RELATIONAL AGGRESSION AND DISORDERED EATING

BY

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Abstract

Previous studies have investigated the link between aggression and disordered eating behavior. This study investigated the behavioral and psychological links between disordered eating and relational aggression in a female college-age population. I used logistic regression and multiple linear regression were used to investigate behavioral and psychological links. Relational aggression did not predict disordered eating behavior but did predict affective problems and interpersonal problems. Depressive symptoms predicted disordered eating behavior, engagement in relational aggression, and negative psychological traits. Prosocial behavior proved to be a buffer against disordered eating behavior, negative psychological traits, and depressive symptoms. Previous studies finding links between relational aggression and disordered eating may have not considered the influence of depressive symptoms on disordered eating.

Keywords: eating disorders, relational aggression, depression, prosocial behavior, social resources

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Relational Aggression and Disordered Eating

Social variables in complex medical and psychological disorders often go understudied, particularly recently as biological and medical models have been the predominant driving forces behind research, funding, and a popular understanding of human behavior. However some behaviors have yet to be adequately explained by biology alone. These disorders are best explained using a multi-systematic approach most advocated by the developmental psychopathology models and newer evolutionary psychology models. Two of these behaviors/clusters of behaviors are relational aggression and disordered eating.

Relational aggression is defined as "a form of aggression that involves attempts to harm others through the manipulation and damage of relationships and feelings of social inclusion" (Werner & Crick, 1999, p. 615). On the surface it may appear as if there is no logical connection between relational aggression and disordered eating. However, they do have some important commonalities. For example, both behaviors are seen more frequently in women and girls, both are suspected to be highly influenced by culture, and traditional viewpoints propose that both are undesirable and aversive in nature. However, recent research reveals that these behaviors may serve a function in mate selection and resource attainment (Hawley, 2003a). Uncovering more about their relationship may shed light on them and even potentially lead to new interventions for aggressive behavior and disordered eating.

Traditionally, clinical theory and literature have supported the premise that negative social behaviors such as relational aggression, regardless of frequency, form, or skill, produce negative mental health outcomes. Many clinical theories point to depression,

social isolation, low self-esteem, anxiety, and eating disorders as outcomes of aggressive behavior (Crick, 1996; Crick & Grotpeter, 1995; Werner & Crick, 1999). There is also empirical evidence that in fact these things are related, particularly when negative social behaviors are examined in isolation from other social behaviors (Hawley, 2003). However, there is a growing body of literature that suggests these connections are not as simple and clear as one would expect, and therefore previous conclusions may need revision. Recent research points to the possibility that not all relational aggression results in negative consequences and that disordered eating may be perceived as functional in today's society, such that women who engage in disordered eating may believe that their disordered eating serves a useful purpose (Li, Smith, Griskevicius, Cason, & Bryan, 2010). Examination of relational aggression in isolation from other social behaviors, although convenient, may lead to inaccurate and too simplistic conclusions about the role of relational aggression in psychopathology. The current study examined the relationships among relational aggression, prosocial behaviors, depressive symptoms, and eating disorder behaviors.

This paper will first discuss relational aggression and disordered eating. There will also be some discussion of how research on relational aggression has developed over time to include women. Then implications of exploring the two viewpoints will be discussed in general as well as the importance of taking a more inclusive look at social behaviors when examining depressive symptoms and eating disorder behavior.

Traditional Clinical Approaches to Relational Aggression and Disordered Eating

Until very recently both relational aggression and disordered eating have been examined primarily through traditional clinical and developmental psychopathology

perspectives. These perspectives have garnered considerable research support, have made an impact on the treatment of related disorders, and have guided researchers and clinicians alike to assume several things about relational aggression and disordered eating; primarily that these two behaviors develop over time from multiple influences, such as biology and family, peer, and community social interaction (Ackard, Fulkerson, & Neumark-Sztainer, 2011; Gollan, Lee, & Coccaro, 2005; Jimerson, Pavelski, Orliss, & D'Agruma, 2002).

Aggression and Relational Aggression

Historically aggression has been viewed as male-dominated, and most research on the impact of physical aggression has studied only males (Crick & Dodge, 1994; Crick, Ostrov, & Kawabata, 2007). The investigation of aggression in women has been more limited, as it was discounted as a rare phenomenon, possibly because aggression among women is thought to be more covert and relational in nature. Initially research on relational aggression was intended to show that women and girls do, in fact, utilize aggressive behaviors. Research then evolved to investigate the consequences of relational aggression behaviors among women. Recently the examination of relational aggression among women has shifted somewhat to investigate potential gains associated with relational aggression and to highlight the importance of examining the influence of multiple social behaviors on individuals' quality of life and psychopathology (Hawley, 2003).

Aggression, relational aggression and developmental psychopathology. Much of the developmental psychopathology literature holds aggression accountable for a variety of adverse or negative mental health consequences and reveals that the use of relational aggression in social interactions starts as early as language is present (Bonica et al., 2003;

Crick et al., 1998). Generally speaking, developmental models advance the belief that mental illness and wellness, quality of life, and happiness are enduring patterns that start in early childhood.

Developmental psychopathology proposes that both atypical and typical development illuminate the nature of both illness and wellness, that development in general leads to both adaptive and maladaptive thoughts, feelings, and behaviors (Masten & Coatsworth, 1995), and that change is often influenced by many variables such as biology, society, culture, individual psychology and social interactions (Cicchetti & Toth, 1995). Moreover, this perspective focuses on the actions and their consequences, and looks comprehensively at how they influence the individual over the lifespan. Sroufe (1997) explains, "Within a developmental perspective, maladaptation is viewed as evolving through the successive adaptations of persons in their environments. It is not something a person has or an ineluctable expression of an endogenous pathogen. It is the complex result of a myriad of risk and protective factors operating over time." (p. 1). This reflection highlights the importance of looking at social behavior over a lifespan to see the effects of aggression and holds that there likely are both risk and protective factors at work. The present study was designed to investigate both the risk and protective factors associated with disordered eating, relational aggression, and prosocial behavior.

Relational aggression and psychopathology research. Studies of relational aggression have often found that girls and women are more negatively affected by relational aggression than are boys and men. The predominant explanation for this relates to the importance of intimacy in women's relationships (Grotpeter & Crick, 1996). Crick and Grotpeter (1995), in fact, argued that women are more likely than men to engage in

relational aggression precisely because relational aggression is more likely to be effective in women's social groups. They hypothesized that when women attempt to inflict harm on peers, they selectively target highly valued goals. According to this line of thought, behaviors that challenge the homeostasis of relationships will be particularly effective in women's social groups (Crick, 1996).

There is a sizeable body of literature providing evidence that relational aggressors display psychosocial maladjustment (Crick, 1996; Crick & Grotpeter, 1995; Werner & Crick, 1999). Clinical theory regarding the impact of aggressive social behaviors on mental health tends to formulate the aggressor as experiencing the negative mental health consequences of their negative social interactions. Negative psychosocial consequences include depression, anxiety, low self-esteem, alcohol and drug use, and eating disorders (Crick, 1996; Crick & Grotpeter, 1995; Werner & Crick, 1999), and relational aggression appears to be related to such symptoms of Borderline Personality Disorder (Underwood, 2003), as affective instability, negative relationships, and self-harm (Werner & Crick, 1999).

Early research regarding the psychosocial consequences for women and girls who frequently use relational aggression has found that they have some of the same psychosocial maladjustment markers, such as depression and peer rejection (Crick, 1996; Werner & Crick, 1999) as do women and girls who engage in physical aggression (Werner & Crick, 1999). Others (Crick, 1996; Crick & Grotpeter, 1995; Rys & Bear, 1997; Underwood, 2003) have theorized that the primary reason relational aggression leads to psychosocial maladjustment is the high likelihood of rejection by peers.

Disordered Eating: Traditional View

As with relational aggression research, there is increased interest in exploring a developmental psychopathology perspective on eating disorders because their prevalence in children and adolescents continues to increase (Phelps & Bajorek, 1991). Research up to this point has not revealed a clear front-runner in the search for the mechanisms underlying eating disorders, but a developmental psychopathology model encourages the investigation of multiple contributing factors (Jimerson, et. al., 2002).

Traditional clinical and etiologic theories designed to illuminate the factors contributing to eating disorders note that it is imperative to include biological, genetic, sociocultural, psychodynamic, cognitive, behavioral, and family factors (Minnes, Senders, & Singer, 1993). Most research supports the development of both Anorexia Nervosa (AN) and Bulimia Nervosa (BN) in middle adolescence through early adulthood (American Psychological Association, 2000; Smolak & Levine, 1994). The typical age of onset for eating disorder symptoms is 14-18 years and the typical age of onset specifically for bulimic behavior is 16-20 years (Gordon, 2000). The present study aimed to gather data from women in this general age range.

Psychological traits in disordered eating. Clinical research on the development and maintenance of eating disorders has identified several negative psychological characteristics associated with them. For this reason, psychological traits were examined in this investigation. The primary clusters of psychological traits associated with eating disorders are: interpersonal difficulties, affective problems, personal ineffectiveness, and control, often exemplified by controlling intake and output of food itself when other aspects of life (i.e. relationships) can't be controlled (Garner, 2004).

Interpersonal difficulties are common in those with eating disorders (Fairburn, 1997; Mines, Senders, & Singer 1993). Interpersonal difficulties also play an important role in the maintenance of eating disorders because binges are often precipitated by interpersonal events. Treatments that modify current difficult interpersonal relationships have been shown to have large positive benefits (Fairburn, 1997).

Affective problems, such as difficulty with emotion regulation and affective instability, also are commonplace in eating disordered populations (Crowther & Sherwood, 1997; Garner, 2004). In particular, individuals with eating disorders tend to have difficulty identifying, understanding, and responding to emotional states (Allen, Scannell, & Turner, 1998). Often affective instability is described in terms of increased irritability, hostility, anger, reckless behavior, and misuse of substances to regulate mood states (Garner, 2004).

Personal ineffectiveness is also a set of personality characteristics common to those with disordered eating. The term "personal ineffectiveness" refers to beliefs and feelings that relate to decreased self-esteem and personal alienation such that the individual feels he or she lacks a strong personal identity and frequently falls victim to low personal self-evaluation (Garner, 2004).

The need for control is prominent in theory for both social and clinical examinations of contributors to the development and maintenance of eating disorders. A high need for control has been identified as common in those with AN (Blank & Latzer, 2004; Slade, 1982; Vitousek & Ewald, 1993). For example, control over the consumption of food, even in the face of intense biological mechanisms encouraging the individual to eat, is in common to both anorexic and bulimic individuals. Often, bulimic behaviors bring about feelings of power, competence, and control. Some social theories of eating disorders

hypothesize that they function, in part, as ways to control and manipulate the environment (Gordon, 2000).

Research on Relational Aggression and Disordered Eating

The relationship between disordered eating and aggression has not been extensively explored. However, recent research has found evidence for a link between disordered eating and the use of relational aggression. For example, a unique investigation by Werner and Crick (1999) yielded important results regarding the consequences of relational aggression in a college-age population. Consequences of engaging in relational aggression included peer rejection, anti-social behavior, stimulus seeking, egocentricity, affective instability, identity problems, negative relationships, self-harm behavior, affective features of depression, bulimic symptoms, and reduced life satisfaction. Of note, higher scores of relational aggression scores were associated with more severe bulimic symptoms in women (Werner & Crick, 1999). Given the potentially life-threatening nature of this eating behavior, its association with relational aggression deserves further investigation.

