Author: **Birmachu, Abigya M.**

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STUDENT:

NAME: Abigya M. Birmachu **DATE: 5/10/18**

ADVISOR: (Committee Chair if MS Plan A or EdS Thesis or Field Project/Problem):

NAME: Lindsay Heidelberger, Ph.D, RD, LD **DATE: 5/10/18**

This section for MS Plan A Thesis or EdS Thesis/Field Project papers only
Committee members (other than your advisor who is listed in the section above)

1. **CMTE MEMBER'S NAME:** John Klem, Ph.D **DATE: 5/10/18**
2. **CMTE MEMBER'S NAME:** Alicia Stachowski, Ph.D. **DATE: 5/10/18**
3. **CMTE MEMBER'S NAME:** Kristina Gorbatenko, Ph.D. **DATE: 5/10/18**

This section to be completed by the Graduate School

This final research report has been approved by the Graduate School.

Director, Office of Graduate Studies: **DATE:**

Birmachu, Abigya M. ***Eating Disorder Attitudes and Behaviors, Perceived Social Support, and Rumination in University Students***

Abstract

The prevalence of eating disorder attitudes and behaviors (EDAB) is highest amongst college students but few receive treatment. It has been well established that rumination predicts EDAB. The Emotional Cascade Model (ECM) proposes that as rumination persists, negative affect is heightened until one engages in dysregulated behaviors, such as EDAB, to distract from ruminative thoughts and emotional distress. Social support has also been associated with EDAB. Support may be provided by family, friends, or significant others; however, it is unclear which domains impact EDAB. The current study explored three objectives: 1) determine if there is a relationship between perceived social support and EDAB, 2) identify if there is a relationship between rumination and EDAB, and 3) elucidate whether rumination moderates the relationship between perceived social support and EDAB. A sample of 300 students completed an online Qualtrics survey. Pearson's correlation and moderated regression analyses were performed. Perceived social support and rumination were associated with EDAB. Moreover, high rumination coupled with high perceived social support from significant others predicted eating, shape, and weight concerns, but not dietary restraint. Further research is needed to determine the mechanisms by which social support from significant others and rumination influence EDAB in university students.

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Chapter I: Introduction

Both men and women are affected by eating disorders. However, women are two times more likely to be impacted than men (Hudson, Hiripi, Pope, & Kessler, 2007). Four types of eating disorders are commonly diagnosed, anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorder (BED), and other specified feeding or eating disorder (OSFED) (American Psychiatric Association, 2013). Common symptomology is shared across the four disorders. However, each diagnosis includes distinguishing symptom-sets that are used to differentiate the four. Studies indicate that AN is the most common eating disorder, accounting for 18-47% of diagnoses, followed by OSFED with 14-51% of diagnoses, BN with 15-39%, and BED with 5-13% (Fairburn & Cooper, 2011; Machado, Goncalves, & Hoek, 2013; Mancuso, Newton, Bosanac, Rossell, Nesci, & Castle, 2015; Sysko, Roberto, Barnes, Grilo, Attia, & Walsh, 2012). The approximate lifetime prevalence of AN, BN, BED, and binge eating symptoms are: 0.6%, 1.0%, 2.8%, and 4.5% respectively (Hudson, et al., 2007). This means that approximately one out of ten individuals struggle with an eating disorder at some point in their lifetimes.

The classifications for diagnosing eating disorders are frequently being adapted. While the Diagnostic Statistical Manual of Mental Disorders, Fifth Edition, (DSM-5) currently recognizes these diagnoses as distinguishable disorders, there is an argument for adopting an alternative lens for conceptualizing eating disorders (Fairburn & Bohn, 2004; Fairburn, 2008). The Transdiagnostic View, developed by Fairburn (2008), posits that all eating disorders share a common core of psychopathology. According to this view, psychopathology can be divided into two domains, general and core psychopathology. The former includes the presence of depression, anxiety, perfectionism, and low self-esteem. The latter includes judgement of one's self-worth based on their shape and weight, ability to control shape and weight, over-evaluation

of shape, and an intense concern of weight. Together, these aspects of psychopathology represent a core set of symptomologies experienced by individuals with eating disorders (Fairburn, 2008). The Transdiagnostic View allows for identification of similarities across the diagnoses. Evidence for the Transdiagnostic View stems from individuals' frequent migration across several eating disorder diagnoses within one's lifetime (Fairburn, 2008). To illustrate, it is common for individuals to have an initial clinical diagnosis of AN, but later meet criteria for BN or OSFED. This can occur because the development of eating disorders typically begins with dietary kilocalorie restraint; however, such dietary restraint is difficult to maintain, and individuals frequently engage in binge eating as a result (Fairburn, 2008). Similarly, one may initially receive a diagnosis of BN and later develop AN or OSFED (Fairburn, 2008). According to Fairburn (2008), it is the core psychopathology that allows for this diagnostic migration. Within this view, the core psychopathology does not lock an individual into developing a specific disorder, rather, it locks an individual into having an eating disorder in general (Fairburn, 2008). Thus, Fairburn presents a view that advocates for a single diagnostic criterion for eating disorders rather than multiple diagnoses.

This single criterion is based on the belief that similar factors underlie eating disorders. Fairburn (2008) suggests that the similarities comprising the core psychopathology are cognitions which are observed in an individual's attitudes and behaviors. This includes over-evaluation of one's shape and weight, preoccupation with controlling one's shape and weight, and low self-worth (Fairburn, 2008). A pervasive attitude found in the core psychopathology includes judging one's self-worth based on their shape, weight, and ability to obtain their goal shape or weight. These attitudes may manifest as behaviors typically categorized as symptoms that may include dietary restriction, compulsive/driven exercise, purging (induced vomiting),

misuse of laxatives, and binge eating, to name a few (Fairburn, 2008). Thus, for the scope of this project, AN, BN, and OSFED are referred to as "eating disorder attitudes and behaviors" (EDAB) to account for the frequent diagnostic migration that is outlined in the Transdiagnostic View. It is important to note that this model does not include BED.

