Gunn, 2002).

There is some disagreement about how perfectionism relates to disordered eating (Striegel-Moore & Bulik, 2005). One explanation is that perfectionism is thought to add to an individual's susceptibility to an eating disorder by exacerbating individuals' perceptions of their flaws (Polivy & Herman, 2002). Another related explanation is that perfectionism is thought to prevent individuals from being able to genuinely present themselves and that it prevents them from being able to be open about their problems (Hewitt et al., 1995). Fairburn, Shafran, and Cooper (1999) offered an alternative explanation centered on control regarding the development of Anorexia. These theorists proposed that individuals with Anorexia typically feel the need to control different aspects of their lives (a characteristic of perfectionism), and that these individuals find

immediate gratification and reward from the results that they obtain from controlling their diet and physical appearance. Individuals with Anorexia may feel that their ability to limit their food intake is the only area of their lives over which they feel that they have control (Fairburn et al.).

In summary, whereas perfectionism can be positive, in that it provides high standards for one's behavior and motivation to strive for excellence, it can also be negative when those standards are unrealistic. The current study examines the relationship between Negative Perfectionism and Disordered Eating Behavior. The relationship between stress and Disordered Eating Behavior is also of interest. The following is a discussion about the relationship between stress and disordered eating.

Stress. Stress has been defined as "the nonspecific response of the body to any demand" (Selye, 1976, p. 15). Stress, like the previously mentioned factors, has also been associated with Disordered Eating Behaviors (Fryer, Wallace, & Kroese, 1997; Harrington et al., 2006; O'Connor & O'Connor, 2004). For example, individuals who reported increases in work demands and reported experiencing more stress were also more likely to increase their caloric and fat intake (Arnett, 2006; McCann, Warnick, & Knopp, 1990).

In a study by Oliver and Wardle (1999), participants reported either an increase or decrease in food intake, particularly in relation to snacking behaviors, in the face of stress. Participants in a study by Kandiah, Yake, Jones, and Meyer (2006) also reported either an increase or decrease in eating due to changes in their appetite as a result of stress. Food restriction and decreases in caloric intake have been linked to Disordered Eating Behaviors (Williamson et al., 2008). These same individuals indicated that they

consumed less diversity in terms of food choices when stressed. Jenkins, Rew, and Sternglanz (2005) found that stress influenced individuals' unhealthy eating behaviors but not their healthy eating behaviors. O'Connor, Jones, Conner, McMillan, and Eamonn (2008) distinguished between consumption of snack and main meal in response to stress. These researchers found that all forms of stress, with the exception of physical stress (i.e. infliction of physical pain), which had an inverse relationship, were associated with reported increases in snacking behaviors and decrease in main meal consumption.

Oliver, Huon, Zadro, and Williams (2001) pointed out that most of the literature on stress has failed to examine how interpersonal stress affects eating behavior. These researchers compared eating behavior as a result of being exposed to two different types of interpersonal interactions—ostracism and argument— in low and high disinhibitors (individuals who lacked the ability to control their food consumption). According to these researchers, ostracism occurs when an individual or individuals are excluded or disregarded by others and an argument consists of "a heated, confrontational form of interaction" (Oliver et al., p. 20). Although Oliver et al. found no differences in the amount of food consumed as a result of type of interaction or level of disinhibition, serving as the target of the ostracism or argument appeared to increase intake of food for high disinhibitors (Oliver et al.). In a separate study investigating the relationship between stress and binge eating among African-American and Caucasian women, Harrington et al. (2006) found that discriminatory stress, or stress experienced as a result of being discriminated against because of minority status, was significantly related to binge eating patterns for African-American women.

Other studies have indicated that perception of the stressful nature of an event as well as an individual's ability to handle the event were important factors which impacted disordered eating (Sims et al., 2008; Soukup, Beiler, & Terrell, 1990). Studies of women with eating disorders have found that these women believe that their lives are more stressful than women without eating disorders and that they are less capable of enduring high levels of stress (Denisoff & Endler, 2000; Harrington et al., 2006). Crowther, et al. (2001) conducted a study in which they found that how stress was experienced by the individual was related to disordered eating and increased caloric intake. Participants in Crowther et al.'s study were normal weight individuals who engaged in binge eating and normal weight individuals who did not. When compared with participants who did not engage in binge eating, binge eating participants reported that they perceived daily hassles as more stressful (Crowther et al.). Sims et al. obtained similar results when examining levels of Perceived Stress, as measured by the Perceived Stress Scale (PSS-10), among a nonclinical sample of African Americans. Sims et al. found that Perceived Stress was related to increases in tendencies to engage in emotional eating, or eating in response to negative emotional experiences. Individuals, with higher scores on a measure of perceived stress who were also classified as overweight or obese, based on measures of Body Mass Index (BMI), also ate more sweets. Nguyen-Rodriguez, Chou, Unger, and Spruijt-Metz (2008) also found a positive relationship between Perceived Stress and emotional eating. In a related study, by Okon, Greene, and Smith (2003), adolescent females who perceived their family life as stressful were more likely to engage in bulimic behavior (i.e. bingeing and purging). Some view the behaviors inherent in an eating disorder (e. g., bingeing) as unhealthy and ineffectual methods of coping (Harrington et

al.). These methods are considered ineffective because they only provide temporary relief of uncomfortable affects or situations (Harrington et al.).

In addition to research examining the relationship between perfectionism and disordered eating and between stress and disordered eating alone, some studies examined the combined or interactive relationship between perfectionism and stress and disordered eating. Sassaroli and Ruggiero (2005) administered the Multidimensional Perfectionism Scale (MPS) to female, high school students on a regular school day, which represented a non-stressful occasion, as well as on the day of a test and on the day that test results were given, which were assumed to represent stressful situations. Whereas concern over mistakes—one dimension of perfectionism—was related to Disordered Eating Behavior even in absence of stress, parental criticism— a separate dimension of perfectionism—was related to eating disorder symptoms only when stress was also present. In a separate study with a similar design, Ruggiero, Levi, Ciuna, and Sassaroli (2003) found that although perfectionism was related to body dissatisfaction, regardless of whether or not stress was a factor, perfectionism was only related to drive for thinness during exposure to stressful situations. Thus, it appears that, in some situations, stress strengthens the relationship between Disordered Eating Behaviors and perfectionism.

In summary, both perfectionism and stress have been linked to Disordered Eating Behaviors. In following sections a brief overview is given of some differences between graduate students and undergraduates. This brief overview is followed by a discussion of why stress and perfectionism may be especially prevalent among graduate students. When combined with literature just reviewed, these discussions help justify the study of perfectionism and stress in graduate students.

Rationale for the Study of Graduate Students

There appear to be important differences between graduate students and undergraduates. For example, Golde (2005) interviewed graduate students from four separate fields of study who had left their programs. Among other factors, students who left their respective graduate programs stated that the graduate experience differed greatly from that of their undergraduate experience. One obvious difference between undergraduates and graduate students is that the latter elect to continue with their education beyond the undergraduate level. According to Friedenberg and Roth (1954), successful graduate students are competitive and autonomous. In addition, graduate students are more likely to be intrinsically motivated and to possess an internal locus of control (Terrell, 2005). The following is a discussion of these differences.

Autonomy and competitiveness. Graduate students typically exhibit good initiative and are proactive in their own success. To be effective in graduate school, students have to be able to function independently. In contrast to the undergraduate experience, in which students are told specifically what courses to take related to their profession, graduate students are more likely to define their own individual and professional needs and to shape their studies accordingly (Fischer & Zigmond, 1998; Friedenberg and Roth, 1954). As explained by Gardner (2008), "the transition to independent scholar is part and parcel of the doctoral education process as well as an integral part of the socialization process that occurs while in graduate school" (p. 326). Additionally, graduate students often are individuals who have performed above their peers. Given that graduate school is typically attended by many highly qualified students, it is plausible to argue that graduate school tends to select for academically competitive students.

Intrinsic motivation and internal locus of control. Vidler and Wood (1981) compared graduate students and undergraduates and found that graduate students demonstrated greater intrinsic motivation. Melaney (1987) examined factors related to why students go to graduate school. Melaney found that among other factors, personal satisfaction was often a reason for going to graduate school. Graduate students sought opportunities to further learn and grow professionally. In fact, the graduate students in Melaney's study found that their interest in learning and personal fulfillment exceeded job-related incentives in importance in their decision to attend graduate school. Anderson and Swazey (1998) obtained similar findings. Nordstrom and Segrist (2009) found that graduate students had a greater internal locus of control than undergraduates. That is, graduate students believe that they have some personal affect on their successes and failures.

Given that there are qualities that distinguish graduate students from undergraduates, it seems reasonable to extend research on Disordered Eating Behaviors to the population of graduate students. Furthermore, given that perfectionism and stress have been identified as possible predictors of Disordered Eating Behaviors, it is reasonable to ask whether those variables are also worth investigating within the population of graduate students. This question is addressed in the following section.

Graduate Students, Stress, and Perfectionism

As graduate students, individuals may find themselves facing many unexpected challenges in both their academic and personal lives. With so many simultaneous demands on a graduate student's time, graduate school may be an important source of stress (Johnson, Batia, & Huan, 2008; "Very Different"). For example, some graduate

students may have families for which they are responsible. In addition to their schoolwork, these individuals are faced with the challenges of maintaining relationships, maintaining a household, paying bills, etc. (Semenza, 2005; Ülkü-Steiner, Kurtz-Costes, & Kinlaw, 2000). Having perhaps been dependent upon and having received financial support from their parents throughout their undergraduate years, these individuals might find themselves primarily responsible for many aspects of their own welfare. With the great amount of time devoted to research in graduate school, other areas of an individual's life may be neglected. The amount of time devoted to studies might interfere with both the formation of new relationships and with the maintenance of current relationships (Whitman, 2000). Additionally, graduate students might sacrifice time necessary for self-care and rejuvenation in the quest to complete the demands of their education. The potential conflict between academic demands and personal needs could obviously exacerbate the level of stress in the lives of graduate students.