Alternative Perspectives on Aggression and Disordered Eating

Alternative view of relational aggression. In contrast to the more traditional view of aggression, there is an emerging view that aggression may be functional and assistive in thriving in one's environment. Until recently, aggression was thought of to have deleterious mental health consequences regardless of other factors. Indeed, many developmental theorists see aggression as universally negative. However, Hawley and colleagues (Hawley, Little, & Card, 2007; Hawley & Vaughn, 2003a) have combined an

evolutionary perspective with developmental psychology tenants to devise and test the hypothesis that not all aggression is maladaptive.

Hawley proposed that it is necessary to work within a social group in order to have adequate access to resources for survival (Hawley, 2003b). Behaviors that contribute and promote group cohesiveness and cooperation are referred to as prosocial behavior (Hawley, 2003a). However, a given individual's access to important resources may be advanced via aggressive behaviors (Hawley, 2003a). Under this premise, not all aggressive behavior is seen as having negative repercussions. Indeed this viewpoint proposes that skillful combinations of prosocial and aggressive social behavior strategies may be the most effective in securing the limited resources that are available (Hawley, 2003a).

It appears that relational aggressors may actually benefit from their aggressive strategies. For example, girls who used indirect aggression have been found to be less likely to report loneliness, to have greater popularity among their peers (Bjorkqvist et al., 2001 from Archer & Coyne, 2005), to be central members of a social network (Xie, Cairns, & Cairns 2002), to be just as likely as non-aggressive children to have friends (Grotpeter & Crick, 1996), and to have friendships with high levels of intimacy (Xie et al., 2002).

Adolescents who demonstrate high combined use of prosocial and aggressive relational strategies may actually fair just as well as peers who mainly use prosocial strategies. High use of prosocial behavior and relational aggression was related to positive peer regard, being seen as socially skilled, and being socially central to the group (Hawley, 2003). It appears that using both strategies skillfully may prevent peer rejection. It may also be that high use of prosocial behaviors buffers an individual from some of the documented negative effects of relational aggression.

Alternative view of disordered eating behavior. Recent research has challenged the traditional clinical psychopathology view of disordered eating. These new views arise out of the evolutionary psychology literature and are based on ideas about competition for and access to resources. Recent evolutionary psychology studies, for example, have supported a possible connection between engagement in disordered eating and intent to manipulate body image in order to access such social resources as access to mates/partners. In one study, sexual competition cues, such as appearance of a high status opposite sex individual and reminders of mating or attraction, led to higher report of body dissatisfaction and restrictive eating attitudes for women but not for men (Li, Smith, Griskevicius, Cason, & Bryan, 2009). Increased prevalence of disordered eating may point to an underlying adaptive nature of the very behavior that would have been maladaptive in previous environments (Li et al., 2009). However, this connection is not without some contention and debate, as disordered eating behaviors are potentially life threatening.

This model for disordered eating behavior places function and form at the core of why disordered eating may be adaptive. The function is theorized to be the acquisition of desired social resources, and the form is aggression and manipulation of body image via disordered eating. However, the findings from the Li et al., (2009) study provide an interesting paradox to the proposed functional role of disordered eating behaviors. Even though individuals with disordered eating may see their behavior as functional, if it is taken too far, it could lead to death. The same holds true for aggression, for much like in nature, the display of too much aggression can also result in death. This paradox indicates that *skilled* use of both behaviors may be necessary in order for aggression and disordered eating to aid individuals in thriving.

Examining Two Competing Theories and Multiple Social Behaviors

The tension between the contrasting viewpoints on aggression and eating disorders highlights the need for further study. The present study investigated three primary issues. First, this author examined relational aggression and its associations with negative outcomes, disordered eating, and the use of prosocial behavior. The second issue involved examining whether relational aggression is associated with the negative psychological traits that often co-occur with disordered eating. Finally, the study examined whether individuals view disordered eating as functional in the sense of helping them garner social resources.

Assessing multiple social behaviors. In addition to the above questions, the present investigation explored the utility of assessing multiple social behaviors when examining the role of relational aggression and prosocial behavior in psychopathology. With the exception of Hawley's (2007, 2003a, 2002) work on "bistrategic" (prosocial and relationally aggressive) women, the majority of work on relational aggression has studied it in isolation from other social behaviors. The present study examined how relational aggression and prosociality may work together to influence mental health.

Examining prosocial behavior when exploring the impact of relational aggression on mental health may clarify the effects of relational aggression on psychological wellbeing and may influence how mental health practitioners, parents, and caregivers choose to shape children's behavior. In particular, I was interested in determining whether relational aggression skills may serve to advance social adaptation and whether women may view disordered eating behavior as a means to achieve social resources.

Structure of the Investigation

This investigation examined behavioral hypotheses, psychological hypotheses, and social resource hypotheses.

Behavioral hypotheses. Aggression has long been thought to be a pathological behavior leading to negative mental health consequences, but there is some evidence that prosocial behavior may mitigate those negative consequences. The present study explored whether women differ in their engagement in disordered eating based on their level of prosocial behavior.

Hypothesis 1: Relational aggression will predict high levels of disordered eating.

Hypothesis 2: High levels of relational aggression combined with high levels of prosocial behavior will predict high levels of disordered eating.

Psychological hypotheses. Affective problems and interpersonal problems are two psychological traits that have been implicated in disordered eating behavior and that may potentially be related to aggression. It is possible that an aggressive response or action to a situation may result from uncontrolled or unmanaged negative affect. As noted above, aggressive behavior has been linked to peer rejection in prior studies.

Hypothesis 3: Engagement in relational aggression will predict affective and interpersonal problems.

Hypothesis 4: High levels of engagement in relational aggression combined with high levels of prosocial behavior will predict high desire for control and higher drive for thinness.

Social resource hypotheses.

The following social resource hypotheses were designed to examine the alternative theoretical framework, taken from evolutionary psychology, that aggression is one of several means of attaining social resources. Among women, the desired resources are quite possibly beneficial social relationships.

Hypothesis 6: High levels of reporting the importance of social resources and strong beliefs about use of weight and body image to achieve such resources will be associated with higher levels of disordered eating behaviors.

Hypothesis 7: High levels of relational aggression and prosocial behavior will predict the report of importance placed on social resources.

Hypothesis 8: High levels of relational aggression and prosocial behavior will be associated with use of weight/body image to attain social resources.

Hypothesis 9: High levels of relational aggression and prosocial behavior will be associated with higher number of dating and sexual partners and perception of partners as attractive and wealthy.

Method

Participants and Procedures

Participants were women enrolled in Introduction to Psychology course at a large mid-western university. They were required to participate in research projects or compose a research paper as part of their requirements for this course.

A power analysis was completed prior to initiating data collection for this study. The power analysis revealed that 270 participants were needed for this study. This study was completed by 309 participants. No participants withdrew from the study.

Participants ranged in age from 18 to 42 (mean age = 18.92). One participant, age 42, was removed from the analyses. The next closest age was 28 years old (a 14-year age separation). All statistical analyses and demographic variables from this point forward were with the removal of one participant, resulting in a sample size of 308. Ninety-seven percent of the sample were 21 years of age or younger. Membership in a sorority and participation in NCAA athletics were assessed, as there is research to indicate that females involved in these two activities may have a higher chance of disordered eating behavior (Basow, Foran, & Bookwala, 2007; Robert-McComb, 2008). The majority of participants identified themselves as white, non-Hispanic. Further information regarding participants' race and other demographic characteristics can be found in Table 1.

Table 1

Characteristics of Sample

Demographics	n	%	Mean (SD)
Age	308		18.92 (1.179)
Race			
White, Non-Hispanic	242	78.8%	
African American	18	5.9%	
Hispanic	15	4.9%	
Asian/Pacific Islander	23	7.5%	
Native American	3	1.0%	
Other	6	2.0%	
Year in School			
Freshman	109	61.7%	
Sophomore	83	26.9%	
Junior	20	6.5%	
Senior	6	1.9%	
Beyond	9	2.9%	
Sorority Membership			
Yes	76	24.8%	
No	230	75.2%	
Athletic Membership			
Yes	20	6.6%	
No	285	93.4%	

Participants arrived to the research location, reviewed the consent forms (See Appendix A) and agreed to participate before completion of the survey packets. Questionnaires were presented in the same order for all participants. Participants completed packets in a group setting but were asked to distance themselves from others and not speak to one another during the completion of the packets. Packets consisted of a demographic information form, a self-report questionnaire assessing their use of relational aggression and prosocial behavior. Participants also were asked about their experience

with depressive symptoms, eating disorder symptoms, and other psychological factors that have been associated with development and maintenance of eating disorders (e.g., emotion dysregulation, control, perfectionism). We also assessed the importance they placed on various social situations with an author-constructed survey, the Social Resources Importance Questionnaire (SRIQ). Upon completion of the packet, the participants received a debriefing form (Appendix B), information about contacting the investigator if they had questions regarding the study, and a list of psychological resources, in case completing the study led them to feel a need to further discuss personal issues.

Measures

Assessment of social behaviors: relational aggression and prosocial behavior.

A self-report questionnaire based on the seven identified items for assessing relational aggression according to Werner and Crick (1999) was used to examine relational aggression. The wording of the individual items was slightly modified from the wording used in the original Werner and Crick (1999) study in order to encapsulate that the individual should be answering the question based on how they feel about themselves. The Werner and Crick (1999) study asked participants to answer questions about their peers. The questionnaire included items such as "When I am mad, I have tried to damage others' reputations by passing on negative information" and "I have intentionally ignored others until they have agreed to do something for me" (See Appendix C for full questionnaire). Participants indicated the frequency of each behavior on a five-point scale ranging from 1 (never) to 5 (very often). Self-reported relational aggression has been deemed an appropriate measure of relational aggression in adults (Archer & Coyne, 2005; Crick et al.,

1998). The prosocial behavior questionnaire was based on the prosocial behaviors also examined in the Werner and Crick (1999) study and was constructed in to survey form by this author, resulting again in wording modifications to fit the current study population. Nine prosocial criteria were assessed in a similar manner to the relational aggression questionnaire and the frequency of prosocial behavior was assessed on the same five-point scale (see Appendix C for questionnaire). Individual item order and questionnaire order were presented uniformly for all participants.

Assessment of disordered eating.

Eating disorder inventory-symptom checklist. The Eating Disorder Inventory-Symptom Checklist (EDI-SC) (Garner, 2000) is a measure used to assess for specific symptoms of eating disorders as defined in the DSM-IV. It assesses current and past disordered eating behaviors. The EDI-SC is designed for at-risk populations and typically takes about 10 minutes to complete (Garner, 2004). It was not designed to diagnose specific eating disorders, but rather to provide information regarding past and current eating behavior problems congruent with clinically significant disordered eating behavior. Questions were primarily open answer/fill in the blank format with the exception of a few multiple-choice questions.

Eating disorder inventory-3. The Eating Disorder Inventory-3 (EDI-3) is a 91-item multiple-choice questionnaire designed to assess for psychological traits that contribute to the development and maintenance of eating disorders (Garner, 2004) and their frequency and intensity of identification. Psychological traits assessed by the EDI-3 are separated in to 13 scales and those 13 scales are further divided in to three risk scales (Drive for Thinness, Bulimia, Body Dissatisfaction) and nine psychological scales (Low Self-Esteem,

Personal Alienation, Interpersonal Insecurity, Interpersonal Alienation, Interoceptive Deficits, Emotional Dysregulation, Perfectionism, Asceticism). The EDI-3 has been found to have good internal consistency (Garner, Olmstead, & Polivy, 1982) and has been found to be a reliable and valid measure of disordered eating behaviors and psychologically-related constructs (Bennett & Stevens, 1997; Cumella, 2006; Eberenz & Gleaves, 1994).