EDAB can occur at any age. The lifetime prevalence of EDAB in the general population ranges from 0.6% to 4.5% (Hudson et al., 2007). However, the university student population has a high incidence of EDAB with reported rates ranging from 8%-17% (Eisenberg, Nicklett, Roeder, & Kirz, 2011). In addition, treatment-seeking rates amongst students with EDAB is low with only 48% perceiving a need for help and 15% having attended counseling (Eisenberg et al., 2011). Students have reported that "stress is normal in university", "I don't have time", and "the problem will get better by itself" as reasons that they do not seek mental health services (Eisenberg et al., 2011). The high prevalence rate of EDAB coupled with low treatment seeking rates exemplifies the importance of elucidating EDAB within this population.

Several risk-factors for the development and maintenance of EDAB have been identified. The current study focuses on two independent factors that have been linked to EDAB, perceived social support (Bodell, Smith, Holm-Denoma, Gordon, & Joiner, 2011; Ghaderi & Scott, 2001; Hefner & Eisenberg, 2009; Wade, Wilksch, & Lee, 2012) and rumination (Arbuthnott, Lewis, & Bailey, 2015; Gordon, Holm-Denoma, Troop-Gordon, Sand, 2012; Monterubio, Fitzsimmons-Craft, & Wilfley, 2015; Opwis, Schmidt, Martin, & Salewski, 2017; Riviere & Douilliez, 2017; Selby, Anestis, & Joiner, 2008). Several studies have found associations between social support and mental health concerns. For example, Hefner and Eisenberg (2009) concluded that low perceived social support is linked to an increased risk of mental health problems in university students. Jibeen (2016) and Ullah (2017) identified a relationship between low perceived familial

support and poor psychological outcomes among university students. Previous research has also identified associations between social support and EDAB. Monterubio et al. (2015), determined that individuals in both clinical and non-clinical samples who reported having less perceived social support had higher rates of EDAB when compared to their control counterparts. These findings suggest that exploring the potential impacts of social support on the occurrence of EDAB may be beneficial for the well-being of university students.

Rumination is a construct that has also been known to impact the occurrence of EDAB. Rumination is defined as a tendency to repetitively think about one's negative affect and the causes, consequences, and symptoms that result from this negative affect (Smith & Alloy, 2009). The role of rumination in EDAB can be explained by the Emotional Cascade Model (ECM) (Selby et al., 2008). The Emotional Cascade Model proposes that individuals engage in dysregulated behaviors, such as disordered eating, in response to emotional distress (Selby et al., 2008). According to Selby et al. (2008), this occurs via emotional cascades. Emotional cascades occur when an individual experiences negative affect and responds to the negative affect by vigorously ruminating on it. Such intense rumination increases one's negative affect to the point where an individual must engage in a dysregulated behavior to relieve the rumination and its associated distress (Selby et al., 2008). Rumination has been identified as a potential risk factor for EDAB in university samples (Arbuthnott et al., 2015; Maraldo, Zhou, Dowling, & Vander Wal, 2016). In addition, rumination has been found to moderate the relationships between EDAB and body dissatisfaction (Gordon et al., 2012), gender (Opwis et al., 2017), perceived physical appearance (Holm-Denoma & Hankin, 2010), and perfectionism (Riviere et al., 2017). The connection between rumination and EDAB is apparent, however, there is little research on the moderating effect of rumination on perceived social support and EDAB. In addition,

acknowledging eating disorders as EDAB may ease the assessment and treatment of eating disorders.

Statement of the Problem

University students are at high risk for EDAB. Research has shown that the prevalence of EDAB in the university population ranges from 8%-17% in comparison to 0.5% - 4.5% in the general population (Eisenberg et al., 2011). Additionally, these students are not likely to seek mental health services to address EDAB (Hudson et al., 2007). University students are in a transitional stage of life. Navigating new social parameters while maintaining old relationships (i.e. moving away from family, leaving high-school friends, maintaining long-distance romantic and platonic relationships) may negatively impact an individual's social support system and thus evoke emotional distress (Hefner & Eisenberg, 2009). In addition, ECM posits that ruminating on negative affect in response to distressing stimuli may be a potential pathway leading to EDAB (Selby et al., 2008).

The literature suggests that rumination and perceived social support independently impact the occurrence of EDAB. However, this has not been explored in a sample of students attending a small, rural, Midwest university. Additionally, minimal research has investigated a possible interaction between rumination and perceived social support in the prediction of EDAB. Elucidating these relationships in the university population is necessary so that steps can be made to reduce the prevalence of EDAB in this high-risk group.

Purpose of the Study

The goals of this study are to investigate the links between EDAB, perceived social support, and rumination. The first aim is to identify a possible association between perceived social support and EDAB. The second aim is to identify an association between rumination

tendencies and EDAB. Third, this study investigates the interaction of perceived social support and rumination in the prediction of EDAB. In other words, does a tendency to ruminate on negative affect, coupled with low perceived social support, increase the likelihood of university students to exhibit EDAB?

A battery of three surveys were administered to analyze these relationships, the Eating Disorder Examination Questionnaire (EDE-Q), the Multidimensional Scale of Perceived Social Support (MSPSS), and the Rumination-Reflection Questionnaire (RRQ). The information gained from this study may be used to aid in the development of tools to better support students, identify new interventions, and reduce prevalence of EDAB in the university population.

Research Questions/Hypothesis

The current study sought to elucidate the following research questions and hypotheses:

1. Is there a relationship between perceived social support and EDAB?
2. Is there a relationship between rumination and EDAB?
3. Does rumination interact with perceived social support in the prediction of EDAB?
    a. Does rumination interact with perceived social support from friends in the prediction of EDAB?
    b. Does rumination interact with perceived social support from family in the prediction of EDAB?
    c. Does rumination interact with perceived social support from significant others in the prediction of EDAB?
4. Low perceived social support coupled with a tendency to ruminate will predict greater EDAB in university students.

a. Low perceived social support from friends coupled with a tendency to ruminate will predict greater EDAB in university students.
b. Low perceived social support from family coupled with a tendency to ruminate will predict greater EDAB in university students.
c. Low perceived social support from significant others coupled with a tendency to ruminate will predict greater EDAB in university students.