The rate of graduate school drop-out provides additional evidence for the difficult and stressful nature of graduate school in comparison to undergraduate school. The attrition rate for graduate students is such that chances of not completing are quite high (Gardner, 2008; Golde, 2005). The attrition rate for graduate students (40%-70%) is comparatively higher than that for undergraduates (10%-40%) (DeBerard, Spielmans, & Julka, 2004; Gardner; Golde; Porter, 1990).

Graduate students are usually individuals who have excelled and outperformed their peers throughout their undergraduate studies (Mitchell, 1996). These individuals might be expected to have a perfectionistic approach to their studies, and perhaps their lives as well. Yet with all the challenges inherent in graduate school, there are many

opportunities to fail or fall short of one's goal. These perfectionistic individuals might have to work extra hard in graduate school to maintain their perfect appearances. These individuals, who prior to now excelled, may find themselves struggling for the first time simply to complete coursework and to pass courses (Davis, Bissler, and Leiter, 2001; "Very Different," 2008). As a result of being in the company of so many highly qualified students, individuals may experience a greater sense of competition. Individuals who, throughout their undergraduate years, stood out because of their distinct achievements might struggle to even be noticed ("Very Different," 2008). This sense of invisibility may cause these individuals to question themselves and may possibly threaten their sense of identity. After all, perfectionists tend to have an ongoing fear that their true imperfect selves will be discovered (Lafferty & Lafferty, 1996). As previously mentioned, it is very important to perfectionists that they appear to have everything under control. Failure to maintain appearances may, in turn, increase anxiety and decrease self-esteem (Nagel, 2002).

Graduate school is also the time that individuals learn to balance multiple, sometimes conflicting, roles while maintaining appropriate boundaries. While in graduate school, individuals work closely with others in positions of authority, at times as subordinates and at other times as colleagues (Friedlander, Keller, Peca-Baker, & Olk, 1986; Goplerund, 2001; Johnson, Batia, & Huan, 2008). For example, graduate students often have to fulfill their roles as student, advisee, supervisee, and assistant, at times, while operating as professional peers at other times. The process of learning to balance these sometimes conflicting roles in a complementary manner, as is expected of professionals, can become confusing given that roles often bleed into one another and

boundaries sometimes become unclear. Not only must students learn to effectively juggle these roles, they often do so while being fully cognizant of their vulnerability to the repercussions of any mishaps. This process might present added stress to graduate students' already stressful lives, as the process requires students to constantly change roles (Dodds, 1986). For perfectionists, the process of learning to manage so many simultaneous demands while maintaining very high standards can be especially challenging.

The level of stress and perfectionism experienced by graduate students may be somewhat different from that of an undergraduate. Graduate school places various demands on an individual, including responsibility for one's own financial welfare and the balancing of numerous roles simultaneously. These demands might cause significant problems for graduate students as they are confronted with many possibilities for failure.

In summary, there is much evidence for the relationship between perfectionism and stress and Disordered Eating Behaviors (Denisoff & Endler, 2000; Landa & Bybee, 2007; O'Connor et al., 2008; Robert-McComb, 2001). Although the relationship between stress and perfectionism and Disordered Eating Behavior has been examined, this relationship within the graduate student population has not. The current study examined Disordered Eating Behaviors within the graduate student population, specifically focusing on Perceived Stress and Negative Perfectionism.

HYPOTHESES

As discussed in the literature review, Negative Perfectionism and Perceived Stress are believed to increase susceptibility to Disordered Eating Behaviors. This relationship was explored using a population of graduate students. In accordance with the above, it was hypothesized that:

1a: Negative Perfectionism, as measured by the Discrepancy Subscale of the Almost Perfect Scale-Revised (APS-R), will account for a significant amount of variance in Disordered Eating Behavior, as measured by the Uncontrolled Eating Subscale (UE) of the Three Factor Eating Questionnaire-R21 (TFEQ-R21), above and beyond the variance accounted for by Perceived Stress, as measured by the Perceived Stress Scale (PSS-10).

1b: Perceived Stress, as measured by the PSS-10, will account for a significant amount of variance in Disordered Eating Behavior, as measured by the UE Subscale, above and beyond the variance accounted for by Negative Perfectionism, as measured by the Discrepancy Subscale of the APS-R.*2a:* Negative Perfectionism, as measured by the Discrepancy Subscale of the APS-R, will account for a significant amount of variance in Disordered Eating Behavior, as measured by the Cognitive Restraint Subscale (CR) of the TFEQ-R21, above and beyond the variance accounted for by Perceived Stress, as measured by the PSS-10.

2b: Perceived Stress, as measured by the PSS-10, will account for a significant amount of variance in Disordered Eating Behavior, as measured by the CR Subscale, above and beyond the variance accounted for by Negative Perfectionism, as measured by the Discrepancy Subscale of the APS-R.

3a: Negative Perfectionism, as measured by the Discrepancy Subscale of the APS-R, will account for a significant amount of variance in Disordered Eating Behavior, as measured by the Emotional Eating Subscale (EE) of the TFEQ-R21, above and beyond the variance accounted for by Perceived Stress.

3b: Perceived Stress, as measured by the PSS-10, will account for a significant amount of variance in Disordered Eating Behavior, as measured by the EE Subscale, above and beyond the variance accounted for by Negative Perfectionism, as measured by the Discrepancy Subscale.

METHOD

Participants

Two hundred and forty-six graduate students from Auburn University and the University of Memphis were recruited; 160 (23 males and 137 females) agreed to participate. Since the literature indicates that Disordered Eating Behaviors are presented differently among males and females and the current study focused on Disordered Eating Behaviors of females, data from males were removed. Eleven of the remaining participants were eliminated from the original sample because they provided incomplete surveys. Also, only individuals who were at least 19 years old, which was the age of consent in the state of Alabama (18 was age of consent in TN) were allowed to participate. Since the average age for professional and graduate students ranged from 28 to 34, respectively, the cutoff age for the study was set at 35 (Choy & Cataldi, 2006; Choy, Geis, & Malizio, 2002). Therefore, only responses from those participants who were ages 19 through 35 were used and all other surveys were set aside. Eighteen additional participants were excluded because they were above the age range. The total number of participants included in the current study was 108. Participants' ages ranged from 21 to 35. The mean age was 24.87 and the median was 24. The remaining participants self-identified as follows: 4.63% Asian, 13.89% Black, 75.93% White, and 5.56% Other. Additionally, of those who identified as Other, 16.7% specified that they

were International, 16.7% Indian, and 50% Biracial (Black and White); one (16.7%) did not specify.

Procedure

Permission, from instructors, to administer surveys to graduate-level classes, related to a variety of majors on the campuses of Auburn University and the University of Memphis, was obtained through an email request (See Appendix F). Participants were from a sample of convenience; however some attempt was made to approach instructors from classes believed to have high female enrollment and to obtain a representation from a variety of majors. A list of departments from which participants were approached is included in Table 1. The data collection took place during spring and summer semesters of 2008. A script (See Appendix G) briefly describing the study was read aloud to potential participants. They were instructed to complete instruments outside of classrooms and to return completed packets at their next class meeting to be collected. Individuals who chose not to participate were also instructed to return incomplete packets during their next class meeting. The surveys were estimated to take a maximum of approximately 15 minutes to complete. Also, a list of local mental health providers was provided (See Appendices H and I) in case participants experienced any psychological discomfort as a result of their participation.

The survey consisted of questions related to demographics (i.e., age, sex, ethnicity, and educational status) (See Appendix A) and a battery of assessment instruments with questions measuring stress, perfectionism, and participants' beliefs,

attitudes, and behaviors related to disordered eating. Detailed information concerning the instruments used is listed below.

Table 1

Departments

The University of Memphis	Auburn University
Anthropology	Harrison School of Pharmacy
The Department of Counseling, Educational Psychology, and Research	The Communication and Journalism Department
The Department of Psychology	The Department of Human Development and Family Studies
The Biology Department	The Department of Counselor Education, Counseling Psychology, and School Psychology
The School of Law	The Biggio Center for Teaching and Learning
The Department of Instruction and Curriculum Leadership	The Curriculum and Teaching Department
The Political Science Department	The Department of Educational Foundations, Leadership, and Technology
The Communication Department	The Aerospace Engineering Department
The Criminal Justice Department	The Department of Agricultural Economics and Rural Sociology
The School of Nursing	The Chemistry and Biochemistry Department
The School of Audiology and Speech Language Pathology	The Biological Sciences Department
The Marketing Supply Management Department	The Department of Animal Sciences
The Department of Economics	
The School of Accountancy	

Instruments

TFEQ-R21. The Three-Factor Eating Questionnaire-R21 (TFEQ-R21) (Australian version) (See Appendix B) is a 21-item self-report instrument used to measure Disordered Eating Behaviors (Stunkard & Messick, 1985). The original Three-Factor Eating Questionnaire (TFEQ) contains 55 items. It was later reduced to 51 items (Karlsson et al., 2000), then to 18 items, and finally added to in order to arrive at the present 21-item revised version (Tholin, Rasmussen, Tynelius, & Karlsson, 2005). Items 1 through 16 are scored on a four-point Likert-type scale ranging from 1 ("definitely true") to 4 ("definitely false"). Items 17 through 20 have a unique four-point Likert-type scale (See Appendix B) (Karlsson et al.). Item 21 is an eight-point Likert-type scale anchored by "I eat whatever and whenever I want to" (1) and "I am constantly limiting my food intake, never 'giving in'" (8). The revised version (TFEQ-R21) is made up of three subscales: Cognitive Restraint, Emotional Eating, and Uncontrolled Eating (de Lauzon et al., 2004).