Assessment of depressive symptoms.

Beck Depression Inventory-II. Depressive symptoms were assessed using the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a 21-item, multiple-choice self-report measure of depressive symptomatology. Participants indicate how much they are currently experiencing a depressive symptom by selecting the response indicating symptom presence and severity. A high score on the BDI-II indicates more depressive symptomatology than a lower score. The BDI-II has been found to be both a reliable and valid measurement of depressive symptoms (Beck, et al., 1996; Longwell, 2005).

Assessment of importance of social resources. The importance an individual placed on social resources was assessed using the author-constructed Social Resources Importance Questionnaire (SRIQ). The questionnaire was designed to assess for several clusters of thinking and behavior that would indicate how the participant thinks, feels, and acts regarding dating/sexual partners and friends. The survey was structured to draw comparisons between desire for access to dating and/or sexual partners and friends. For example, one item asks how important it is that the participant have a dating or sexual partner that is desired by other women and then later asks how important it is that the participant have a friend group that is desired by others. The SRIQ was designed *a priori*

with the intention of examining the value placed on weight and body image in achieving access to social resources. The SRIQ was designed to assess for seven factors: "importance of having a high status partner" (or friend), "perceived instrumentality of weight/body image to attract a partner" (or friend), and "attempts at manipulation of physical appearance to obtain a partner" (or friend). These above constructs were separated between partners and friends as I was also curious about whether participants would value friends as much as partners. An additional construct was also available for examination of assessing feelings toward a dating/sexual partner only. This construct was titled "actual use of physical appearance to obtain a partner". The rationale for these seven constructs (three partner/friend pairs, one partner-exclusive factor) was that it was first important to establish how important social resources were to the individual. The constructs titled "importance of having a high status partner", and "importance of having high status friends" were assessed prior to assessing beliefs about weight and body image. The next construct was created to assess the thoughts and feelings of the participants about the potential for weight and body image to play an instrumental role in their achieving a partner or friends. Those constructs were titled "perceived instrumentality of weight/body image to attract a partner" and "perceived instrumentality of weight/body image to attract friends". The next construct was designed to assess attempts by the participants to manipulate or change their physical appearance to obtain a partner or friend. The thinking behind this construct was that, if the participants place importance on a particular social resource and see the instrumentality of weight and body image for achieving said social resource, then their behavior should likely follow their values and beliefs (that weight and body image can help attract or acquire valued partners or friends). The constructs to assess

for actual behaviors were "attempts at manipulation of physical appearance to obtain a partner" and "attempts at manipulation of physical appearance to obtain a friend". The survey also included items intended to assess participants' actual use of their physical appearance to obtain a partner and the construct was titled "actual use of physical appearance to obtain a partner". A Confirmatory Factor Analysis was conducted on the SRIQ data and the results supported the constructs in the seven-factor form (Appendix E, Tables 1-3).

Analytic Methods

Disordered eating behavior was a binomial variable for this investigation. Logistic regressions were run on all hypotheses involving the prediction of disordered eating. Relational aggression and prosocial behavior were continuous variables, as were psychological traits and social resources. The psychological and social resource hypotheses were examined using multiple linear regression. All statistical analyses in this investigation were conducted with and without the self-report of depressive symptoms (BDI-II score). The decision to remove self-reported depressive symptoms from the analytic model was based in theory and justified by later statistical analyses. Depressive symptoms are commonly co-morbid with disordered eating. Also, depressive symptoms itself can cause changes in appetite, weight, and eating behavior. This investigation attempted to look at the relationship between disordered eating and relational aggression above and beyond the effects of depressive symptoms.

Results

Missing data was minimal at .6%. Missing data was imputed using the single expectation-maximization method. I chose to impute missing data because the majority of the missing data related to missing the back page of the Beck Depression Inventory-II (N=14). Data were analyzed using Statistical Package for the Social Sciences-17 (SPSS-17).

The data were examined to test for normality. With the removal of one significant age outlier, the examination of histograms and frequency distributions revealed that the assumptions of normality were met.

Initial Analyses

Body weight, dieting characteristics, and disordered eating. Body weight and height were gathered to determine the Body Mass Index (BMI) of the participants. BMI was collected to assess general weight characteristics of the sample as a whole. The mean BMI of the sample was 22.46 (SD=4.06). This BMI falls into the desirable range for females (desirable range is 20-24.9; Yoke & Gladwin, 2003). In this sample 25% (N=77) of the participants reported a clinically significant engagement in disordered eating behavior at some point in their lives. These reports are within the expected range of lifetime prevalence for college-age women (Renfrew Center Foundation for Eating Disorders, 2003). Participants were asked to report the age at which they engaged in disordered eating behavior or had weight problems. A sizeable proportion of them (N= 210, 62%) reported engaging in dieting behavior at some point in their lives (*M*= 15.49 yrs, *SD*= 2.31, min=8, max=22) and having "weight problems" (*N* = 148, 48%, Median = 16 years). The median desired or "ideal" body weight reported by this sample was 125lbs.

Clinically significant eating behaviors. Potentially clinically significant eating behaviors were examined as reported in the EDI-SC. Lifetime prevalence of binge eating was reported by 20% of the sample. Lifetime prevalence of purging behavior was 18%. Lifetime prevalence of laxative use for weight control was 6%, and 1.6% of the sample reported having engaged in diuretic use. Diet pill usage was reported by 13.6% of the sample. (See Table 2 for more information on specific disordered eating behaviors).

A report of engagement in these diet-related behaviors was not, in and of itself sufficient to meet criteria for engaging in clinically significant disordered eating behavior. Cutoff criteria were established prior to data analysis to determine placement into one of two categories: disordered eating behavior, and non-disordered eating behavior. The cutoff criterion was based on DSM-IV diagnostic criteria. The cutoff criteria were necessary for this project due to variance in reporting by the sample and because a one-time use of any one behavior would not qualify as an eating disorder. Cutoff criteria are listed in Appendix F.

Table 2

Descriptive Statistics for Health and Eating Behaviors

Variable		n	Percent	
Engagement in Clinically Significant Disordered eating Behavior (N=308)	Yes	77	25%	
	No	231	75%	
Dieting	Yes	210	68.2%	
	No	98	31.8%	
Bingeing	Yes	61	19.8%	
	No	247	80.2%	
Purging	Yes	54	17.6%	
	No	252	82.4%	
Laxative Use	Yes	19	6.2%	
	No	287	93.8%	
Diet Pill Use	Yes	42	13.7%	
	No	264	86.3%	
Diuretic Use	Yes	5	1.6%	
	No	301	98.4%	
			Mean (SD)	Range
Body Mass Index (BMI)		306	22.48 (4.05)	14.6-43.8

Psychosocial characteristics of the sample. This study collected information on social behaviors, number and quality of dating and sexual partners, depressive symptoms, and desire to attain social resources. Depressive symptoms status at the time of data collection was also assessed using the Beck Depression Inventory-II (BDI-II). The mean BDI was 8.54 (SD=7.18). The clinical cutoffs for depressive symptoms on the BDI-II are: 0-9 Normal, 10-18 Mild to Moderate, 19-29 Moderate to Severe, 30-63 Severe (Beck, Steer, & Brown, 1996). Mild to moderate depressive symptoms were reported by 27.2% of the

sample, while 2.4% of the sample reported being severely depressed (See Table 3). (See Appendix G for individual item frequencies on the BDI-II.)

Table 3

Frequency of Depressive Symptoms

BDI-II Range	Frequency		Percentage
Normal 0-9	190		64.63%
Mild to Moderate 10-18	80		27.21%
Moderate to Severe 19-29	17		5.78%
Severe 30-63	7		2.38%
			Mean (SD)
Beck Depression Inventory-II	n=294	0-44 (Range)	8.54 (7.177)

With regard to social behaviors (aggression, prosocial behavior), 82.1% of the sample reported some engagement in relational aggression, and all subjects reported at least some engagement in prosocial behavior. The social scales had different numbers of items, so the values reported below (Table 4) are for the standardized measures of social behaviors that were used in the final regression analyses.

Table 4

Descriptive Statistics for Social Behaviors

Variable	Mean (SD)	Range
Relational Aggression	0.47 (0.43)	.00-2.20
Prosocial Behavior	3.43 (0.44)	1.67-4.0

Sexual preferences and number of sexual and dating partners were assessed. Participants also reported what quality of dating/sexual partners they felt they had and also indicated how important it was for them to have high status partners and friends as well as what they may do to achieve partners and friends (See Table 5 for the means, standard deviations and ranges for these measures).

Table 5

Descriptive Statistics for Social Importance Survey

Variable	Mean (SD)	Range
Number of Dating Partners	1.77 (1.44)	0-9
Number of Sexual Partners	1.50 (1.77)	0-12
Perceived Attractiveness of Partner	8.06 (1.40)	1-10
Perceived Wealth of Partner	6.07 (1.80)	1-10
Importance of Having a High Status Partner (F1)	3.46 (1.17)	1-6.33
Perceived Instrumentality of Weight/ (F2) Body Image to attract a partner	5.20 (1.01)	1.67-7.00
Actual Use of Physical Appearance (F3) To Obtain a Partner	1.81 (1.20)	0-4
Attempts at Manipulation of Physical (F4) Appearance to Obtain a Partner	1.49 (1.42)	0-5
Importance of High Status Friends (F5)	3.83 (1.20)	1-6.6
Perceived Instrumentality of Weight/ (F6) Body Image to attract a friend	1.63 (0.95)	.5-5.0
Attempts at Manipulation of Physical (F7) Appearance to obtain a friend	0.48 (0.98)	0-4

Examination of multicoliniarity and singularity. A correlation matrix was constructed to determine multicoliniarity and singularity (See Table 6). The correlation matrix was examined to look for potential control variables, disordered eating behavior, psychological traits, and social behaviors to determine if they needed to be included in the regression analyses. Possible control variables were age, ethnicity, sorority membership, competitive athletic membership, BMI, and BDI-II score.