Assumptions of the Study

In regard to this study, the following assumptions exist:

1. The current sample at the University of Wisconsin-Stout is representative of university students in rural, Midwestern regions of the United States.
2. Participants provided honest responses to survey questions.

Definition of Terms

The purpose of defining the following terms is to aid in the reader's comprehension of the current study.

Anorexia nervosa (AN). AN is characterized by a restriction in dietary intake leading to a significantly low weight in relation to one's expected development, age, gender, and physical health. Individuals may have an intense fear of gaining weight, perform persistent behaviors that prevent weight gain despite their low weight, experience disturbances in the perception of one's body shape and weight, over-evaluate weight and shape in relation to self-worth, and an inability to recognize consequences of one's significantly low weight (American Psychiatric Association, 2013, p. 338-339).

Binge eating. "A "binge" is an episode of eating during which an objectively large amount of food is eaten, given the circumstances and accompanied by a sense of loss of control at the time (American Psychiatric Association, 2013, p. 350).

Binge eating disorder (BED). Diagnosis of BED includes recurrent binge eating episodes occurring at least 1x/week for ≥ 3 months. Binge eating episodes consist of consumption of large quantities of food in a discrete period of time in comparison to what is considered typical consumption. Episodes must be paired with a sense of loss of control. BED is distinguished from AN and BN by the absence of frequent compensatory behaviors such as compulsive/driven exercise, misuse of laxatives and diuretics, fasting, or purging (Wilfley, Citrome, & Herman, 2016).

Bulimia nervosa (BN). According to the American Psychiatric Association (2013), BN is characterized by: recurrent binge eating, inappropriate compensatory behaviors, and self-evaluation that is largely influenced by one's shape or weight (p. 345).

Core psychopathology. A broad term used to denote the shared characteristics of over-evaluation of shape and weight and the control of shape and weight present in most individuals with eating disorders (Fairburn, 2008).

Eating disorder attitudes and behaviors (EDAB). "The over-evaluation of shape and weight and their control; that is, the judging of self-worth largely; or even exclusively; in terms of shape and weight and the ability to control them" (Fairburn, 2008, p. 96). This term describes eating attitudes, behaviors, and symptoms relating to AN, BN, and residual eating disorder diagnoses.

Eating disorder not otherwise specified (EDNOS). An old diagnosis reserved for individuals with clinically severe symptom-sets that do not meet diagnostic criteria for AN, BN,

or BED (Fairburn, 2008). This was included in DSM-IV but is no longer a diagnosis and was not included in the latest edition, the DSM-5 (American Psychiatric Association, 2013).

Other specified feeding or eating disorder (OSFED). According to the American Psychiatric Association (2013), this category is reserved for individuals who present with clinically significant distress, impairment, and symptoms, but do not meet full criteria for other eating disorders (p. 353).

Perceived social support. An individual's subjective assessment and perception of the adequacy of one's social support system (Zimit, Dahlem, Zimet, & Farley, 1988).

Rumination. According to Nolen-Hoeksema, Wisco, and Lyumbomirsky (2008), rumination is a stress-response style involving an intense and repetitive focus on distressing feelings, and the causes and consequences of distress, without active engagement in problem solving.

Limitations of the Study

There are a few limitations which must be taken into consideration while reading the current study.

- University students are the population of interest in this study. Therefore, results may not be representative of EDAB in the general population. Future studies should investigate EDAB in the general population using a randomized sample.
- While the use of online testing tools is a convenient method of data collection, it may serve as a limitation for the study. Participants may become distracted from survey material via email or computer popups or by having additional tabs open on their computer. There is no way to ensure that participants are focused solely on the survey

and not engaging in other computerized tasks during completion. Future studies may benefit from administering the survey via paper-copies.

Methodology

A sample of 1,900 university students attending a small, rural, Midwestern University were contacted to participate in the current study. Participants (n = 300) completed a demographic questionnaire, the Eating Disorder Examination Questionnaire (EDE-Q), Multidimensional Scale of Perceived Social Support (MSPSS), and Rumination-Reflection Questionnaire (RRQ). The response rate for this study was 16%. Statistical Package for the Social Sciences version 24.0 (SPSS, 2016) was utilized for data analysis and Pearson's correlation and moderated regression analyses were used to test the research questions.

Chapter II: Literature Review

A number of factors influence the occurrence of EDAB. University students frequently undergo stress (Pierceall & Keim, 2007) and are especially at risk for EDAB (Eisenberg et al., 2011). Despite this, very few students seek mental health support which puts them at greater risk for developing EDAB and having ongoing issues related to eating habits (Eisenberg et al., 2011). EDAB are associated with a host of negative experiences including decreased engagement in normal areas of life such as friendships, family life, work, or sports (Fairburn, 2008), and anxiety and depression (Hefner & Eisenberg, 2009). Previous research suggests that both perceived social support (Bodell et al., 2011; Ghaderi & Scott, 2001; Hefner & Eisenberg, 2009; Wade et al., 2012) and rumination (Arbuthnott et al., 2015; Gordon et al., 2015; Opwis et al., 2017) independently impact the development of eating pathology. Thus, it is important to thoroughly explore these factors since both may impact the prevalence of EDAB in the student population. The current study aims to investigate these relationships in a rural, Midwestern sample of university students. Additionally, this study seeks to identify a potential moderating role of rumination in the EDAB and perceived social support relationship. This chapter will review current literature regarding EDAB, common stressors of university students, perceived social support, and rumination.

Eating Disorder Attitudes and Behaviors

The following section discusses an alternative method for conceptualizing EDAB, the Transdiagnostic View. In addition, symptomology, diagnostic criteria, and recent changes to these criteria are addressed. Lastly, consequences resulting from EDAB and a common survey used to measure symptomology, the EDE-Q, are presented.

