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Predictors of Eating Disorders in College-Aged Women: The Role of Competition and Relational Aggression

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Predictors of Eating Disorders in College-Aged Women: The Role of Competition and Relational Aggression

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Fine manners need the support of fine manners in others.

-Ralph Waldo Emerson

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Predictors of Eating Disorders in College-Aged Women: The Role of Competition and Relational Aggression

by

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The serious consequences and high prevalence rates of eating disorders among women have been well documented (American Psychiatric Association, 2000; Birmingham, Su, Hlynasky, Goldner, & Gao, 2005; Crow, Praus, & Thuras, 1999; Steinhausen, 2009). Factors linked to the development of an eating disorder include competitiveness and group membership (Basow, Foran ,& Bookwala, 2007; Striegel-Moore, Silberstein, Grunberg, & Rodin, 1990). The purpose of this study was to further examine risk factors associated with eating disorder symptomatology by examining the role of sorority membership, different forms of competition, and relational aggression.

Sorority membership was hypothesized to impact a participant's eating disorder symptomatology, competitiveness, and relational aggression. Additionally, this study looked at three different forms of competition (Hypercompetition, Female Competition for mates, and Female Competition for status) and sought to understand which form of competitiveness best predicts eating disorder symptomatology. Female Competition for mates was hypothesized to best predict disordered eating. Lastly, relational aggression

was expected to moderate the relationship between competition among women and eating disorder behaviors. An increase in relational aggression was hypothesized to strengthen the relationship between competition among women and eating disorder symptomatology. The reasoning for this relationship was based on an evolutionary framework that proposes aggression is needed to drive competition (Shuster, 1983).

Participants included 407 undergraduate women, with a split of 211 sorority members and 196 non-sorority women. Measures included four subscales from the Eating Disorder Inventory (Garner et al., 1983), the Hypercompetitive Attitudes Scale (Ryckman et al., 1996), the Female Competition for mates scale, the Female Competition for status scale (Faer et al., 2005), and the Indirect Aggression Scale (Forrest et al., 2005). Separate regression analyses were conducted to answer each research question. Participants also answered qualitative questions after completing the surveys.

Analyses revealed sorority membership significantly predicted a participant's Female Competition for status. Female Competition for mates was found to best predict both body dissatisfaction and drive for thinness such that the higher a participant's competition for mates score, the lower these eating disorder symptoms. No moderating effects of relational aggression were found in the model. Additionally, social desirability was included in the regressions as a means of controlling for a participant's tendency to self-report desirably. An important surprise finding was that social desirability was a significant predictor of eating disorder symptomatology, competition, and relational aggression. Exploratory qualitative analyses suggested women's acceptance of their

bodies, while their conversations with friends included self-deprecating ways of discussing their appearance. Findings also suggest sorority membership predicts higher female competition for mates and status. Results reveal a relationship between competition and disordered eating which suggests important considerations for clinicians to explore with clients who may experience eating disorder symptomatology.

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CHAPTER 1: INTRODUCTION

High prevalence rates and severe consequences of eating disorders among women have been well-documented (American Psychiatric Association, 2000; Crow, Praus, & Thuras, 1999; Fairburn & Harrison, 2003). Estimates suggest that 6% of women will experience some form of eating disorder during their lifetime (American Psychiatric Association, 1987), while even more women will engage in disordered eating behaviors (Krahn, Kurth, Gomberg, & Drewnowski, 2005).

The dieting behaviors of two-thirds of college women have been identified as disordered and consequently increase the risk for developing an eating disorder (Krahn et al., 2005). In addition to affecting large numbers of women, eating disorders can be life threatening; the mortality rate of those diagnosed with an eating disorder is extremely high (Birmingham, Su, Hlynasky, Goldner, & Gao, 2005; Steinhausen, 2009; Sullivan, 1995). Because developing an eating disorder has such serious implications, thoroughly studying associated risk factors is crucial.

The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) lists three major classifications of eating disorders: anorexia nervosa (AN), bulimia nervosa (BN), and eating disorder not otherwise specified (EDNOS) (American Psychiatric Association, 2000). AN is associated with extreme thinness, a refusal to maintain a healthy weight, and an intense fear of weight gain. BN is associated with a bingeing and purging cycle. EDNOS is a category for eating disorders in which the formal criteria for AN or BN is not met.

The risk factors for developing an eating disorder are both broad and multifaceted. Significant attention has been focused on the potential environmental risk factors, such as media familial influences, and competitiveness (Burckle, Ryckman, Gold, Thornton, & Audesse, 1999; Kluck, 2010; Striegel-Moore & Smolak, 2001). With high rates of eating disorders among college women, researchers initially began exploring the possibility that a competitive environment on a college campus may impact eating disorder behaviors (Striegel-Moore et al., 1990). To date, different forms of competitiveness have been shown to relate to the development of eating disorders (Burckle, et al., 1999). One such form of competitiveness is hypercompetitiveness, which reflects a "win at all costs" mentality (Burckle, et al., 1999; Ryckman, Libby, van den Borne, Gold, & Lindner, 1997).

More recently, "competition among women" has been explored and linked to the development of eating disorders (Faer, Hendriks, Abed, & Figueredo, 2005). Research on this topic has noted women's engagement in these behaviors (Buss, 1988; Campbell, 2004; Cashdan, 1998; Joseph, 1985, Horner, 1972). The literature has demonstrated that women participate and seek out competition but has not substantially demonstrated how disordered eating may be affected by this form of competition. As a result, this area of interest requires more attention.

Additionally, possible explanations of competition among women, such as evolutionary explanations, have been proposed (Buss, 1988; Buss & Schmitt 1993; Campbell, 1999; Campbell, 2004). While such explanations are valuable in

understanding this behavioral phenomenon, they do not fully address the potential detrimental effects of competition among women. Ultimately, these evolutionary explanations fail to clarify how competition among women is related to the development of eating disorders.

Understanding how competition among women emerges behaviorally is critical. From an evolutionary framework, it has been proposed that aggression is needed to drive competition (Shuster, 1983). Specifically among women, aggression is thought to drive an intrasexual competitiveness that both promotes oneself and derogates competition (Buss & Dedden, 1990; Fisher, Cox, & Gordon, 2009). Disordered eating has been linked to this type of competition among women (Faer et al., 2005).

When considering the possible effects of competition among women, one promising area of study is aggression. Early researchers recognized differences between the sexes in their aggressive behaviors (Bjorkqvist, Lagerspetz, & Kaukiainen, 1992; Conway, 2005; Crick & Grotpeter, 1995; Hess & Hagen, 2006). The study of these differences lead to a focus on verbal or indirect forms of aggression in women. The term relational aggression has been defined as the attempt to inflict pain in an interpersonal relationship without revealing any intention to hurt someone (Bjorkqvist et al., 1992; Crick & Grotpeter, 1995). Examples of relational aggression include the use of gossip or spreading rumors (Bjorkqvist et al., 1992). Adding relational aggression to the study of competition and eating disorders may aid in understanding if this specific type of aggression contributes to disordered eating among women.

While research has demonstrated a relationship between intrasexual competition for mates and status and eating disorders, to date, no studies have explored the relationship between intrasexual competition for mates and status, relational aggression, and disordered eating. Examining this relationship with a group of women likely to engage in these behaviors may be informative. Women in sororities not only seem to be one such group, but they have also been shown to be at an increased risk for the development of eating disorders (Basow, Foran, Bookwala, 2007; Schulken, Pinciaro, Sawyer, Jensen, & Hoban, 1997). Therefore, research exploring this group's competitiveness and relational aggression may help explain the increased eating disorder symptomatology of its members.

The current study aims to understand how the constructs of competition among women and relational aggression impact the development of eating disorder symptomatology among women in sororities. Previous findings suggest that women in sororities are high on eating disorder behaviors (Basow et al., 2007; Shulken, 1997), and that several forms of competition including hypercompetitiveness and intrasexual competitiveness for mates and status impact disordered eating. A conceptual framework from an evolutionary perspective also suggests that aggression is necessary for competition (Shuster, 1983) yet we do not know whether aggression plays a role in eating disorders. This study will address this gap by seeking to understand the role relational aggression plays in the relationship between competition among women and the development of eating disorder symptomatology. Additionally, this research project seeks

to further develop an understanding of how the constructs of competition, aggression and eating disorders are related by a) expanding the body of research which suggests that women in sororities are an “at risk” population for developing eating disorders (Basow et al., 2007) to include the constructs of competition and relational aggression, and b) examining specific forms of competitiveness in the development of eating disorders.

CHAPTER 2: LITERATURE REVIEW

This chapter includes a review of the following: (a) eating disorder diagnoses, including a description of each classification of eating disorder, an outline of possible etiologies, as well as outlining different subgroups thought to be most affected by these debilitating disorders; (b) examination of the construct of competition among women; (c) explanation of relational aggression and how this construct relates to competition among women. This chapter concludes with a rationale for the following dissertation study.

Eating Disorders

Nature and Scope of Eating Disorders

The DSM-IV-TR characterizes eating disorders as severe disturbances in eating behavior. Three specific diagnoses are listed in this most recent edition of the DSM: anorexia nervosa (AN), bulimia nervosa (BN), and eating disorder not otherwise specified (EDNOS). These disorders are extremely damaging and have both severe short and long-term repercussions. According to the Diagnostic and Statistical Manual of Mental Disorders, AN is characterized by a refusal to maintain a minimally normal body weight. The mortality rate of those diagnosed with AN is also extremely high (Birmingham et al., 2005; Steinhausen, 2009; Sullivan, 1995). BN is characterized by episodes of binge-eating followed by unhealthy compensatory acts meant to rid the body of the previously consumed calories. These compensatory acts include inducing vomiting, using laxatives and diuretics, fasting, and exercising excessively. EDNOS is a category for clinically significant disordered eating that does not meet specific criteria of

AN or BN. Recent research at a college counseling center reveals that the most common eating disorder diagnosis is EDNOS, suggesting the need to be able to detect eating disorder symptoms beyond AN and BN (Hoyt & Ross, 2003). These results reveal that a substantial amount of women on college campuses are engaging in behaviors that are dangerous to their health (Hoyt & Ross, 2003), even if they do not meet full diagnostic criteria for AN or BN.

While researchers have begun to explore the gender gap in eating disorders and restructure diagnostic criteria (Jones & Morgan, 2010), women continue to be more likely to struggle with an eating disorder than men (American Psychiatric Association, 2000). in fact they account for 85-95% of people diagnosed with AN or BN (American Psychiatric Association, 2000). The American Psychiatric Association (1987) estimated that about 6% of all women have an eating disorder of some kind. These statistics illustrate the widespread nature of eating disorders. However, there is a distinction between someone who suffers from an eating disorder and someone who engages in disordered eating. While estimates suggest 6% of women have an eating disorder (American Psychiatric Association, 1987) many more are impacted by disordered eating and body image issues.

Subclinical Disordered Eating

Most women express dissatisfaction with their bodies (Feingold & Mazzella, 1998; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999), but relatively few actually battle a full-blown eating disorder over their lifespan. A substantially larger number of

women struggle with disordered eating that would be classified as subclinical (not meeting full DSM-IV-TR criteria for AN, BN, or EDNOS). Experiencing eating problems at the subclinical level means the individual is engaging in some eating disorder behaviors (i.e. restrictive behaviors, compensatory behaviors, or excessive exercising behaviors) and/or has some degree of body image dissatisfaction, but does not meeting full DSM-IV-TR diagnostic criteria. Subclinical eating and body image problems can put women at risk for developing an eating disorder, and may also create long term, irreversible damage to their bodies (Mitchell & Crow, 2006). Additionally, women who engage in subclinical disordered eating (including binge/purge episodes, subclinical restricting, use of laxatives) have also been found to have impairments in the overall health related quality of life as well as mood-related psychopathology (Latner, Vallance, & Buckett, 2008).

According to DSM-IV-TR criteria, only about 1-4 % of female college students have a clinically significant eating disorder; however, 35-70% of college women report engaging in subclinical eating disorder behaviors that include using laxatives, bingeing, strictly monitoring weight, and reducing caloric intake (Heatherton, Nichols, Mahamedi, & Keel, 1995; Hoyt & Ross, 2003).Women battling eating problems at the subclinical level may actually be at a great deal of risk simply due to the fact that they may not be receiving treatment. For example, a young woman could periodically restrict her calories and sometimes binge or use laxatives. This would not classify her as having AN, BN, or EDNOS, but one could imagine the damage that is caused by this type of behavior.

According to the National Eating Disorders Association website, excessively restricting calories can lead to severe dehydration, a reduction in bone density, and overall weakness. Additionally, purging can cause electrolyte imbalances, esophagus inflammation, and tooth decay. Mitchell and Crow (2006) review more serious possible implications, including dermatological issues, endocrine concerns, and hormonal complications associated with disordered eating.

Women who do not meet full diagnostic criteria for an eating disorder may be placed at different risk than women who receive treatment for an eating disorder. Bunnell, Shenker, Nussbaum, Jacobson, and Cooper (1990) examined the differences between women not meeting formal diagnostic criteria for an eating disorder and those who remained at the subclinical level. Their findings suggest that those who met formal clinical diagnostic criteria were on average slightly older than those who were at the subclinical level. Another finding was that those who did not meet full criteria for AN still engaged in problematic eating behaviors such as bingeing and purging. Women not meeting criteria for AN also displayed an equal amount of depressive symptoms to those with AN. Ultimately, these findings suggest that women at the subclinical level are at risk for going on to actually develop an eating disorder, are engaging in both anorexic and bulimic behaviors, and are suffering from many of the same psychological consequences as those who meet formal diagnostic criteria (Bunnell et al., 1990).

Developing an eating disorder can cause life-long bodily damage, and can even result in death (Birmingham et al., 2005). Therefore it is critical to learn as much as

possible about causes, prevention, and treatment of both AN and BN. While focusing attention on AN and BN is important, understanding more about the subclinical levels of eating disorders is also necessary. Learning about poor body esteem or body image may aid in creating a deeper understanding of eating disorders at the subclinical level.

Body Image Disturbances

The concept of body image is a relatively new one. Researchers began investigating "body distortion" in women suffering from both AN and BN in the early 1980's. Not surprisingly, researchers found that women with both AN and BN had high levels of body distortion (Garner & Garfinkel, 1980). After examining rates of body distortion in women struggling with eating disorders, researchers became interested in this construct in healthier populations. Thompson and Thompson (1986) were some of the first to demonstrate gender differences in the construct of body distortion. In addition to recognizing that women disproportionately seemed affected by “body distortion,” early research clearly showed that women estimated their bodies as larger than they were (Dolce, Thompson, Register, & Spana, 1987). This early finding was key in developing the body of literature that demonstrates women’s tendencies to a) have more body distortions than men and b) over-estimate their true size.

Body image researchers have tried to understand the origins of women’s tendencies to over-estimate their true body size. Early predictors of body image disturbance included social comparisons and teasing about weight or size (Heinberg & Thompson, 1992). Currently body image disturbances are being linked to predictors such

as depression and competitiveness (Sides-Moore & Tochkov, 2011). Furthering knowledge about what can affect a woman's body image seems critical, largely because this construct is directly related to both body esteem and satisfaction. Body esteem and satisfaction have been defined as feelings towards one's body (Thompson et al., 1999). Therefore, findings that suggest a majority of women have poor body esteem reveal that a majority of women actually have negative feelings about their bodies. This finding is particularly disturbing when one considers that body esteem is often thought to be a domain in the multidimensional construct of self-esteem (Mendelson, McLaren, Gauvin & Steiger, 2002). This finding is also disturbing when considering that eating disorder symptomatology often includes the construct of body satisfaction. Developing a further understanding of just how many women suffer from the problem of poor body esteem is ultimately important to the study eating disorder symptomatology.

Etiology of Eating Disorders

To fully grasp why women are currently battling subclinical eating disorder symptoms and clinically significant eating disorders at such high rates, exploring the mechanisms that may contribute to the onset and maintenance of eating disorders is crucial. Hypotheses about etiology have varied over time, although most researchers agree that eating disorders are not simply caused by one single event.

The study of the development of eating disorders has progressed from once strictly maintaining an emphasis on an individual's interpersonal or familial relationships to more recently including the importance of societal or cultural influences. Currently, a

biological emphasis is also being explored as a risk factor in the development of eating disorders. Examining what previous research has offered as an explanation of how one develops an eating disorder is essential in understanding the multidimensional nature of the development of eating disorders. Understanding proposed explanations also provides further reasoning to continue exploring how different forms of competition may be included in this multidimensional model.

Psychological Models and Familial Influence

There has been substantial interest in the psychological aspects of the development of eating disorders. Historically, disordered eating was not only attributed to individual pathology, but was also predominantly linked to familial relationships. Minuchin, Rosman, and Baker (1978) report on some of the earliest family and individual psyche attributions of eating disorders. Early researchers suggested that a young girl's refusal to eat was considered a disorder of "consumption" and was thought to be solely driven by individual psychology (Minuchin et al., 1978). The trend to focus on the individual continued over 100 years later when a patient's mother was actually thought to cause AN (Minuchin et al., 1978). Additionally, in the late 19th century, Sir William Gull and other prominent psychiatrists began studying AN and linking the disorder to specific ages and types of families (Brumberg, 1986). These researchers believed that AN was somehow related to “hysteria” and that it most commonly occurred in adolescent women who did not get along with their families (Brumberg, 1986).

The early 20th century's fascination with psychoanalysis also impacted how anorexia was viewed. The development of anorexia was thought to have followed an inappropriate sexual experience such as witnessing parents having sex or some form of sexual assault (Brumberg, 1986). Other more recent psychological models seem to follow the same premise proposed by Gull and other prominent researchers, that familial relationships are largely related to the development of eating disorders. For example, an Adlerian approach suggests that people with eating disorders use food as a means of communicating a sense of inadequacy and this inadequacy is believed to have developed from a failure to master skills needed to successfully live with others (Casper & Zachary, 1984).