Table 6

Correlation Matrix of Predictor and Criterion Variables

Variables	ED Behav.	ED	ID	II	IA	P	A	PA	LSE	DT	RA	PS
Disordered Eating Behavior	-	.29**	.28**	.08	.21**	.09	.39**	.26**	.32**	.49**	.14*	-.07
Emotional Dysregulation (ED)		-	.47**	.18**	.43**	.13*	.36**	.48**	.43**	.26**	.22**	-.16**
Interoceptive Deficits (ID)			-	.41**	.56**	.13*	.45**	.65**	.60**	.39**	.28**	-.17**
Interpersonal Insecurity (II)				-	.52**	.04	.22**	.46**	.43**	.09	.16**	-.35**
Interpersonal Alienation (IA)					-	.08	.40**	.61**	.45**	.24**	.23**	-.17**
Perfectionism (P)						-	.30**	.06	.05	.20**	.15**	-.02
Asceticism (A)							-	.43**	.41	.48**	.25**	-.04
Personal Alienation (PA)								-	.76**	.38**	.23**	-.13*
Low Self-Esteem (LSE)									-	.45**	.16**	-.17**
Drive for Thinness (DT)										-	.14*	-.27**
Relational Aggression (RA)											-	-.27**
Prosocial Behavior (PS)												-

*p < .05 ** p <.01

Table 7

Correlations between variables and categorical disordered eating behavior

Covariate:	Disordered Eating Behavior
Age	.13*
Sorority Membership	.04
Competitive Athletic Membership	-.06
BMI	.12*
BDI-II Score	.27**

Note:
Disordered Eating Behavior, 0= no disordered eating behavior, 1= disordered eating behavior
Sorority Membership, 0 = no, 1 = yes
Competitive Athletic Membership, 0 = no, 1 = yes
*p < .05 **p < .01

Table 8

Correlations between variables and psychological traits

Covariate:	ED	ID	II	IA	P	A	LSE	PA	DT
Age	.12*	-.04	.01	.03	-.04	-.02	-.08	-.05	.01
Sorority Membership	-.07	-.06	-.07	-.09	.05	-.09	.00	.01	.07
Competitive Athletic Membership	-.15*	-.09	-.02	-.06	-.02	-.04	-.09	-.06	-.08
BMI	-.01	.04	.03	.03	-.03	.06	.04	.04	.25**
BDI-II Score	.56**	.53**	.33**	.44**	.16**	.38**	.64**	.67**	.36**

Note:
ED= Emotion Dysregulation
ID= Interoceptive Deficits
II= Interpersonal Insecurity
IA= Interpersonal Alienation
P= Perfectionism
A= Asceticism
LSE= Low Self-Esteem
PA= Personal Alienation
DT= Drive for Thinness
**p < .05 **p < .01*

Table 9

Correlations between variables and social behaviors

Variable	RA	PS
Age	.06	-.04
Sorority Membership	-.06	.12*
Competitive Athletic Membership	-.12*	.08
BMI	.00	-.02
BDI-II Score	.20**	-.11

Note:
RA= Relational Aggression
PS= Prosocial Behavior
Disordered Eating Behavior, 0= no disordered eating behavior, 1= disordered eating behavior
Sorority Membership, 0 = no, 1 = yes
Competitive Athletic Membership, 0 = no, 1 = yes
**p < .05 **p < .01*

An examination of the social variables and hypothesized control variables shown in Table 8 revealed that BDI-II scores were significantly related to social behaviors, clinically significant disordered eating behaviors, and psychological traits. BDI-II scores were examined in the overall model for exploring whether social variables influence engagement in clinically significant disordered eating behavior and report of psychological traits without the presence of depressive symptoms.

The analyses did not show any multicolinearity or singularity among variables. Although a significant correlation was found between relational aggression and prosocial behavior (r = -.26, $p < .001$), correlations less than .70 don't tend to create problems regarding multicolinearity or singularity (Tabachnick & Fidell, 2001). Based on this criterion, only Low Self-Esteem and Personal Alienation on the EDI-3 correlated strongly enough to potentially produce multicolinearity (r = .76, $p < .001$).

Primary Analyses: Eating Behavior, Psychological Traits, and Social Resources

Social behavior and engagement in disordered eating

Relational aggression and disordered eating. The hypothesis that engagement in relational aggression would predict engagement in disordered eating was examined by logistic regression. Though the overall model was significant $X^2(2,308)= 20.463$, $p <.001$, relational aggression did not have a significant effect on disordered eating over and above the effect of depressive symptoms (Table 10). When the logistic regression model was run *without* self-report of depressive symptoms, however, relational aggression did significantly positively predicting disordered eating (ß = 0.690, p =.019, SE= 0.294). Thus it appears that the predictive ability of relational aggression on disordered eating is really due to the shared effects with depressive symptoms.

Table 10

Logistic regression predicting eating disorder behavior for relational aggression and considering depressive symptoms

					95% Confidence Interval for Odds Ratio	
Variable	*ß*	Wald Chi-Square	*p*	Odds Ratio	Lower	Upper
BDI-II Score	0.078	16.012	<.001	1.081	1.041	1.123
Relational Aggression	0.293	0.784	.376	1.341	0.701	2.565
Constant	-1.958	52.210	.000	.141		

Relational aggression, prosocial behavior, and disordered eating. I predicted that high engagement in relational aggression and prosocial behavior would predict engagement in disordered eating. This hypothesis was examined using logistic regression.

Though the overall model was significant X^2 (4,308)= 21.00, $p < .001$, high use of relational aggression and prosocial behavior did not have a significant effect on disordered eating above and beyond the significant effects of depressive symptoms (Table 14), and thus the hypothesis was not supported.

Table 11

Logistic regression predicting disordered eating behavior for the interaction of relational aggression and prosocial behavior, and including depressive symptom score

					95% Confidence Interval for Odds Ratio	
Variable	*ß*	Wald Chi-Square	*p*	Odds Ratio	Lower	Upper
BDI-II Score	0.078	15.845	<.001	1.081	1.040	1.123
Relational Aggression	-0.519	2.424	.831	0.595	0.005	68.874
Prosocial Behavior	-0.340	0.436	.509	0.712	0.259	1.954
RA X PS	-0.761	0.097	.755	1.253	0.304	5.170
Constant	-0.761	0.178	.674	0.467		

RA = Relational Aggression
PS= Prosocial Behavior

Psychological traits

Relational aggression and psychological traits. I hypothesized that high engagement in relational aggression would predict affective and interpersonal problems. Multiple linear regression was used to examine this hypothesis.

Affective problems. I hypothesized that high engagement in relational aggression would predict emotion dysregulation and interoceptive deficits, as measured by the EDI-3 categories of Emotion Dysregulation (ED) and Interoceptive Deficits (ID). The hypothesis was confirmed for emotion dysregulation. The model was significant F(2,288)= 71.24, $p <$ .001 and accounted for a moderate proportion of variance (R^2 *adjusted*= .326,). The model

showed that engagement in relational aggression was a significant predictor of Emotion Dysregulation (ß= 0.126, t(290)=2.55, p = .01) above and beyond the role of depressive symptoms. There also was a main effect for depressive symptoms (ß= 0.536, t(290)=10.89, p < .001).

The hypothesis was also confirmed for interoceptive deficits. The model was significant F(2,289)= 68.37, p <.001 and predicted a moderate proportion of variance (R^2 *adjusted*= .316). The model showed that engagement in relational aggression was predictive of Interoceptive Deficits (ß= 0.205, t(291)=4.14 p < .001), above and beyond the effects of depressive symptoms. There also was a main effect for depressive symptoms (ß= 0.489, t(291)= 9.88 p < .001).

Interpersonal problems. I also hypothesized that high engagement in relational aggression would predict high levels of interpersonal problems, as measured by the EDI-3 categories of Interpersonal Insecurity (II) and Interpersonal Alienation (IA). The model was significant F(2,288)= 18.94, p < .001, with minimal predictive power (R^2 *adjusted* = .110). Contrary to the hypothesis, high engagement in relational aggression did not predict interpersonal insecurity above and beyond the effects of depressives symptoms (ß= 0.102, t(290)= 1.80, p = .074). Instead the predictive nature of the model was related to BDI-II score (ß= 0.305, t(290)= 5.39, p < .001).

The hypothesis was confirmed for interpersonal alienation. The model was significant F(2,288)= 38.28, p < .001 and accounted for minimal variance (R^2 *adjusted* = .205). High use of relational aggression predicted self-report of Interpersonal Alienation above and beyond the effects of depressive symptoms (ß= 0.139, t(288) =2.60, p = .01). There was also a main effect for depressive symptoms (ß= 0.409, t(288)= 7.65, p < .001).

Relational aggression, prosocial behavior, and psychological traits. I hypothesized that high engagement in both relational aggression and prosocial behavior would predict increased desire for control, as measured by the Perfectionism and Asceticism scales in the EDI-3, and seeing oneself as achieving a perceived ideal body weight, as measured by the Drive for Thinness scale also on the EDI-3.

Control. Contrary to the hypothesis, engagement in high relational aggression and high prosocial behavior was not a significant predictor of self-report of perfectionism above and beyond the effects of relational aggression alone (ß= -0.50, *t(*287)= -1.19, *p* = .237). The model was significant [F(4,287)= 3.68, *p* = .006] but did not account for much of the variance (R^2 adjusted = .035). There was a main effect for BDI-II score (ß= 0.136, *t*(287)= 2.31, *p* = .02).

Contrary to the hypothesis, engagement in high relational aggression and high prosocial behavior was not a significant predictor of self-report of Asceticism. The model was significant [F(4,286)= 15.67, *p* < .001] but did not account for much of the variance (R^2 *adjusted* = .168). High report of relational aggression and prosocial behavior were not significantly predictive of Asceticism (ß= 0.565, *t*(286)= 1.45, *p* = .148) above and beyond the effects of depressive symptoms. There was a main effect for BDI-II score (ß= 0.342, *t(*286)= 6.25, *p* < .001).

Drive for Thinness. Initial correlations revealed a high likelihood for BMI's influence on Drive for Thinness. The model was significant F(5,285) = 14.122, *p* < .001], but accounted for modest variance (R^2 *adjusted* = .184). The hypothesis was not supported, as high combined engagement in relational aggression and prosocial behavior was not predictive of Drive for Thinness above and beyond the effects of depressive symptoms and BMI (ß = 0.195, t(285)= .504, *p* = .615). Main effects were found for BMI score, (ß = 0.250,

$t(285) = 4.71$ $p < .001$) and self-report of depressive symptoms (ß = 0.350, $t(285) = 6.46$, $p < .001$).

Social resources. The confirmatory factor analysis for the SRIQ revealed that it was appropriate to cluster individual items as I had intended when designing the survey. The CFA results supported the hypothesized model constructs with appropriate fit $X^2(2{,}306, N=308) = 555.423$, $p < .001$. Tucker-Lewis fit index (TLI)= 0.870, comparative fit index (CFI)= 0.920; RMSEA= 0.052 (0.042, 0.062), SRMR= 0.047. Please see Appendix E for detailed information regarding the statistical information and individual items that created each of the seven factors used in this study. These seven factors (F1-F7) were then used as the predictor variables in the models examining engagement in clinically significant disordered eating behavior and criterion variables when examining the use of social behaviors.

Social resources and disordered eating. After confirming the soundness of the factors on the SRIQ via CFA, logistic regression analyses were run on factors one through seven to examine if the importance placed on various social resources predicted clinically significant disordered eating behavior. Factors one through seven were run in independent models (seven separate models) including BDI-II scores. Sexual/romantic partner scales F1, F2, F3, F4, and friend scales, F6 and F7 on the SRIQ predicted disordered eating above and beyond the effects of depressive symptoms (see Appendix H, Tables 1-7).

Social resources and social behaviors. I hypothesized that engagement in both high relational aggression and high prosocial behavior would predict placing higher importance on various social resources assessed by the SRIQ. This hypothesis was examined with multiple linear regression models created for each of the seven factors independently.

The model that examined the predictive influence of relational aggression and prosocial behavior on Importance of having a High Status Partner (F1) was not significant $F(4,276)= 1.649$, $p = .162$. Thus the hypothesis was not supported; high engagement in relational aggression and prosocial behavior was not predictive of importance placed on having a high status partner (ß = 0.288, $t(276)= .66$, $p = .507$).

The model that examined the predictive influence of relational aggression and prosocial behavior on Perceived Instrumentality of Weight/Body Image to Attract a Partner (F2) was significant $F(4,285)= 8.787$, $p < .001$, and relational aggression and prosocial behavior predicted a minimal amount of variance (R^2 *adjusted* = .097). The additive effect of prosocial behavior with relational aggression was significant (ß = 0.98, $t(285)= 2.40$, $p = .017$) and thus the hypothesis was supported; engagement in high relational aggression and high prosocial behavior was significantly predictive of Perceived Instrumentality of Weight/Body Image to Attract a Partner.