The field of psychology has historically conceptualized BN, AN, and EDNOS as distinct disorders. The DSM uses hallmark symptoms and the frequency in which they occur to distinguish these disorders (American Psychiatric Association, 2013). For example, in the DSM-IV, a diagnosis of AN required an individual have amenorrhea (lack of menstruation) and a BMI ≤ 17.5 (American Psychiatric Association, 2000). In order to meet criteria for BN, binge eating episodes had to occur at least two times per week (American Psychiatric Association, 2000). If an individual did not meet diagnostic criteria for AN or BN but displayed clinically significant symptoms, a diagnosis of EDNOS was made (American Psychiatric Association, 2000). Despite its designation as a residual diagnosis, EDNOS was the most common eating disorder diagnosed in outpatient settings, accounting for approximately 60% of diagnoses (Fairburn & Bohn, 2004).

Thus, Christopher Fairburn, the author of *Cognitive Behavior Therapy and Eating Disorders* and creator of the EDE-Q proposed that the DSM-IV diagnostic criteria be revised. This was based on the premise that diagnostic criteria were too strict, resulting in a high prevalence of EDNOS (Fairburn, 2008). Fairburn and Bohn (2004) outlined two scenarios that may have accounted for the high prevalence of EDNOS. First, individuals may have been experiencing symptom-sets that were identical to AN or BN but failed to meet the diagnostic criteria due to differences in frequency of symptoms, resulting in a diagnosis of EDNOS (Fairburn & Bohn, 2004). Therefore, a case of BN and a case of EDNOS may have identical symptomology with differences lying only in frequency of symptoms (Fairburn & Bohn, 2004). At first glance this may incline someone to incorrectly assume that EDNOS was less severe than AN or BN, when in fact, EDNOS was a clinical diagnosis, not a diagnosis reserved for subclinical cases (Fairburn & Bohn, 2004). A study by Turner and Bryant-Waugh (2004) further elucidated this debate. Eating Disorder Examination (EDE) scores of males and females that

utilized a community eating disorder service (n = 200) were compared. Individuals with AN (5.5%), BN (22.5%), and EDNOS (67%) had similar scores on the EDE, suggesting a parallel in clinical severity across the three diagnoses (Turner & Bryant-Waugh, 2004). After further analysis of the EDNOS group, Turner and Bryant-Waugh (2004) determined that 35% of participants failed to meet an AN diagnosis because of lack of amenorrhea or having a BMI ≥ 17.5. In addition, 37% failed to meet a BN diagnoses due to frequency of binge eating episodes or compensatory behaviors (Turner & Bryant-Waugh, 2004). Therefore, research suggested that EDNOS was too frequently diagnosed (Mancuso, Newton, Bosanac, Rossell, Nesci, & Castle, 2015).

The distribution of eating disorder diagnoses raised questions regarding the clinical utility of the diagnostic standards. Fairburn and Bohn (2004) proposed that if "atypical" cases comprise the most commonly diagnosed eating disorder, the current "typical" standards could not be representative. Fairburn and Bohn (2004) suggested adaptations that might increase the validity of the diagnostic methods. They proposed that broadening existing diagnostic criteria for AN and BN would reduce the number of EDNOS cases while increasing the number of AN and BN cases. Andersen, Bowers, and Watson (2001) loosened the diagnostic criteria to examine a potential redistribution of diagnoses and found that EDNOS cases in a clinical sample were reduced from 119 to 22. This included adjustments for weight, amenorrhea, and frequency and duration of BN symptomology. The alteration resulted in only 18% of the initial EDNOS diagnoses remaining (Anderson, Bowers, and Watson, 2001), thus, providing evidence to revise the diagnostic criteria.

The task force in charge of the revision of the latest edition of the DSM, the DSM-5, took these factors into consideration and broadened the diagnostic criterion for AN and BN. One

change is that amenorrhea is no longer required to be diagnosed with AN (American Psychiatric Association, 2013). Another change to the AN diagnostic criterion was to increase the BMI threshold. BMI ≤ 17.0 is now categorized as mildly low, however, it is noted that individuals with a BMI between 17.0 and 18.5, and potentially higher, may still be of significantly low weight (American Psychiatric Association, 2013). In addition, the threshold for the number of binge eating episodes have been reduced to once per week and the occurrence of compensatory behaviors have also been lowered for BN (American Psychiatric Association, 2013).

The revisions of the DSM-5 also included eliminating and creating diagnoses. Of importance is the addition of Binge Eating Disorder (BED), which was formerly a sub-classification of EDNOS. In addition, EDNOS has been eliminated (American Psychiatric Association, 2013) and research using this term refers to studies conducted prior to 2013. EDNOS was replaced with Other Specified Feeding or Eating Disorder (OSFED) and research utilizing this term refers to studies conducted during 2013 or later. OSFED has five subtypes: atypical anorexia nervosa, subthreshold bulimia nervosa, subthreshold BED, purging disorder, and night-eating syndrome (American Psychiatric Association, 2013). An OSFED diagnosis is appropriate when individuals experience clinical distress or impairment in functioning but do not fully meet other eating disorder criterion (American Psychiatric Association, 2013). These changes together widened the pool of AN and BN diagnoses while reducing the number of individuals with a residual diagnosis (Mancuso et al., 2015).

As a result of the changes in the DSM-5, the distribution of specific eating disorders has shifted. Ranges for the prevalence of AN have risen from 8-35% to 18-47%, OSFED has fallen from 40-73% to 14-51%, BED accounts for 5-13%, and BN has remained steady between 12-39% (Fairburn & Cooper, 2011; Machado et al., 2013; Mancuso et al., 2015; Sysko et al., 2012).

Despite these changes, the percentage of indivduals falling within the residual diagnosis, OSFED, remains high (Murray & Anderson, 2015). Given these persistent issues with DSM classifications, eating disorders may be better conceptualized using an alternative method such as the Transdiagnostic View.