The Cognitive Restraint Subscale measures reported food restriction with the purpose of influencing weight and shape (de Lauzon et al., 2004). It is comprised of six items (1, 5, 11, 17, 18, and 21). Although the authors do not discuss any connections, the Cognitive Restraint Subscale appears to measure certain facets of eating disorders which might be associated with anorexia within the clinical population (See Appendix B).

The Emotional Eating Subscale assesses the reported tendency to overeat in response to negative emotions (i.e., anxiety, depression, and loneliness) (de Lauzon et al., 2004). It is made up of six items (2, 4, 7, 10, 14, and 16).

The Uncontrolled Eating Subscale measures the reported inability to maintain control over eating when hungry or when food is present. It is comprised of nine items (3, 6, 8, 9, 12, 13, 15, 19, and 20). Although no connection is drawn by the authors, the Uncontrolled Eating Subscale appears to measure certain facets of eating disorders which might be associated with bulimia within the clinical population (See Appendix B).

Responses to items 1 through 16 and item 21 are reverse scored. Raw scores for each subscale are calculated by adding the Likert values for each item in that subscale. These scores are then transformed by following a formula provided with the instructions that accompany the instrument. Transformed scores are computed by subtracting the number of items in the subscale from the raw score, dividing this number by the difference between the maximum and minimum score, and then multiplying this number by 100. Transformed scores thus fall in the 0-100 range. As per instructions in the test manual, an individual's scale score is calculated only if the person has answered at least one-half of that subscale's items. Two people failed to answer all items on one of the subscales but did answer more than one-half of the items on that scale. To compute the subscale scores for these two individuals, the mean of completed items was computed and then multiplied by the total number of items in the subscale. These scores were then transformed using the formula mentioned above. Higher scores indicate more uncontrolled eating, cognitive restraint, and emotional eating.

In a study (de Lauzon et al., 2004) of 236 male and 284 female participants (ages 14 to 27), the mean for males on the Cognitive Restraint Subscale was 18 (*SD* = 16) and the mean for females was 34 (*SD* = 20). For participants between the ages of 30 and 67, the mean for males was 22 (*SD* = 18) and the mean for females was 39 (*SD* = 21). On the

Uncontrolled Eating Subscale, male and female participants (ages 14 to 27) obtained mean scores of 39 (*SD* = 19) and 35 (*SD* = 19), respectively, while male and female participants (ages 30 to 67) obtained mean scores of 26 (*SD* = 18) and 27 (*SD* = 19), respectively. On the Emotional Eating Subscale, male and female participants (ages 14 to 27) obtained mean scores of 26 (*SD* = 23) and 46 (*SD* = 29), respectively, while participants (ages 30 to 67) obtained mean scores of 22 (*SD* = 25) for males and 43 (*SD* = 31) for females. Internal consistency for each subscale was found to range from .76 to .85, based on Cronbach's alpha (Karlsson et al., 2000). When correlated with similar measures, such as the Restraint Scale (RS) and the Dutch Eating Behavior Questionnaire (DEBQ-R), the TFEQ-R21 convergent validity was high, .74 and .89, respectively (Allison, Kalinsky, & Gorman, 1992). There was a low correlation between the TFEQ-R21 and measures of social desirability, such as the Edwards Social Desirability Scale and the Marlowe-Crowne Social Desirability Scale (MCSD) (Allison et al.). The TFEQ-R21 takes about 5 minutes to complete.

APS-R. The Almost Perfect Scale-Revised (APS-R) (See Appendix C) is an instrument created to measure both negative (maladaptive) and positive (adaptive) dimensions of perfectionism and their implications for counseling. The earlier Almost Perfect Scale (APS) was created following a review of two qualitative studies in which the characteristics of high standards, orderliness, and perception of a discrepancy between those standards and actual performance seemed to be consistent across studies among individuals who self-described themselves as perfectionists (Slaney et al., 2001). The revised scale, the APS-R, is a 23-item self-report instrument that is composed of three subscales: High Standards, Order, and Discrepancy. High Standards is related to

having high standards for one's behavior. Order refers to organization or neatness. The High Standards and Order subscales are thought to be related to positive features of perfectionism, whereas Discrepancy, or the degree of perceived inconsistency between one's standard of behavior and one's actual behavior, has been linked to the negative characteristics of perfectionism. In developing the revised scale (APS-R), principal component analysis confirmed the presence of three factors corresponding to the three subscales (Slaney et al.). The total variance accounted for by these three factors was 45% (Slaney et al.). The final revised version is comprised of seven items which make up the High Standards subscale (1, 5, 8, 12, 14, 18, and 22), four items which made up the Order subscale (2, 4, 7, and 10), and 12 items making up the Discrepancy subscale (3, 6, 9, 11, 13, 15, 16, 17, 19, 20, 21, and 23), which is considered to be representative of Negative Perfectionism (Slaney et al.). Items from the Discrepancy subscale include "I often feel frustrated because I can't meet my goals" and "I rarely live up to my high standards". Ratings are based on a 7-point scale ranging from strongly disagree (1) to strongly agree (7) (Mobley, Slaney, & Rice, 2005). Higher scores indicate greater perfectionism.

Normative data for the APS-R was derived from a sample of 1,533 undergraduates (Rice & Ashby, 2007). The mean score on the Discrepancy Subscale was 39.98 (*SD* = 15.15) for men, and 39.57 for women (*SD* = 15.50). Whereas scores on the Discrepancy subscale that were equal to or greater than 45 were considered to be representative of maladaptive perfectionism (or Negative Perfectionism), scores below 45 on the Discrepancy subscale were considered to represent adaptive perfectionism (Rice & Ashby). Internal reliability based on Cronbach's alpha ranged from .82 to .92. Internal consistency for the three subscales ranged from .85 to .92. At intervals of three weeks

and eight to ten weeks, with correlations of .72 to .83 and .76 to .87, respectively, the APS-R established good test-retest reliability (Rice & Ashby). The APS-R demonstrated good convergent validity with the Multidimensional Perfectionism Scale (MPS) and the Frost Multidimensional Perfectionism Scale (FMPS) (Rice & Ashby). It also demonstrated appropriate concurrent validity with the Center for Epidemiologic Studies—Depression scale (CES-D) and the Satisfaction With Life Scale (SWLS), with maladaptive perfectionists, when compared to adaptive perfectionists, being more depressed and reporting lower life satisfaction. Individuals who had been determined to have adaptive perfectionism tended to have higher grade point averages (GPA) than those individuals with maladaptive perfectionism (Rice & Ashby). The APS-R takes about 5 minutes to complete.

PSS-10. The Perceived Stress Scale (PSS-10) (See Appendix D) measures the extent to which individuals perceive their life circumstances to be stressful (Cohen et al., 1983). It was created for usage with community samples of individuals possessing at least a junior high school education. A benefit of this instrument is that it is relatively straightforward and uncomplicated and contains items that are general, and thus appropriate for use with many individuals from the general population.

The original version (PSS-14) of the PSS-10 contains 14 items. However, a factor analysis showed a one-factor solution with 10 of the 14 items (1, 2, 3, 6, 7, 8, 9, 10, 11, and 14) loading well with at least .42 and items 4, 5, 12, and 13 loading poorly (.17, .33, .11, and .39). The PSS-10, a shorter version, resulted after the scale was reduced to only the 10 items which loaded at .42 or above (1, 2, 3, 6, 7, 8, 9, 10, 11, and 14) and when the four items (4, 5, 12, and 13) which had low loadings were removed (Cohen &

Williamson, 1988). The remaining items accounted for 48.9% of total variance, as compared to the original version (41.6%). Four of the items (4, 5, 7, and 8) are positively worded and the remaining six items (1, 2, 3, 6, 9, and 10) are negatively worded. Internal consistency for the PSS-10 was determined by Cohen and Williamson to be .78 (Cronbach's alpha). However, in more recent studies, internal consistency has ranged from .87 to .89 (Croghan et al., 2006; Roberti, Harrington, & Storch, 2006). The PSS-10 includes items such as "In the last month, how often have you found that you could not cope with all the things that you had to do?" and "In the last month, how often have you felt that you were on top of things?" Ratings are based on a five-point scale ranging from never (0) to very often (4) (Cohen & Williamson). The scores on the positively-phrased items, 4, 5, 7, and 8, are coded in reverse. After reversing the scores on all positively-phrased items, scores are then added together ("PSS Scoring," n.d.). Higher scores indicate greater Perceived Stress.