Psychological models of eating disorders often imply that the family dynamic can be associated with the development of an eating disorder. The exploration of how family life influences the development of eating disorders has been greatly focused upon. Again, a historical overview of the initial "causes of AN" points to the family, specifically characteristics of families were identified. These characteristics include enmeshed relationships, over-protectiveness, rigidity, and a tendency to avoid conflict (Minuchin et al., 1978; Garner & Garfinkel, 1980).

Over the years more familial qualities have increasingly been correlated with the development of an eating disorder in women. These include both low levels of parental expectations (Young, Clopton, & Bleckley, 2004) and high levels of parental pressure (Karwautz et al., 2001). Parental modeling has also been explored as influencing the

development of eating disorders (Pike & Rodin, 1991). The form of parental modeling that is particularly harmful is the modeling of placing extreme importance on thinness. In addition to the detrimental effects of mothers' dieting behaviors, fathers' expressions of a preference for thinness have also been linked to the development of eating disorders (Ogden & Elder, 1998; Pike & Rodin, 1991).

More recently, researchers have also begun to examine more complex models of family dynamics and their impact on disordered eating (Kluck, 2008). These models take into account family-food related experiences, i.e. modeling, parental expectations, and commentary, on the development of disordered eating behaviors. Negative family food-related experiences have been found to mediate the relationship between family dysfunction and disordered eating behaviors (Kluck, 2008). Such findings are critical in the research addressing the familial risks of developing an eating disorder, specifically because they lead to a more multifaceted understanding of the role of family.

In addition to examining family dynamics, researchers have examined the type of attachment styles in women with eating disorders (Ringer & Crittenden, 2007). Findings suggest that women with eating disorders are most often anxiously attached, meaning their attachment styles consisted of a push-pull strategy where there is both a denial and desire for care (Ringer & Crittenden, 2007). This area of research further complicates the role of family in the development of disordered eating. In summary, problematic family dynamics and insecure attachment styles are just some of the familial factors that may contribute to the risk of developing an eating disorder.

Sociocultural risk factors

In her text, "The Cult of Thinness," Sharlene Hesse-Biber, eloquently suggests that even though eating disorders are individual diagnoses, perhaps one may assume that broader factors are at play when the number of incidences is on the rise (Hesse-Biber, 2006). While one's family can act as an environmental risk factor, one of the most established bodies of literature examining the risk factors associated with developing an eating disorder is the influence of society and culture. Sociocultural theories have been a major component of the more recent eating disorder research, arguing that those affected by eating disorders are largely impacted by their environment (Striegel-Moore & Smolak, 2001; Thompson et al., 1999). For example, the idea that there is a "culture of thinness," emerged from this research on sociocultural influences (Wolf, 2002). A "culture of thinness," suggests that being thin is the only acceptable way for women in western culture to look (Wolf, 2002). This sociocultural phenomenon is thought to largely contribute to the development of eating disorders in young women (Brownmiller, 1984; Striegel-Moore & Cachelin, 2001; Wolf, 2002).

Women tend to place a tremendous amount of importance on their appearance (Brownmiller, 1984; Striegel-Moore & Cachelin, 2001; Thompson et al., 1999; Wolf, 2002). This individual emphasis on appearance is often associated with society's prescriptive beauty norms (Wolf, 2002). Regardless of the possible explanations for this overemphasis on appearance, an excessive concern with appearance becomes harmful to women (Brownmiller, 1984). Therefore, further understanding the negative effects of an

overemphasis on appearance seems critical, particularly because an overemphasis on appearance often leads women to take extreme measures to ensure they look a certain way.

Another negative effect of an overemphasis on appearance is that women may end up comparing themselves to what has been presented as the "ideal" image. In addition to comparing themselves to ideal images, women may also simply end up comparing themselves to other women. Engaging in these comparisons may have harmful effects on women's self-esteem. Women may feel that they do not meet the ideal and subsequently develop poor body satisfaction. A substantial body of literature has sought to examine how women feel about themselves after viewing media images that portray an "ideal" (Henderson-King & Henderson-King, 1997; Henderson-King, Henderson-King & Hoffman, 2001; Posavac, Posavac & Posavac, 1998). Grogan et al. (1996) demonstrated that women's body esteem declined after viewing images of same-sex models. This finding suggests women engage in some form of comparison when seeing other women who appear to fit the "ideal." These comparisons seem to be a means of competition for women. Perhaps these comparisons are a way for women to ultimately assess themselves (Joseph, 1985).

In addition to exploring how women feel after viewing "ideal images," women's food choices women's food choices have been examined after exposure to competitive environments. Pliner, Rizvi, and Remick (2009) found that when placed in threatening, competitive situations, women opted for lower calorie and more nutritious foods. This

finding appears to be driven by the fact that women who eat less are perceived more positively (Basow & Kobrynowicz, 1993; Chaiken & Pliner, 1987). More specifically, women who eat less are often seen as more feminine, more physically attractive, and more socially attractive than those who eat more (Basow & Kobrynowicz, 1993). Therefore, women seem to feel societal pressure to eat less as it is more socially desirable to not only be thin, but also to limit food consumption (Pliner & Chaiken 1990). Understanding that many women compare themselves to images in the media as well as other women suggests that there is some form of competition occurring for women on a daily basis.

In general, one's environment has been shown to be a significant factor in the development of eating disorders. However, it seems too simplistic to only consider how environment contributes to the development of eating disorders. When discussing the etiology of eating disorders, biological factors should also be examined. The etiology of eating disorders is multifaceted and environmental risk factors are one possible facet. Studying potential biological risk factors contributes to a well-rounded understanding of these disorders.

Biological risk factors

As mentioned previously, women are differentially affected by eating disorders when compared to men. Women, more than men, develop these disorders and women from certain groups have also been shown to develop eating disorders disproportionately (Basow et al., 2007; Crandall, 1988; Harris, 1995; Shulken et al., 1997; Striegel-Moore &

Cachelin, 2001). However, not *all* women fall victim to these environmental or social risk factors and develop an eating disorder. Clearly, there must be some distinguishing factors that make certain women more susceptible than others.

Kaye, Bulik, Thornton, Barbarich, and Masters (2004) propose that specific gene polymorphisms may increase an individual's risk for developing eating disorders, including anorexia nervosa and bulimia nervosa. Some of these polymorphisms have been identified in serotonergic genes that play a key role in regulating appetite, mood, and impulse control (Kaye, 2008). Accordingly, a disturbance in the serotonin (5-HT) system could contribute to eating disorder symptomatology. Retrospective studies of recovered anorexics reveal disturbances in the serotonin system (Bailer et al., 2007). This suggests a "trait-related" disturbance of the serotonin system that may have predated the development of anorexia nervosa and contributed to a heightened risk for restricted eating and dysphoric mood states (Kaye, 2008).

Because prospective studies of eating disorders are difficult to conduct with humans, researchers have focused their attention on animal models of eating disorders. In one such model, rats are maintained on a restricted-feeding schedule and housed with access to running wheels (Dixon, Ackert, & Eckel, 2003). Within days to weeks, rats develop activity-based-anorexia (ABA), a syndrome that is characterized by high rates of wheel running despite access to a limited amount of calories (Dixon et al., 2003). This model provided researchers an opportunity to examine whether the development of ABA could be exacerbated or attenuated by pharmacological manipulation of the 5-HT system,

the system responsible for the release of serotonin (Atchley & Eckel, 2005). Indeed, rats were more susceptible to ABA (as indexed by more severe and more rapid weight loss than controls) when 5-HT neurotransmission was increased. More importantly, the development of ABA was attenuated when 5-HT neurotransmission was decreased (Atchley & Eckel, 2005). The impact of these findings is crucial in studying eating disorders. There may, in fact, be biological dispositions that make women more or less susceptible to the development of an eating disorder. Understanding the potential biological bases for eating disorders simply creates a broader understanding surrounding how one develops an eating disorder, but in no way makes studying other risk factors less necessary.

Despite an extensive body of research on the etiology of eating disorders, the findings offer support for several different risk factors rather than definitively supporting simple explanatory models. Each of these proposed risk factors offers its own area of study within the broader field of eating disorders. However, examining how other possibilities, such as different forms of competitiveness, influence the development of eating disorders is largely important. The more clinicians can understand about these debilitating disorders, the more adept they will be in treating clients.

Women at a Heightened Risk for Eating Disorders

The role of race and ethnicity

Group membership is very much linked to the environmental risk factors associated with the development of eating disorders. Therefore focusing one's attention

on which groups have been shown to have increased rates of eating disorders is essential. Historically AN and BN have been primarily associated with Caucasian women (Crago, Shisslak, & Estes, 1996). Sociocultural theorists suggest that cultural and environmental pressures to achieve thinness may be highest for Caucasians, thus leading to higher numbers of women engaging in eating disorder behaviors. While there is research to support that Caucasian women have higher rates of eating disorder symptomatology and lower body satisfaction, women of other ethnic groups also display significant amounts of eating disorder behaviors (Crago et al., 1996; Wildes, Emery, & Simmons, 2001; Roberts, Cash, Feingold, & Johnson, 2006). This finding demonstrates that the "culture of thinness" that once more heavily influenced Caucasian women has now become prominent in other cultures as well.

Because eating disorders have long been thought to primarily affect affluent Caucasian women (Striegel-Moore & Smolak, 1996), some researchers have suggested that belonging to an ethnic minority group could act as a buffer in the development of eating disorders (Striegel-Moore & Smolak, 1996). Recently, attention has shifted to how one's acculturative status impacts eating disorders rather than simply observing the rate of eating disorders within certain ethnic groups. Research suggests that the more acculturated to the dominant culture an individual is, the higher that individual is on eating disorder symptomatology (Cachelin, Veisel, Barzegarnazari, & Striegel-Moore, 2000). Acculturative stress, anguish associated with acculturative processes, has also

been considered a unique risk factor for the development of eating disorders among women of color (Cachelin et al., 2000).

College-aged women

One specific group of women that is seen as being particularly susceptible to developing an eating disorder is college-aged women. College women have been shown to have high rates of body dissatisfaction and disordered eating (Harris, 1995). In fact, 35-70% of college women report engaging in disordered eating behaviors ranging from strict dieting, over-exercising, and using laxatives (Heatherton et al., 1995). Researchers have hypothesized that this may be related to the specific time in young women's lives that creates an environment in which competition is necessary (Striegel-Moore et al., 1990). This hypothesis has lead researchers to further categorize college women into different subgroups in order to examine whether it is simply being in college that impacts eating behavior and body dissatisfaction or if there are other components, e.g., group membership, that contribute to such negative patterns of eating (Basow et al., 2007; Crandall, 1988; Shulken et al., 1997).

Across college campuses there are different subgroups of women that may in fact be more at risk for the development of eating disorder symptomatology, (e.g., student-athletes). Some studies report that female athletes, especially in sports such as gymnastics or ice-skating where leanness is emphasized, have higher rates of eating disorder symptoms than other women (Smolak, Murnen, & Ruble, 1999). Other factors have also been thought to further impact the development of eating disorders among college

athletes. Holm-Denoma, Scaringi, Gordon, Van Orden, and Joiner (2009) found that those with higher levels of sports anxiety engaged in more eating disorder behaviors than those with less anxiety about their sport. In sum, female athletes on college campuses are one group that has been shown to have high rates of eating disorder symptomatology.

Another group of college-aged women that has received attention for being at risk for the development of eating disorders is sorority women. Women in sororities are often perceived as placing extreme emphasis on appearance, and there is research to support this claim. Crandall (1988) suggested a social group's interest in losing weight will impact how members of that group act. After examining social pressures, norms, and binge eating behaviors in two sororities on a college campus, Crandall (1988) found that group norms and social pressures impact group members' behaviors. This was true particularly for binge eating behaviors and furthermore Crandall (1988) hypothesized that binge eating may, in fact, be a modeled behavior. Additionally, engaging in social comparisons might affect groups of women experiencing pressure to look a certain way. Therefore, while disordered eating may be modeled behavior, women may also compare themselves to other women with the recognition that their peers use unhealthy measures to achieve their weight. Perhaps this recognition impacts group members' likelihood to engage in disordered eating as well.

After Crandall's research, it seemed imperative to examine whether women in sororities actually differ from other women on a college campus in terms of body image and eating disorders. Shulken et al. (1997) examined sorority women's perceptions of

their weight as well as eating attitudes and behaviors. The Eating Disorder Inventory (Garner, Olmstead, & Polivy, 1983) was administered to 627 sorority women in order to assess feelings and behaviors related to eating and weight. This 64 item questionnaire contains different subscales, including the drive for thinness subscale. This subscale examines participants' concerns surrounding food and weight gain (Garner et al., 1983). In this study, the women in sororities had higher drive for thinness scores than their non-sorority counterparts (Shulken et al., 1997). These findings suggest that women in sororities may have a greater fear of weight gain, higher body dissatisfaction, and more of a preoccupation with weight in general than other women on a college campus. Bulimia scores for these women suggest that perhaps sorority women also have more bulimic tendencies. Other key findings from Shulken et al. (1997) relate to what sorority women consider to be ideal physiques. When presented with different silhouettes, a majority of the participants chose an underweight silhouette as what women should look like and as what they would prefer to look like (Shulken et al., 1997). The theme that emerges from this finding is that women in sororities may consider extreme thinness as the ideal, and that they may prescribe to this ideal more so than their non-sorority counterparts.

Sorority membership has been linked to more of an emphasis on thinness and more eating disorder behaviors (Basow et al., 2007; Crandall, 1988; Shulken et al., 1997). However, researchers have become interested in whether these findings can be attributed to the pre-existing characteristics of women who choose to join sororities or to the influence of sorority life itself. In order to understand more about women in sororities it

is necessary to examine differences between women who intend to join sororities and those who do not.

Basow et al. (2007) attempted to gain a better understanding of the view that women in sororities have about body image and disordered eating behaviors. Their main research question was related to whether simply being in a sorority impacts body image and disordered eating behaviors, or whether sororities tend to attract women with tendencies to develop eating disorders. Basow et al. (2007) had the opportunity to conduct research at an institution where rushing for a sorority is prohibited until sophomore year of college. Therefore, the researchers had the ability to assess whether the women who intend on joining sororities are somehow inherently different than those who have no desire to pursue membership.

Women who joined sororities were found to be at more of a risk for developing an eating disorder than non-sorority counterparts and women with no intentions of joining a sorority (Basow et al., 2007). Women in sororities and those intending to join had higher levels of objectified body consciousness, higher disordered eating attitudes, and higher perceived social pressures, suggesting they may tend to focus more on their bodies and appearance, putting them at a higher risk for developing an eating disorder (Basow et al., 2007). Women with intentions to join sororities were not higher than those who did not wish to pursue sorority membership on the EDI-bulimia subscale (the measure used to assess actual engagement in eating disorder behaviors). However, women actually in sororities were higher than non-sorority women on bulimia scores. Because this research

was longitudinal and saw differences in women once they joined or did not join a sorority, there is support for previous research that suggests that surrounding oneself with like- minded people may influence one's eating behaviors. (Basow et al., 2007; Crandall, 1988). Ultimately, sororities may attract certain types of women; women already high on the scales of drive for thinness and body dissatisfaction while being a member of a sorority may also impact one's disordered eating and therefore be a risk factor in the development of eating disorders.

Group membership is clearly linked to eating disorder symptomatology (Basow et al., 2007; Crandall, 1988; Shulken et al., 1997). This link implies that there are aspects of the particular group and the women in the group that increase susceptibility to eating disorder behaviors. One such aspect of sororities that may be linked to eating disorders is competition. Understanding how competition is viewed and played out within sororities is critical to explore as a risk factor in the development of eating disorders.

Competition

Definitions Related to the Construct of Competition

The construct of competition is often characterized by two dimensions, interpersonal competitiveness and goal-oriented competitiveness. Interpersonal competitiveness can be defined as wanting to do better than others (Helmreich & Spence, 1978). The term interpersonal competitiveness also refers to a desire to be the best in interpersonal interactions as well as gaining pleasure from interpersonal competition. An athlete whose main goal is to win and beat the competition would be an example of interpersonal competitiveness. In goal-oriented competitiveness the focus is on a desire to obtain a certain goal (Griffin-Pierson, 1988). An example of goal-oriented competitiveness is an athlete who gains satisfaction from achieving a personal best performance, regardless of how her performance compares to others.

In addition to both interpersonal competitiveness and goal-oriented competitiveness, researchers also break down competitive attitudes into personal development competitiveness and hypercompetitiveness. Similar to goal-oriented competitiveness, personal development competitiveness refers to an attitude where an individual is primarily concerned with enjoying the task, and the main goal is "mastery and enjoyment of tasks" (Ryckman et al., 1996). Hypercompetitiveness has been suggested to be a form of competitiveness that describes an attitude in which winning is the goal, no matter what the cost (Burckle et al., 1999; Ryckman et al., 1997). Horney (1937) first defined hypercompetitiveness as needing to achieve regardless of the

potential effects. Others have built upon this term and further define hypercompetitiveness as a willingness to manipulate and exploit those perceived as obstacles in achieving success (Burckle et al., 1999; Ryckman et al., 1997).

Differences between Men and Women's Competitiveness

Griffin-Pierson (1988) hypothesized that women were more likely to be oriented towards goal-competitiveness, whereas men were more likely to be interpersonally competitive. Cashdan (1998) measured competitiveness by collecting competition diaries that asked participants what they felt competitive about, who they competed with, and what competitive tactics they engaged in. This research suggests that both men and women engage in interpersonal competition with men actually slightly higher than women in terms of their interpersonal competitiveness (Cashdan, 1998). While men in this study demonstrated higher interpersonal competitiveness, Cashdan (1998) suggested that this could be related to more men reporting competing most over sports.