The Transdiagnostic View. The Transdiagnostic View is an alternative approach to view eating disorders. Support for this is based on concerns with the residual diagnosis and diagnostic migration (Fairburn & Bohn, 2004; Fairburn, 2008). Diagnostic migration is the tendency for individuals to migrate between different eating disorders across the lifespan (Fairburn & Bohn, 2004; Fairburn, 2008). Eating disorders, such as AN, are difficult to maintain for long periods of time (Fairburn, 2008). Dietary restriction, defined as physiological deprivation of food, cannot be sustained over the course of one's lifetime (Fairburn, 2008). Instead, dietary restriction often leads to binge eating episodes and potentially the development of BN or EDNOS (Fairburn, 2008). As a result, individuals may initially be diagnosed with one eating disorder and at a later time diagnosed with a different eating disorder (Fairburn, 2008). In fact, approximately 50% of AN diagnoses progress to either BN or OSFED and many BN cases develop into OSFED (Fairburn, 2008).

The migration between diagnoses may be a result of the psychopathology found at the core of all eating disorders. Fairburn (2008) describes this core psychopathology as being cognitive in nature, mainly relating to an individual's over-evaluation of weight and shape and preoccupation with controlling it (Fairburn, 2008). Such over-evaluation of weight and shape often results in an individual deriving their self-worth solely from weight and shape (Fairburn, 2008). These cognitions are so pervasive that domains of life where self-worth is typically derived from become marginalized. For instance, the importance of work, family, friendships,

sports, or music diminishes while the emphasis of self-worth based upon weight and shape is magnified (Fairburn, 2008). In turn, the persistence of these cognitive features typically manifest as behaviors and attitudes including frequent shape checking (i.e. touching bony body parts such as collar bones or wrists), shape avoidance (i.e. avoiding mirrors), making comparisons of one's own body to others, or "feeling fat" (Fairburn, 2008).

In addition to core psychopathology, there is also a general psychopathology common to all eating disorders. This includes anxiety, depression, self-harming behaviors, also known as non-suicidal injury (NSSI), and substance abuse (Fairburn, 2008). Individuals who display high dietary restraint often have co-occurring anxiety while those who experience depression, self-harm, and misuse substances often binge eat (Fairburn, 2008). Given the general and core psychopathologies that are common to eating disorders, it is proposed that transdiagnostic mechanisms, expressed through attitudes and behaviors, predispose individuals to maintain psychopathology (Fairburn, 2008). This same transdiagnostic mechanism locks an individual into having an eating disorder, but not any one particular eating disorder (Fairburn, 2008). Additional support for this theory can be found in the success of enhanced Cognitive Behavioral Therapy (CBT-E) in the treatment of all eating disorders (Fairburn, 2008). Thus, the above factors suggest that the various eating disorders may be best referred to as EDAB (Fairburn, 2008).

Impacts of EDAB. The presence of EDAB may impair an individual's daily life. However, only a third of women with EDAB report severe clinical impairment resulting from an eating disorder (Mond, Hay, Rodgers, & Owen, 2012). The low rate of reports may be due to positive reinforcement (Selby et al., 2014). For instance, an individual with EDAB may reach a goal weight through dietary restriction or compensatory behaviors (Selby et al., 2014).

Appearing thinner and receiving compliments from others on their recent weight loss may be a positive experience for the individual, thus reinforcing the maladaptive weight loss behaviors (Selby et al., 2014). This positive reinforcement may prevent one from viewing their EDAB as impairing daily life (Selby et al., 2014).

Therefore, the low rate of EDAB reports does not indicate that EDAB do not result in clinical impairment, rather, that they are not viewed as such by the individual. Clinical impairment can manifest in many areas of life such as poor academic performance, failure to thrive in university environments, and loss of social functioning and support which may result in isolation (Byrne, Eichen, Fitzsimmons-Craft, Taylor, & Wilfley, 2016). In addition to the academic and social struggles experienced during university, affective disturbances such as anxiety and depression are also likely to arise, increasing one's chances of impairment (Bryne et al., 2016). The tendency to underreport on EDAB and the resulting impairment presents a critical need for university campuses to better recognize, understand, and prevent further clinical impairment resulting from EDAB.

Eating disorder examination questionnaire (EDE-Q). The EDE-Q was developed from the EDE, a standard assessment tool used to measure EDAB. The EDE was developed by Fairburn and Cooper (Cooper & Fairburn, 1987). The EDE was designed to measure the full range of existing eating disorder psychopathologies and was intended for use in detailed studies of symptomology and treatment efficacy (Cooper & Fairburn, 1987). The EDE-Q is a shortened version of the EDE that was developed with Belgin and piloted with a community sample of young women (n = 243) (Fairburn & Beglin, 1994). Patients diagnosed with AN, patients with BN, a control group of patients with weight and shape concerns, and a control group of patients

without weight and shape concerns participated (Cooper & Fairburn, 1987). The EDE-Q was found to be a reliable and valid way to measure EDAB.

There are a few important differences between the EDE and EDE-Q. The EDE is intended to be used in an interview setting (1:1) and can be time consuming, taking approximately 30-60 minutes to administer. Additionally, the EDE is costly (Carter, Aime, & Mills, 2001). In contrast, the EDE-Q can be administered in group settings, is inexpensive, time-effective, and requires less resources to train personnel to conduct the interviews (Goldfein, Devlin, & Kamentz, 2005). It is thought that the EDE has higher accuracy in comparison to the EDE-Q (Carter et al., 2001). This may be due to the ability of investigators to properly define complex concepts to participants during the interview process, provide examples, ask the participant clarifying questions, and utilize strategies to enhance recall by respondents (Carter et al., 2001). This assistance is not available when using the EDE-Q because it is a self-report measure. While the EDE is the preferred method of assessment in regards to accuracy, the EDE-Q is comparable and has been found to be a valid and reliable method of EDAB assessment (Byrne et al., 2016; Carter et al., 2001; Goldfein et al., 2005; Mond et al., 2004, Mond et al., 2006). Thus, utilizing the EDE-Q for EDAB assessment in university students is widely accepted.