Normative information was gathered from a study involving 960 males and 1,427 females from a nonclinical population that were at least 18 years-of-age. The mean was 12.1 (*SD* = 5.9) among males and 13.7 (*SD* = 6.6) among females. The PSS-10 has demonstrated convergent validity with other assessments of stress (Cohen et al., 1983; Cohen & Williamson, 1988; Roberti et al., 2006). The PSS-10 had a positive, low to moderate correlation, with intensity of stressful life events and it correlated moderately with perceptions of stressfulness of life events (Cohen et al.). For example, low to moderate correlations were found between PSS-10 and the College Student Life-Event Scale (CSLES), with increased convergent validity (.24 to .49, $p < .01$) among two of the three samples when the impact of life events was considered (Cohen et al.). Additionally,

the PSS-10 was more highly correlated with physical complaints and psychosomatic difficulties in comparison to assessments of stressful life events and of perceptions of stressfulness of life events (.52 to .70, $p < .001$) (Cohen et al.). Similarly, the PSS-10 was moderately correlated with social anxiety (.37 and .48, $p < .001$) (Cohen et al.). There was good discriminant validity between the PSS-10 and the Sensation Seeking Scale, Form V (SSS-V), the Santa Clara Strength of Religious Faith Questionnaire-Short Form (SCSRFQ-SF), and the Overt Aggression (OA) subscale of the Adult Aggression Scale (Roberti et al.). The PSS-10 takes about 5 minutes to complete.

Since the current study was only interested in the relationship between Negative Perfectionism and Disordered Eating Behaviors, scores on the Almost Perfect Scale-Revised (APS-R) subscales associated with positive forms of perfectionism--High Standards and Order--were set aside and only scores on the Discrepancy subscale were used. Instruments were administered in the following order: the Three-Factor Eating Questionnaire-R21 (TFEQ-R21), the Almost Perfect Scale-Revised (APS-R), and the Perceived Stress Scale (PSS-10).

RESULTS

Overview

The following section explains the analyses completed to test the hypotheses from the previous section. The current study sought to demonstrate that there is a significant relationship between the predictor variables, Perceived Stress and Negative Perfectionism, and the criterion variable of Disordered Eating Behaviors among graduate students. The Perceived Stress Scale (PSS-10) measured how stressful individuals believed their life situations to be. The Discrepancy Subscale of the Almost Perfect Scale-Revised (APS-R) was used to measure Negative Perfectionism, which was the difference between one's standard of behavior and one's actual behavior. The TFEQ-R21 is comprised of three separate subscales (Cognitive Restraint, Emotional Eating, and Uncontrolled Eating). The Cognitive Restraint Subscale was used to measure food constraint. The Emotional Eating subscale measured the tendency to overeat when experiencing negative emotions. The Uncontrolled Eating Subscale measured inability to avoid over eating. The instrument provides separate scores for each.

Determining Effect Size and Power

In order to determine the number of participants necessary to have sufficient power, the researcher considered both a formula by Green (1991) and the results of a power analysis completed using the computer program GPOWER (Erdfelder, Faul, &

Buchner, 1996; Faul & Erdfelder, 1992). Green suggested beginning with 104 participants and increasing the number by one for each independent variable. Thus, $N \geq 104 + m$, where m is equal to the number of predictor variables (Cohen, 1988; Green). Based on the power analysis, using GPOWER (Erdfelder et al.; Faul & Erdfelder), 48 participants were needed, assuming a large effect size, with $F(2, 45) = 3.2043$ and Lambda = 16.8 ($f^2 = .35$, Power = .95, $p < .05$). Thirty-one participants were needed, assuming a medium effect size as recommended by Cohen, $F(2, 28) = 3.34$ and Lambda = 10.85 ($f^2 = .35$, Power = .80, $p < .05$). The researcher reasoned that it would be better to follow Green's recommendation since his recommendation was for a larger number, thereby increasing the power. Thus, the minimum *N* for the current study was 106 (Green).

Descriptive Statistics and Intercorrelations

Means, standard deviations, and ranges for the independent and dependent variables are show in Table 2. Table 3 shows the intercorrelations among the independent and dependent variables.

Preliminary Procedures and Hierarchical Multiple Regression

Hierarchical multiple regressions were performed to examine the independent contributions of Perceived Stress and Negative Perfectionism on each dimension (Uncontrolled Eating--UE, Cognitive Restraint--CR, and Emotional Eating--EE) of the criterion variable. An interaction term was created to observe any possible interaction effects, after the predictor variables were centered around their respective means (M = 40.98 for the Discrepancy Subscale and M = 17.66 for Perceived Stress Scale). Next,

scores from the Perceived Stress Scale and the Discrepancy Subscale were entered as predictor variables into the first step of each hierarchical regression performed for each dimension of the dependent variable (UE, CR, and EE). The newly created interaction term was entered in the second step. The results of the regressions are shown in Tables 4, 5, and 6.

Table 2

Means and Standard Deviations (N = 108)

Variable	M	SD	Range
1. UE	40.77	20.70	0-93
2. CR	54.36	21.32	0-94
3. EE	44.95	27.75	0-100
4. DS	40.98	15.83	12-76
5. PS	17.67	7.03	3-33

Note. UE = Uncontrolled Eating Subscale; CR = Cognitive Restraint Subscale ; EE = Emotional Eating Subscale; DS = Discrepancy Subscale; PS = Perceived Stress Scale

Table 3

Intercorrelation Table of Independent and Dependent Variables (N = 108)

Variable	UE	CR	EE	DS	PS
1. UE	—				
2. CR	.06	—			
3. EE	.58	.24**	—		
4. DS	.24*	.33**	.59**	—	
5. PS	.34**	.19*	.50**	.60**	—

Note. UE = Uncontrolled Eating; CR = Cognitive Restraint; EE = Emotional Eating; DS = Discrepancy Subscale; PS = Perceived Stress;
*p < .05 **p < .01

Table 4

Hierarchical Regression Analysis: Negative Perfectionism and Perceived Stress predicting Uncontrolled Eating Scores (N = 108)

Variable	B	SE B	β	Semipartial
Step 1				
Discrepancy Subscale	.07	.15	.05	.04
Perceived Stress*	.91	.34	.31	.25
Step 2				
Discrepancy Subscale	.09	.16	.07	.05
Perceived Stress*	.90	.34	.30	.24
Interaction	-.01	.02	-.04	-.04

*p < .05

Table 5

Hierarchical Regression Analysis: Negative Perfectionism and Perceived Stress predicting Cognitive Restraint Scores (N = 108)

Variable	B	SE B	β	Semipartial
Step 1				
Discrepancy Subscale *	.46	.16	.34	.27
Perceived Stress	-.04	.35	-.01	-.01
Step 2				
Discrepancy Subscale *	.43	.17	.32	.24
Perceived Stress	-.02	.35	-.01	-.01
Interaction	.01	.02	.06	.05

*p < .05

Table 6

Hierarchical Regression Analysis: Negative Perfectionism and Perceived Stress predicting Emotional Eating Scores (N = 108)

Variable	B	SE B	β	Semipartial
Step 1				
Discrepancy Subscale **	.79	.17	.45	.36
Perceived Stress*	.88	.38	.22	.18
Step 2				
Discrepancy Subscale **	.82	.18	.47	.35
Perceived Stress**	.87	.38	.22	.18
Interaction	-.01	.02	-.04	-.04

*p < .05 **p < .01

Hypotheses Restated and Results

Together, Perceived Stress, as measured by the PSS-10, and Negative Perfectionism, as measured by the Discrepancy Subscale, accounted for a significant amount of the variance in the Uncontrolled Eating Subscale (UE) with $R^2 = .12$ and Adjusted $R^2 = .10$, $F(2, 105) = 6.87$, $p < .05$. These predictor variables also accounted for a significant amount of variance in the Cognitive Restraint Subscale (CR) with $R^2 = .11$ and Adjusted $R^2 = .09$, $F(2, 105) = 6.56$, $p < .05$ and in the Emotional Eating Subscale (EE) with $R^2 = .38$ and Adjusted $R^2 = .36$, $F(2, 105) = 31.68$, $p < .001$.

Hypotheses 1a and 1b

1a: Negative Perfectionism, as measured by the Discrepancy Subscale of the Almost Perfect Scale-Revised (APS-R), will account for a significant amount of variance in Disordered Eating Behavior, as measured by the UE Subscale of the TFEQ-R21, above and beyond the variance accounted for by the PSS-10, with high scores on the Discrepancy Subscale being associated with high scores on the UE Subscale.

1b: Perceived Stress, as measured by the PSS-10, will account for a significant amount of variance in Disordered Eating Behavior, as measured by the UE Subscale of the TFEQ-R21, above and beyond the variance accounted for by the Discrepancy Subscale, with high scores on the PSS-10 being associated with high scores on the UE Subscale.

Results of Analysis of Hypotheses 1a and 1b:

As shown in Table 4, scores on the PSS-10 accounted for a significant amount of variance (6.3%; $r = .25$, $b = .91$, $SEB = .34$, $\beta = .31$, $p < .01$) on the UE Subscale, above

and beyond the variance accounted for by the Discrepancy Subscale. Scores on the Discrepancy Subscale did not account for a significant amount of unique variance on the UE Subscale (b = .07, SEB = .15, β = .05, p = .66) above and beyond the variance accounted for by PSS-10. Thus, Perceived Stress predicted a significant amount of unique variance in Uncontrolled Eating, but Negative Perfectionism did not. The findings suggest that the greater the perceived stress experienced by participants, the less likely they were able to control their eating.

Hypotheses 2a and 2b

2a: Negative Perfectionism, as measured by the Discrepancy of the APS-R, will account for a significant amount of variance in Disordered Eating Behavior, as measured by the Cognitive Restraint Subscale (CR) of the TFEQ-R21, above and beyond the variance accounted for by the PSS-10, with high scores on the Discrepancy Subscale being associated with high scores on the CR Subscale.

2b: Perceived Stress, as measured by the PSS-10, will account for a significant amount of variance in Disordered Eating Behavior, as measured by the CR Subscale of the TFEQ-R21, above and beyond the variance accounted for by the Discrepancy Subscale, with high scores on the PSS-10 being associated with high scores on the CR.