Another major finding from Cashdan (1998) was that what men and women report they are competitive about differs. These findings suggest that women tend to be more competitive in regards to physical attractiveness and as previously discussed, men tend to be more competitive in regards to sports (Cashdan, 1998). Cashdan (1998) also found that women and men reported feeling equally competitive, despite feeling competitive about different topics. This finding suggests that there may be different gender norms influencing competition. These norms may impact women's ability to express competitive beliefs. Given that women felt equally as competitive as men, but

expressed competitive attitudes about appearance suggests that perhaps women feel safer competing about something that is considered feminine.

In understanding the construct of competition in women, research has also considered how competition relates to sex-roles (Alagna, 1982; Auster & Ohm, 2000; Bem, 1974; Bem, 1981; O'Neil, 1981; Spence & Helreich, 1980). Women who tend to be more traditional have been thought to be less competitive; conversely, nontraditional women have been believed to be more competitive (Auster & Ohm, 2000; O'Neil, 1981; Spence & Helreich, 1980). There is some evidence to suggest that women who engage in competitive behaviors often feel as if they are stepping out of their "comfort zone" (Alagna, 1982). Perhaps women engaging in prototypical competitive behaviors feel as if they are out of place and behaving "un-feminine." These prototypical competitive behaviors tend to be oriented towards goal competition, e.g., sports. Perhaps it is the case that engaging in an interpersonal competition is more aligned with traditional female gender roles.

Competitiveness in Women

As its own specific body of literature, competition among women has only recently begun to be explored. Initially, research on this topic resulted from a body of literature examining achievement motivation (Horner, 1972). Horner's work almost inadvertently studied competition between women simply by asking women to write a story about a woman who was in medical school. The stories female respondents devised seemed to attack the character's personality and femininity (Horner, 1972). Common

responses included the terms, “ugly” and “bitch” to describe the female character. Horner’s work led to an interest in studying competition between women as an independent behavioral phenomenon.

In further examination of hostile behavior among women, Joseph (1985) theorized that women have a “critical nature.” The basis of this critical nature seems to stem from women being easily threatened by one another in regards to appearance. In order to evaluate these claims, Joseph (1985) conducted three experiments where participants were given scenarios about either men or women. The themes in women’s responses were distrust and envy of the women characters in the scenarios. Not surprisingly, there was an overall preoccupation with physical attractiveness in the responses. The male participants also appeared concerned with physical attractiveness, but this concern was related to not wanting to be perceived as being attracted to other men, as opposed to the jealous responses of the female participants (Joseph, 1985). Additional research has suggested that women may actually seek to find something wrong in other women (Buss & Dedden, 1990). As Buss and Dedden, (1990) suggest, “derogating” one’s competition serves two purposes; making one’s self appear better than the competition while simultaneously harming the competition. Perhaps finding faults in other women acts as a means to boost one’s own self-image (Joseph, 1985).

An Evolutionary Perspective of Competition among Women

An evolutionary basis for women engaging in competition with other women has been offered. The evolutionary psychology perspective on competition between women suggests that sexual selection is the impetus for women engaging in such behaviors (Buss, 1988; Buss & Schmitt, 1993; Campbell, 2004; Dijkstra & Buunk, 2002). It has been suggested, that in order to mate successfully members of one sex must "beat out" members of the same sex (Buss, 1988; Buss & Dedden, 1990). This concept is referred to as intrasexual competition, and according to Buss (1988) is a result of "intersexual selection." Intersexual selection is the "preferential choice" of members from one sex to prefer certain traits or qualities in members of the opposite sex. Therefore, members of each sex end up competing with one another in regards to the traits that members of the opposite sex value.

Intrasexual competition is the result of preferences that members of one sex have in their potential mates, also called intersexual selection (Buss, 1988). Ultimately, the competition that ensues exists in order to "gain access" to members of the opposite sex over members of one's own sex (Buss, 1988). Buss (1988) hypothesized that there will be certain traits and tactics that are most effective in this intrasexual competition. For men, displaying resources has been the tactic most explored (Buss, 1988). Some evidence suggests that women competing with one another in the realm of physical appearance is the most common tactic used in intrasexual competition (Buss, 1988; Campbell, 2004; Cashdan, 1998). Again, according to the evolutionary psychology perspective, this is the

result of men's preference for a mate who is physically attractive and young (Buss, 1988).

These evolutionary psychology findings suggest that women ultimately compete with other women in order to gain access to mates. This competition leads to a process that is referred to as "derogation of competitors" (Buss & Dedden, 1990). Buss and Dedden (1990) explain the derogation of competitors as an attempt to bolster one's self by putting others down. Women are most likely to derogate competitors in regards to appearance (Buss & Dedden, 1990). Common methods of derogating competitors' appearances are calling competitors ugly, laughing at their hair, and calling them fat (Buss & Dedden, 1990).

Women report more jealousy when other women are higher in physical attractiveness than when they are greater on other dimensions such as social dominance or physical dominance (Dijkstra & Buunk, 2002). This is referred to as jealousy evoking behaviors, and similar to derogation of competition, appearance tends to be the primary means of making other women most jealous. These findings offer support for the evolutionary psychology perspective that suggests because men value appearance in women, women tend to compete with and become jealous of other women who are more physically attractive.

A Sociocultural Perspective of Competition among Women

Women's emphasis on appearance tends to be greater than men's. Research consistently finds women to be more likely to be concerned with their appearance, more

invested in their looks, and to engage in more surveillance of their looks than men (Frederick, Forbes, Grigorian, & Jarcho, 2007; Gillen & Lefkowitz, 2006). Additionally, in today's culture women tend to be disproportionately judged based on appearance, and in turn this may be related to men's overemphasis on appearance in partner selection. These consistent findings lead to questions concerning the origins of women's over emphasis on what they look like. The evolutionary perspective points to a more reproductive rationale for women to maintain a hyperfocus on their appearance. However, a sociocultural perspective might elucidate more possible reasons that women tend to overemphasize appearance.

While the effects of media on women's eating behaviors and body image has already been discussed, it is important to note that media messages also influence how much or how little women feel pressured to focus on their appearance. Research has found that young women report more appearance related pressure from the media than their male peers (Ata, Ludden, & Lally, 2007). Appearance related pressure is a critical area of research when considering a sociocultural perspective on competition among women. Social norms have long reinforced that women should pay careful attention to their looks (Striegel-Moore, Silberstein, & Rodin, 1986). More recent research has examined the messages young women receive about their appearances. Gillen and Lefkowitz (2009) asked young men and women open ended questions regarding the messages they received about appearance from their peers, family, school, and media. Overall, women perceived experiencing more frequent and negative messages than men

(Gillen & Lefkowitz, 2009). Additionally, this research found women more likely than men to perceive attractiveness as being associated with success (Gillen & Lefkowitz, 2009). Women's perception that appearance is linked to success is critical in furthering the understanding of the construct of competition among women.

Meta-analytic studies have demonstrated that appearance continually affects women in "real world" settings (Langlois et al., 2000). Both men and women are treated better, have greater success, and are more popular when they are perceived as attractive (Langlois, et al., 2000). It also seems to be the case that in the business world, appearance does matter. Baron, Markman, and Bollinger (2006) found that "attractive" entrepreneurs and their ideas were reviewed more favorably. Social psychological research demonstrates that looks are important in succeeding in real world settings for both men and women. While attractiveness is linked to success in men and women, women still tend to place more emphasis on their appearance, even perceiving their looks to be more important in ensuring success than men (Gillen & Lefkowitz, 2009).

This over-emphasis on appearance and competition among women may be explained through an examination of media representations of women. Popular culture critics such as Susan Douglas have argued that current television programming strongly reinforces old stereotypes that women are to be judged by their looks (Douglas, 2010). Douglas (2010) highlights the role of reality television in demonstrating the importance of appearance and ultimately competition to young women. Douglas (2010) offers countless examples of television programs promoting the importance of appearance and

competition. As Douglas (2010) suggests, shows like *The Bachelor, America's Next Top Model*, and *The Apprentice* have themes of both beauty and competition that young women ascribe to (Douglas, 2010). Ultimately, a sociocultural understanding of competition among women links the messages women receive regarding the importance of their appearance with how pressured they feel to compete in this area.

The evolutionary psychology perspective on competition among women tends to be a controversial approach to understanding this behavioral phenomenon. Generally speaking, the evolutionary psychology framework suggests that all human behavior can be linked to the innate biological desire to procreate (Confer et al., 2010; Gannon, 2002). This has led to critiques and criticisms concerning the narrow scope of behavioral explanations that this framework offers. A sociocultural perspective directs attention to media influences on both women's fascination with appearance and competition. Each perspective offers interesting and novel insights into learning about competition among women. Regardless of whether one agrees with an evolutionary or sociocultural perspective, it is hard to deny that women express a greater interest in appearance (Brownmiller, 1984; Pliner, Chaikin, & Flett, 1990). This greater interest and greater emphasis on physical appearance leads to competition in the arena of this valued trait among women. In fact, this overemphasis on appearance seems to negatively impact women's daily lives. In considering the impact of placing such an emphasis on appearance, Guendouzi (2004) sought to examine just how often women engage in conversations surrounding their appearance. Her findings suggest that women tend to

engage in conversations that most often center around weight and physique, specifically, the topic of conforming to a more socially acceptable body size (Guendouzi, 2004). These findings suggest women not only place tremendous emphasis on their appearance, but physical appearance means something more to women. Women seem to gain "social capital" by looking a certain way and their appearance becomes representative of who they are (Guendouzi, 2004). Unfortunately, this creates an environment of women vying to look better than other one another because so much of what is valued is based on appearance (Guendouzi, 2004). In turn, this environment may lead to women viewing each other as potential threats and engaging in competitive discourse about physical appearance.

Effects of Competition

Expanding our current knowledge about the effects of competition between women is crucial. There are of course, positive effects related to competitiveness. Personal development competitiveness is associated with several positive outcomes (Burckle et al., 1999; Ryckman et al., 1996; Ryckman et al., 1997). This form of competitiveness allows competitors to focus on mastery and in turn work towards self-discovery. Personal development competitiveness has been linked to better general psychological health and has even been correlated with a greater concern for other's welfare (Ryckman et al., 1996; Ryckman et al., 1997). Having a personal development approach to competition has also been shown to buffer against the development of eating

disorders (Burckle et al., 1999). Conversely, maintaining other forms of competitiveness may act as a risk factor in the development of eating disorders.

In addition to focusing on the positives associated with competition, researchers have also addressed the potential negative effects of competition. There has certainly been an emphasis on the potential detrimental effects of competition such as stress and anxiety (Fletcher, Major, & Davis, 2007; Gaumer, Shah, Cotleur, 2005; Harrison, Denning, Easton, Hall, Burns et al., 2001). Competitiveness has also been identified as a risk factor in the development of eating disorders (Striegel-Moore et al., 1990). This body of literature is relatively novel and often views competitiveness as a one-dimensional construct. However, competitiveness is an extremely broad concept and therefore specific forms of competition have been thought to be important in the development of eating disorders. Specifically, achievement orientation has received attention for its correlation to eating disordered behaviors. Striegel-Moore et al. (1990) considered that high achievement needs could increase risk for disordered eating. The results of this research suggest that competitiveness is a component within achievement orientation that is associated with eating disorder symptomatology (Striegel-Moore et al., 1990). These findings provide insight into how one's need for achievement is correlated to the development of eating disorders.

Competitiveness in general may be too broad of a construct to discuss as being correlated with eating disorders. Burckle et al. (1999) proposed that simply having a competitive attitude is not necessarily a risk factor in developing eating disorders, but

rather there may in fact be certain forms of competitiveness that correlate more strongly to the development of eating disorders. Burckle, et al. (1999) broke down different forms of competitiveness by evaluating personal development competitiveness and hypercompetitiveness in the development of eating disorders. A hypercompetitive attitude was noted as being a likely correlate to the development of eating disorders as opposed to a competitive attitude in general. Generalized competitiveness does not correlate with eating disorders, but rather hypercompetitiveness (Burckle et al., 1999). These findings suggest that having a hypercompetitive attitude can be detrimental to one's health. Gaining a deeper understanding about this form of competitiveness and ultimately how it may be related to competition among women is essential.

Relational Aggression

As mentioned previously, women tend to compete with one another in regards to physical attractiveness (Buss, 1988; Cashdan, 1998). They also tend to use specific methods in order to "derogate rivals" (Buss & Dedden, 1990). These specific methods used to bolster themselves compared to their competitors can be explained as forms of relational aggression. Relational aggression is a form of aggression where indirect means of competing are used and the perpetrator attempts to inflict pain in an interpersonal manner, without revealing any intentions of harming someone (Bjorkqvist et al., 1992). In this form of aggression competitors also use tactics that are intended to harm the interpersonal goals of others (Conway, 2005). Examples of relational aggression include gossip, spreading rumors, and withholding friendships (Crick & Grotpeter, 1995).

Individuals may gossip and spread rumors in order to harm others in an interpersonal manner. For example, an individual may spread rumors about people so that others do not want to be their friend. For this reason, relational aggression has been described as a tactful form of aggression that requires a certain level of maturity as well as involvement in a social group (Bjorkqvist et al., 1992; Crick & Grotpeter, 1995).

Researchers have long studied whether or not boys are more aggressive than girls (Bjorkqvist et al., 1992; Crick & Grotpeter, 1995). However, findings suggest that there are no differences in the amount of boys' and girls' aggressive behaviors (Crick & Rose, 2000) when aggression is considered more broadly. Rather, differences emerge when the type or form of aggression is specified to be either direct or relational (Bjorkqvist et al., 1992; Crick & Grotpeter, 1995; Crick & Rose, 2000). Relational aggression has been found to be more commonly used among girls and women (Bjorkqvist et al., 1992 Crick & Grotpeter, 1995; Hess & Hagen, 2006). Hypotheses as to why young girls engage in relational aggression as opposed to physical aggression relate to young girls engaging in "gender appropriate" forms of aggression (Conway, 2005). Children tend to follow stereotypes and for young girls this means not engaging in physically aggressive behaviors (Conway, 2005).

Differences between the sexes are found in adults' as well as children's use of relational or physical aggression (Hess & Hagen, 2006). Hess and Hagen (2006) found that women felt compelled to retaliate by attacking a classmate's reputation in the form of gossip and telling. There are different schools of thought behind why women tend to use

relational aggression over other more physical forms of aggression. Evolutionary psychologists suggest that women's use of relational aggression rather than physical aggression is meant to help them avoid potential harm associated with physical aggression (Hess & Hagen, 2006). Women may avoid harm because of the potential effects on reproduction (Campbell, 2004; Hess & Hagen, 2006). Evolutionary psychology also views relational aggression as means of making one's self appear better than competitors (Buss & Dedden, 1990). Gossip, from this perspective, can be considered to be a method of intrasexual competition (Buss & Dedden, 1990).

Expanding our working knowledge of relational aggression includes exploring the possibility that certain subgroups may find themselves in environments that are more prone to relational aggression. The college experience itself tends to be one associated with a competitive environment (Striegel-Moore et al., 1990). Students are working to get good grades and this often involves competing with others in their classrooms. Perhaps women on college campuses may be more susceptible than other women to engaging in competition with other women, particularly about physical appearances. The college environment is one that is likely competitive, but women in college have also been shown have higher body dissatisfaction as well as more disordered eating than those outside of the university setting (Harris, 1995, Krahn et al., 2005). College women may engage in more tactics to "derogate" their competitors which may lead to more relationally aggressive behaviors. This leads to critical research questions regarding competition, the

use of relational aggression, and the development of eating disorders in women on college campuses.

When considering the possibility that certain groups of women may be particularly prone to relational aggression, women in sororities should be considered. Perhaps women in sororities are more susceptible to relational aggression because of the environment in which they find themselves. Women in sororities are often surrounded by women, and generally, women have been shown to have a hyper-focus on appearance (Guendouzi, 2004; Pliner et al., 1990). Simply being in the presence of women may exacerbate the focus individual women place on appearance. Therefore, not only is the focus on appearance heightened, but it also seems plausible that there may be an increase in the amount of relational aggression women in sororities display due to specific aspects of sorority-life.

Statement of Purpose

The purpose of this study was to expand the literature examining predictors of eating disorder symptomatology to include different forms of competitiveness and relational aggression. This study also sought to address these concerns among specific groups of college-aged women, women in sororities.

College women in general have been shown to be at an increased risk of developing an eating disorder (Striegel-Moore, 1990). Additionally, specific groups of college women have been shown to engage in more eating disorder behaviors. Women who join sororities are one such group; they have been shown to have higher body

dissatisfaction and higher levels of eating disorder symptomatology in general (Basow et al., 2007; Crandall, 1988; Shulken et al., 1997). Environmental factors may contribute to women in sororities having increased rates of eating disorder symptoms.

Because of the nature of the selection process associated with sororities, the environment surrounding women in sororities could be classified as a competitive one. Research has found that there is a correlation between competitiveness and eating disorders (Burckle et al., 1999; Strigel-Moore et al., 1990). Hypercompetitiveness, female intrasexual competition for mates, and female intrasexual competition for status have all been linked to the development of eating disorders (Burkel et al., 1999; Faer et al., 2005). This study sought to expand the literature linking these forms of competitiveness to eating disorder symptomatology by examining them among sorority women.

Evolutionary psychologists suggest that aggression is needed to drive competition (Shuster, 1983). Specifically among women, aggression is thought to drive intrasexual competition that not only promotes oneself but also derogates competition (Buss & Dedden, 1990; Fisher, Cox, & Gordon, 2009). One goal of this study was to explore the possibility that relational aggression drives competition among women.

The construct of relational aggression, aggression in an interpersonal manner, seems to be highly related to competition among women. Relationally aggressive behaviors, such as gossip, have been suggested to be a representation of competitive behaviors between women (Buss & Dedden, 1990; Campbell, 2004). Therefore it seems plausible to conceptualize relational aggression as one of the driving forces of

competitiveness among women. Including the construct of relational aggression as a means of predicting eating disorders may be a way of capturing the relationship between competition among women and the development of eating disorder symptomatology.