Two types of data can be derived from the EDE-Q. This includes frequency data of behavioral features and severity of psychopathology (Fairburn, 2008). The frequency data assesses both the number of episodes and number of days that a behavior has occurred (Fairburn 2008). The EDE-Q produces a global score which measures severity of overall psychopathology and four subscale scores: dietary restraint, eating concerns, shape concerns, and weight concerns

(Fairburn, 2008). Internal consistency and test-retest reliability has been established for all EDE-Q subscales (Luce & Crowther, 1999).

The EDE-Q also addresses binge eating and compensatory behaviors. These are measured in frequency of episodes (Mond et al., 2006). However, these items are not included in subscale or global scores (Fairburn, 2008). Items addressing binge eating episodes can be designated into one of two categories. These are referred to as subjective binge eating episodes (SBE) and objective binge eating episodes (OBE) (Fairburn, 2008). OBE is defined as having eaten a large amount of food that would be regarded as large by means of the EDE-Q, with a loss of control (LOC) being either present or not present (Fairburn, 2008). SBE is defined as having eaten a subjectively large amount of food, with a LOC either present or not present (Fairburn, 2008). The inclusion of SBE and OBE makes the EDE-Q preferable over other self-report measures because types of binge eating episodes are not commonly distinguished from one another (Goldfein et al., 2005). The information has been useful in the assessment and treatment of eating disorders in the general population (Goldfein et al., 2005). All EDE-Q questions assess symptoms experienced in the preceding 4 weeks of completing the survey (Fairburn, 2008).

The EDE-Q has also been administered with university students. Validity and normative EDE-Q values have been established for university aged women (18-25 years old) in the United States (Luce, Crowther, & Pole, 2008) and young adult women (ages 18-45 years old) in Australia (Mond et al., 2006). The EDE-Q has also been used to measure EDAB in community samples of males (ages 18-65) (Turton, Goodwin, & Meyer, 2017) and university men (Lavender, De Young, & Anderson, 2010). Average EDE-Q scores for undergraduate women in the United States are as follows: global score (M = 1.74, SD = 1.30), dietary restraint (M = 1.62, SD = 1.54), eating concerns (M = 1.11, SD = 1.11), shape concern (M = 2.27, SD = 1.54), and

weight concern (M = 1.97, SD = 1.56) (Luce et al., 2008). In addition, OBE typically occur at some point in 21.3% of undergraduate women and is pervasive in 6.4%, while SBE occur in 32.1% of undergraduate women, but is pervasive in 16.7% (Luce et al., 2008). Global, subscale, SBE, and OBE scores of young adult women are similar in the United States and Australia (Mond et al., 2006). Thus, the globally wide use of the EDE-Q makes this survey appropriate for a rural, university sample.

Stressors of University Students

University students experience frequent stress. Approximately 75% of students report being moderately stressed while 12% report being highly stressed (Pierceall & Keim, 2007). This stress is typically viewed as normal by students, leading to low rates of seeking mental health resources (Eisenberg et al., 2011). However, this is problematic since high stress can negatively impact mental health status and the occurrence of EDAB (Eisenberg et al., 2011). In addition, difficulties such as anxiety, depression, academic failure, and homesickness may arise (Rahat & Ilhan, 2016). Thus, the high rate of reported stress and associated complications makes identifying stressors important in the prevention and treatment of EDAB (Civitici, 2015). This research aims to further understand social support and rumination as specific stressors impacting EDAB in university students.

Several stressors impact university students. The stressors experienced by students are unique since the transition from high-school to university-life introduces new life experiences that occur only during this timeframe (Hicks & Heastie, 2008; Rahat & Ilhan, 2016). For example, students may have concerns regarding roommates, dormitory life, and adjusting to a different and potentially poor living environment (Hicks & Heastie, 2008). Additionally, navigating daily life with newfound autonomy, responsibilities accompanying financial

independence, and self-care such as doing laundry and cooking for oneself may evoke stress (Rahat & Ilhan, 2016). Academic stress has also been well researched and is acknowledged as a major stressor (Civitici, 2015; Hicks & Heastie, 2008; Rahat & Ilhan, 2016). Given the variability of stressors that impact students, it is essential to identify additional risk factors for EDAB.

Perceived Social Support

While social support may mitigate stress, it may also be a source of stress. Changes in interpersonal relationships have been identified as a stressor for university students (Chao, 2012; Civiciti, 2015; Hicks & Heastie, 2008; Smith & Alloy, 2009). Students may be apprehensive about leaving and maintaining old friendships after entering university (Hicks & Heastie, 2008). In addition, pressures to make new friends and uncertainty of finding a new social circle on campus may be a stressful experience (Hicks & Heastie, 2008). Conflict with friends, family, or romantic partners may also increase stress and negatively impact students' health (Civiciti, 2015). In fact, dysfunction in the interpersonal life has been identified as a risk factor for EDAB (Monterubio et al., 2015) and warrants more investigation. Thus, the interpersonal nature of these stressors makes perceived social support a promising area of study in offsetting the negative impacts of stress on EDAB.

Additionally, social adjustment to university life may be difficult for some students, perhaps even stressful. According to Rahat and Ilhan (2016), higher scores on perceived social support predicted successful social adjustment and overall adjustment in at-risk freshman students aged 18-25 (n = 527), in Turkey. Students were considered at-risk if they had experienced any of the 15 life experiences that the researchers identified as potentially leading to unfortunate consequences for the individual. Some examples include working while in school,

alcohol or drug use, living away from home for the first time, or having divorced parents. Rahat and Ilhan (2016) found that social support coming from family and friends had the greatest predictive power in comparison to social support supplied by romantic partners, although romantic partners still provided significant support.