The model that examined the influence of relational aggression and prosocial behavior on predicting Actual Use of Physical Appearance to Obtain a Partner (F3) was significant $F(4,288)= 5.653$, $p <.001$, and predicted a minimal amount of variance (R^2 = .073, R^2 adjusted = .060). The additive effect of prosocial behavior was significant (ß = 1.07, $t(288)= 2.58$, $p = .010$), however further investigation revealed that the results were contradictory to the direction of the hypothesis. Engagement in relational aggression and prosocial behavior was significantly and negatively correlated with the importance placed on Actual Use of Physical Appearance to Achieve a Partner.

The model that examined the influence of relational aggression and prosocial behavior on Attempts at Manipulation of Physical Appearance to Obtain a Partner (F4) was significant $F(4,288)= 9.498$, $p <.001$, and predicted a minimal amount of variance (R^2

adjusted = .104). The additive influence of prosocial behavior was not significant (ß = -0.040, *t(*288)= -.10, *p* = .921). Contrary to the hypothesis, high engagement in relational aggression and prosocial behavior was not predictive of attempts at manipulation of physical appearance to obtain a partner.

The model that examined the predictive influence of relational aggression and prosocial behavior on Importance of Having High Status Friends (F5) was not significant F(4,284)= 2.532, *p* = .041. The additive effect of prosocial behavior was not significant (ß = 0.738, *t*(284)= 1.78, *p* = .076). Contrary to the hypothesis, high engagement in relational aggression and prosocial behavior was not predictive of importance placed on having high status friends.

The model that examined the predictive influence of relational aggression and prosocial behavior on Perceived Instrumentality of Weight/Body Image to Attract a Friend (F6) was not significant F(4,288)= 2.575, *p* = .038. The additive effect of prosocial behavior was not significant (ß = 0.211, *t*(288)= .500, *p* = .617). Contrary to the hypothesis, high engagement in relational aggression and prosocial behavior was not predictive of perceived instrumentality of weight/body image to attract a friend.

The model that examined the predictive influence of relational aggression and proocial behavior on Attempts at Manipulation of Physical Appearance to Achieve a Friend (F7) was significant F(4,289)= 3.203, *p* = .014, and predicted a minimal amount of variance (R^2 *adjusted*= .029). The additive effect of prosocial behavior was not significant (ß = -0.52, *t*(289)= -1.25, *p* = .214). Contrary to the hypothesis, high use of relational aggression and prosocial behavior was not predictive of attempts at manipulation of physical appearance to achieve a friend.

I also hypothesized that women who reported high use of relational aggression and prosocial behavior would have more dating and sexual partners and would see their partners as more attractive and wealthy.

I examined the relationship between the number of dating partners and engagement in relational aggression and prosocial behavior. The model was not significant F(4,288)= 0.182, p=.948, indicating that engagement in relational aggression and prosocial behavior was not predictive of the number of dating partners in this study (ß= -.251, *t*(288)=-.585, *p*=.559).

Next I examined the relationship between the number of sexual partners and engagement in relational aggression and prosocial behavior. The model was significant F(4,288)= 2.796, *p* = .026, and predicted a minimal amount of variance (R^2 *adjusted* = .024). Contrary to the hypothesis, engagement in relational aggression and prosocial behavior was not predictive of the number of sexual partners in this study above and beyond the effects of depressive symptoms (ß= .145 *t*(288)= .345, *p*= .731). There was a main effect for BDI-II score in the model (ß= 0.159, t(288)= 2.691 *p*= .008), which indicated that self-report of depressive symptoms was predictive of the number of sexual partners.

I examined the relationship between perceived attractiveness of dating/sexual partners and engagement in relational aggression and prosocial behavior. The model was significant F(4,283)= 3.009, *p* = .019, and predicted minimal variance (R^2 *adjusted* = .027), indicating that engagement in relational aggression and prosocial behavior was predictive of the perceived attractiveness of one's dating/sexual partner in this study above and beyond the effects of depressive symptoms (ß= .207, *t*(283)= -.371, *p*= .711).

I then examined the relationship between perceived wealth of one's dating/sexual partners and engagement in relational aggression and prosocial behavior. The model was

not significant F(4,283)= 1.451, p = .217. Engagement in relational aggression and prosocial behavior was not predictive of the perceived wealth of one's dating partners (ß= .114 t(283)= .261, p= .794) above and beyond the effects of depressive symptoms.

Discussion

This study attempted to clarify the relationship of selected social behaviors to eating disordered behaviors. Ultimately, the study demonstrated just how complex it is to decipher the variables that predict disordered eating behaviors. Despite this, the study did demonstrate the importance of examining prosocial behavior and the beliefs and importance of resource obtainment when thinking about disordered eating. It also showed the significant role of prosocial behavior in disordered eating, and highlighted the important role of depressive symptoms in both social behaviors and eating disorder behaviors.

The findings of the study will be discussed in two parts: the first part will focus on interpreting the findings for disordered eating behavior and psychological traits and discussing the role of depressive symptoms. The second part will examine the results with regards to the debate on traditional versus alternative views of social behaviors and disordered eating. I will end with a brief discussion on the importance of examining multiple social behaviors when investigating psychopathology.

Disordered Eating Behavior

I hypothesized that both relational aggression and prosocial behavior would predict disordered eating . This hypothesis was not supported. Instead, depressive symptoms were

the most important predictor of disordered eating. Prosocial behavior appeared to diminish the effect of depressive symptoms and relational aggression on disordered eating.

Based on previous findings, I expected that engagement in relational aggression would predict disordered eating. Werner and Crick (1999), for example, had reported a significant correlation between relational aggression and disordered eating. However, they did not account for the influence of depressive symptoms. The present findings highlight the importance of controlling for depressive symptoms when investigating eating behaviors and self-reported social behaviors. Among the common symptoms of depression are changes in appetite, changes in eating behaviors, and weight fluctuations. Irritability and social isolation are also symptoms of depressive illness, and have the potential to look like relational aggression. Depressive symptoms can also influence self-report of social behaviors (e.g. viewing oneself in a negative light) (Smith & Greenberg, 1981).

Contrary to expectations, prosocial behavior was negatively correlated with disordered eating and depressive symptoms. This finding suggests that disordered eating behavior is more likely to result from complex blend of social experiences, personality traits, biology, desire for social resources and beliefs about how to obtain them instead of being heavily influenced by social experiences. It also leaves room for alternative theories about the development and maintenance of eating disorders. One such alterative theory may be that individuals view disordered eating as more of an instrumental or functional behavior for resource attainment as opposed to a reactive behavior or consequence of negative social interactions. This latter point will be discussed in the second portion of the discussion.

Psychological Traits

I hypothesized that relational aggression would predict affective regulation difficulties and interpersonal relationship problems. The findings did, in fact, reveal that relational aggression was significantly related to affective regulation problems above and beyond the effects of depressive symptoms. This may imply a degree of impulsivity associated with acting aggressively in response to negative affect. For example, if an individual is experiencing difficulty managing or regulating negative affect (such as depressive symptoms or irritability), that individual may be more likely to act negatively or aggressively. Relational aggression also predicted some interpersonal problems. Relationally aggressive women reported feeling alienated in their interpersonal relationships, but did not report feeling insecure in them.

I hypothesized that the combination of relational aggression and prosocial behavior would be associated with greater attempts to control body weight and increased desire for achieving ideal body weight. The hypothesis was not confirmed in this study. Instead, the additive effects of prosocial behavior with relational aggression revealed that prosocial behavior was negatively associated with negative psychological traits related to control as well as concern over attempting to achieve ideal body weight and image. Only self-report of depressive symptoms was a significant predictor of control. Drive for thinness was also significantly predicted by BMI and self-report of depressive symptoms.

Social Resources

Perhaps one of the most interesting findings of this study was the role of participant's beliefs about weight and physical appearance in achieving social resources and engaging in disordered eating behavior. Beliefs about the importance of social resources and the beliefs about use of weight and body image to achieve social resources

predicted engagement in disordered eating behavior in all but one model. This set of findings supports a cognitive model of the psychopathology of disordered eating. Beliefs about weight and body image predicted a disordered behavior. Social behaviors were not as strongly predictive of beliefs about achieving social resources via weight and body image. Only one of the seven factors (Perceived Instrumentalness of Weight/Body Image to Attract a Partner) was predicted by engagement in relational aggression and prosocial behavior.

The Role of Depressive Symptoms

Depressive symptoms were associated with relational aggression and disordered eating. Depressive symptoms also influenced the reporting of all psychological traits assessed for this study. Depressive symptoms and disordered eating have been studied extensively. The predicted incidence of individuals experiencing depression concurrent with an eating disorder ranges from 23-40%, depending on selected cutoff criteria (Santos, Richards, & Bleckley, 2007). Similarly, relational aggression has been shown to also be associated with depressive symptoms (Werner & Crick, 1999).

Prosocial behavior has been considered a buffer against depressive symptoms in at least one previous study (Eron & Huesmann, 1984). In the present study, even among those women who reported engaging in relational aggression, the addition of prosocial behavior to the model reduced the association between relational aggression and depressive symptoms. This supports Hawley's (2003) findings that "bistrategic" women don't necessarily experience negative repercussions from their aggression. This finding runs counter to the view that relational aggression, regardless of other compensatory social behaviors, leads to poor mental health.

There were significant associations between depressive symptoms and the psychological traits examined in this study. The psychological traits in the EDI-3 are all negative in nature. The depressive experience, by clinical definition is a cognitive focus on the negative. That alone may have contributed to the broad finding that depressive symptoms were related to all the psychological scales in the EDI-3. Although the present study was intended to explore social behaviors and disordered eating behavior, one could argue that this study shed more light on the role of depressive symptoms in social behavior and disordered eating.

Examination of Two Competing Theories of Relational Aggression and Disordered Eating

Aggression.

***Support for the traditional model of relational aggression*.** This study's findings did not support the traditional model of relational aggression which proposes that aggression, regardless of its form or function typically results in negative psychological consequences. This study did find that relational aggression, when examined in isolation from other social behaviors, was positively associated with depressive symptoms and a handful of negative psychological traits. However, when the model was expanded to include other social behaviors, namely prosocial behaviors, the association between aggression and negative outcomes was no longer supported.

Support for the alternative model of relational aggression. The alternative model of relational aggression argues, simply, that not all relational aggression is clearly negative. It also argues that relational aggression, when viewed from an evolutionary perspective, may actually be helpful and adaptive. The present findings support the

alternative model of relational aggression. Specifically, when relational aggression was examined in combination with prosocial behavior, the negative psychopathological behaviors, negative psychological traits, and depressive symptoms initially associated with relational aggression were no longer reliably predicted. Not all engagement in relational aggression results in negative behaviors (e.g. disordered eating), negative psychological traits, or depressive symptoms. The present findings also supported the theoretical evolutionary basis for the alternative model, which proposes that relational aggression may actually be adaptive if it promotes access to social resources. Relational aggression in combination with prosocial behavior was related to higher self-report of attractiveness of their sexual/dating partners.

Given that combinations of social behavior resulted in the absence of negative behaviors and psychological traits, the findings supporting the alternative model of relational aggression show that the traditional model of aggression is incomplete, and possibly inaccurate. Not all relational aggression can be viewed as negative. It also supports the theoretical basis for taking an evolutionary perspective: relational aggression combined with prosocial behavior actually resulted in perceptions of having more attractive dating/sexual partners.

Disordered eating behavior.