Ultimately, this study intended to expand the literature on eating disorder risk factors to include specific forms of competition and relational aggression. Understanding these risk factors among sorority women was another major goal of this project. It was expected that due to the nature of the sorority selection process, women in sororities would be higher on hypercompetitiveness, intrasexual competition for mates, and intrasexual competition for status. Additionally, this study sought to explore which form of competition best predicts disordered eating among sorority women. Intrsexual competition for mates was expected to best predict disordered eating. This hypothesis was based on previous literature suggesting intrasexual competition for mates best predicts disordered eating compared with intrasexual competition for status (Faer et al., 2005) and that women in sororities are expected to be higher on this form of competition. The final purpose of this study was to understand the role relational aggression plays in understanding competition and eating disorder symptomatology. Aggression is thought to drive competition (Shuster, 1983), therefore relational aggression was expected to strengthen the relationship between competition among women and eating disorder symptomatology.

CHAPTER 3: METHODOLOGY

Participants

Participants were 407 undergraduate women from the University of Texas at Austin. Roughly half of this sample (211) came from Panhellenic Sororities on the University campus. Panhellenic Sororities are nationally recognized sororities that are monitored and represented by the University Panhellenic Council (UPC). The University of Texas at Austin has 14 Panhellenic Sororities. Of these 14 sororities, thirteen participated in the study. Current members of sororities were chosen to participate in order to evaluate differences between these women and women not in sororities. The remaining participants were recruited from the Educational Psychology subject pool. Women were prescreened and asked to indicate affiliation or non-affiliation with a sorority. EDP subject pool participates indicating sorority membership were moved into the sorority group. The response rates for each of these groups were:

The initial sample size goal for this study was first determined through a power analysis with the program GPower (Erdfelder, Faul, & Buchner 1996). This program provides an estimation of the minimum number of participants that are needed in order to show significant differences. The parameters set by the researcher were an alpha of .05, a power level of .80, and a medium effect size (.25). For an omnibus one-way analysis of variance (ANOVA), GPower reported needing a sample size of 130 participants in order to see significant differences. For a one-way multivariate analysis of variance

(MANOVA), GPower indicated a sample size of 210 would be appropriate. Therefore the sample size achieved was well within the minimum number suggested by GPower.

Data were collected from 548 undergraduate women from the University of Texas. This included women from both sororities and the EDP subject pool. After examining the percentage of questions missed by participants, the primary investigator decided that women who completed less than 98% of the entire survey were to be removed as not completing this could reflect haphazard responding. This elimination resulted in removing 113 participants. After removing participant's incomplete data, 435 participants remained. Additionally 24 participants were removed as they did not meet demographic research criteria. This resulted in a total participant number of 411, with roughly an even split between women in sororities (52.1%, *n* = 214) and those who were not in a sorority (47.9%, *n* = 197). Ages of participants ranged from 18-25, with 6.3% of participants age 18 (*n* = 26), 16.5% age 19 (*n* = 68), 19.2% age 20 (*n* = 79), 30.6% age 21 (*n* = 126), 21.6% age 22 (*n* = 89), and 5.8% ages 23-25 (*n* = 24).

The race and ethnic breakdown of participants was 70% identified as Caucasian (*n* = 304), with other participants identifying as Asian American/Pacific Islander (13.1%, *n* = 57), Latina (6.5%, *n* =28), Multiracial (4.1%, *n* = 18), African American (2.3%, *n* = 10), other (2.1 %, *n* = 9), Indian American (1.2%, *n* = 5), Native American (< 1%, *n* = 1), and <1 % preferred not to answer (*n* = 2). Additionally, participants were asked to report their sexual identity, and 96% of the sample reported they identified as heterosexual (*n* = 418). The remaining sexual orientation breakdown of participants was Bisexual (1.8%, *n*

= 8), Gay/Lesbian (1.4%, *n* = 6), Questioning (<1%, *n* = 1), and other (<1%, *n* = 1). Because of the large majority of heterosexual women in this sample, it was decided to eliminate the 16 women who identified as LGBQ and other.

Regarding relationship status of the sample, the majority of participants reported being single/never married (61%, *n* = 264), while others were in a committed relationship but not married or living together (31.4%, *n* = 136), living with a partner, but not married (5.8%, *n* = 25), and married (1.8%, *n* = 8). The primary investigator decided that the small number of married participants warranted their removal from the study.

Due to participants' enrollment in school, it was suspected that income levels would be low and variable. Therefore participants were asked to report both the income levels of their families as well as their own income level. The majority of participants reported an annual family income of above $75,000 (59.3%, *n* =255), 16% (*n* = 69) reported that their families earned between $55,000 and $74,999, and 12.8% (*n* = 55) 11.9% (*n* = 51) reported their family's household income was between $15,000 and $34,999. Additionally, the majority of participants reported their individual annual income was <$15,000 (86.6%, *n* = 376).

There was a wide range of participants' year in school. Almost 15% reported being in their first year of college (*n* = 63), while 17.5% (*n* = 76) reported being a second year, 24% (*n* = 104) were third year students, 38.2% (*n* = 166) were in their fourth year, and only 5.8% (*n* = 25) were in their 5th year or beyond.

Table 1
Demographic Statistics

	Sorority		*Non-Sorority*	
Age	*n*	*%*	*n*	*%*
18	14	6.7	12	5.9
19	50	23.8	18	8.9
20	48	22.9	31	15.3
21	49	23.3	77	38.1
22	43	20.5	46	22.8
23	6	2.9	18	8.9
Race/Ethnicity	*n*	*%*	*n*	*%*
Caucasian	184	84.4	120	55.6
African American	1	.5	9	4.2
Asian	15	6.9	42	19.4
Latina	7	3.2	21	9.7
Indian American	1	.5	4	1.9
Native American	1	.5	n/a	n/a
Multi-Racial	7	3.2	11	5.1
Prefer Not to Answer	1	.5	1	.5
Other	1	.5	8	3.7
Sexual Orientation	*n*	*%*	*n*	*%*
Straight	216	99.1	202	93.1
Gay or Lesbian	1	.5	5	2.3
Questioning	1	.5	n/a	n/a
Bisexual	n/a	n/a	8	3.7
Other	n/a	n/a	1	.5
Income (family)	*n*	*%*	*n*	*%*
15,000-34,999	13	6	38	17.8
35,000-54,999	18	8.3	37	17.3
55,000-74,999	28	13	41	19.2
>75,000	157	72.7	98	45.8
Income (participant)	*n*	*%*	*n*	*%*
<15,000	189	86.7	187	86.6
15,000-34,999	10	4.6	11	5.1
35,000-54,999	1	.5	5	2.3
55,000-74,999	5	2.3	4	1.9
>75,000	13	6.0	9	4.2
Year in School	*n*	*%*	*n*	*%*
1st year	45	20.6	18	8.3
2nd year	49	22.5	27	12.5
3rd year	50	22.9	54	25
4th year	66	30.3	100	46.3
5th and higher	8	3.7	17	7.9

Procedure

Approval from the Institutional Review Board (IRB) of The University of Texas was awarded on November 15, 2010 (IRB Protocol 2010 08 0032). After the IRB approval was obtained, an additional UPC approval process ensued. The UPC Research Committee granted their approval on January 18, 2011. All data were collected online from February 25, 2011 to April 28, 2011. The UPC Research Committee approval allowed for communication between the primary investigator and the University of Texas' Greek Life Coordinator. It was through this communication that the primary investigator received email addresses for all active UPC sorority members on the University of Texas campus. Members were asked to participate through an email as well as in person during several UPC-council member meetings. Over 2000 UPC members were recruited to participate. Ten percent of this group successfully completed the online questionnaires. EDP subject pool participants were assigned to the study and provided a link to access the surveys. The response rate for the EDP subject pool was 66%.

All measures were completed online. It has been suggested that participants may be more willing to disclose information anonymously through online questionnaires (Locke & Gilbert, 1995). More recent research suggests that there are limitations to self-disclosure in an online-setting (Attrill & Jalil, 2011; Nosko, Wood, & Molema, 2010). Specifically online-self disclosures tend to be easier for more superficial information (Attrill & Jalil, 2011) and disclosures decrease as the age of a participant increases (Nosko, Wood, & Molema, 2010). Female Educational Psychology Subject pool

participants who were assigned this study were provided a URL link to follow. Similarly, women recruited to participate from sororities were sent an email containing the URL link. Once getting to the Qualtrics survey, participants were provided a brief outline of eligibility and confidentiality. Participants then read and provided their informed consent to participate. After completing the quantitative measures, participants were asked to respond to three qualitative questions (see Appendix H). They were provided a text box to respond to each question.

Once the qualitative questions were completed, participants from the EDP subject pool were sent to a different webpage and asked to provide their UT EID. They were reminded that their UT EID was completely separate from the responses they provided. Additionally, women who received the participation link due to sorority membership were sent to a different webpage and asked if they wanted to provide their email address in order to be entered into a raffle to win one of five $50 Amazon.com gift cards.

Measures

Eating disorder symptomatology was measured by the Eating Disorder Inventory (EDI). Competitiveness was broken down and examined by three different measures: the Hypercompetitiveness Attitudes Scale (HCA), Intrasexual Competition for Mates Scale (ISC-mates), and Intrasexual Competition for Status Scale (ISC-status). Relational aggression was measured by the Indirect Aggression Scale (IAS). Finally, a measure assessing social desirability was included in the surveys as a means of understanding a participant's response bias. Social Desirability was measured using the Balanced

Inventory of Desirable Responses (BIDR). All measures were administered to women who were both affiliated and not affiliated with sororities. A more detailed explanation of each measure along with their psychometric properties is included below.

Demographics

Participants were given a questionnaire that asked for information regarding specific demographic information including: age, height, weight, marital status, sexual identification, family household income, participant income, and race/ethnicity (see Appendix A).

Eating Disorder Symptomatology

Eating disorder symptomatology was measured using the Eating Disorder Inventory (EDI; Garner et al., 1983; Appendix C). The EDI is a 64-item self-report measure of eating related behaviors and attitudes. There are eight subscales measured on the EDI, but this study was only concerned with the Drive for Thinness, Bulimia, Body Dissatisfaction and Perfectionism subscales, which are the EDI scales that seem most directly related to eating disorder symptoms. The remaining subscales include: Ineffectiveness, Interpersonal Distrust, Interoceptive Awareness, and Maturity Fears. Each question contains 6 response options (1=Always, Usually, Often, Sometimes, Rarely, and 6=Never), and a higher score on a subscale signifies higher eating disorder symptomatology. The subscales are internally consistent and demonstrate stable test-retest correlations (Garner et al., 1983). The subscales have also been extensively validated (Garner et al., 1983).

Reliability measures for the drive for thinness subscale were high for an adult female population (Cronbach's Alpha = .85) (Garner et al., 1983). Reliability coefficients for the bulimia subscale were high for an adult female population (Cronbach's Alpha = .83) (Garner et al., 1983). Similarly, the reliability coefficients for the body dissatisfaction (Cronbach's Alpha = .91) and perfectionism (Cronbach's Alpha = .73) subscales were high (Garner et al., 1983).

Hypercompetitiveness

Hypercompetitiveness was measured using the Hypercompetitive Attitude Scale (HCA; Ryckman et. al 1996; Appendix D). The HCA is a 26 item self-report questionnaire that measures a subject's individual differences in hypercompetitive attitudes (Ryckman et. al 1996). Participants respond to questions using a 5-point Likert scale (1=never true of me, 5=always true of me), with a higher score indicative of greater hypercompetitiveness. The HCA has strong internal consistency (Cronbach's Alpha = .91) (Ryckman et al., 1996) and when compared with the Personal Development Competitive Attitude Scale, there was no correlation, r (91) = -.07, confirming adequate discriminant validity (Ryckman et al., 1996).

Competitiveness among Women

Two measures were used to assess competitiveness among women. The Female Competition for mates scale (Female ISC for mates; Faer et al., 2005; Appendix E) was used to measure female competition for mates. The Female ISC for mates scale contains 8 items in which participants respond on a 6-point Likert scale (0=strongly disagree, 5=

strongly agree) as well as 7 third-person vignettes that require participants to rank how appropriate the behaviors presented were (0=completely inappropriate, 5=completely appropriate). The Female ISC for mates scale demonstrated strong internal consistency (Cronbach's alpha =.89) (Faer et al., 2005).

The Female Competition for status scale (Female ISC for status; Faer et al., 2005; Appendix E) was used to measure female competition for status. The Female ISC for status scale contains 5 items in which participants respond on a 6-point Likert scale (0=strongly disagree, 5=strongly agree) as well 7 third-person vignettes that ask participants to rank how appropriate the behaviors of the characters are on a 6-point Likert Scale (0=completely inappropriate, 5=completely appropriate). The Female ISC for status scale also demonstrated strong internal consistency (Cronbach's Alpha= .80) (Faer, et al., 2005).

Relational Aggression

Relational Aggression was measured by the Indirect Aggression Scales (IAS; Forrest, Eatough, & Shevlin, 2005; Appendix F). There are two versions of the Indirect Aggression Scales. The first is the Indirect Aggression Scale-Aggressor (IAS-A) version. This version asks participants to think about times when they have used aggressive behaviors against another person in the last 12 months. The second version of the Indirect Aggression Scales is the Indirect Aggression Scale-Target version. This version asks participants to think about times when they experienced aggressive behavior towards

themselves in the last 12 months. Both versions use a 5 point Likert Scale to assess frequency with which each behavior occurred (1= Never, 5= Regularly).

Both versions of the Indirect Aggression Scales (Aggressor and Target) are 25 item self-report questionnaires with 3 subscales each (Social Exclusionary, Malicious Humor, and Guilt Induction). For purposes of this study, only the Indirect Aggression Scales Aggressor scale was used. A 5 point Likert scale was used to assess the frequency participants engaged in the behaviors (1= Never to 5= Regularly). Each subscale had high reliability coefficients, Cronbach's alpha coefficients ranged from .81 to .89 for each of the 3 subscales on the two versions of the IAS (Forrest, Eatough, & Shevlin, 2005).

Social Desirability

Social Desirability was measured using the Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1988; Appendix G). The BIDR contains 40 items in which participants respond using a 7 point Likert Scale (1= Not true, 7= Very true). Reliability coefficients for all 40 items is strong (Chronbach's Alpha = .83) (Paulhus, 1988).

Research Questions, Hypotheses, and Data Analyses

Research Question 1

Does sorority membership affect eating disorder symptomatology, competition, and relational aggression?

Hypothesis: Women in sororities will score higher on measures of eating disorder symptomatology, competition, both intrasexual competition and hypercompetitiveness, and relational aggression.

Rationale: Sorority membership has been shown to have an impact eating disorder symptomatology, specifically affecting participant's drive for thinness, body dissatisfaction, and bulimia symptoms (Basow et al., 2007; Crandall, 1988). Therefore it is hypothesized that the sorority women from this sample will also score higher on measures of eating disorder symptomatology than their non-sorority counterparts. The particular environment sorority members often find themselves in tends to be rather competitive. Therefore, women in sororities are also predicted to score higher on specific measures of competitiveness that relate to the competitiveness of the environment (intrasexual competitiveness and hypercompetitiveness). Both intrasexual competitiveness and hypercompetitiveness have been linked to eating disorder symptomatology, and therefore the assumption is that this sample of sorority women will also be higher on these measures (Burckle et al., 1999; Faer et al., 2005).Women in sororities have gone through a competitive process to acquire membership. This process is called "rush" and it forces them to compete with other women in order to be considered for that particular sorority. This process seems likely to set the stage for women to compete with one another and to engage in specific tactics, i.e. relationally aggressive behaviors, to make themselves appear better than other women in order to get into the sorority of their choice. Due to the nature of sorority life, it also seems logical to assume there may be a higher prevalence of relational aggression within this population.

Research Question 2

Is eating disorder symptomatology best predicted by female intrasexual competition for mates?

Hypothesis: Female intrasexual competition for mates will account for most of the variance of eating disorder symptomatology.

Rationale: Burckle et al. (1999) wanted to explore whether more specific forms of competitiveness correlate with eating disorder symptomatology. This research supported the notion that just having a competitive attitude is not related to the development of eating disorders, but rather a hypercompetitive attitude was found to be related to the development of eating disorders (Burckle, et al., 1999). This research also found that a need to achieve in appearance was most correlated to eating disorder symptomatology (Burckle et al., 1999). This finding seems to fit with the research conducted by Faer et al. (2005) which found that intrasexual competition for mates was most related to eating disorder symptomatology. Working to achieve a particular appearance seems to be closely linked to intrasexual competition for mates (i.e. perhaps having a specific appearance makes one feel they are more likely to appeal to potential mates). Based on these findings, it is predicted that female intrasexual competition for mates will be the form of competitiveness that is most predictive of eating disorder symptomatology.

Research Question 3

Assuming intrasexual competition for mates accounts for the largest amount of variance of eating disorder symptomatology, is the relationship between competitiveness,

specifically intrasexual competition for mates, and eating disorder symptomatology moderated by relational aggression?

Hypothesis: Relational aggression will partially moderate the relationship between intrasexual competition for mates and eating disorder symptomatology among women in sororities.

Rationale: Because it is predicted that female intrasexual competition for mates will account for the most unique variance in the previously mentioned multiple regression, ultimately this is the form of competitiveness that will be entered into the moderation model. As discussed earlier, relational aggression can be defined as a particular type aggression in which indirect means of competing are used and the perpetrator attempts to inflict pain in a secretive manner (Bjorkqvist et al., 1992). Because a partial mediation is expected, it seems reasonable to expect that intrasexual competition for mates will be a significant predictor of eating disorder symptomatology as well as relational aggression. Intrasexual competition for mates is a form of competitiveness in which women feel the need to compete with other women based on what they think their potential mates will find attractive (intrasexual selection). Buss and Dedden (1990) found that women engaging in this form of competition tend to derogate their competitors based on intrasexual selection. In other words, women will engage in competitive and aggressive acts in order to make themselves appear better than their competition. The aggressive acts they may engage in seem to be directly related to relational aggression, and therefore it seems likely that relational aggression will

moderate the relationship between this form of competitiveness and the eating disorder symptomatology.