Results of Analysis of Hypotheses 2a and 2b:

As shown in Table 5, scores on the Discrepancy Subscale accounted for 7.3% (r = .27, b = .46, SEB = .16, β = .34, p < .01) of the variance on the CR Subscale, above and beyond the variance accounted for by the PSS-10. The PSS-10 did not account for a significant amount of the variance on the CR (b = -.04, SEB = .35, β = -.01, p = .92), above and beyond the variance accounted for by the Discrepancy Subscale. Thus,

Negative Perfectionism did predict a significant amount of unique variance in Cognitive Restraint, but Perceived Stress did not. According to these results, the greater the discrepancy between participants' preferred standards and their perception of the standards they had obtained, the more likely they were to restrict their food intake to manage their weight.

Hypotheses 3a and 3b

3a: Negative Perfectionism, as measured by the Discrepancy Subscale of the APS-R, will account for a significant amount of variance in Disordered Eating Behavior, as measured by the Emotional Eating Subscale (EE) of the TFEQ-R21, above and beyond the variance accounted for by the PSS-10, with high scores on the Discrepancy Subscale being associated with high scores on the EE.

3b: Perceived Stress, as measured by the PSS-10, will account for a significant amount of variance in Disordered Eating Behavior, as measured by the Emotional Eating Subscale (EE) of the TFEQ-R21, above and beyond the variance accounted for by the Discrepancy Subscale, with high scores on the PSS-10 being associated with high scores on the EE Subscale.

Results of Analysis of Hypotheses 3a and 3b:

As shown in Table 6, scores on the Discrepancy Subscale accounted for 13% ($r = .36$, $b = .79$, $SEB = .17$, $\beta = .45$, $p < .01$) of the variance on the EE, above and beyond the variance accounted for by the PSS-10. Scores on the PSS-10 accounted for 3.2% ($r = .18$, $b = .88$, $SEB = .38$, $\beta = .22$, $p < .05$) of the variance on the EE, above and beyond the variance accounted for by the Discrepancy Subscale. Therefore, both Negative Perfectionism and Perceived Stress predicted a significant amount of unique variance in

Emotional Eating**.** Based on these results, the greater the stress experienced and the greater the discrepancy between participants' high standards and their obtainment of those high standards, the more likely they were to overeat in response to negative emotions.

Supplementary Analysis

Although a specific hypothesis was not created to test for whether either independent variable moderated the other, it was logical to ask whether there was a significant interaction between the two. To examine this, an interaction term was created and entered into the regression equation (Tables 4, 5, and 6). The interaction between scores on the PSS-10 and on the Discrepancy Subscale was insignificant for the UE, CR, and EE Subscales. Since the interaction effect was not significant, it was determined that neither independent variable moderated the other on Uncontrolled Eating, Cognitive Restraint, or Emotional Eating.

DISCUSSION

Review of Findings

The current study examined the relationship between Perceived Stress, Negative Perfectionism, and Disordered Eating Behaviors among graduate students. More specifically, the current study sought to test the hypothesis that an individual's perception of how stressful her life is (measured by the PSS-10) and the discrepancy between one's desired and actual performance (Discrepancy Subscale of the APS-R) would account for a significant amount of unique variance in the amount of food restriction the individual engaged in to control her weight and shape (Cognitive Restraint Subscale-CR of the TFEQ-R21). Also, the current study sought to test the hypothesis that an individual's perception of how stressful her life is and the discrepancy between the individual's desired and actual performance would account for a significant amount of unique variance in one's ability to refrain from over eating (Uncontrolled Eating Subscale-UE of the TFEQ-R21). In addition, this study sought to test the hypothesis that an individual's perception of how stressful her life is and the discrepancy between one's desired and actual performance would account for a significant amount of unique variance in the individual's propensity to overeat when experiencing negative emotions (Emotional Eating Subscale-EE of the TFEQ-R21). Based on the results, Perceived Stress was significantly and uniquely related to graduate students' tendency to eat uncontrollably (UE) and to eat in response to experiences of negative emotions (EE). Thus, the more

stressful participants perceived their lives to be, the more difficulty they reported having with controlling what they ate. Graduate students who reported higher Negative Perfectionism were not only more likely to eat more in response to negative emotions (EE), but they also were likely to limit the foods that they ate (CR). These findings were consistent with other studies in which a significant relationship between stress and binge eating (Crowther et al., 2001; Harrington et al., 2006; Nguyen-Rodriguez et al., 2008; Sims et al., 2008) and between perfectionism and anorexia was observed (Cockell et al., 2002; Kiemle et al., 1987; Polivy & Herman, 2002; Striegel-Moore & Bulik, 2005; Tyrka et al., 2002).

In comparison to studies involving samples of undergraduates, the correlations in the current study were either roughly identical or somewhat weaker. For example in a study by Harrington et al. (2006), the relationship between Perceived Stress, as measured by the Perceived Stress Scale (PSS-14), and binge eating, as measured by The Eating Expectancies Inventory (EEI), was small but roughly equal to the partial correlation between Perceived Stress and Uncontrolled Eating in the current study. Yet, the relationship between Perceived Stress and binge eating in Harrington et al.'s study was greater than the correlation between Perceived Stress and Emotional Eating in the current study. In Harrington et al.'s study, Perceived Stress accounted for a greater percentage of the variance in binge eating. In the current study, Perceived Stress accounted for only 3.2% of the variance in Emotional Eating, as measured by the TFEQ-R21. In comparison to the normative sample, the scores on the Perceived Stress Scale (PSS-10) in the current study were, on average, higher. It should be noted that the Uncontrolled Eating Scale

appears to measure aspects of bulimia (See Appendix B) while the Cognitive Restraint Scale appears to measure aspects of anorexia.

Holston and Cashwell (2000) found a moderate zero-order correlation between neurotic perfectionism (possession of unrealistically high standards and fear of failure) (Mitzman, Slade, & Dewey, 1994), as measured by the Neurotic Perfectionism Questionnaire (NPQ), and Disordered Eating Behavior, as measured by the Eating Disorders Inventory (EDI). In the current study, the correlations between Negative Perfectionism and Cognitive Restraint, and between Negative Perfectionism and Emotional Eating were weak to moderate. Although the above mentioned instruments appear to be very similar, any comparisons or conclusions should be made with caution.

Although less variance in scores on a measure of disordered eating (assessed using the three scales of the TFEQ-R21) was explained by variance in scores on a measure of Negative Perfectionism (Discrepancy Scale of the APS-R) and a measure of Perceived Stress (PSS-10), it appears that on average, graduate students obtain scores comparable to undergraduates on the measures used in the current study. For example the mean in this current study was 40.98 on the Discrepancy Subscale, while the mean in Rice and Ashby's (2007) study was 39.80. The standard deviation in both studies was approximately 15 to 16. In the current study the mean for Perceived Stress was 17.67, and the mean in Croghan et al.'s (2006) study was 17.7. The standard deviation in both studies was approximately 7. The means in the current study on a measure of Disordered Eating (TFEQ-R21) were 40.77 (*SD* = 20.70) for Uncontrolled Eating, 54.36 (*SD* = 21.32) for Cognitive Restraint, and 44.95 (*SD* = 27.75) for Emotional Eating, while the

means in Mosher and Danoff-Burg's (2008) study for Uncontrolled Eating was 38.17 (*SD* = 19.36), for Cognitive Restraint was 42.55 (SD = 27.66), and for Emotional Eating was 32.14 (*SD* = 29.26) on the TFEQ-R18. The TFEQ-R18 and the TFEQ-R21 only differ by three items which were added to the TFEQ-R18 to create the TFEQ-R21. Because of the way the means are computed, one would expect slightly lower scores on the TEFQ R18. When we compare the current study to the Mosher and Danoff-Burg's (2008) study, we see comparable mean values. It should be noted that neither the graduate students in the current study nor the undergraduate students in Rice and Ashby's study obtained mean scores on the Discrepancy Scale of the APS-R that indicated maladaptive (negative) perfectionism.

Although many studies have examined the relationship between Disordered Eating Behaviors and Perceived Stress and between disordered eating and Negative Perfectionism, none—to the researcher's knowledge—have examined these relationships among graduate students. The current study sought to provide useful information for better understanding of Disordered Eating Behaviors within the graduate population. More information about implications and suggestions concerning how this information might be useful is included following the summary.

Limitations

One limitation of the current study was that this study relied on self-report. As is the case with all surveys, there was a chance of response bias. That is, participants may have over- or underreported their experiences. For example, with regard to reporting of Disordered Eating Behaviors, participants might have been motivated to under-report such

behaviors. In general, participants might have responded in a socially-desirable manner or may have exaggerated their difficulties. Thus, their responses might not accurately reflect their true response. However, Allison, Kalinsky, and Gorman (1992) found that scores on the TFEQ-R21 did not correlate significantly with measures of social desirability.

Additional limitations were related to the demographics of the sample. One such problem was that the sample size was small. A larger sample would have increased the power of the independent variables to predict changes in the dependent variable, thereby decreasing the likelihood of committing a Type II error—or of failing to find an effect when one is actually present. Thus, it might be beneficial in the future to recruit a larger sample size. Also, the sample was one of convenience. Thus, generalizability is limited to some extent by non-random sampling. Attempts were made to recruit from classes that were anticipated to have high female enrollment. Thus, experiences of other female graduate students may not have been well represented. Furthermore, by design, only females were included in this study. As previously discussed, Disordered Eating Behaviors also occur in males. Other studies are needed to extend the knowledge base about males and disordered eating.