Support for the traditional model of disordered eating behavior. The traditional clinical model of disordered eating behavior proposes that its causes are developmental in nature and multifaceted. This study's findings support this view in several ways. First, disordered eating was highly influenced by self-report of depressive symptoms. Also, when examining several social behaviors with disordered eating, the amount of variance

predicted with the various models was minimal. There are multiple etiological reasons for disordered eating. Social behaviors may not independently influence disordered eating.

Support for the alternative model of disordered eating behavior. The alternative model of disordered eating proposes that it has instrumental and functional value, particularly in the realm of sexual competition. The alternative model proposes that disordered eating behavior is an adaptive behavior aimed at fulfilling the function of achieving a mating partner. The present findings indicated that disordered eating was predictive of participant's beliefs that achieving a desired body weight would facilitate their acquisition of social resources in the form of partner and friend selection. These beliefs were predictive of self-reported use of disordered eating to acquire partners and friends. Disordered eating was predictive of the importance participants placed on having a high status partner, the perceived instrumentality of weight for attracting partners, their reported manipulation of weight to attract partners, and their use of physical appearance to acquire partners. Disordered eating also was predictive of participants' perceived instrumentality of weight for attracting friends and their reported attempts at manipulating their physical appearance to acquire friends.

Participants who engaged in disordered eating endorsed beliefs that their behavior would be functional for them in partner and friend selection. In other words, they reported acting in accordance with their beliefs. This supports the alternative theory that women may engage in disordered eating if they see it as a functional mechanism for obtaining social resources

Conclusions about the two competing models. In this study, prosocial behavior appears to have attenuated the negative behavioral, psychological, and depressive symptoms effects typically expected of relational aggression. These findings clearly point to

a need to consider the relevance of other social behaviors when judging whether aggression is detrimental.

Unfortunately, it is not possible to clearly discern which model (traditional or alternative) of disordered eating is best supported by the present findings because both models received support. Practically speaking, however, both perspectives may be useful information for treatment providers. Treatment providers can approach eating disorders from multi-systemic angles (cognitive, biological, interpersonal) and also give special consideration to the cognitions/beliefs that individuals have about their weight and body image. At minimum, the present findings argue for a need to expand our theoretical viewpoints on aggression and disordered eating and to continue testing alternative models for both of these behaviors.

The Utility of Examining Multiple Social Behaviors and the Role of Depressive Symptoms

This study's findings support the need to continue to explore a variety of social variables when examining the effects of aggression on mental health. This study also supported the need to include the role of depressive symptoms in future similar investigations. The consequences of not doing so could result in deleterious (at worst), or non-helpful theories (at best), about the role of social behavior in psychopathology and subsequent treatments. This study provided information about the role of prosocial behavior and depressive symptoms. These factors proved to be most salient in the regression models completed. It would have been a far less

accurate and complete picture of the role of social behaviors in mental health if these variables had not been included.

Special Considerations: Social Behaviors, Cognitions, and Eating Behavior

In the present study, disordered eating was associated with beliefs that weight and body image were important for acquiring high status partners. This may not come as a surprise to clinicians treating eating disorders, but it could have important psychotherapeutic implications when identifying and challenging distorted beliefs about weight and body image in disordered eating populations.

Women reporting high engagement in relational aggression and prosocial behavior did not strongly or uniformly endorse beliefs that weight and body image were influential for social resource attainment. They did not endorse beliefs that using eating disorder behavior was functional for achieving social resources. These same social behaviors (relational aggression and prosocial behavior) also didn't predict disordered eating. People's behavior is often based on their beliefs about how their environment operates (cognitions). Thus, they were less likely to engage in disordered eating behavior in order to achieve access to social resources because they didn't believe that doing so would be beneficial.

Implications

Prosocial behavior may have acted as a buffer against the negative consequences associated with relationally aggressive behavior. This finding has novel treatment implications, requiring further research. For example, if we teach

relationally aggressive women to be strategically prosocial, is it possible that they will be less likely to experience depressive symptoms or to engage in disordered eating behavior?

The findings regarding beliefs about manipulating weight and body image to achieve social resources also have implications for treating eating disorders. We already aim our therapies at changing core beliefs (CBT therapy, Schema-Based Cognitive Therapy) when treating eating disorders. More directly addressing the beliefs about disordered eating's being useful for achieving social resources may be helpful.

Research on the mental health implications of social behaviors including prosocial behavior when examining relational aggression would likely be helpful. Relational aggression examined in a vacuum away from the context of prosocial behavior may result in overly simplistic and perhaps inaccurate model of social behavior.

Limitations and Future Directions

Limitations

This study had several notable limitations. Due to the large sample size needed, it was not possible to make clinician-based diagnostic decisions regarding eating behavior or depressive symptoms. As with almost all studies relying on self-report for measuring clinical and social behaviors, people may "paint themselves in

a positive light". In this study, it is possible that people inaccurately reported eating behaviors and/or undesirable social behaviors.

It also was not possible to assess one large closed social group in this study due to the number of subjects needed. Ideally, this study would include a clinical interview to assess for disordered eating behaviors and peer report of social behaviors within their social group.

Another limitation of this study was a clear difficulty in accurately assessing disordered eating. Diagnosing eating disorders is a quite difficult task, even when using clinical interviews. Self-report of eating behaviors and subsequent interpretation of a variety of answers was quite challenging. A "clinical cutoff" was established in this study based on self-reported eating behaviors, but it is possible that there were unknown rates for both type 1 and type 2 errors.

Related to the above limitation, this study did not directly measure the cognitions (psychological factors) involved in making eating disorder diagnoses. Cognitions are important in making a clinical diagnosis of an eating disorder. For example, a belief that one is of the wrong/unacceptable body weight is a cognitive factor in the diagnostic criteria for eating disorders.

This study also did not separate out disordered eating behaviors into currently accepted diagnostic categories (i.e. Anorexia, Bulimia, Eating Disorder, NOS). These categories present differently from one another and failure to account for those differences represents a limitation of the present findings and conclusions.

This study also neglected to directly assess anxiety and to thoroughly assess self-esteem. Ideally, it would have been convenient to examine whether anxiety or self-esteem were factors in participants' reporting of both eating behaviors and social behaviors. Also, this examination did not assess for co-morbid Axis I disorders and Axis II pathology and used a non-clinical sample. It could be possible that co-morbid diagnoses could better account for findings in this study.

The design of the study did not permit elucidating the influence of depressive symptoms on relational aggression or disordered eating. A logical concern is whether depressive symptoms were secondary to the onset of disordered eating behavior or contributed to the onset of disordered eating behavior.

Many studies have hypothesized that clinically significant eating disorders are moderated by multiple factors, including biological vulnerability to eating disorders (Levine, 2006; Strober & Katz, 1988), familial factors (Spanou & Morogiannis, 2010), media and cultural influence (Stice, Schupak-Neuberg, Shaw, and Stein, 2004), and direct peer modeling of behaviors and body image standards (Lieberman, Gauvin, Bukowski, & White, 2001). This study only examined the role of social behaviors on disordered eating. Ideally, large studies examining all the factors potentially contributing to disordered eating will one day illuminate the variables contributing to the development of eating disorders.

An unfortunate limitation of the measures used to assess eating behaviors and social behaviors was that it was not possible to assess their temporal relation to one another. This will be discussed as a potential future direction for investigation

with regard to exploring the residual temporal effects of engaging in social behaviors and/or eating behaviors.

There also was a flaw in the EDI-SC. It did a relatively poor job of assessing restrictive eating behaviors, asking only about dieting and exercise and neglecting to ask about restricting food intake. This measure was not sensitive enough to pick up restrictive eating behaviors that may be considered disordered.

As with most studies conducted with college-age populations, there is the increased possibility of sample bias which limits generalizability. A large portion (78.8%) of the sample self-identified as Caucasian. With regard to the US population, this is not a representative sample of minorities, as the United States is 72.4% white (US Census Bureau, 2010). Also related, this study only examined eating behaviors in females because of higher base rates of eating disorders in females (American Psychiatric Association, 2000).

Future Directions

A strong case could be made for the importance of conducting longitudinal studies of the influence of social behaviors on the development and maintenance of disordered eating over time. Previous studies demonstrated that relational aggression is present long before the typical age of onset for eating disorders. Longitudinal study designs would be better suited for making claims about which social behaviors influence which eating behaviors and psychological components.

Ideally, future studies will be able to examine the temporal relationship between social behaviors and disordered eating.

The limitations listed above provide guidance for future examinations of the role of social factors in the development and maintenance of eating disorders. Specifically, it would be ideal to use structured clinical interviews to assess for disordered eating behaviors. Also, the use of a closed peer group in order to allow for peer report on social behaviors would provide a stronger study design, as would assessing social behaviors via multiple methods of reporting, (e.g., by both self-report and peer report).

It would also be worth investigating the social behaviors associated with eating disorders in a slightly younger age group such as high school age females, as the onset of eating disorders does often occur prior to age 18 (Keel, Eddy, Thomas, & Schwartz, 2010). Also high school environments provide an appropriate social structure and experience for assessing closed peer groups using peer nomination methods of assessing social behaviors.

Future studies may also want to more closely examine the role of social anxiety and self-esteem. Several studies have found that women who engage in disordered eating are at higher risk for low self-esteem (Ackard, et. al., 2011) as well as anxiety (Juarascio, Perone, & Timko, 2011). These two factors may influence engagement in relational aggression and prosocial behavior.

Also important is the examination of other non-social factors in disordered eating. The medical community has identified key brain region abnormalities and

neurotransmitter and monoamine deficiencies and abnormalities present in many individuals with eating disorders. Lately, epigenetic factors in eating disorders have been examined in attempts to find components that differentiate individuals who develop alcohol dependence versus eating disorder. Some research studies have found genetic, neurophysiological, and neurochemical abnormalities to be similar to those found in both alcohol dependence and eating disorder (Pearlstein, 2002; Brewerton, 1995).

There are other more theory-specific future directions that should be explored. Investigating the role of one's environment in the selection of social behaviors and eating behaviors could guide more practical treatments for eating disorders. For example, if results from future studies show that specific environmental elements and social behaviors (i.e. relational aggression and prosocial behavior) contribute to choosing potentially harmful behavioral strategies like disordered eating modifications of the individual's environment or social behavior may prove clinically useful. Similarly, investigating the role the environment plays in placing value on particular social resources and in achieving them may be equally useful for the same purpose. Lastly, one future direction sure to incite controversy is the potentially useful investigation of whether there is truth in women's beliefs about weight and body image playing an important role in their access to partners. If weight and body image do in fact contribute to increased partner selection choices and obtainment, then challenging these beliefs as a way to treat disordered eating behaviors will be rendered more difficult and the treatment

community may have to acknowledge that disordered eating behavior, to some extent, may be adaptive.

Conclusions

In conclusion, this study demonstrated, again, that not all relational aggression results in negative consequences. Prior models of examining relational aggression may have shown this, but they did not inclusively look at combinations of relationally aggressive behavior with other social behaviors, particularly prosocial behavior. It appears as if individuals who use relational aggression and prosocial behavior in tandem may not only avoid such negative consequences such as eating disorders and depressive symptoms, but may also reap the benefits of developing fewer negative psychological traits. Future studies investigating relational aggression would benefit from using models that are more multi-dimensional and can evaluate causality.

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Appendix A

Consent and Authorization Form:
Social Interactions and Eating Behaviors

INTRODUCTION

The Department of Psychology at the University of Kansas supports the practice of protection for human subjects participating in research. The following information is provided, so you can decide whether you wish to participate in the present study. You may refuse to sign this form and not participate in this study. You should be aware that even if you agree to participate, you are free to withdraw at any time. If you do withdraw from this study, it will not affect your relationship with this unit, the services it may provide to you, or the University of Kansas.