Social support is a frequently utilized coping strategy and may mitigate the negative impacts of stress. Social support systems consist of individuals that one can rely on in times of stress, and often include family, friends, and significant others (Trapnell & Campbell, 1999). The positive impacts of social support range from overcoming stressful life events to keeping feelings of loneliness at bay (Hefner & Eisenberg, 2009). Thus, it is important to elucidate how one's perception of social support may impact students in relation to the prevalence of EDAB. Social support is inversely related to stress in university students (Civiciti, 2015) and may protect against the negative impacts of stress (Hefner & Eisenberg, 2009). In addition, social support moderates the relationships between stress and psychological well-being, and stress and depression (Civiciti, 2015). Therefore, utilizing social support as a coping mechanism may be useful in improving stress levels and overall psychological well-being. University aged individuals are in a stage of life where mental health status may have profound effects lasting throughout the lifespan, deeming this as a timeframe where social support is of importance (Hefner & Eisenberg, 2009). According to Flynn, Kecmanovic, and Alloy (2010), strong social networks may serve as a protective factor against general mental health issues. In addition, higher reports of perceived social support have been associated with decreased anxiety, depression, NSSI, and EDAB within the university population (Hefner & Eisenberg, 2009). It was determined that within this context, scores on social support from family, friends, and significant-other domains correlated with one another in addition to global scores (Hefner &

Eisenberg, 2009). This indicates that individuals that have adequate social support in one domain may be more likely to receive adequate social support in other domains. The inverse relationship between adequate social support and mental health has been well-established. Therefore, it is important to elucidate how one's perception of social support may impact students in relation to prevalence of EDAB.

Perceived social support and EDAB. While it is well known that social support has an impact on overall well-being, research has yielded varying results on the directionality of the effects on EDAB. Hefner and Eisenberg (2009), identified that higher scores of perceived social support were negatively associated with EDAB. However, the inverse relationship was not found. This suggests that adequate social support is associated with stunted development of EDAB. In contrast, Ghaderi and Scott (2001) determined that low social support predicted the development of EDAB in young adult women (n = 1,157), aged 18-30 years old, over a two-year period. Similarly, Bodell et al. (2011) determined that low social support and negative life events interacted to predict greater clinical severity of bulimic symptoms two months later. The literature provides conflicting evidence on the role of low social support in EDAB and thus further research is needed.

The presence of EDAB coupled with low social support may result in poor life outcomes. Wade et al. (2012) determined that lower perceptions of social support and subclinical EDAB were associated with poor mental and physical quality of life in adults. The effects of these interactions persisted across a nine-year study, emphasizing the importance of social support and the detrimental impact of EDAB on quality of life (Wade et al., 2012). In fact, social support may even moderate the negative impact of EDAB on quality of life. Individuals with and without EDAB had similar mental health quality of life, as long as they maintained high social support

(Wade et al., 2012). This suggests that social support may be an important factor in protecting against the negative long-term effects of EDAB on quality of life.

Having access to social support does not guarantee that the support is beneficial to the individual. It is possible for social interactions to be negative and cause further harm to the individual (Nolen-Hoeksema & Davis, 1999). Family, friends, or significant others may not be able to respond with the correct advice and may even disengage because they may not know how to be helpful (Nolen-Hoeksema & Davis, 1999). It is also possible that supporters may not be willing to listen to distressing information, leading to criticism of the support-seeker (Nolen-Hoeksema & Davis, 1999). Fewer studies have explored the potential negative impacts of social support on EDAB. Interpersonal relationships have the potential to be a source of stress when they are conflict-ridden (Civiciti, 2015). For example, Hefner and Eisenberg (2009), discovered that a higher frequency of contact with family members was positively associated with EDAB. University students (n = 2,843) who contacted family members less than once per day had decreased chances of developing EDAB in comparison to students who communicated with family at least once per day. It is unclear whether students who contacted their family did so as support for EDAB or other dilemmas or if contact with family is negative-laden and posed a risk for EDAB development (Hefner & Eisenberg, 2009). The potential for interpersonal relationships to impact individuals either positively or negatively warrants further investigation; thus, this study aims to explore the nature of the relationship between social support and EDAB.

Rumination

Rumination is a construct that implicates many areas of psychopathology. A universal definition of rumination theory does not exist in the literature to date. However, the Response Styles Theory is most frequently used (Smith & Alloy, 2009). This theory describes rumination

as repetitively thinking about one's negative affect and the causes, consequences, and symptoms regarding that affect (Nolen-Hoeksema, 1999). Negative affect is an essential precursor for the occurrence of rumination, also referred to as ruminative cycles (Nolen-Hoeksema & Morrow, 1993). Rumination has been linked to many psychopathologies, however, research on its impact on the relationship between social support and EDAB is limited.

Ruminative cycles may be triggered by a number of factors. Stress, particularly interpersonal stress, has been documented as a potential trigger for ruminative cycles (Smith & Alloy, 2009). Metacognitive beliefs (i.e. one's belief of whether rumination is an adequate response to stress and/or method of coping) may also influence the onset of ruminative cycles (Smith & Alloy, 2009). For example, if an individual views rumination as a helpful emotion regulation strategy, they may be more likely to engage in rumination in comparison to individuals who view rumination as maladaptive. However, others argue that rumination may be an involuntary process characterized by intrusive thoughts rather than a strategically utilized tool to alleviate distress (Papageorgiou & Wells, 2001; 2003). Whether rumination is voluntary or involuntary, investigating its impact on variables such as EDAB and perceived social support is warranted. Rumination is complex, thus, the remainder of this segment will address the major subdivisions and distinctive qualities of this construct.

Rumination and goal discrepancies. Rumination may be utilized in the process and aftermath of goal achievement. Smith and Alloy (2009) highlighted the importance of goal achievement in the development of rumination. Specifically, awareness of a discrepancy between one's target status and actual status may be an underlying theme in triggering ruminative cycles (Smith & Alloy, 2009). This may be related to interpersonal relationships, body image, or one's current state of emotions (Smith & Alloy, 2009). Goal discrepancies can account for internal

triggers, such as feelings, and external triggers, such as events (Smith & Alloy, 2009). The proposed role of goal discrepancies also takes other factors into consideration such as metacognitive beliefs (Smith & Alloy, 2009). The awareness of a discrepancy between desired and current status may also generate the onset of negative affect and result in rumination.