The sample consisted largely of White females (75.93%). Therefore the results might not be generalizable to other ethnic and/or culture groups. It might be worthwhile to recruit samples with larger numbers of ethnic minorities to understand better how these predictors work with diverse populations.

Also, the mean in the current study on a measure of Negative Perfectionism (the APS-R) did not reflect a serious problem as it was below the recommended cutoff for

Negative Perfectionism. This raises questions as to how restricted the range on Negative Perfectionism is.

Finally, the current study proposed that Perceived Stress would predict Disordered Eating Behaviors. The Perceived Stress Scale (PSS-10) was used to measure the extent to which life circumstances were believed to be stressful. This instrument may not account for the unique stressors of graduate school. It might be beneficial, in future studies, to use a measure of stress that takes into account conditions specific to graduate school (i.e., the Graduate Stress Inventory) (Rocha-Singh, 1994).

Summary

In summary, the relationships between Disordered Eating Behaviors and many factors have been examined and described throughout the literature. Several factors have been linked to Disordered Eating Behaviors. Perceived Stress and Negative Perfectionism are two factors that have been found to be related to Disordered Eating Behaviors. Until now, these relationships have been largely examined in adolescent and undergraduate populations. The current study examined the relationship between Disordered Eating Behaviors and Perceived Stress and between Disordered Eating Behaviors and Negative Perfectionism among graduate students. The three subscales of the TFEQ-R21 (Uncontrolled Eating, Cognitive Restraint, and Emotional Eating) were used to measure Disordered Eating Behaviors. The Discrepancy Scale of the Almost Perfect Scale-Revised (APS-R) was used to measure Negative Perfectionism and the Perceived Stress Scale (PSS-10) was used to measure Perceived Stress. The results of hierarchical regressions indicated that Perceived Stress uniquely predicted increases in

Uncontrolled Eating and Emotional Eating while Negative Perfectionism uniquely predicted increases in Cognitive Restraint and Emotional Eating in graduate students. Although these findings were significant, the actual amount of variance accounted for was rather low. Even though the current study had limitations, its purpose was to fill a gap in the literature by examining Disordered Eating Behaviors among graduate students. It is the researcher's hope that the current study might, in addition to increasing awareness, lead to an increase in resources for the prevention and intervention of Disordered Eating Behaviors among graduate students.

Implications

Directions for future studies. Although the current study's focus was not on differences between graduate and undergraduate students, it might be worthwhile to empirically compare these two populations. Also, the current study only examined the relationship between Negative Perfectionism, Perceived Stress, and Disordered Eating Behaviors among females. It might be useful to look at differences between men and women. Additionally, since more variance was accounted for by Perceived Stress in Harrington et al.'s (2006) study with undergraduates than in the current study of graduate students, future studies might focus on specific types of stressors (e.g., finance) rather than on general stress. Also, the predictor variables, Negative Perfectionism and Perceived Stress, only explained a small amount of variance in each dimension (CR, UE, and EE) of the criterion variable, Disordered Eating Behaviors. Thus, it is possible that variance in Disordered Eating Behaviors might be better accounted for in graduate students by other factors, such as living conditions or financial concerns (e.g., loans, etc.).

Usefulness of findings . These findings might be useful to professionals who aid in the prevention and intervention of Disordered Eating Behaviors. This includes, but may not be limited to, mental health professionals, medical professionals, and educational professionals. For example, instructors, advisors, and supervisors (i.e., for residencies, practicums, and assistantships) often work in close proximity to graduate students. Thus, they might have a crucial role in the early detection of a student at risk for, or suffering from, Disordered Eating Behaviors.

This information might also be useful to mental and medical health professionals. Often times, these professionals may come in contact with graduate students who present with other concerns. If health professionals, such as nurses, physicians, psychologists, and psychiatrists better understand the relationship between Perceived Stress, Negative Perfectionism, and Disordered Eating Behaviors, they might be better able to identify individuals at risk. Their role in prevention and intervention could be essential since, by virtue of their professions, these individuals are more likely to interact with students within an environment (e.g., psychotherapy) that might be perceived as one of safety and which might be conducive to students' willingness to share and openly discuss their symptoms and concerns.

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APPENDIX A

Demographic Sheet

(created by the researcher)

We would like to know more about you. Please complete the following questions. You must be at least 19 years-old to participate.

1. How old are you? _____

2. What is your current educational status?

   A—Undergraduate Student B--Graduate Student

3. Please indicate the group with which you most identify.

   A--Black/African-American B--White/Caucasian C--Hispanic/Latin
   D--Asian/Pacific Islander E--Native American F--Other:_____

4. Please indicate your sex.

   A--male B—female

APPENDIX B

Three Factor Eating Questionnaire-R21

(Tholin, Rasmussen, Tynelius, & Karlsson, 2005)

TFEQ-R21

This section contains statements and questions about eating habits and feelings of hunger.
Read each statement carefully and answer by ticking the alternative that best applies to you.

1. I deliberately take small helpings to control my weight
- ☐ 1 Definitely true
- ☐ 2 Mostly true
- ☐ 3 Mostly false
- ☐ 4 Definitely false

2. I begin eating when I feel anxious
- ☐ 1 Definitely true
- ☐ 2 Mostly true
- ☐ 3 Mostly false
- ☐ 4 Definitely false

3. Sometimes when I start eating, I just can't seem to stop
- ☐ 1 Definitely true
- ☐ 2 Mostly true
- ☐ 3 Mostly false
- ☐ 4 Definitely false

4. When I feel sad, I often eat too much
- ☐ 1 Definitely true
- ☐ 2 Mostly true
- ☐ 3 Mostly false
- ☐ 4 Definitely false

5. There are some foods I don't eat, because they make me fat
- ☐ 1 Definitely true
- ☐ 2 Mostly true
- ☐ 3 Mostly false
- ☐ 4 Definitely false

6. Being with someone who is eating, often makes me also want to eat
- ☐ 1 Definitely true
- ☐ 2 Mostly true
- ☐ 3 Mostly false
- ☐ 4 Definitely false

7. When I feel tense or stressed, I often feel I need to eat
- ☐ 1 Definitely true
- ☐ 2 Mostly true
- ☐ 3 Mostly false
- ☐ 4 Definitely false

8. I often feel so hungry that my stomach feels like a bottomless pit
- ☐ 1 Definitely true
- ☐ 2 Mostly true
- ☐ 3 Mostly false
- ☐ 4 Definitely false

9. I'm always so hungry that it's hard for me to stop eating before finishing all of the food on my plate
- ☐ 1 Definitely true
- ☐ 2 Mostly true
- ☐ 3 Mostly false
- ☐ 4 Definitely false

10. When I feel lonely, I console myself by eating
- ☐ 1 Definitely true
- ☐ 2 Mostly true
- ☐ 3 Mostly false
- ☐ 4 Definitely false

11. I consciously restrict how much I eat during meals to avoid gaining weight
- ☐ 1 Definitely true
- ☐ 2 Mostly true
- ☐ 3 Mostly false
- ☐ 4 Definitely false

12. When I smell appetizing food or see a delicious dish, I find it very difficult not to eat - even if I've just finished a meal
- ☐ 1 Definitely true
- ☐ 2 Mostly true
- ☐ 3 Mostly false
- ☐ 4 Definitely false

TFEQ-R21

This section contains statements and questions about eating habits and feelings of hunger.
Read each statement carefully and answer by ticking the alternative that best applies to you.

13. I am always sufficiently hungry to eat at any time
- ☐ 1 Definitely true
- ☐ 2 Mostly true
- ☐ 3 Mostly false
- ☐ 4 Definitely false

14. If I feel nervous, I try to calm myself down by eating
- ☐ 1 Definitely true
- ☐ 2 Mostly true
- ☐ 3 Mostly false
- ☐ 4 Definitely false

15. When I see something that looks delicious, it often makes me feel so hungry that I have to eat right away
- ☐ 1 Definitely true
- ☐ 2 Mostly true
- ☐ 3 Mostly false
- ☐ 4 Definitely false

16. When I feel depressed, I want to eat
- ☐ 1 Definitely true
- ☐ 2 Mostly true
- ☐ 3 Mostly false
- ☐ 4 Definitely false

17. How often do you avoid "stocking up" on tempting foods?
- ☐ 1 Almost never
- ☐ 2 Rarely
- ☐ 3 Usually
- ☐ 4 Almost always

18. How likely are you to make an effort to eat less than you want?
- ☐ 1 Unlikely
- ☐ 2 A little likely
- ☐ 3 Somewhat likely
- ☐ 4 Very likely

19. Do you go on eating binges even though you're not hungry?
- ☐ 1 Never
- ☐ 2 Rarely
- ☐ 3 Sometimes
- ☐ 4 At least once a week

20. How often do you feel hungry?
- ☐ 1 Only at mealtimes
- ☐ 2 Sometimes between meals
- ☐ 3 Often between meals
- ☐ 4 Almost always

21. On a scale from 1 to 8, where 1 means no restraint in eating and 8 means constant restraint, what number would you give yourself?

Circle the number that best applies to you

1	2	3	4	5	6	7	8
I eat whatever and whenever I want to							I am constantly limiting my food intake, never "giving in"

APPENDIX C

Almost Perfect Scale-Revised

(Slaney, Mobley, Trippi, Ashby, & Johnson, 1997)

APS-R Short Form

Instructions

The following items are designed to measure attitudes people have toward themselves, their performance, and toward others. There are no right or wrong answers. Please respond to all of the items. Use your first impression and do not spend too much time on individual items in responding.