PURPOSE OF THE STUDY

The purpose of this study is to examine the relationship between different social interactions, emotional functioning, health-related behaviors, such as sleeping and eating, and also examine how those things may influence how you think or feel about your sexual and/or dating partners. This study has the potential to yield important information regarding how social interactions may influence health behaviors, feelings about sexual/dating partners, and emotional functioning. Previous research suggests that their may be important relationships between our social and sexual lives, how we feel about our selves and our friends, and health related behaviors such as patterns of eating and sleeping, over and above background demographic variables such as income, age, body size, or ethnic identification.

PROCEDURES

As a participant in this study, you will be asked to complete several surveys and questionnaires about your social interactions with others. You will be asked such questions as "*When mad, I retaliate by excluding others from activities*" or *"I make sure others get included in activities"*. You will also be asked about your health behaviors regarding sleeping and eating with questions like "*Have you ever had an episode of eating an amount of food that others would regard as unusually large*" or "*Have you ever restricted your food intake due to concerns about your body size or weight*" and you will be asked to indicate how your sleep has been in the past two weeks. You will also be asked to rate how strongly you endorse certain statements about your personality with questions like "*I wish I could be younger*" or "*I trust others*" or "*I can clearly identify what emotion I am feeling.*" In addition, we will ask questions about your mood. For example, we will ask you to indicate how strongly you feel or think about such things such as sadness, guilt, loss of energy, and irritability. You will also be asked questions about how you view your dating and/or sexual partners, with questions like "*How attractive are your dating partners*" and also about your sexual and/or dating experiences such as "*How many dating partners have you had in the last 12 months*", as well as how you view your friends, with questions like *"How important is it that you have friends"* and *"How important is it that your friend group is desired by others"*. Lastly, we will ask you to provide some demographic information, including questions regarding your sexuality, income, height, weight, and some characteristics of the partners you have dated.

Because of the personal nature of the questions, your privacy and confidentiality are our utmost concern. For this reason, we ask participants to not speak to others while completing these surveys and to not speak with others about this study or any information you provided to the researcher(s) after the study is over.

We anticipate that participation in this study will take 45-60 minutes. The survey packet is intended to be completed individually in the room provided. No materials may leave the designated classroom. Please do not share your responses with others because we sincerely want to maintain the confidentiality of all participants in this study.

Upon completion of the survey packet, you will be given a debriefing letter that includes an explanation of the investigation and a list of psychological resources in the Lawrence and Kansas City area. You will be given this list of resources regardless of the information you supply on the surveys. Contact information for the researcher will also be provided in the event that you would like to cancel your participation or have any questions about the study itself.

RISKS

We do not believe that the procedures pose more than a minimal risk to individuals participating in this study. We do not believe that the procedures pose more risk than you would experience in your every day activities. However, it is possible that some of the information requested from you may elicit an emotional response. For your convenience, we will be supplying you with a list of resources in the Lawrence and Kansas City area that may be helpful with any emotional response you may have.

BENEFITS

Participants in this study will provide important information about health behaviors, social interactions, and emotional functioning that has the potential to benefit others struggling with health or emotion related behaviors or to aid in the treatment of individuals struggling with relationships.

PAYMENT TO PARTICIPANTS

Participants will be awarded experiment credits for participation in this study upon completion of the survey packet. Participants may withdraw permission to use their information any time after completing the packet and still keep any experiment credits they earned for participation. Failure to complete the surveys will not result in any penalty or loss of services and will not affect your status in any way with the University of Kansas in any way.

INFORMATION TO BE COLLECTED

To complete this study, researchers will collect information about you in the form of surveys and questionnaires which will be completed individually. The information collected will concern eating behaviors, mood, sleep, appetite, thoughts, sexual/dating partners, and social interactions.

CONFIDENTIALITY

Your name will not be associated in any way with the information collected about you or with the research findings from this study. To identify your responses, the researcher(s) will use a study code that will be assigned to you before you begin the survey packet. A master list with your name and the code assigned to you will be kept in a locked and secure area that is accessible only to the researchers working directly on this project. All documents in the packet will only list your assigned code number.

The information collected about you will only be used by Jennifer Prohaska, M.A., her supervisors, Patricia Hawley, PhD and Raymond Higgins, PhD and the members of this research team, the KU Center for Research, and officials at KU that oversee research, including committees and offices that review and monitor research studies.

By signing this form, you give permission for the use and disclosure of your de-identified information for purposes of this study at any time in the future, unless your permission is subsequently withdrawn.

REFUSAL TO SIGN CONSENT AND AUTHORIZATION

You are not required to sign this Consent and Authorization form and you may refuse to do so without affecting your right to any services you are receiving or may receive from the University of Kansas or your right to participate in any programs or events of the University of Kansas. If you refuse to sign, however, you cannot participate in this study.

CANCELLING THIS CONSENT AND AUTHORIZATION

You may withdraw your consent to participate in this study at any time during your participation. At any time subsequent to your participation you also may cancel your permission to use and disclose information collected about you, by sending a written request to: Jennifer Prohaska, 426 Fraser Hall, University of Kansas. If you cancel permission during your participation, the researchers will stop collecting additional information about you. However, the research team may use and disclose information that was gathered before they received your cancellation, as described above. Any information used in the analyses that were completed before the cancellation was received may not be recanted, but future analyses will not include your information.

QUESTIONS ABOUT PARTICIPATION

Questions about procedures should be directed to the researchers listed at the end of this consent form.

PARTICIPANT CERTIFICATION

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to any questions I had regarding the study and the use and disclosure of information about me for the study. I understand that if I have any additional questions about the research or my rights as a research participant, I may call (785) 864-7429 or (785) 864-7385 or write the Human Subjects Committee Lawrence Campus (HSCL), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7563, email dhann@ku.edu or mdenning@ku.edu.

I agree to take part in this study as a research participant. I further agree to the uses and disclosures of my information as described above. By my signature I affirm that I am over the age of eighteen and have received a copy of this Consent and Authorization form.

_____ _____

Print Participant's Name Date

_____

Participant's Signature

Please sign below to indicate that you have received a copy of this consent form.

_____

Participant's Signature

Researcher Contact Information:

Jennifer Prohaska, M.A.	Raymond Higgins, PhD	Patricia Hawley, PhD
Principal Investigator	Co-Investigator	Co-Investigator

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Appendix B

March 3, 2009

Dear Participant,

Thank you for your contribution to this study! As you already know, this study was examining the relationship between social interactions (sociability, aggression, competition), and mood, health behaviors (such as eating, sleep, and appetite), and attitudes towards sexual and dating partners. Additionally we wished to know of the relationship between health behaviors (such as eating, sleep, and appetite) and the importance of having a sexual and/or dating partner. For these reasons, we asked you a litany of personal questions regarding these topics.

We have supplied a list of resources for you in the event that anything in this study has raised concerns for you. Again, thanks for your participation!

Sincerely,

Jennifer Prohaska, M.A.
Principal Investigator
(913) 226-8270
jprohask@ku.edu

Resources in Lawrence, Kansas:

KU Psychological Clinic
785-864-4121

Counseling and Psychological Services (CAPS)
785-864-2277

Bert Nash Community Mental Health Center
785-843-9192

Private Practitioners in Lawrence:

Rita Stuckey, PhD	785-841-4114
Laura Talley, PhD	785-842-3681
Anne Owen, PhD	785-550-8854
Debbie Goldberg, LCSW	785-218-8018

Resources in Kansas City

Vita at Research Medical Center (specialty in treating eating disorders/eating concerns):
816-276-4000

Appendix C

Please read the following questions carefully and answer with regards to ***how you view yourself.***

1.) When I get angry, I tend to give others the "silent treatment"
    a) Never
    b) Rarely
    c) Sometimes
    d) Often
    e) Very Often

2.) When I am mad, I have tried to damage others' reputations by passing on negative information
    a) Never
    b) Rarely
    c) Sometimes
    d) Often
    e) Very Often

3.) When mad, I retaliate by excluding others from activities
    a) Never
    b) Rarely
    c) Sometimes
    d) Often
    e) Very Often

4.) I have intentionally ignored others until they have agreed to do something for me
    a) Never
    b) Rarely
    c) Sometimes
    d) Often
    e) Very Often

5.) I have made it clear to my friends that I will think less of them, unless they do what I want
    a) Never
    b) Rarely
    c) Sometimes
    d) Often
    e) Very Often

6.) I have threatened to share private information with others in order to get someone to comply with my wishes
    a) Never
    b) Rarely
    c) Sometimes
    d) Often

e) Very Often

7.) When angry with a female friend, I have tried to steal their dating partner
   a) Never
   b) Rarely
   c) Sometimes
   d) Often
   e) Very Often

Please read the following questions carefully and answer with regards to ***how you view yourself.***

1.) I am a dependable person.
   a. Never
   b. Rarely
   c. Sometimes
   d. Often
   e. Very Often

2.) I will lend money to others who need it.
   a. Never
   b. Rarely
   c. Sometimes
   d. Often
   e. Very Often

3.) I am kind to others.
   a. Never
   b. Rarely
   c. Sometimes
   d. Often
   e. Very Often

4.) I make sure others get invited to activities.
   a. Never
   b. Rarely
   c. Sometimes
   d. Often
   e. Very Often

5.) I am willing to give advice when asked.
   a. Never
   b. Rarely
   c. Sometimes
   d. Often
   e. Very Often

6.) I include others in conversations.

a. Never
b. Rarely
c. Sometimes
d. Often
e. Very Often

7.) I make others feel welcome.
a. Never
b. Rarely
c. Sometimes
d. Often
e. Very Often

8.) I will typically lend my belongings to others.
a. Never
b. Rarely
c. Sometimes
d. Often
e. Very Often

9.) I am a good listener.
a. Never
b. Rarely
c. Sometimes
d. Often
e. Very Often

Appendix D

Survey

Please answer these questions as honestly as possible. The nature of these questions is personal and the researchers highly value and appreciate your honest opinions regarding the importance you place on the issues below. Please place an "X" in the boxes for your answers.

	Very Important	Moderately Important	Slightly Important	Neutral	Slightly Unimportant	Rarely Important	Not At All Important
1.) How important is it that you have a dating or sexual partner?							
2.) How important is it that you have one of the more wealthy dating or sexual partners?							
3.) How important is it that you have one of the more popular dating or sexual partners?							
4.) How important is it that you have a dating or sexual partner who often gets special privileges, such as (but not limited to), invitations to special events, going to the best parties, or having the most desirable friends?							
5.) How important is it that your dating or sexual partner is desired by other women?							
6.) How important is it that you have one of the more physically attractive dating or sexual partners?							
7.) How important is it to you that you have friends?							
8.) How important is it that you are friends with people that are well known by others?							
9.) How important is it that you are friends with people that others would consider very physically attractive?							
10.) How important is it that your friends get special privileges, such as (but not limited to), invitations to special events, skipping lines at the bars, or having the most popular dating or sexual partners?							
11.) How important is it that your friend group is desired by others?							
12.) How important do you think that <u>your</u> weight or body shape is when attracting a dating or sexual partner?							
13.) How important do you think your physical appearance is in getting members of the opposite sex to do what you want?							
14.) How important do you think your physical appearance is in getting your friends to do what you want?							