CHAPTER 4: RESULTS

This chapter describes the results of the analyses, and is divided into the following four sections: Descriptive Statistics, Preliminary Analysis, Primary Analysis, and Qualitative Results. Objectives and hypothesis are presented at the start of each section, prior to results. Statistical analyses were conducted using SPSS 19.0 for Windows.

DESCRIPTIVE STATISTICS

This section describes the demographics of the sample including frequency distributions of age, race/ethnicity, sexual orientation, relationship status, income, and year in school of both sorority women and non-sorority and women. A further breakdown of demographic information by sorority membership is included in Table 1. Additionally, means, standard deviations, and reliability measures are presented for each outcome variable. Table 2 is included with these descriptive statistics.

Outcome Measures

The outcome variables for this study include: eating disorder symptomatology, competition among women, and relational aggression. In order to assess eating disorder behaviors, four subscales from the Eating Disorder Inventory (Garner et al., 1983) were used. Competition was assessed using the Hypercompetitive Attitudes Scale (Ryckman et al., 1996) as well as the Female Competition for both mates and status (Faer et al., 2005). Lastly, relational aggression was examined by the Indirect Aggression Scale (Forrest et al., 2005). Table 2 shows the means, standard deviations, range, and alpha levels for all subscales and full measures used in this study. Alpha levels were all in the acceptable range. Table 3 contains the correlations and

significance levels between each of the outcome variables.

Table 2
Descriptive Statistics for Outcome Variables

Variable	*M*	*SD*	*Min*	*Max*	α
Body Dissatisfaction[a]	3.53	1.08	1	6	.90
Drive for Thinness[a]	3.77	1.25	1.17	6	.76
Bulimia[a]	4.96	.80	1.43	2.36	.86
Perfectionism[a]	2.66	1.05	1	6	.86
Hypercompetitiveness[b]	2.75	.49	1.15	4.12	.86
Female Competition- Mates[c]	2.61	.71	1	4.80	.85
Female Competition- Status[d]	2.65	.64	1	4.75	.73
Relational Aggression[e]	1.45	.51	1	4.00	.95

Note. [a]Eating Disorder Inventory. [b] Hypercompetitve Attitude Scale. [c]Intrasexual Competition for Mates Scale. [d]Intrasexual Competition for Status Scale. [e]As measured by the Indirect Aggression Scale. N = 411.

Table 3
Correlations between Scales

Scale	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1. BD	-	.66**	-.48**	.05	-.22**	-.37**	.26**	.24**
2. DT		-	.50**	.16**	-.26**	-.38**	-.30**	.26**
3. BU			-	-.11*	-.33**	-.36**	-.30**	.42**
4. PE				-	-.40**	-.13*	-.05	-.08
5. HYP					-	.40**	.22**	.36**
6. ISC-M						-	.70**	.45**
7. ISC-S							-	.41**
8. RA								-

Note. 1. BD = Body Dissatisfaction Subscale of the Eating Disorder Inventory (EDI); 2. DT= Drive for Thinness Subscale; 3. BU= Bulimia Subscale; 4. PE= Perfectionism Subscale; 5. HYP= Hypercompetitive Attitude Scale; 6. ISC-M= Intrasexual Competition for Mates; 7. ISC-S= Intrasexual Competition for Status; 8. RA= Indirect Aggression Scale.

PRELIMINARY ANALYSES

In this section, the analyses conducted prior to addressing all research questions are presented. An a priori power analysis was conducted for multiple regression to determine the best sample size. Next, each of the assumptions of parametric tests was conducted in order to assess if the chosen statistical procedures were valid for the analysis of this data.

Power Analysis

Sample size for this study was first determined through a power analysis with the program GPower (Erdfelder & Buchner 1996). This program provides an estimation of the minimum number of participants that are needed in order to show significant differences. The parameters set by the researcher were an alpha of .05, a power level of .80, and a medium effect size (.25). In order reduce the likelihood of making a Type II error, an a priori analysis for multiple regression with 10 predictors yielded a total sample size of 118 participants, and a sample of 127 with 12 predictors. Post hoc power analyses for the obtained sample size of 407 and 10 predictors, resulted in a power level of >.99. Lastly, because the analyses conclude by solely examining the group of sorority women, a post hoc power analyses for the obtained sample size of 211 and 12 predictors was run and resulted in a power level of .97.

Assumptions

To determine whether the variables met the assumptions of normality for linear regression, data were screened for multicollinearity, linearity, normality, and

homoscedasticity while entering them into each regression model. Multicollinearity was examined by looking at collinearity diagnostics (i.e., tolerance and VIF values). All tolerance values were greater than .2 and VIF values were less than 4, indicating that multicollinearity is not problematic for this data. Skewness and kurtosis values for the scales being analyzed were then calculated and normal probability plots were evaluated. Finally, there were no apparent issues with homoscedasticity. The data were therefore assessed to be adequate for use in the following regression analyses.

PRIMARY ANALYSIS

In this section, the analyses used to test each primary hypothesis are presented. Primary hypotheses are explained at the start of each analysis.

Research Question 1: Does sorority membership affect eating disorder symptomatology, competition, and relational aggression?

H1: Women in sororities will score higher on measures of eating disorder symptomatology, competition, and relational aggression.

Women in sororities were expected to score higher on all 4 measures of eating disorder subscales (drive for thinness, body dissatisfaction, bulimia, and perfectionism). Sorority membership was thought to affect women's competitiveness (Hypercompetitiveness and Female Competition for both mates and status). Lastly, relational aggression was hypothesized to impact sorority membership, in that women in sororities would score higher on this measure. In order to test whether sorority

membership affected women's level of eating disorder symptomatology, competitiveness, and relational aggression, a multiple regression was conducted.

Body Dissatisfaction

Table 4 presents results of the regression analysis of eating disorder symptomatology. Demographic variables were entered into the model in order to control for them. Dummy coding was used for the categorical demographic variables, including sorority membership, race/ethnicity, relationship status, cohabitation status, family income, and participant income. Non-Sorority member status was coded as the reference group (i.e., Sorority=1 and Non-Sorority=0); "other" racial/ethnic member status was coded as the reference group (i.e., Caucasian=1 and All other races=0); non-committed relationship status was coded as the reference group (i.e., Committed Relationship=1 and Non-Committed Relationship=0); non-cohabitation status was coded as the reference group (i.e., Living with Boyfriend=1 and Not Living with Boyfriend=0); Family income less than 15,000 was coded as the reference group, yielding three code variables (viz., 15-34,999K, 35-54,999K, and 55-75K); and participant income greater than 15,000 was coded as the reference group (i.e., > 15K=1 and < 15K=0). Additionally, the two subscales measuring social desirability were also entered into the model as a way to control for the construct. The overall regression model for body dissatisfaction was significant [$R^2 = .145$, $F(10, 396) = 6.73$, $p < .001$]. None of the demographic information was significant in predicting body dissatisfaction. Sorority membership was not significant in predicting participants' body dissatisfaction, ($\beta = .067$, $t = 1.29$, $p > .05$).

Thus, the research hypothesis was not supported and sorority membership did not affect body dissatisfaction. Both subscales of social desirability were found to predict body dissatisfaction, self-deception, ($\beta = .267$, $t = 4.853$, $p < .001$), and impression management, ($\beta = .123$, $t = 2.199$, $p < .05$). Women with higher social desirability, those who may have been more concerned with providing socially desirable responses, were found to have higher body dissatisfaction.

Drive for Thinness

The next regression looked at a participant's drive for thinness. The overall model was significant, [$R^2 = .109$, $F(10, 396) = 4.87$, $p < .001$]. Sorority membership was not found to predict drive for thinness scores, ($\beta = .041$, $t = .788$, $p > .05$). There were no significant differences between women in sororities and those who were not in terms of drive for thinness scores. Additionally, both subscales of social desirability were significant predictors of drive for thinness. A participant's desire to deceive themselves significantly predicted drive for thinness ($\beta = .136$, $t = 2.421$, $p < .05$), such that women with a greater tendency to be self-deceptive had a higher drive for thinness. Similarly, a participant's desire to be viewed favorably predicted higher drive for thinness scores, ($\beta = .233$, $t = 4.069$, $p < .001$).

Bulimia

In examining bulimia scores, the overall regression model was significant, [$R^2 = .138$, $F(10, 396) = 6.328$, $p < .001$]. The null hypothesis failed to be rejected when looking at bulimia scores among participants. That is, sorority membership did not

predict bulimia scores, (β = .048, t = .921, p >.05). In examining individual regression coefficients, it was found that a participants' relationship status significantly predicted her bulimia score, (β = .115, t = 2.416, p < .05). Thus, women who were in a committed relationship reported engaging in more bulimic behaviors than those women who were single. Social desirability also accounted for a significant amount of variance in a participant's bulimia scores. More specifically, the higher a participant's desire to self-deceive, the higher her bulimia scores, (β = .180, t = 3.264, p < .001) and the more a participant desired to manage other's impressions, the higher her bulimia scores as well, (β = .218, t = 3.879, p < .001).

Perfectionism

Lastly, perfectionism was entered into the model as the outcome variable. The overall regression model with perfectionism as the outcome was not statistically significant, [R^2 = .033, F(10, 396) = 1.35, p > .05]. However, for exploratory reasons it is interesting to note that several demographic variables were found to significantly predict perfectionism scores. Women in committed relationships had significantly lower levels of perfectionism than single women (β = -.105, t = -2.092, p <.05). Additionally, women living with their boyfriends had significantly lower levels of perfectionism than single women (β = -.108, t = -2.060, p <.05).

Table 4
Results of Regression Analysis, Eating Disorder Symptomatology

	Body Dissatisfaction		
Predictor	*B*	*SE B*	β
Sorority	.145	.112	.067
Committed Relationship	.198	.110	.085
Living Together	.219	.232	.047
Family Income 15-34,999K	-.283	.179	-.081
Family Income 35-54,999K	.215	.168	.066
Family Income 55-75K	-.090	.145	-.031
Participant Income <15K	.028	.160	.008
Caucasian/Other	-.107	.126	-.045
Social Desirability_Self-deception***	.081	.017	.267
Social Desirability_Impression-management*	.041	.019	.123

Dependent Variable: Body Dissatisfaction [Adjusted $R^2 = .124$, $F(10, 396) = 6.73$, $p < .001$].
Note. $*p < .05$. $**p < .01$. $***p < .001$. $N = 407$.

	Drive for Thinness		
Predictor	*B*	*SE B*	β
Sorority	.103	.131	.041
Committed Relationship	.135	.129	.051
Living Together	-.136	.273	-.025
Family Income 15-34,999K	-.037	.210	-.009
Family Income 35-54,999K	.166	.197	.044
Family Income 55-75K	.209	.171	.062
Participant Income <15K	.047	.188	.012
Caucasian/Other	-.121	.148	-.044
Social Desirability_Self-deception*	.048	.020	.136
Social Desirability_Impression-management***	.090	.022	.233

Dependent Variable: Drive for Thinness [Adjusted $R^2 = .087$, $F(10, 396) = 4.87$, $p < .001$].
Note. $*p < .05$. $**p < .01$. $***p < .001$. $N = 407$.

	Bulimia		
Predictor	*B*	*SE B*	β
Sorority	.077	.083	.048
Committed Relationship*	.198	.082	.115
Living Together	.161	.173	.046
Family Income 15-34,999K	.019	.134	.007
Family Income 35-54,999K	.199	.125	.082
Family Income 55-75K	.004	.108	.002
Participant Income <15K	-.068	.120	-.027
Caucasian/Other	-.053	.094	-.030
Social Desirability_Self-deception***	.041	.012	.180
Social Desirability_Impression-management***	.055	.014	.218

Dependent Variable: Bulimia [Adjusted $R^2 = .116$, $F(10, 396) = 6.33$, $p < .001$].

Note. *$p < .05$. **$p < .01$. ***$p < .001$. $N = 407$.

Table 4- continued

Results of Regression Analysis, Eating Disorder Symptomatology

	Perfectionism		
Predictor	*B*	*SE B*	β
Sorority	-.088	.115	-.042
Committed Relationship*	-.235	.112	-.105
Living Together*	-.491	.238	-.108
Family Income 15-34,999K	.062	.184	.018
Family Income 35-54,999K	.173	.172	.055
Family Income 55-75K	.206	.149	.072
Participant Income <15K	.164	.164	.050
Caucasian/Other	.226	.129	.099
Social Desirability_Self-deception	-.005	.017	-.016
Social Desirability_Impression-management	-.004	.019	-.013

Dependent Variable: Perfectionism [Adjusted $R^2 = .009$, $F(10, 396) = 1.35$, $p > .05$].

Note. *$p < .05$. **$p < .01$. ***$p < .001$. $N = 407$.

Hypercompetitiveness

Table 5 presents the results of the regression analyses for competitiveness. It was expected that sorority membership would affect competitiveness. In order to test this relationship, multiple regressions were conducted. Demographic information was entered into the model to control for these variables. Additionally, social desirability was entered into the model as a way to control for the construct. The overall model examining hypercompetitiveness was significant, [$R^2 = .145$, $F(10, 396) = 6.74$, $p < .001$]. Both subscales of social desirability were found to account for a significant amount of variance in predicting hypercompetitiveness. As one's self-deception increased, hypercompetitiveness decreased ($\beta = -.167$, $t = -3.029$, $p < .01$) and as a participant's impression management increased, hypercompetitiveness decreased, ($\beta = -.241$, $t = -4.298$, $p < .01$). None of the demographic information was significant in predicting hypercompetitiveness. Similarly, sorority membership was not significant in predicting

participants' hypercompetitiveness, (β = .006, *t* = .119, *p* >.05). Thus, the null hypothesis failed to be rejected.

Female Intrasexual Competition-mates

The next form of competition that was examined was female competition for mates. Again, the overall model was statistically significant, [R^2 = .238, *F*(10, 396) = 12.35, *p* < .001]. While the probability associated with the hypothesis of interest was close to a value of .05, sorority membership was found to not statistically significantly predict female competition for mates (ISC-mates), (β = .091, *t* = 1.880, *p* >.05). Social desirability also accounted for a significant amount of variance in the model. Specifically, the higher one's self-deception, the less intrasexual competition for mates (β = -.207, *t* =-3.991, p < .001) and the higher one's impression management, the less intrasexual competition for mates (β = -.313, *t* = -5.916, *p* < .001).

Female Intrasexual Competition-status

A multiple regression was run examining the role of sorority membership in predicting female ISC-status. This overall model was significant [R^2 = .163, *F*(10, 396) = 7.718, *p* < .001]. The hypothesis that sorority membership would affect female competition for status was supported, (β = .180, *t* =3.279, *p* <.05). Women in sororities scored significantly higher on female competition for status than their non-sorority counterparts. Additionally, social desirability significantly predicted intrasexual competition for status (ISC-status). More specifically, the greater one's self-deception, the lower her ISC-status, (β = -.163, *t* = -2.985, *p* <.05), and the higher a participant's

impression management scores, the lower her ISC-status, (β = -.213, t = -3.835, p < .001).

Table 5
Results of Regression Analysis, Competitiveness

		Hypercompetiveness	
Predictor	*B*	*SE B*	β
Sorority	.006	.050	.006
Committed Relationship	.026	.049	.025
Living Together	-.098	.103	-.047
Family Income 15-34,999K	.090	.079	.058
Family Income 35-54,999K	-.102	.075	-.070
Family Income 55-75K	-.039	.065	-.029
Participant Income <15K	-.033	.071	-.022
Caucasian/Other	-.044	.056	-.042
Social Desirability-Self-deception**	-.022	.007	-.167
Social Desirability-Impression management**	-.036	.008	-.241

Dependent Variable: Hypercompetitiveness [Adjusted R^2 = .124, F(10, 396) = 6.743, p < .001].
Note. *p < .05. **p < .01. ***p < .001. N = 407.

		ISC Mates	
Predictor	*B*	*SE B*	β
Sorority	.130	.069	.091
Committed Relationship	.015	.068	.010
Living Together	.058	.144	.019
Family Income 15-34,999K	-.091	.111	-.040
Family Income 35-54,999K	-.168	.104	-.078
Family Income 55-75K	-.004	.090	-.002
Participant Income <15K	.013	.099	.006
Caucasian/Other	.111	.078	.071
Social Desirability-Self-deception	-.041	.010	-.207
Social Desirability-Impression-managment	-.069	.012	-.313

Dependent Variable: ISC- mates [Adjusted R^2 = .218, F(10, 396) = 12.35, p < 001].
Note. *p < .05. **p < .01. ***p < .001. N = 407.

Table 5 continued

Results of Regression Analysis, Competitiveness	*ISC Status*		
Predictor	*B*	*SE B*	β
Sorority***	.213	.065	.167
Committed Relationship	.003	.064	.002
Living Together	.090	.135	.032
Family Income 15-34,999K	-.155	.104	-.075
Family Income 35-54,999K	-.148	.098	-.077
Family Income 55-75K	.066	.085	.038
Participant Income <15K	.055	.093	.027
Caucasian/Other	.032	.130	.023
Social Desirability-Self-deception	-.029	.094	-.163
Social Desirability-Impression-management	-.042	.103	-.213

Dependent Variable: ISC -status [Adjusted $R^2 = .142$, $F(10, 396) = 7.72$, $p < .001$].
Note. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$. $N = 40$

Relational Aggression

The final aspect of this first hypothesis looked at differences between women in sororities and non-sorority women on relational aggression. The overall model for this regression was significant, [$R^2 = .189$, $F(10, 396) = 11.05$, $p < .001$]. Table 6 presents the results from the regression looking at group membership and relational aggression. It was predicted that women in sororities would score higher on this measure than non-sorority women. However, the research hypothesis was not supported, suggesting no significant differences between these groups on relational aggression ($\beta = -.025$ $t = -.508$, $p > .05$). In other words, relational aggression was not found to be any different between women based on their membership in a sorority. When examining individual regression coefficients in the model, participants living with their partners reported less relational aggression those not living with their partners ($\beta = -.125$, $t = -2.651$, $p < .05$). Additionally, participants with higher relational aggression had less self-deception ($\beta = -.111$, $t = -2.114$, $p < .05$) and those with less impression management also scored higher on relational aggression, ($\beta = -.361$, $t = -6.729$, $p < .001$).