Respond to each of the items using the scale below to describe your degree of agreement with each item. Fill in the appropriate number circle on the computer answer sheet that is provided.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

1. I have high standards for my performance at work or at school.

2. I am an orderly person.

3. I often feel frustrated because I can't meet my goals.

4. Neatness is important to me.

5. If you don't expect much out of yourself, you will never succeed.

6. My best just never seems to be good enough for me.

7. I think things should be put away in their place

8. I have high expectations for myself.

9. I rarely live up to my high standards.

10. I like to always be organized and disciplined.

11. Doing my best never seems to be enough.

12. I set very high standards for myself.

13. I am never satisfied with my accomplishments.

14. I expect the best from myself.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

15. I often worry about not measuring up to my own expectations.

16. My performance rarely measures up to my standards

17. I am not satisfied even when I know I have done my best.

18. I try to do my best at everything I do.

19. I am seldom able to meet my own high standards of performance.

20. I am hardly ever satisfied with my performance.

21. I hardly ever feel that what I've done is good enough.

22. I have a strong need to strive for excellence.

23. I often feel disappointment after completing a task because I know I could have done better.

APPENDIX D

Perceived Stress Scale

(Cohen, Kamarck, & Mermelstein, 1983)

Perceived Stress Scale-10 Item

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, please indicate with a check how often you felt or thought a certain way.

1. In the last month, how often have you been upset because of something that happened unexpectedly?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

2. In the last month, how often have you felt that you were unable to control the important things in your life?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

3. In the last month, how often have you felt nervous and "stressed"?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

4. In the last month, how often have you felt confident about your ability to handle your personal problems?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

5. In the last month, how often have you felt that things were going your way?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

6. In the last month, how often have you found that you could not cope with all the things that you had to do?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

7. In the last month, how often have you been able to control irritations in your life?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

8. In the last month, how often have you felt that you were on top of things?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

9. In the last month, how often have you been angered because of things that were outside of your control?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

APPENDIX E

Information Sheet

(for Auburn University Institutional Review Board)

Auburn University

Auburn University, Alabama 36849-5222

Counseling & Counseling Psychology
2084 Haley Center

Telephone: (334) 844-5160
Fax: (334) 844-2860

INFORMATION SHEET

for a Research Study Entitled
---GRADUATE STUDENTS & DISORDERED EATING BEHAVIOR---

You are invited to participate in a research study examining health behaviors and personality factors. This study is being conducted by Carmilya Wilson, under the supervision of Dr. Randolph Pipes. We hope to learn more about individuals' health-related behaviors. You were selected as a possible participant because you are a student from a freshman or sophomore level class at Auburn University. You must be at least 19 years-old to participate in this study.

If you decide to participate, you will be asked to complete a survey. The survey should take no longer than approximately fifteen minutes to complete. After finishing the survey, please place it in the provided folder at the front of the room. It is impossible to link your responses back to you. Your responses will be anonymous. Your are asked to place your response sheets in the envelope on the front desk. Please do not include any additional or personal information. Remember that responses are to be kept anonymous.

No risks are involved. However you may experience some discomfort from being asked to recall information related to your health behaviors and personality factors.

Aside from contributing to and learning about the research process, there are no direct benefits to you as a result of your participation. There is no compensation. Your participation is strictly voluntary. Although no serious psychological risks are expected, if you should experience any problems, you are encouraged to seek assistance from a trained professional. However, if you shall require any medical or psychological attention as a result of the current study, you are responsible for all costs.

Any information obtained in connection with this study will remain anonymous. Information collected through your participation may be used to fulfill an educational requirement, published in a professional journal, and/or presented at a professional meeting. Your participation is strictly on a voluntary basis only. You are not obligated to participate or finish the survey once you have started. You may stop at any time. You may also refuse to complete any items that you so choose to. Surveys will be anonymous. Thus, after you have provided information you will not be able to withdraw your data after participation since there will be no way to identify individual information.

Your decision whether or not to participate will not jeopardize your future relations with Auburn University or the Department of Counselor Education, Counseling Psychology, and School Psychology.

If you have any questions, I invite you to ask them now. If you have questions later, Carmilya Wilson (334-502-7932; wilsoc4@auburn.edu) and/or Dr. Randolph Pipes (334-844-2883 pipesrb@auburn.edu) located in the Department of Counselor Education, Counseling Psychology, and School Psychology (room 2084) of the Haley Center will be happy to answer them.

For more information regarding your rights as a research participant you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone (334)-844-5966 or e-mail at hsubjec@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH TO PARTICIPATE IN THIS RESEARCH STUDY. IF YOU DECIDE TO PARTICIPATE, THE DATA YOU PROVIDE WILL SERVE AS YOUR AGREEMENT TO DO SO. THIS LETTER IS YOURS TO KEEP.

_____

Investigator's signature Date

_____

Co-investigator's signature Date

APPENDIX F

Example of Email to Instructors

EXAMPLE of AN EMAIL TO PROFESSORS

Dear Dr. _____,

I am a student in the Counseling Psychology Department. I am working on my dissertation (under the supervision of Dr. Randolph Pipes). My study is on eating behaviors and personality variables. I am contacting you and other instructors who teach graduate and professional-level courses to see whether you would be willing to allow me to come to your classes for about 10 minutes to request participation of your students in my study. I would like to come to both your _____ and your _____ classes. If granted permission, either I or one of my assistants will briefly explain my study and distribute survey packets to your students. We will ask students, if interested, to complete the surveys outside of classes and to return both completed and incomplete packets to their next class the following week for collection by either one of my assistants or myself. If you could provide me with this opportunity, I would greatly appreciate it. Also, I would be more than willing to provide you with more information regarding my study, if you would like. If you are willing, please let me know and I will contact you for additional information concerning the most convenient times for you.

Carmilya Wilson

APPENDIX G

Script

SCRIPT

My name is _____ and I will be passing out packets for Ms. Carmilya Wilson who is conducting her dissertation study. The study is concerned with eating behaviors and personality variables. This packet contains an informed consent form, three instruments, and a demographic data sheet. You are being asked to review the forms and to decide whether or not to participate. If you decide to participate, please complete the enclosed documents outside of class and seal them in the envelope provided. Please bring completed forms to your next class meeting to be collected. The surveys should take about 15 minutes to complete. If you have already completed the surveys, you should not complete them a second time. If you choose not to participate, please bring blank packets and forms to your next class meeting during which time they will be collected.

APPENDIX H

List of Auburn Mental Health Providers

This is a list of public agencies providing psychological services; other services are available from private practitioners.

Individual Agency	**Services Available**	**Cost Hour**
East Alabama Mental Health (334) 742-2700	Individual Therapy	Based on income
Student Counseling Services (334) 844-5123	Individual and Group Therapy	No charge
AU Psychological Services (334) 844-4889	Individual and Group Therapy	Based on income
Crisis Center (334) 821-8600	Phone Counseling	No charge
Rape Counselors of East Alabama (334) 741-0707	Phone Counseling	No charge
AU Marriage and Family Therapy Center (334) 844-4478	Individual, Couples, and Family Therapy	Based on income $10-40

Referral List of Auburn-Area Mental Health Providers

APPENDIX I

List of Memphis Mental Health Providers

This is a list of public agencies providing psychological services; other services are available from private practitioners.

Individual Agency	**Services Available**	**Cost Hour**
Psychological Services Center (901) 678-2147	Individual, Couples, and Family Therapy	Based on income
Midtown Mental Health Center (901) 577-0200	Individual Therapy	Based on income
Center for Counseling Learning & Testing Services (901) 678-2068	Individual and Group Therapy	No charge for students with 6 hours
Church Health Center (901) 272-0003	Individual, Couples, and Family Therapy	Sees those with no insurance Based on income
Crisis Hotline (901) 678-4357	Phone Counseling	No charge
Suicide & Crisis Intervention (877) 237-0004	Phone Counseling	No charge
Rape Crisis (901) 272-2020	Phone Counseling	No charge
Family Services of the Mid-South (901) 3243637	Marriage, Family, and Child Therapy	Based on income

Referral List of Memphis-Area Mental Health Providers

APPENDIX J

Permission to Use the Three Factor Eating Questionnaire-R21

Dear Carmilya,

The latest version of the revised, short-form TFEQ includes 21 items (TFEQ-R21). Three new items were added to the Emotional eating scale which now comprises six items compared to three in the TFEQ-R18 version. This change was done to avoid floor and ceiling effects. The TFEQ-R21 has been used in several clinical and epidemiological studies and the expected factor structure has been replicated. Note that the wording of some items have been modified in the latest version of the TFEQ-R21.

You have permission to use the TFEQ-R21 in your project. I enclose the instrument (Australian version) and scoring instructions. Do not distribute the questionnaire without permission.

Best regards,
Jan

Jan Karlsson, psychologist, PhD
Health Care Research Unit
Institute of Medicine
Sahlgrenska Academy at Göteborg University
SE-413 45 Göteborg
Sweden

-----Original Message-----
From Carmilya Wilson <wilsoc4@auburn.edu>
Sent Sun 12/10/2006 3:41 AM
To jan.karlsson@medicin.gu.se
Subject Question about the TFEQ-R18

** High Priority **

Dear Dr. Karlsson,

I am a doctoral graduate student at Auburn University (in Auburn, AL), and I have plans to examine how different factors relate to susceptibilty of disordered eating behaviors in graduate students. I am contacting you because I would like to setup an online survey for participants to complete and would like to use The Three Factor Eating Questionnaire-Revised 18 (TFEQ-R18). I am trying to determine who holds the copyright for this instrument and to obtain permission for usage in my study.