	Yes, many times	Yes, Occasionally	Yes, Maybe Once or Twice	Unsure	N
15.) Have you ever "lost out" on dating someone because he picked a <u>more</u> attractive female over you?					
16.) Have you ever "lost out" on dating someone because he picked a <u>less</u> attractive female over you?					
17.) Have you ever "won out" on dating someone because he picked you over a <u>less</u> attractive female?					
18.) Have you ever "won out" on dating someone because he picked you over a <u>more</u> attractive female?					
19.) Have you ever used your looks to get men to do what you want or give you special treatment?					
20.) Have you ever relied on flirting with a member of the opposite sex to get what you want/special privileges?					
21.) Has a dating or sexual partner ever turned you down because of your body weight or shape?					
22.) Have you ever tried to loose weight or alter your body shape to attract a dating or sexual partner?					
23.) Have you ever tried to loose weight or alter your body shape to become part of a desired group of friends?					

24.) How physically attractive do you feel that <u>you</u> are? (circle one)

Very Attractive	Moderately Attractive	Slightly Attractive	Average	Slightly Unattractive	Unattractive	Very Unattractive

25.) How physically attractive do you feel your <u>friends</u> are? (circle one)

Very Attractive	Moderately Attractive	Slightly Attractive	Average	Slightly Unattractive	Unattractive	Very Unattractive

26.) What do you think is the likelihood that a dating or sexual partner will <u>not</u> be interested in you because of your weight or body shape? (circle one)

Very Likely	Quite Likely	Fairly Likely	Slightly Likely	Not At All Likely

27.) What do you think is the likelihood that a friend or group of friends will <u>not</u> be interested in being your friend because of your weight or body shape? (circle one)

Very Likely	Quite Likely	Fairly Likely	Slightly Likely	Not At All Likely

28.) How strongly do you feel that the dating or sexual partners you are interested in will primarily care about physical attractiveness when selecting who they will date/if they will date you? (circle one)

1----------2----------3----------4----------5----------6----------7
Not Strong — Neutral — Very Strong

29.) How frequently do you feel your body size or weight influences how others feel about you? (circle one)

Very Frequently	Frequently	Sometimes	Rarely	Never

30.) How often do you think other people (besides your friends or dating/sexual partners) have done things for you based on how attractive you are or what you look like? (circle one)

Very Often	Often	Sometimes	Rarely	Never

Appendix E

Table 1

Means, standard deviations, and alpha coefficients for each construct, as well as item variance for each item of the CFA

Construct/variable	Items	Item variance explained	Alpha	M (SD)
Importance of high status partner				
	How important is it that you have a dating or sexual partner?	5.097	< .001	.465 (.09)
	How important is it that you have one of the more wealthy dating or sexual partners?	14.513	< .001	1.211 (.08)
	How important is it that you have one of the more popular dating or sexual partners?	17.61	< .001	1.35 (.08)
	How important is it that you have a dating or sexual partner who often gets special privileges, such as invitations to special events, going to the best parties, or having the most desirable friends?	17.431	< .001	1.386 (.08)
	How important is it that your dating or sexual partner is desired by other women?	14.113	< .001	1.2 (.09)
	How important is it that you have one of the more physically attractive dating or sexual partners?	9.01	< .001	.837 (.09)

Table 1 (continued)

Construct/variable	Items	Item variance explained	Alpha	M (SD)
Perceived instrumentality of Weight/Body Image to Attract A Partner				
	How important do you think that your weight or body shape is when attracting a dating or sexual partner?	10.632	< .001	.705 (.07)
	How important do you think your physical appearance is in getting members of the opposite sex to do what you want?	13.22	< .001	1.162 (.09)
	How strongly do you feel that the dating or sexual Partners you are interested in will primarily care about physical attractiveness when selecting who they will date/if they will date you?	7.358	< .001	.609 (.08)
Actual Use of Physical Appearance To Achieve a Partner				
	Have you ever used your looks to get men to do what you want or give you special treatment?	15.171	< .001	1.198 (.08)
	Have you ever relied on flirting with a member of the opposite sex to get what you want/special privileges?	13.858	< .001	1.027 (.07)

Table 1 (continued)

Construct/variable	Items	Item variance explained	Alpha	M (SD)
Attempts at Manipulation of Physical Appearance to Achieve a Partner				
	Have you ever tried to loose weight or alter your body shape to attract a dating or sexual partner?	24.797	< .001	1.943 (.08)
Importance of High Status Friends				
	How important is it to you that you have friends?	3.355	.001	.157 (.05)
	How important is it that you are friends with people that are well known by others?	16.759	< .001	1.395 (.08)
	How important is it that you are friends with people that others would consider very physically attractive?	17.285	< .001	1.313 (.08)
	How important is it that your friends get special privileges, such as invitations to special events, skipping lines at the bars, or having the most popular dating or sexual partners?	16.951	< .001	1.315 (.08)
	How important is it that your friend group is desired by others?	18.165	< .001	1.474 (.08)

Table 1 (continued)

Construct/variable	Items	Item variance explained	Alpha	M (SD)
Perceived Instrumentality of Weight/ Body Image to Attract a Friend				
	How important do you think your physical appearance is in getting your friends to do what you want?	7.088	< .001	1.008 (.14)
	What do you think is the likelihood that a friend or group of friends will not be interested in being your friend because of your weight or body shape?	4.814	< .001	.239 (.05)
Attempts at Manipulation of Physical Appearance to Achieve a Friend				
	Have you ever tried to loose weight or alter your body shape to become part of a desired group of friends?	24.818	< .001	.982 (.04)

Table 2

Factor Loadings and Relationships among Factors

	Maximum likelihood estimates [a]							Standardized
Item and Factor	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	disturbances
1.	.465 (.09)							
2.	1.211 (.08)							
3.	1.35 (.08)							
4.	1.386 (.08)							
5.	1.2 (.09)							
6.	.837 (.09)							
12.		.705 (.07)						
13.		1.162 (.09)						
28.		.609 (.08)						
19.			1.198 (.08)					
20.			1.027 (.07)					
22.				1.943 (.08)				
7.					.157 (.05)			
8.					1.395 (.08)			
9.					1.313 (.08)			
10.					1.315 (.08)			
11.					1.474 (.08)			
14.						1.008 (.14)		
27.						.239 (.05)		
23.							.982 (.04)	

Table 3

Latent correlations among factors in the confirmatory factor analysis of the Social Importance Survey

		Relationships among factors						
		F1	F2	F3	F4	F5	F6	F7
1.	Importance of Having a High Status Partner	1.00						
2.	Perceived Instrumentality of Weight/Body Image to attract a Partner	.45	1.00					
3.	Actual Use of Physical Appearance to Achieve a partner	.26	.46	1.00				
4.	Attempts at Manipulation of Physical Appearance to achieve a Partner	.28	.34	.08*	1.00			
5.	Importance of Having a High Status Friend	.76	.35	.22	.184	1.00		
6.	Perceived Instrumentality of Weight/Body Image to attract a Friend	.66	.72	.21**	.34	.80	1.00	
7.	Attempts at Manipulation of Physical Appearance to achieve a Friend	.28	.29	.11	.36	.29	.47	1.0

Note: All correlates are significant at the p<.01, with the exception of the *, which indicates non-significance, and **, which indicates significance at the p<.05

Appendix F

Clinical Cutoff Criteria for Disordered Eating Behavior*

Indicating "Yes" for Bingeing AND also indicated all of the following in some way:

Do you feel out of control when you binge? (Often, Usually, or Always)
Do you feel that you can stop a binge? (Never, Rarely, or Sometimes)
Do you feel you can prevent a binge? (Never, Rarely, or Sometimes)
Do you feel you can control urges to binge? (Never, Rarely, or Sometimes)
Do you feel distressed by your binging? (Often, Usually, or Always)

Indicating "Yes" for Purging at any time, with the EXCEPTION of the following:

- They indicate that they have NOT vomited in the past 3 months AND That the worst amount of vomiting episodes per week was "NONE" or "ONLY DID IT ONCE"
- Make a reference to not understanding the question (e.g. "I had the flu, I was a baby, etc.")

Indicating "Yes" for using Laxatives to get rid of food

Must have also indicated that they use laxatives weekly at some point (either by indicating weekly or listing worst of times is more than 2 episodes of using laxatives per week)

Indicating "Yes" for Diet Pill use and:

Using more than 14 diet pills in a week**
OR taking diet pills more than 3 times a day***

Indicating "Yes" for use of Diuretics AND:

Also used Laxatives or Diet Pills or Binging or Purging in the SAME general time period

*A study participant only needed to meet one of the five different criteria to be considered engaging in disordered eating behavior
**2 pills a day is typical dosing, so abuse would be more than that. Please note that there are brands that dosing is more than 2 a day, but this is the only way to fairly account for this because brand isn't included in the questions on diet pills
*** this would be at every meal, as some diet pills are dosed this way

Appendix G

Table 1

Frequency of Depressive Symptoms

BDI-II Range	Frequency
0	17
1	12
2	29
3	18
4	20
5	20
6	18
7	20
8	24
9	12
10	12
11	13
12	12
13	14
14	8
15	10
16	6
17	2
18	3
19	5
21	4
22	1
23	2
24	3
26	1
27	1
31	2
32	1
37	1
38	1
40	1
44	1

Appendix H

Table 1

Logistic Regressions for Social Resource variables and Engagement in Disordered Eating

					95% Confidence Interval for Odds Ratio	
Variable	*ß*	Wald Chi-Square	*p*	Odds Ratio	Lower	Upper
BDI-II Score	.083	18.232	.000	1.086	1.046	1.128
F1	.331	7.078	.008	1.392	1.091	1.776
Constant	-3.044	32.801	.000	.048		

Table 2

					95% Confidence Interval for Odds Ratio	
Variable	*ß*	Wald Chi-Square	*p*	Odds Ratio	Lower	Upper
BDI-II Score	.064	10.665	.001	1.066	1.026	1.108
F2	.543	10.175	.001	1.721	1.233	2.402
Constant	-4.604	24.648	.000	.010		

Table 3

Variable	ß	Wald Chi-Square	*p*	Odds Ratio	95% Confidence Interval for Odds Ratio Lower	Upper
BDI-II Score	.071	12.617	.000	1.074	1.032	1.117
F3	.313	6.487	.011	1.368	1.075	1.741
Constant	-2.362	50.486	.000	.094		

Table 4

Variable	ß	Wald Chi-Square	*p*	Odds Ratio	95% Confidence Interval for Odds Ratio Lower	Upper
BDI-II Score	.053	6.658	.010	1.055	1.013	1.098
F4	.635	30.757	.000	1.886	1.507	2.361
Constant	-2.737	71.354	.000	.065		

Table 5

					95% Confidence Interval for Odds Ratio	
Variable	*ß*	Wald Chi-Square	*p*	Odds Ratio	Lower	Upper
BDI-II Score	.083	17.632	.000	1.086	1.045	1.129
F5	.221	3.581	.058	1.247	.992	1.568
Constant	-2.719	26.947	.000	.066		

Table 6

					95% Confidence Interval for Odds Ratio	
Variable	*ß*	Wald Chi-Square	*p*	Odds Ratio	Lower	Upper
BDI-II Score	.076	15.683	.000	1.079	1.039	1.120
F6	.506	11.965	.001	1.658	1.245	2.208
Constant	-2.672	57.098	.000	.069		

Table 7

					95% Confidence Interval for Odds Ratio	
Variable	*ß*	Wald Chi-Square	*p*	Odds Ratio	Lower	Upper
BDI-II Score	.076	14.530	.000	1.079	1.037	1.121
F7	.738	27.081	.000	2.092	1.584	2.762
Constant	-2.229	72.207	.000	.108		