Table 6
Results of Regression Analysis, Relational Aggression

	Relational Aggression		
Predictor	*B*	*SE B*	β
Sorority	-.025	.050	-.025
Committed Relationship	-.008	.049	-.007
Living Together**	-.276	.104	-.125
Family Income 15-34,999K	-.056	.080	-.034
Family Income 35-54,999K	-.076	.075	-.050
Family Income 55-75K	.072	.065	.052
Participant Income <15K	.049	.072	.031
Caucasian/Other	-.061	.056	-.055
Social Desirability- Self-deception	-.016	.007	-.111
Social Desirability- Impression-management	-.057	.008	-.361

Dependent Variable: Relational Aggression [Adjusted $R^2 = .198$, $F(10, 396) = 11.05$, $p < .001$]. *Note.* $*p < .05$. $**p < .01$. $***p < .001$. $N = 407$.

Research Question 2: Is eating disorder symptomatology best predicted by female intrasexual competition for mates among sorority women?

H2: Female intrasexual competition for mates will account for the most variance of eating disorder symptomatology.

Intrasexual competition for mates was hypothesized to be the form of competitiveness that best predicted eating disorder symptomatology. This research question specifically looked at women in sororities. Prior to collecting data, the investigator decided to focus on women in sororities, and in light of the aforementioned results, the decision to utilize the sorority population is supported.

In order to test which form of competitiveness accounts for the most variance of eating disorder symptoms, regressions were run for each eating disorder subscale. Table 7 provides the results of the regression analyses.

Body Dissatisfaction

The overall model examining body dissatisfaction was significant, [R^2 = .265, F(12, 210) = 5.95, p < .001]. As hypothesized, female competition for mates (ISC-mates) was found to significantly predict body dissatisfaction, (β = -.304, t = -3.147, p <.01), reflecting that less female competition for mates is predictive of higher body dissatisfaction. The results of this regression analysis suggest that women who had higher levels of female competition for mates tended to actually feel better about their bodies. This aspect of the hypothesis was not supported. Additionally, the self-deception subscale of social desirability was also found to significantly predict body dissatisfaction, such that the higher a participant's self-deception, the more body dissatisfaction she reported (β = .189, t = 2.583, p <.05).

Drive for Thinness

In testing the best predictor of a participant's drive for thinness, the overall regression model was significant [R^2 = .236, F(12, 210) = 5.09, p < .001]. Female competition for mates (ISC-mates) was found to significantly predict drive for thinness (β = -.309, t = -3.138, p <.01). Similar to the results for body dissatisfaction, a participant's drive for thinness tended to increase as her competitiveness for mates decreased.

Bulimia

The overall results of this multiple regression model were significant [R^2 = .284, F(12, 210) = 6.55, p < .001]. Results suggest that hypercompetitiveness is a significant predictor of bulimia (β = -.160, t = -2.320, p <.05) as well as female competition for

status (ISC-status) (β = -.193, t = -2.258, p <.05). However, the hypothesis that female competition for mates would best predict bulimia scores was not supported. These results suggest that the lower a participant's hypercompetitiveness, the higher her bulimia symptoms. Similarly, the lower a participant scored on ISC-status, the higher her bulimia score. Additionally, women in this population who reported being in a committed relationship demonstrated significantly higher bulimia scores than single women, (β = .194, t = 3.093, p <.01). Lastly, the impression management subscale of social desirability was also a significant predictor of bulimia in this model, such that the higher one's impression management score, the higher her bulimia score (β = .194, t = 2.485, p <.05).

Perfectionism

Regarding the relationship between perfectionism and competitiveness, the overall regression model was significant [R^2 = .253, F(12, 210) = 5.59, p < .001], with hypercompetitiveness as a significant predictor (β = -.484, t = -6.878, p <.001). This finding suggests that the less hypercompetitive the participant, the higher her perfectionistic scores. Additionally, the lower one's score on the impression management scale of social desirability, the higher her perfectionism score (β = -.186, t = -2.332, p <.05).

Table 7
Results of Regression Analysis examining which form of competitiveness best predicts eating disorder symptoms

	Body Dissatisfaction		
Predictor	*B*	*SE B*	β
Hypercompetitiveness	-.029	.154	-.013
ISC-Mates**	-.459	.146	-.304
ISC-Status	-.035	.147	-.021
Committed Relationship	.213	.139	.097
Living Together	.713	.390	.115
Family Income 15-34,999K	-.458	.277	-.107
Family Income 35-54,999K	.334	.264	.086
Family Income 55-75K	.092	.192	.030
Participant Income <15K	-.116	.191	-.037
Caucasian/Other	-.232	.194	-.081
Social Desirability-Self-deception	.056	.022	.189
Social Desirability-Impression-management	.024	.027	.070

Dependent Variable: Body Dissatisfaction [Adjusted $R^2 = .220$, $F(12, 210) = 5.95$, $p < .001$].
Note. $*p < .05$. $**p < .01$. $***p < .001$. $N = 211$.

	Drive for Thinness		
Predictor	*B*	*SE B*	β
Hypercompetitiveness	-.252	.182	-.098
ISC-Mates**	-.541	.172	-.309
ISC-Status	-.009	.174	-.004
Committed Relationship	.020	.164	.008
Living Together	.800	.461	.111
Family Income 15-34,999K	-.344	.327	-.069
Family Income 35-54,999K	.055	.312	.012
Family Income 55-75K	.052	.228	.015
Participant Income <15K	.069	.226	.019
Caucasian/Other	-.131	.229	-.039
Social Desirability-Self-deception	.028	.026	.080
Social Desirability-Impression-management	.047	.032	.118

Dependent Variable: Drive for Thinness [Adjusted $R^2 = .190$, $F(12, 210) = 5.92$, $p < .001$].
Note. $*p < .05$. $**p < .01$. $***p < .001$. $N = 211$.

Table 7 continued

Results of Regression Analysis examining which form of competitiveness best predicts eating disorder symptoms

		Bulimia	
Predictor	*B*	*SE B*	β
Hypercompetitiveness*	-.262	.113	-.160
ISC-Mates	-.130	.107	-.117
ISC-Status*	-.243	.108	-.193
Committed Relationship**	.314	.102	.194
Living Together	.411	.285	.089
Family Income 15-34,999K	-.251	.202	-.079
Family Income 35-54,999K	.074	.193	.026
Family Income 55-75K	.034	.141	.015
Participant Income <15K	.039	.139	.017
Caucasian/Other	-.156	.142	-.073
Social Desirability-Self-deception	.003	.016	.014
Social Desirability-Impression-management*	.050	.020	.194

Dependent Variable: Bulimia [Adjusted $R^2 = .241$, $F(12, 210) = 6.55$, $p < .001$].

Note. $*p < .05$. $**p < .01$. $***p < .001$. $N = 211$.

		Perfectionism	
Predictor	*B*	*SE B*	β
Hypercompetitiveness***	-1.085	.158	-.484
ISC-Mates	-.037	.149	-.025
ISC-Status	.078	.151	.045
Committed Relationship	-.212	.142	-.096
Living Together	-.538	.398	-.085
Family Income 15-34,999K	.029	.283	-.007
Family Income 35-54,999K	-.081	.270	.020
Family Income 55-75K	.166	.197	.054
Participant Income <15K	.098	.195	.031
Caucasian/Other	.325	.198	.112
Social Desirability-Self-deception	-.022	.022	-.074
Social Desriability-Impression-management*	-.065	.028	-.186

Dependent Variable: Perfectionism [Adjusted $R^2 = .208$, $F(12, 210) = 5.59$, $p < .001$].

Note. $*p < .05$. $**p < .01$. $***p < .001$. $N = 211$.

Research Question 3: Is the relationship between competitiveness, specifically intrasexual competition for mates, and eating disorder symptomatology moderated by relational aggression?

H3: Relational aggression is predicted to moderate the relationship between intrasexual competition for mates and eating disorder symptomatology among women in sororities. A high score on relational aggression is expected to strengthen the relationship between competition and eating disorder symptomatology. Additionally, it is expected that those high on relational aggression will be high on competition and have greater eating disorder symptomatology. The other forms of competition will be included in the model for exploratory reasons. It is not expected that relational aggression will moderate the relationship between hypercompetitiveness, intrasexual competition for status, and eating disorder symptoms.

To evaluate the possible moderating role of relational aggression between ISC-mates and eating disorder symptoms, multiple regressions were run which included interaction terms of competition and relational aggression. Table 8 includes the results of each of these regression models.

Results of the overall regression model assessing relational aggression as a moderator in the relationship between competition and eating disorder behaviors was significant, [$R^2 = .226$, $F(16, 210) = 4.84$, $p < .001$], however the regression demonstrated that the interaction effects were not statistically significant in predicting any eating disorder behaviors. These findings suggest that there is no moderating relationship

between the 3 different forms of competitiveness and eating disorder symptoms. Therefore, there is partial support for Hypothesis 3. Relational aggression did not interact with hypercompetitiveness and ISC-status to significantly predict eating disorder symptoms. However, relational aggression also did not interact with ISC-mates to significantly predict eating disorder symptoms. Thus, results of the analysis demonstrate partial support for Hypothesis 3 because relational aggression did not interact with both hypercompetitiveness and ISC-status.

Table 8
Results of Regression Analysis examining possible interaction effects of competitiveness and relational aggression

	Body Dissatisfaction		
Predictor	*B*	*SE B*	β
Hypercompetitiveness_Centered	-.080	.163	-.036
ISC-mates_Centered***	-.602	.130	-.399
ISC-status_Centered	.157	.155	.083
Relational Aggression_Centered	-.006	.191	-.003
Hypercompetitiveness x Relational Aggression	-.482	.408	-.089
ISC-mates x Relational Aggression	.241	.246	.125
ISC-status x Relational Aggression	.010	.332	.004
Committed Relationship	.242	.142	.111
Living Together	.784	.395	.127
Family Income 15-34,999K*	-.443	.278	-.103
Family Income 35-54,999K	.279	.268	.072
Family Income 55-75K	.050	.194	.016
Participant Income <15K	-.118	.190	-.038
Caucasian/Other	-.251	.195	-.087
Social Desirability_Self-deception	.048	.022	*.161
Social Desirability_Impression-management	.020	.029	.057

Dependent Variable: Body Dissatisfaction [Adjusted $R^2 = .226$, $F(17, 210) = 4.83$, $p < .001$].
Note. *$p < .05$. **$p < .01$. ***$p < .001$. $N = 211$

Table 8-continued

Results of Regression Analysis examining possible interaction effects of competitiveness and relational aggression

		Drive for Thinness	
Predictor	*B*	*SE B*	β
Hypercompetitiveness_Centered	-.276	.189	-.108
ISC-mates_Centered***	-.789	.151	-.451
ISC-status_Centered*	.474	.179	.215
Relational Aggression_Centered	-.373	.221	-.156
Hypercompetitiveness x Relational Aggression	-.128	.473	-.020
ISC-mates x Relational Aggression	.324	.285	.145
ISC-status x Relational Aggression	.063	.384	.020
Committed Relationship	.034	.164	.013
Living Together	.854	.458	.119
Family Income 15-34,999K	-.366	.322	-.074
Family Income 35-54,999K	.032	.310	.007
Family Income 55-75K	-.048	.225	-.014
Participant Income <15K	.055	.221	.015
Caucasian/Other	-.167	.225	-.050
Social Desirability_Self-deception	.010	.026	.030
Social Desirability_Impression-management	.028	.034	.070

Dependent Variable: Body Dissatisfaction [Adjusted $R^2 = .227$, $F(16, 210) = 4.86$, $p < .001$].

Note. $*p < .05$. $**p < .01$. $***p < .001$. $N = 211$.

Table 8-continued

Results of Regression Analysis examining possible interaction effects of competitiveness and relational aggression

		Bulimia	
Predictor	*B*	*SE B*	β
Hypercompetitiveness_Centered	-.190	.118	-.116
ISC-mates_Centered*	-.195	.094	-.174
ISC-status_Centered	-.008	.112	-.006
Relational Aggression_Centered	-.375	.138	-.246
Hypercompetitiveness x Relational Aggression**	.267	.295	.066
ISC-mates x Relational Aggression	.033	.177	.023
ISC-status x Relational Aggression	-.267	.240	-.130
Committed Relationship*	.277	.103	.171
Living Together	276	.285	.060
Family Income 15-34,999K	-.325	.201	-.102
Family Income 35-54,999K	.101	.194	.035
Family Income 55-75K	-.022	.140	-.010
Participant Income <15K	.053	.138	.023
Caucasian/Other	-.159	.141	-.074
Social Desirability_Self-deception	.002	.016	.011
Social Desirability_Impression-management	.027	.021	.106

Dependent Variable: Body Dissatisfaction [Adjusted $R^2 = .264$, $F(16, 210) = 5.71$, $p < .001$].

Note. $*p < .05$. $**p < .01$. $***p < .001$. $N = 211$.

Table 8- Continued

Results of Regression Analysis examining possible interaction effects of competitiveness and relational aggression

		Perfectionism	
Predictor	*B*	*SE B*	β
Hypercompetitiveness_Centered***	-1.169	.168	-.522
ISC-mates_Centered	-2.582	.134	.000
ISC-status_Centered	.017	.159	.009
Relational Aggression_Centered	.105	.197	.050
Hypercompetitiveness x Relational Aggression	-.380	.421	-.069
ISC-mates x Relational Aggression	.344	.253	.176
ISC-status x Relational Aggression	-.447	.341	-.159
Committed Relationship	.172	.146	-.078
Living Together	-.472	.407	-.075
Family Income 15-34,999K	.049	.286	.011
Family Income 35-54,999K	-.158	.276	-.040
Family Income 55-75K	.139	.200	.045
Participant Income <15K	.102	.196	.033
Caucasian/Other	.299	.200	.102
Social Desirability_Self-deception	-.025	.023	-.084
Social Desirability_Impression-management	-.062	.030	-.178

Dependent Variable: Body Dissatisfaction [Adjusted $R^2 = .203$, $F(16, 210) = 4.34$, $p < .001$].

Note. $*p < .05$. $**p < .01$. $***p < .001$. $N = 211$.

QUALITATIVE RESULTS

Because many of the research questions asked in this study were novel, an additional goal of this research was to seek to further understand the relationships between competition, relational aggression, and disordered eating by asking women about their views on these topics. After completing the online survey, participants were asked to briefly respond to the following statements.

> Please briefly describe how you feel / about your body since beginning college/beginning sorority membership.
>
> Please describe a typical / conversation about the topic of physical appearance with a female friend.
>
> It is common for young women to have witnessed gossiping. Please offer an example of when you may have witnessed gossiping. What was gossiped about?

In order to analyze the qualitative questions in the study, the primary investigator reviewed the responses and determined general themes in the provided answers. Table 9 provides the themes for each qualitative question, along with a percentage of how many responses matched that particular theme, as well as an example response. Because the qualitative component of this research is for exploratory purposes these were the only analysis conducted with the responses. Similarly, due to the exploratory nature of these qualitative questions, the primary investigator chose not to eliminate participants who may not have completed all three qualitative questions or any other component of the

survey. It was decided that responses might be able to provide insight into results as well as future topics of interest.

For the first qualitative question regarding attitudes towards appearance, responses from 414 sorority and non-sorority women were analyzed for thematic content. Results suggest that a majority of this sample reported body acceptance 29% (n=119). A majority of the 364 (25%, n=89) sorority and non-sorority women who responded to the second qualitative question responded by stating that their typical conversations regarding appearance were in regards to seeking reassurance. Lastly, of the 419 women who responded to the final qualitative question, a majority (24%, n= 101) reported that the gossip they witness revolves around sexual encounters. A further discussion regarding the significance of the qualitative responses is presented throughout the discussion section as a way to provide further explanation for the results of the hypotheses.

Table 9
Qualitative Questions, Sample Responses, Themes, & Percentages

Question	*Sample Responses*	*Thematic Sub Category*	*%*[a]
Feelings toward body since beginning college/sorority	"I've come to accept and love my body more and more"	Acceptance and comfort	29%
	"…I've always been insecure about my baby fat…"	Always had body image issues	9%
	"…The small amount of weight gain is still of concern to me"	Worse and would like to lose weight	7%
	"I feel too fat and that I am the biggest one of my friends"	Unhappy and uncomfortable	8%
	"Probably a bit more confident"	Better since college	7%
	"I feel I need to exercise more and tone my body"	Need to be healthier	6%
	"I have become more self-conscious about my body and how others perceive me…"	More self-conscious	9%
	"Since starting college, I've gained a little weight but I don't think I am fat"	Gained, but don't need to worry	6%
	"I have had the same body type for a while so I am comfortable. However, I would like to lose weight and look better."	Satisfied, BUT	11%
	"Fine"	Fine	2%
	"I go back and forth with how I feel about my body…"	Up and Down	1%
	"Same"	Same	3%
Conversations about appearance	"I want her butt or I want her boobs"	Envy	4%
	"We talk about how we are too fat and need to work out, and how our clothes don't fit."	Self-deprecating	20%

	"They're usually going on and on about how unhappy they are with something or other while I try to convince them that whatever it is, it isn't true"	Reassurance	25%
	"Non-judgmental, everyone is different"	Positive conversations	9%
	"They're non-existent"	No conversations	7%
	"We usually talk about our clothing choices…"	Clothes, hair, make-up	5%
	"Pretty much we just talk about going to the gym"	Workouts, gym	2%
	"We usually joke about food and eating and eating too much or not eating at all"	Food, nutrition, diets	17%
	"She looks like she has gained/loss weight since the beginning of college…"	Gossip about other's appearance, self-comparison	5%
	"Men like think women. The slimmer the better but I don't agree…"		
		Didn't fit a theme	4%
Gossip examples	"A girl getting breast implants for her graduation present"	Pointing out appearance changes	15%
	"Girls talk about other girls, how they acted around a boy, who they hooked up with or went home with…"	Sexual encounters	24%
	"…We usually talk about what girls did over the weekend"	What people did over the weekend	3%
	"Lots of women gossip…I always remove myself from the situation…"	No gossip witnessed or choose not to participate	3%
	"Usually gossiping about other people's behavior or personalities	Friends or roommates 'behaviors	21%
	"People like to gossip about other people's relationships"	Relationships	15%
	"Drama between friends"	Agree there is gossip, nonspecific	10%

	"Yes, anything, boys, family, problems, rumors, lies."	Women gossip about everything	6%
	"…The main reason girls gossip is because they are jealous or they feel threatened"	Themes of jealousy	1%
	"n/a"	Not applicable	.7%

Note. [a] participants may not have responded to each question. Therefore, percentages reflect the percent of responses for each particular question. Respectively N= 414,364,419.