Thanks,
Carmilya Wilson

>>> Jan Karlsson <jan.karlsson@medicine.gu.se> 9/8/2008 4:16 AM >>>

Hi Carmilya,

Thank you for the information. You have permission to use the TFEQ-R21 (using hardcopies). It is also OK to include a copy of the TFEQ-R21 in your dissertation. I am aware that the dissertation is scanned to be available on the Web.

Please make sure that the copyright information "TFEQ-R21 © 2000 HRQL group - Gothenburg University on-Campus Company, Gothenburg, Sweden. All Rights Reserved." is shown on the copy that you include in your dissertation. You should also indicate that this is the Australien version of the instrument. Finally, you should include the following statement: Permission to use the TFEQ-R21 may be granted by Jan Karlsson, email: jan.karlsson@medicine.gu.se.

Best wishes,

Jan

Jan Karlsson, Research Psychologist, PhD
Institute of Health and Care Sciences
Sahlgrenska Academy at
Gothenburg University
Box 457
SE-405 30 Gothenburg
Sweden

-----Ursprungligt meddelande-----
Från Carmilya Wilson <wilsoc4@auburn.edu>
Skickat fr 2008-09-05 22:03
Till jan.karlsson@medicine.gu.se
Ärende Apology & Question

** High Priority **

Dear Dr. Karlsson,

First, the apology. I emailed you earlier to ask for permission to use the TFEQ-R21 in my dissertation study. I would like to thank you again for your permission to do so. However, I recently realized that I made a mistake. After we exchanged emails, I ended up changing the design of my study (this was some months later) from an online survey to one which involved administering surveys in hardcopy to participants in person (students in classrooms). Regrettably, after changing the design of my study I forgot that I had asked for permission to use your instrument for an on-line survey, and thus I failed to contact you again and ask for your permission to administer your instrument using hard copies. I apologize for this error; obviously I am completely responsible.

The question I have is about whether or not to include a copy of your instrument in my dissertation itself. Auburn University has a policy which requires that all dissertations be scanned to make them available on the Web. If you prefer that your instrument not be embedded in my dissertation, I will not include it in the dissertation. However, if you do not object to the instrument being in the hardcopy of my dissertation AND you do not object to it being scanned, I will include your instrument in my dissertation. Please let me know at your earliest convenience whether you do or do not give permission to include your instrument in my dissertation (which, as I said, will be scanned and then available on the Web).

Sincerely,
Carmilya Wilson

APPENDIX K

Permission to Use the Almost Perfect Scale-Revised

Ok, and thanks for the quick response!
Carmilya

>>> Robert Slaney <rslaney@psu.edu> 10/26/2006 1:20 PM >>>
Hi Carmilya,

Yes, that's OK. Let me know what you find. Here's the version we have used.

Bob S.

>Dr. Slaney,
>
>I am a doctoral graduate student at Auburn University and I have plans
>to examine how such factors as perfectionism relate to susceptibilty of
>disordered eating behaviors in graduate students. I am wondering if it
>would be possible to use The Almost Perfect Scale-Revised (APS-R) to
>conduct a study online. I am asking because I would like to setup an
>online survey for participants to complete. I see that you grant
>permission for the use of the APS-R for research purposes, but I wanted
>to verify that it would be ok to use it to conduct an online study.
>
>Carmilya Wilson
>
>Date: Mon, 23 Oct 2006 00:16:05 -0500
>From: "Carmilya Wilson" <wilsoc4@auburn.edu>
>To: <trx@psu.edu>
>Subject: Question about Use of the (APS-R)
>Mime-Version: 1.0
>Content-Type: text/plain; charset=US-ASCII
>Content-Transfer-Encoding: 7bit
>Content-Disposition: inline
>
>Dr. Slaney,
>
>I am a doctoral graduate student at Auburn University and I have plans
>to examine how such factors as perfectionism relate to susceptibilty of
>disordered eating behaviors in graduate students. I am wondering if it
>would be possible to use The Almost Perfect Scale-Revised (APS-R) to
>conduct a study online. I am asking because I would like to setup an
>online survey for participants to complete. I see that you grant
>permission for the use of the APS-R for research purposes, but I wanted
>to verify that it would be ok to use it to conduct an online study.
>
>Carmilya Wilson

>>> Robert Slaney <rslaney@psu.edu> 9/13/2008 9:29 PM >>>

Carmilya,

I hop Hi e you got my reply but I'll risk repeating myself given you
have sent your apology three times. First, there is n o need for an
apology I'm pleased you used it in your study. Feel free to scan it

and include the APS-R in your dissertation. Let me know what you found when you have a moment.

Best,

Bob S.
On Sep 10, 2008, at 11:01 AM, Carmilya Wilson wrote:

> ** Reply Requested When Convenient **
>
> Dr. Slaney,
>
> I apologize if you have received this twice, but I wanted to make
> sure that the email was successfully delivered to you. I emailed
> you last week concerning my dissertation study. Please see the
> original contents of that email below and, if possible, please
> respond at your earliest convenience. Please see below:
>
>
>>>> Carmilya Wilson 9/5/2008 3:02 PM >>>
> Dear Dr. Slaney,
>
> First, the apology. I emailed you earlier to ask for permission to
> use the APS-R in my dissertation study. I would like to thank you
> again for your permission to do so. However, I recently realized
> that I made a mistake. After we exchanged emails, I ended up
> changing the design of my study (this was some months later) from an
> online survey to one which involved administering surveys in
> hardcopy to participants in person (students in classrooms).
> Regrettably, after changing the design of my study I forgot that I
> had asked for permission to use your instrument for an on-line
> survey, and thus I failed to contact you again and ask for your
> permission to administer your instrument using hard copies. I
> apologize for this error; obviously I am completely responsible.
>
> The question I have is about whether or not to include a copy of
> your instrument in my dissertation itself. Auburn University has a
> policy which requires that all dissertations be scanned to make them
> available on the Web. If you prefer that your instrument not be
> embedded in my dissertation, I will not include it in the
> dissertation. However, if you do not object to the instrument being
> in the hardcopy of my dissertation AND you do not object to it being
> scanned, I will include your instrument in my dissertation. Please
> let me know at your earliest convenience whether you do or do not
> give permission to include your instrument in my dissertation
> (which, as I said, will be scanned and then available on the Web).
>
> Sincerely,
> Carmilya Wilson

APPENDIX L

Permission to Use the Perceived Stress Scale-10

>>> Carmilya Wilson 10/23/06 11:31 AM >>>
Thanks so much for your permission and quick response!!

Carmilya

>>> "Ellen Conser" <conser@andrew.cmu.edu> 10/23/06 9:17 AM >>>
Carmilya,

You have our permission to use the PSS in your online survey for your PhD study. Good luck with your work. Please let me know if you have any other questions.

Ellen Conser
Assistant to Dr. Sheldon Cohen
Department of Psychology
Carnegie Mellon University

-----Original Message-----
From: Carmilya Wilson [mailto:wilsoc4@auburn.edu]
Sent: Monday, October 23, 2006 1:27 AM
To: SCOHEN@CMU.EDU
Cc: conser@andrew.cmu.edu
Subject: Question about Use of the PSS

Dr. Cohen,

I am a doctoral graduate student at Auburn University and I have plans to examine how such factors as stress relate to susceptibilty of disordered eating behaviors in graduate students. I am wondering if it would be possible to use The Perceived Stress Scale (PSS) to conduct a study online. I am asking because I would like to setup an online survey for participants to complete which I would like to include the PSS. I see that you grant permission for the use of the PSS for research purposes, but I wanted to verify that it would be ok to use it to conduct an online study.

Carmilya Wilson

>>> "Sheldon Cohen" <scohen@andrew.cmu.edu> 9/5/2008 4:57 PM >>>
Not a problem for me. sc

Sheldon Cohen, PhD, Robert E. Doherty Professor of Psychology
Department of Psychology
Carnegie Mellon University
Pittsburgh, PA 15213
412-268-2336 (phone) 412-268-3294 (fax)

-----Original Message-----
From: Carmilya Wilson [mailto:wilsoc4@auburn.edu]
Sent: Friday, September 05, 2008 4:04 PM
To: scohen@andrew.cmu.edu; SCOHEN@CMU.EDU
Subject: Apology & Question
Importance: High ** High Priority **
** Reply Requested When Convenient **

Dear Dr. Cohen,

First, the apology. I emailed you earlier to ask for permission to use the PSS-10 in my dissertation study. I would like to thank you again for your permission to do so. However, I recently realized that I made a mistake. After we exchanged emails, I ended up changing the design of my study (this was some months later) from an online survey to one which involved administering surveys in hardcopy to participants in person (students in classrooms). Regrettably, after changing the design of my study I forgot that I had asked for permission to use your instrument for an on-line survey, and thus I failed to contact you again and ask for your permission to administer your instrument using hard copies. I apologize for this error; obviously I am completely responsible.

The question I have is about whether or not to include a copy of your instrument in my dissertation itself. Auburn University has a policy which requires that all dissertations be scanned to make them available on the Web. If you prefer that your instrument not be embedded in my dissertation, I will not include it in the dissertation. However, if you do not object to the instrument being in the hardcopy of my dissertation AND you do not object to it being scanned, I will include your instrument in my dissertation. Please let me know at your earliest convenience whether you do or do not give permission to include your instrument in my dissertation (which, as I said, will be scanned and then available on the Web).

Sincerely,
Carmilya Wilson