CHAPTER 5: DISCUSSION

This study had several primary goals. First, this research sought to identify group differences in eating disorder symptomatology, competition, and relational aggression based on sorority membership. Second, this study examined which specific forms of competitiveness best predicted disordered eating. Third, this project explored the possible moderating effects of relational aggression in the relationship between competition among women and eating disorder symptomatology. This chapter is broken down into four sections. The first section reviews results and presents them based on thematic findings; the second section discusses limitations of the study; the third section provides recommendations for future research; and the final section offers clinical implications of this research.

Summary of Results

The Role of Social Desirability in Eating Disorder Symptomatology

Results from the first hypothesis demonstrated key findings based on participants' social desirability and other specific demographic information. Social desirability refers generally to a tendency to provide positive self-descriptions (Paulhus, 2002). This tendency to promote oneself in a positive manner has been studied as a potential interference in self-report data (Paulhus & Reid, 1991). However, isolating and measuring participants' social desirability can be informative in data interpretation. The Balanced Inventory of Desirable Responses (BIDR) contains two subscales, the self-deception subscale and the impression management subscale. The self-deception subscale addresses a participant's desire to appear a certain way to themselves, while the

impression management subscale focuses on a participant's desire to appear a certain way to others. In this study, women's body dissatisfaction was found to significantly differ based on social desirability scores. Specifically, women who were higher on both subscales of social desirability were also higher on body dissatisfaction. These responses demonstrate that women, from both sororities and non-sororities, who may be more concerned with both how others perceive them and what they tell themselves, were also more likely to be dissatisfied with their bodies. This could indicate that despite sorority membership, women who are more concerned with what others think of them, might be more dissatisfied with their bodies. While not formally measuring eating disorder symptomatology, research has suggested that eating behaviors are influenced by what is deemed to be socially desirable (Pliner & Chaiken, 1990). Perhaps it is the case that women feel it is socially desirable or in many ways "normal" to not be satisfied with their appearance.

These results seem to compliment and complicate the qualitative results surfacing in the data. When asked about attitudes towards their appearance, a majority of women reported acceptance. However, when asked about the topics of their conversations, many women reported seeking reassurance about their looks. For example, participants often reported feelings of acceptance such as this "I've come to accept my body more and more," and conversations regarding deprecation, "we talk about how we are too fat and need to work out…" Seeking reassurance could indicate that the women in this sample felt the need to present themselves as feeling a certain way about their bodies, and, regardless of sorority membership, most women desire to appear confident in their

appearance. These findings suggest that how women discuss their feelings about their bodies and the conversations surrounding their bodies may be in conflict with one another. As Guendouzi (2004) found, women's conversations often focus on desire to obtain "socially acceptable" bodies. These types of conversations suggest women's tendency to reassurance seek as a way to make social connections.

Results from this study suggest that women with higher levels of social desirability reported higher levels of drive for thinness. Again, this finding is noteworthy when considering the concept of social desirability. Those who wished to please others in the way they answer self-report surveys, also reported wanting to look thinner. Social desirability was also predictive of bulimic behaviors. Specifically, women with higher social desirability had higher bulimia subscale scores.

It is worth considering the role social desirability plays in how women respond to the topic of appearance in general. The qualitative responses indicated that the women in this sample converse with their peers about their perceived flaws more than other topics reported. For example, comments such as "I want her butt," were common. However, the majority of women who responded to the question regarding how they feel about their bodies, primarily reported acceptance and confidence. In other words, when asked how they feel about their bodies, women predominantly reported acceptance, despite reporting that their conversations about appearance are self-deprecating in nature. While these mixed messages may indicate a desire to discuss topics that are seen as socially acceptable, they might also relate to some form of competition. Women's conversations

with one another may also have a competitive feel and the self-deprecating nature of these dialogues may reflect some form of competition.

Role of Sorority Membership in Eating Disorder Symptomatology

Several hypotheses that were not supported still yield useful information. In addressing potential differences between women's eating disorder behaviors, competitiveness, and relational aggression based on sorority membership, the first hypothesis predicted that sorority membership would affect a participant's eating disorder symptomatology, competitiveness, and relational aggression. Building on a body of literature that has found women in sororities to have higher eating disorder symptomatology (Basow et al., 2007; Crandall, 1988; Shulken et al., 1999), it was hypothesized that sorority women in this sample would report more eating disorder symptoms. However, no significant differences in eating disorder symptomatology were found based on sorority membership. While there were no significant differences between the groups in disordered eating in the current sample, EDI scores in this study were generally higher than they have been in other samples of college women. Participants from this study were all from a large school in the south. It might be the case that there are geographic differences driving participants' higher scores. Researchers have examined the role geographic location can play in bulimic symptoms and found that women from specific regions do have higher bulimic symptoms than others (Perez, Hernandez, Clarke, & Joiner, 2007). Perez et al. (2007) found that women from the South Atlantic region (North Carolina and Virginia) had the most bulimic symptoms in the study. The higher rates of eating disorders in this particular study may be influenced by

geographic region. Therefore, the sample (i.e. both the sorority and non-sorority members in the current study) may be experiencing higher rates of eating disorder symptomatology than is typical for most college women.

Another possible explanation for the lack of eating disorder symptom group differences in the current study is that women currently involved in Greek life may be exposed to more positive messages about body image than they have been in the past. There have been recent initiatives nationwide to educate women involved in Greek life about the benefits of a healthy and positive body image. For instance, a program called The Reflections: Body Image Program, co-created by Dr. Carolyn Becker, recently held trainings at the University of Texas at Austin. In this program, Greek women are encouraged to speak about their bodies in a more positive manner and encourage others to do the same. Educational programming such as this could have affected participants' responses and contributed to the current observation of similar, although relatively high responses on eating disorder symptomatology between sorority and non-sorority women.

Competition in both Sorority and Non-Sorority Women

Competitiveness was examined in both sorority and non-sorority women. For purposes of this study, the construct of competitiveness was categorized into three different forms (hypercompetitiveness, intrasexual competition for mates, and intrasexual competition for status). The first form of competitiveness that was examined was hypercompetitiveness, which reflects a "win at all costs" mentality. Hypercompetitiveness was posited to differ based on sorority membership, however this was not supported. Again, the construct of social desirability significantly impacted

women's hypercompetitiveness. Interestingly, as a participant became less concerned about how she is perceived, her hypercompetitiveness increased. This could indicate that, conversely, women who tend to be more concerned with what others think are less competitive or at least they report being less hypercompetitive.

The second form of competitiveness that was examined in these two groups of women was female competition for mates (ISC-mates). As hypothesized, sorority membership was predictive of a higher ISC-mates score. Because previous literature has not specifically looked at female competition in a sorority population, this finding is particularly important. Findings on the role of sorority membership in body image, eating behaviors, and self-esteem have been equivocal (Alexander, 1998; Basow et al., 2007; Saville & Johnson, 2007). Focusing on a construct such as female competition (for both mates and status) may elucidate some of the findings that suggest group differences in body image, eating behaviors, and self-esteem. The final significant predictor of female competition for mates was the construct of social desirability. Women with less social desirability had higher ISC-mates. It seems likely that one who scores higher on female competition for mates may also be less concerned with pleasing others.

Finally, as predicted, group membership was associated with differing scores on female competition for status (ISC-status). Closer examination revealed that women in sororities were higher on ISC-status than those not in sororities. Again, highlighting the construct of female competition may be helpful in understanding the larger body of research associated with women in sororities and eating disorders. Additionally, women who were less likely to be concerned with how desirable they appeared were significantly

more likely to engage in female competition for status. As such, perhaps women competing for status tend to be less concerned by how they appear to others. Ironically, the construct of ISC-status seems directly related to a desire to come across a certain way. However, those participants concerned with social desirability seem to be concerned with how they are perceived by others in regard to their character. For example, questions on the Balanced Inventory of Desirable Responding ask participants about swearing, littering, and stealing. Women high on ISC-status seem to be concerned with how others think they look based on clothing, other aesthetics, and performance at work and school. Therefore, high scores on ISC-status and low scores on social desirability seem to correspond.

Relational Aggression among Sorority Women

Relational aggression was the final construct hypothesized to differ based on group membership. Contrary to prediction, sorority membership was not associated with higher relational aggression. Results indicated that both relationship status and ethnicity affected relational aggression. Specifically, women who lived with their partners reported less relational aggression than single women. The final significant finding related to relational aggression was based on social desirability. Similar to both female competition scales, those who scored higher on relational aggression had less social desirability. Again, perhaps this could be explained by the character-logical concerns associated with social desirability.

Intrasexual Competition in Sorority Women

Hypothesis 2 concerned which form of competitiveness would account for the most variance of eating disorder symptomatology in a sorority sample. Based on previous findings, this study posited that intrasexual competition for mates would best predict eating disorder symptomatology.

As hypothesized, female competition for mates significantly predicted body dissatisfaction and drive for thinness. However, these hypotheses only received partial support in that higher ISC-mates was associated with *less* body dissatisfaction and drive for thinness. Contrary to previous findings, these results suggest that women with higher levels of female competition for mates tended to feel better about their bodies and did not feel the need to pursue a thinner physique. While these findings seem counterintuitive, it may be the case that women in sororities tend to feel better about their bodies in general.

Results from the first research question reveal no significant differences in eating disorder symptomatology based on group membership. However, results from the first research question do suggest differences in competitiveness based on group membership. It may be the case that women in sororities generally feel more pressure to compete with one another in other domains, rather than domains central to body size and shape. As the qualitative findings of this research suggest, the majority of women in the sample report a sense of acceptance towards their bodies. Therefore, the findings that suggest higher female competition for mates as predictive of less body dissatisfaction and drive for thinness may reflect participants' satisfaction with their bodies as well as a sense of beating out their competitors. When women feel the need to compete, they may also feel

a sense of winning. As such, perhaps less body dissatisfaction and drive for thinness in women who feel competitive with one another may be related to feeling a sense of accomplishment.

Contrary to the hypothesis that female competition for mates would best predict bulimic symptoms, both hypercompetitiveness and female competition for status were significant predictors of bulimic symptoms. Participants who scored higher on both hypercompetitiveness and ISC-status measures were more likely to endorse bulimic symptoms. Again, these findings suggest that the more competitive (both hypercompetitive and ISC-status) a woman is, the lower her bulimia score. This finding could again be related to participants' feelings about their bodies in general as well as a sense of beating out the competition.

The final eating disorder symptom examined by this study was perfectionism. The hypothesis that ISC-mates would best predict perfectionism was not supported. Hypercompetitiveness was found to significantly predict perfectionism scores; however the relationship between these constructs was similar to the other eating disorder symptoms already discussed. The more hypercompetitive a participant responded, the lower her perfectionism scores. This again may be reflective of body confidence as well as a sense of accomplishment.

The construct of social desirability was included in the regression analyses examining the role of competition in predicting eating disorder symptomology among sorority women. Social desirability was significantly predictive of each of the eating disorder symptom domains in these regressions. Participants with greater social

desirability had higher body dissatisfaction, drive for thinness, and bulimia scores. These findings are concurrent with other findings that suggest women with higher social desirability are significantly different than those low on social desirability (Johnson, Brems, & Fischer, 1996). Women who appear more concerned with how they are perceived seem to also be more concerned with achieving a thin ideal. However, the construct of perfectionism was not predicted by higher social desirability, and in fact was significantly predicted by less social desirability. While this finding is inconsistent with previous findings suggesting social desirability is a significant predictor of eating disorder symptoms (Johnson, Brems, & Fisher, 1996), previous literature has used the construct of social desirability based on different sex role inventories.

Relational Aggression, Competition, and Eating Disorder Symptomatology

The final hypothesis of this study predicted that the construct of relational aggression would moderate the relationship between eating disorder symptoms and female competition for mates. Because results of this study suggested that both hypercompetitiveness and female competition for status significantly predicted some eating disorder symptoms, these forms of competitiveness were included in the model for exploratory reasons. Results of the third hypothesis yielded no significant findings. These findings suggest that there are no interactions between each form of competitiveness and relational aggression. Interestingly, qualitative findings suggest that women tend to gossip predominantly about sexual encounters. This qualitative finding is particularly interesting because gossip tends to be an example of relational aggression and sexual encounters seem related to female competition for mates (Buss, 1988; Crick & Gropeter,

1995). These responses demonstrate that there may be reason to continue looking at the relationship between relational aggression and competition in the prediction of eating disorders.

Limitations of the Study

Conducting this research presented many challenges. The first was the process of recruiting participants and the related potential sampling bias. While subject pool participants had to complete the study in order to get class credit, sorority participants had no such compensation. It was decided that sorority participants would be offered the opportunity to enter a raffle and possibly win a gift card. However, sorority members were likely aware of the random nature of the raffle drawing. Therefore, out of the 2,000 University Panhellenic Sorority members approached to participate, the study only had a total of 211 sorority participants with completed data. Participants were emailed a brief and vague description of the research and asked for their participation. While vague, the description still suggested the topic concerned "attitudes towards appearance." Women interested in the topic of "attitudes towards appearance" were likely more apt to participate. Results from the voluntary, sorority population may therefore reflect a group of women particularly interested or in some ways affected by the research topic.

While psychological research continues to utilize subject pool populations, external validity may be affected by data with these participants. Researchers have questioned and continue to question the use and possible over-reliance on subject pool participates in psychological research (Jung, 1969; Padilla-Walker, Zamboanga, Thompson & Schmersal, 2005), suggesting that the ability to generalize findings

becomes diminished. Findings suggest that college women are in many ways more at risk for developing an eating disorder than other women are (Hoyt & Ross, 2003) and therefore, research with this population seems critical. However, the findings of the current research study are not likely generalizable to other at risk populations.

An additional limitation was that the construct of competition among women has predominantly been driven by an evolutionary framework. While this framework provides a valuable paradigm to work from, the evolutionary explanation of female competition can be limiting. As Wood and Eagly (2000) have expressed, many evolutionary psychology assumptions are not accepted in the scientific community but are thought to be important speculative hypotheses. While interesting, these evolutionary explanations for behaviors fail to incorporate or address social and cultural influences. For example, Eagly and Wood (1999) reexamined Buss' (1989) work that looked at sex differences in mate preferences in 37 cultures. Wood's reanalysis accounted for cultural differences and similarities between each of the 37 cultures. This reexamination found that the sexual division of labor between the sexes in the 37 cultures was very similar, predominantly characterized by a "homemakers-provider division." This finding suggests that the evolutionary explanation may not hold up against other broader sociocultural hypotheses.

The theoretical bases and measurement tools of female competition will possibly expand as the construct grows in interest. However, currently the Intrasexual Competition Scales (for both mates and status) (Faer et al., 2005) are the only measures available for assessing the construct of competition among women. These scales alphas have

suggested internal consistency, however they have not been used in many studies. Additionally, several of the questions are written in the form of vignettes. These vignettes are long and could have been difficult for participants to follow. The choice to use such a new measure may have resulted in not adequately capturing participants' female competitiveness.

Another limitation related to the measures of this study relate to the use of the Indirect Aggression Scales (Forrest et al., 2005). These scales are also relatively new and even though alpha levels in this study and other studies have been acceptable so far, it is possible the scales do not properly measure the construct of relational aggression across populations.

Overall, the use of subject pool participants may affect the generalizability of findings. Additionally, relying on relatively new measures in conducting research may not present the most reliable results. However, there are benefits to using a convenient sample and utilizing measures that relate to constructs of interest.

Recommendations for Future Research

Because competition among women has been examined in a limited capacity, future research could seek to expand this domain of interest. More research is needed to better understand the construct of competition among women. Research examining the role of culture in this construct might be particularly useful. Specifically, it would be beneficial to revise current measures or develop new measures that look at the construct of competition among women beyond evolutionary psychology.

Similarly, the construct of relational aggression might be reexamined. Participation in relationally aggressive behavior is not easily admitted. Different ways of ascertaining this information might be useful. Perhaps qualitative interviews or sociometric measures, measures that ascertain behavior based on friend's reporting, might better assess a participant's use of relational aggression as opposed to self-report surveys.

Future research could also address sorority membership in a more complex manner. This study emailed about 2,000 sorority members asking for their participation, however there were only 211 members who completed the surveys. Incentivizing participation might lead to more participation among this group, and help to explain the relationships between the constructs of interest among sorority women.

In addition to trying to get more sorority participation in the future, it might also be helpful to examine sororities' responses separately and look for differences between the groups. In looking at differences between sororities it might be helpful to understand reasons for sorority membership as well as time spent in the sorority. Future research could provide a better picture of how these constructs are related in sororities based on motivations for joining.

Lastly, it might be worth further investigating the role social desirability plays in eating disorder symptomatology, competitiveness, and relational aggression. While there is research to suggest that social desirability may affect food choices (Pliner & Chaiken, 1990), few studies have specially investigated how social desirability impacts responses to self-report questionnaires measuring eating disorder symptomatology. Considering

most eating disorder research utilizes self-report measures (Tilgner, Wertheim, & Paxton, 2003), further examining social desirability seems important. Additionally, understanding how social desirability influences the self-reporting of competition and relational aggression could be beneficial.

Clinical Implications and Concluding Comments

As research has demonstrated, a significant amount of college women engage in subclinical eating disorder behaviors (Heatherton et al., 1995; Hoyt & Ross, 2003). Because of the multifaceted nature of the development of eating disorders and the large amount of college women suffering with symptomatology, examining possible predictors is critical. Researchers have long recognized that competition is an important part of college and therefore might impact eating disorder behaviors (Striegel-Moore et al., 1990). While the connections between college-life, competitiveness, and the development of disordered eating have been addressed, more information examining the nuances of these constructs is needed.

This study was a preliminary attempt to link the constructs of group membership, competition, and relational aggression in the development of eating disorders. While researchers have previously examined how group membership, specifically sorority membership, might influence eating disorders, (Basow et al., 1999; Crandall et al., 1988; Shulken et al., 1997) no studies have sought to understand how the constructs of competition and relational aggression might be related to group differences. Additionally, a significant body of research has demonstrated the potential negative effects of specific

forms of competition (Burckle et al., 1999). However, the emphasis on competition among women in a sorority sample has not been previously explored.

Furthering knowledge in these areas might be beneficial in understanding the development of eating disorders. Additionally, more research in this area might be beneficial for university administrators working with young women who struggle with eating disorder behaviors. Research on an increase in disordered eating among sororities has been crucial in the development of educational programs implemented on university campuses. The Reflections: Body Image Program (Becker, Smith, & Ciao, 2005) has grown substantially in recent years. This is a program that developed out of research that suggested women in sororities may be more at risk for developing disordered eating behaviors. This program continues to implement techniques on university campuses aimed at improving women's body image. The Reflections program creates effective programming to improve body image and might benefit from this research that demonstrates competition in sororities may be a domain worth addressing. Perhaps body image could be further improved if these young women explore how their own competitiveness can impact their feelings about their bodies. Additionally, the topic of relational aggression could be one that programs such as Reflections address. It is possible that university policies and procedures could benefit from this research, improving psychoeducational information for sororities as well as women who are not in sororities, in the area of body image and disordered eating.

While the macro-level implications of this research might enhance university programming, drawing attention to the competitive behaviors among women may prove

fruitful in working with female college students in therapeutic milieus. Perhaps university counseling centers could foster more dialogue surrounding competition, relational aggression, and the development of eating disorders. This could occur individually as well as in group therapy settings. The more attention dedicated to these topics in research, the better clinicians will be able to address these concerns in therapy.

Appendix A: Email Recruitment & Cover Letter

As an EDP enrolled student/member of the Greek system, you are invited to participate in a survey, entitled "Attitudes about Appearance and Competition." The purpose of the study is to better understand the attitudes and behaviors related to appearance that young college women may have. The study is being conducted by Vanessa Scaringi, M.A., Counseling Psychology, Department of Educational Psychology of The University of Texas at Austin, 1 University Station D5800, Austin, TX 78712**,** (512) 471-0368**,** vscaringi@mail.utexas.edu

A dearth of research exists on attitudes and behaviors related to appearance in college women. The understanding of other constructs, such as competition, may represent a critical step toward furthering the literature in this area.

If you agree to participate in this study, you will be asked to complete several surveys about your attitudes towards appearance, competitiveness, and aggression.

If you agree to participate in this study, you will have 14 days to complete the surveys.

Total estimated time to participate is approximately 45 – 60 minutes. All participants who complete the survey are eligible to receive a $50 gift card to Amazon.com. Five participants in the study will be randomly selected. Instructions for participating in the drawing will be provided at the end of the survey.

Eligibility:

You are eligible to be a participant in this particular study because you meet **all** of the following criteria: (a) you are currently enrolled in classes in Educational Psychology / or you are a member of a panhellenic sorority (b) you are 18 years of age or older; and (c), you are in good health and not experiencing a mental health emergency (e) you are not currently participating in any residential treatment and are not currently in a correctional facility (f) you are not currently experiencing any conditions that would prevent you from providing your own consent to participate. It is the understanding of these researchers that you satisfy all of these experimental criteria. If this is not the case, please cease your online participation, which is an indication that you are "not eligible" for this particular study.

Risks to participants are considered minimal. Your responses are anonymous and identifying information will not be tracked with your responses; therefore, since personal information will not be collected, the privacy of your responses will be kept private and your personal information will be kept confidential. Further, some questions may potentially be sensitive, and may require you to think about emotions related to life stressors or events. When filling out the inventories, you may skip questions you do not wish to answer and you may withdraw from the study at any time. Only the researchers

will have access to the data during data collection. There will be no costs or compensation for participating.

Mental health treatment will not be provided with this study. If you experience any distress during any portion of the study, please call the UT Counseling & Mental Health Center at 512.471.3515, the Austin–Travis County Mental Health Services Counseling Helpline at 512.472.4357, or Vanessa Scaringi, M.A. at 954-579-9946

To complete the survey, click on the link below:

If you do not want to receive any more reminders, you may email vscaringi@mail.utexas.edu.

This study has been reviewed and approved by The University of Texas at Austin Institutional Review Board. If you have questions about your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact - anonymously, if you wish - the Institutional Review Board by phone at (512) 471-8871 or email at orsc@uts.cc.utexas.edu.

IRB Approval Number: 2010-08-32

If you agree to participate please press the arrow button at the bottom right of the screen otherwise use the X at the upper right corner to close this window and disconnect.

Thank you.

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Appendix B: Demographics

Instructions: Please endorse the electronic item that best describes you.

Your participation in this study is voluntary, anonymous, and completely confidential. Each question in this section captures a phenomenon that significantly impacts your psychological wellness, health and/or physiological functioning, and thus is important to our being able to accurately interpret your data. We greatly appreciate your participation and cooperation.

Indicate your age:
Specify _____

Please indicate your height and weight:
Specify_____

Indicate your marital status
A Single/Never Married
B Married
C Widowed
D Committed relationship, not married or living together
E Living with a spouse or partner, not married

Please indicate your sexual identification
A Straight
B Gay/Lesbian
C Bisexual
D Questioning
E Other

Indicate your (or your family's) estimated yearly household income:
A Less than $15,000
B $15,000 – $34,999
C $35,000 – $54,999
D $55,000 – $74,999
E Above $75,000

Ethnicity/Race (SELECT ONE):
A. Caucasian
B. African American
C. Asian American/Pacific Islander
D. Latino/Latina
E. Indian American
F. Native American

G. Multiracial
H. Other: _____
I. Prefer not to answer

Appendix C: Eating Disorder Inventory

Drive for Thinness:

	Always	Usually	Often	Sometimes	Rarely	Never
1. I eat sweets and carbohydrates without feeling nervous						
2. I think about dieting						
3. I feel extremely guilty after overeating						
4. I exaggerate or magnify the importance of weight						
5. I am preoccupied with the desire to be thinner						
6. If I gain a pound, I worry that I will keep gaining						

Bulimia:

	Always	Usually	Often	Sometimes	Rarely	Never
1. I eat when I am upset						
2. I stuff myself with food						
3. I have gone on eating binges where I have felt that I could not stop						
4. I think about bingeing (overeating)						
5. I eat moderately in front of others and stuff myself when they are gone						
6. I have the thought of trying to vomit in order to lose weight						
7. I eat or drink in secrecy						

Body Dissatisfaction:

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

Perfectionism:

	Always	Usually	Often	Sometimes	Rarely	Never
1. Only outstanding performance is good enough in my family.						
2. As a child I tried very hard to not disappoint my parents and teachers.						
3. I hate being less than best at things						
4. My parents have expected excellence of me.						
5. I feel that I must do things perfectly, or not at all.						
6. I have extremely high goals.						

Appendix D*:* Hypercompetitive Attitude Scale

Never True of Me				Always True of Me
1	2	3	4	5

1. Winning in competition makes me feel more powerful as a person.
2. 1 find myself being competitive even in situations which do not call for competition.
3. I do not see my opponents in competition as my enemies.
4. I compete with others even if they are not competing with me.
5. Success in athletic competition does not make me feel superior to others.
6. Winning in competition does not give me a greater sense of worth.
7. When my competitors receive rewards for their accomplishments, I feel envy.
8. I find myself turning a friendly game or activity into a serious contest or conflict.
9. It's a dog-eat-dog world. If you don't get the better of others, they will surely get the better of you.
10. I do not mind giving credit to someone for doing something that I could have done just as well or better.
11. If I can disturb my opponent in some way in order to get the edge in competition, I will do so.
12. I really feel down when I lose in athletic competition.
13. Gaining praise from others is not an important reason why I enter competitive situations.
14. I like the challenge of getting someone to like me who is already going with someone else.
15. I do not view my relationships in competitive terms.
16. It does not bother me to be passed by someone while I am driving on the roads.
17. I can't stand to lose an argument.
18. In school, I do not feel superior whenever I do better on tests than other students.
19. I feel no need to get even with a person who criticizes or makes me look bad in front of others.
20. Losing in competition has little effect on me.
21. Failure or loss in competition makes me feel less worthy as a person.
22. People who quit during competition are weak.
23. Competition inspires me to excel.
24. I do not try to win arguments with members of my family.
25. I believe that you can be a nice guy and still win or be successful in competition.
26. I do not find it difficult to be fully satisfied with my performance in a competitive situation.

Appendix E: Measures of Intrasexual Competition

Female competition for mates measure

Likert scale questions:

0	1	2	3	4	5
Strongly disagree					Strongly agree

(1) The skinnier I am, the more attractive I am to men.
(2) If women think that I am attractive, they will stay away from my partner.
(3) I work out or watch what I eat because I want a body that will impress men.
(4) When I buy clothes, I think about what men will find attractive.
(5) I don't care if other women think I dress too provocatively because men like it.
(6) I prefer to go out to clubs with female friends who are less attractive than I am.
(7) Having a romantic partner is important to me.
(8) I exercise because I want a body that will impress men.

Vignettes – how appropriate is Mary's behavior?

0	1	2	3	4	5
Completely inappropriate					Completely appropriate

(1) Mary and her boyfriend Jim are at a party. During the entire evening, Mary notices Jim looking at Jane, who is wearing a very revealing dress. Irritated but not wanting to complain, Mary tells Jim that she had heard that Jane had recently contracted a sexually transmitted disease.
(2) Jane confides to Mary that she is romantically interested in Jim, but that he never seems to notice her. Mary, who is also interested in Jim, tells Jane that she thinks Jim hasn't noticed her because he is already romantically involved with someone else. Mary knows this is a lie but says this so she can go after Jim herself.
(3) Mary overhears her boyfriend Jim telling his buddy Jack that he thinks Jane has a very attractive body. The next day, while Jim goes out, Mary casually mentions to Jack that Jane had extensive cosmetic surgery and derogates her figure as artificial. When Jim returns, Jack tells Jim about Jane's surgery and ridicules how Jim had been admiring her.
(4) Jane and Mary, who are both single, signed up for carpentry classes in hopes of meeting eligible bachelors. Both are excited when they discover that many single men are taking part in this class. However, as the class progresses, Mary is frustrated by the fact that all the men are paying attention to Jane. Mary convinces Jane that she is a lousy carpenter and that she should drop the class.
(5) Mary, who works out at a local gym both as a means of getting in shape and as away to meet single men, is frustrated by the fact that there are so many attractive women who attend the gym. Thus, Mary spends close to an hour getting ready for her

workout every day.
(6) Jane and Mary are going out to a club together. Jane asks Mary if she looks good in her new outfit. While Mary actually thinks the outfit makes Jane look fat, she tells Jane that she looks great so guys will not pay attention to her.
(7) Jane, Mary's good friend, has a crush on Jim. Mary considers Jim to be attractive, but she is not as interested in him as Jane is. However, one night Jim calls Mary and asks her out. Mary accepts the offer.

Female competition for status measure

Likert scale questions:

0	1	2	3	4	5
Strongly disagree					Strongly agree

(1) I feel powerful when I am thinner than other women.
(2) When I buy clothes, I think about what other women will think about them.
(3) I would not be concerned about my appearance at a women-only gym.
(4) I don't like to be in situations where I have to compete with other women.
(5) When playing a game with female friends, I would prefer to tie than to win.

Vignette style questions – how appropriate is Mary's behavior?

0	1	2	3	4	5
Completely inappropriate					Completely appropriate

(1) Mary is Jane's immediate supervisor in a department store. Mary is afraid that Jane is very ambitious and may be after her job. One day, Jane tells Mary that she has an idea for an advertising campaign. Mary dismisses it, telling Jane that it would never work, but later submits the same idea to her own supervisor, representing it as her own.
(2) Mary and Jane are writing reports on similar topics. Jane, who is struggling with the material, asks Mary for help. Mary, who feels that she has worked too hard to give what she has earned to Jane, gives Jane a thick stack of printouts from a computer search that she had made that she knows did not yield any useful information.
(3) Mary's boss has been interviewing all the employees at the firm because management reported there might soon be layoffs. During Mary's interview, her boss asks her what she thinks of Jane's performance on the job. Not wanting to appear to derogate Jane, Mary sweetly says that she thinks Jane has been coping very well with her drinking problem and that Jane's job performance should be considered acceptable, considering what she must be going through. Unknown to Mary's boss, however, Jane does not drink to excess.
(4) Mary and Jane are best friends. Jane has recently learned that she has been

accepted to attend Harvard on a full scholarship. Mary, who desperately wanted to attend Harvard, was not accepted and must instead attend Boston College. Mary begins to distance herself from Jane, eventually ceasing communication with her altogether.

(5) Mary and Jane have been selected to represent their community in a regional mountain biking meet. Mary attended this meet the previous year and knows that succeeding on this course requires specific adjustments to one's bike. While Mary and Jane are friends and are expected to collaborate on the course, Mary decides not to reveal this information to Jane, fearing that it could result in Jane beating her in the competition.

(6) Mary's friend Jane is always talking about what a fantastic golf player she is. Mary has never considered herself to be a very good player. One day Mary and Jane decide to play together and Mary beats Jane. Mary feels great satisfaction and tells Jane's friends that she is the better player.

(7) Mary and Jane receive their grades on a difficult midterm exam. Mary, who studied very hard for this exam, receives a B. After Jane receives her exam, she gets up and goes to the bathroom. Mary peeks over at Jane's grade.

Appendix F: Adult Indirect Aggression Scale

Think about times in the last six months when you have done the following to any friend

1=Never, 2=Once or Twice, 3=Sometimes, 4=Often, 5=Regularly

1. Withheld information from them that the rest of the group is let in on
2. Purposefully left them out of activities
3. Made other people not talk to them
4. Excluded them from a group
5. Used private in-jokes to exclude them
6. Spread rumors about them
7. Made them feel that they don't fit in
8. Stopped talking to them
9. Omitted them from conversations on purpose
10. Turned other people against them
11. Used sarcasm to insult them
12. Made negative comments about their physical appearance
13. Imitated them in front of others
14. Played a nasty practical joke on them
15 Done something to try and make them look stupid
16. Intentionally embarrassed them around others
17. Made fun of them in public
18. Called them names
19. Criticized them in public
20. Used my relationship with them to try and get them to change a decision
21. Tried to influence them by making them feel guilty
22. Used their feelings to coerce them
23. Used emotional blackmail on them
24. Pretended to be hurt and/or angry with them to make them feel bad about him/her-self
25. Put undue pressure on them

Appendix G: Social Desirability

1 2 3 4 5 6 7

Not True Somewhat True Very True

1. My first impressions of people usually turn out to be right.

2. It would be hard for me to break may of my bad habits.

3. I don't care to know what other people really think of me.

4. I have not always been honest with myself.

5. I always know why I like things.

6. When my emotions are aroused, it biases my thinking.

7. Once I have made up my mind, other people can seldom change my opinion.

8. I am not a safe driver when I exceed the speed limit.

9. I am fully in control of my own fate.

10. It's hard for me to shut off a disturbing thought.

11. I never regret my decisions.

12. I sometimes lose out on things because I can't make up my mind soon enough.

13. The reason I vote is because my vote can make a difference.

14. My parents were not always fair when they punished me.

15. I am a completely rational person.

16. I rarely appreciate criticism.

17. I am very confident of my judgments.

18. I have sometimes doubted my ability as a lover.

19. It's all right with me if some people happen to dislike me.

20. I don't always know the reasons why I do the things I do.

21. I sometimes tell likes if I have to.

22. I never cover up my mistakes.

23. There have been occasions when I have taken advantage of someone.

24. I never swear.

25. I sometimes try to get even rather than forgive and forget.

26. I always obey laws, even if I'm unlikely to get caught.

27. I have said something bad about a friend behind his or her back.

28. When I hear people talking privately, I avoid listening.

29. I have received too much change from a salesperson without telling him or her.

30. I always declare everything at customs.

31. When I was young I sometimes stole things.

32. I have never dropped litter on the street.

33. I sometimes drive faster than the speed limit

34. I have never read sexy books or magazines.

35. I have done things that I don't tell other people about.

36. I never take things that don't belong to me.

37. I have taken sick leave from work or school even though I wasn't really sick.

38. I have never damaged a library book or store merchandise without reporting it.

39. I have some pretty awful habits.

40. I don't gossip about other people's business.

Appendix H: Qualitative Questions

1. Please briefly describe how you feel about your body since beginning college/beginning sorority membership.
2. Please describe a typical conversation about the topic of physical appearance with a female friend.
3. It is common for young women to have examples of times when they witnessed gossiping. Please offer an example of when you witnessed gossiping. What was gossiped about?

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