It is important to understand how goal discrepancies may influence rumination. Smith and Alloy (2009) noted that the awareness of goal discrepancies may focus largely on negative mood and the causes and symptoms associated with mood states. For example, when ruminating, individuals may assess their actual mood state (which may be negative) and compare this to some other desired mood state (which may be positive). The realization that they are unsuccessful in obtaining a positive mood may be distressing in itself and further exacerbate ruminative cycles. The degree to which one internalizes their goals also impacts rumination. Thomsen, Tonnesvang, Scnieber, and Olesen (2011) determined that less internalized goals were associated with more frequent rumination. Additionally, rumination was associated with avoidant behavior and viewing goals as being extrinsically controlled (Thomsen et al., 2011). Failure to achieve goals regarding weight, shape, or other aesthetic features may precipitate rumination, thus emphasizing the importance of studying the associations between rumination and EDAB.

Rumination and worry. It is important to highlight the differences between rumination and worry. Rumination is typically more negative-laden in comparison to worry. Additionally, studies largely support that there is a lack of active problem-solving during rumination (Kircanski, Thompson, Sorenson, Sherdell, & Gotlib, 2015; Smith & Alloy, 2009). Ruminative thoughts are generally past-oriented, focused on the self, and are accompanied by a sense of uncontrollability (Kircanski et al., 2015). This is in contrast with worry, which typically consists of active problem-solving to alleviate future-oriented worrisome thoughts (Kircanski et al.,

2015). It is important to note that worry is accompanied by a sense of uncertainty while rumination is not (Kircanski et al., 2015). Papageorious and Wells (1999), found that rumination has been associated with low esteem in one's ability to problem solve. The distinguishing factors between worry and rumination include content, degree of problem solving, and level of control.

Despite these differences, rumination and worry may share characteristics. Kircanski et al. (2015) proposed that the theoretical constructs are similar in that they both focus on preservative thought. Kircanski et al. (2015) measured rumination and worry in a sample of adult women, ages 18-50 years old, with either major depressive disorder (MDD) (n = 16), generalized anxiety disorder (GAD) (n = 15), or co-occurring GAD and MDD (n = 20). Participants answered a series of questions to measure their current level of rumination and worry. It was concluded that rumination and worry consisted of common core features, including unpleasantness and repetitiveness. This research also found that additional differences in temporal orientation (i.e. rumination about the past, present, or future), core content, and degree of feelings of uncertainty regarding a situation exist between worry and rumination. Findings from this study also supported the notion that rumination and worry frequently co-occur in clinical samples (Kircanski et al., 2015). Rumination and worry are distinct with rumination being associated with less problem-solving, posing greater risk for EDAB. This study assesses rumination in regards to one's average ruminative responses.

Rumination: A dysregulated emotion regulation strategy. Having a tendency to ruminate may have profound effects on an individual's emotional state. Rumination has been regarded as a maladaptive emotion regulation strategy (Selby et al., 2008; Smith & Alloy, 2009). Furthermore, rumination has been found to exacerbate and predict negative affect (Maraldo et al., 2016), sometimes resulting in behavioral dysregulation (Selby et al., 2008). ECM proposes

that individuals engage in dysregulated behaviors, such as disordered eating behaviors, in response to emotional distress. According to Selby et al. (2008), this occurs via emotional cascades. Emotional cascades are a result of pervasive rumination on negative-laden affect. As rumination persists, negative affect is continually heightened until the individual can no longer tolerate the distress that negative affect produces. As a result, the individual will engage in dysregulated behaviors to distract from distressing ruminative thoughts (Selby et al., 2008). The use of rumination as an emotional regulation strategy ultimately results in further loss of control over emotions and behavior, thus deeming it maladaptive.

Rumination has been linked to a number of dysregulated behaviors. Selby et al. (2008), proposes that rumination may lead to either NSSI or EDAB such as binge eating and this is motivated by an attempt to escape the experience of negative affect. Furthermore, Nolen-Hoeksema, Stice, Wide, and Bohon (2007) suggested that rumination predicted substance abuse and bulimic symptomology in adolescent females living in a metropolitan area (n = 496). In addition, females who ruminated were more likely to binge eat over the duration of the study. This study suggests that bulimic symptomology and substance abuse reciprocally propagated rumination by creating a cycle of rumination and dysregulated behavior. Holm-Denoma and Hankin (2010) found similar results in a sample of adolescents (n = 356), ages 11-17 years old, where reciprocal predictions between rumination and bulimic symptomology were identified. Within the context of ECM, the individuals engaged in dysregulated behaviors such as NSSI, binge eating, substance abuse, and binge drinking, in order to escape negative affect (Holm-Denoma & Hankin, 2010). These findings identified the association between rumination and EDAB among adolescents and thus, warrants an investigation that focuses on EDAB and rumination in a sample of university students.

Rumination and EDAB. Previous research has determined that rumination may be associated with the development and persistence of EDAB. Research by Holm-Denoma and Hankin (2010) indicated that low satisfaction in physical appearance coupled with rumination, predicted greater bulimic symptomology in adolescents. Furthermore, rumination has been found to strengthen the relationships between EDAB and gender (Opwis et al., 2017), body dissatisfaction (Gordon et al., 2012), and perfectionism (Riviere & Douilliez, 2017). Park, Dunn, & Barnard (2011) proposed that ruminating on weight, shape, and eating concerns may distract from the physiological and emotional discomfort that stems from starvation. Through this distraction from physiological and emotional discomfort, EDAB persist and psychopathology is maintained. However, minimal research has explored whether rumination may moderate the relationship between EDAB and perceived social support.

Studies have also revealed that rumination may predict specific EDAB. For example, rumination predicted the occurrence of both body dissatisfaction and negative affect in a sample of university and community women, ages 18-65 years old (n = 609) (Maraldo et al., 2016). This is consistent with ECM as it suggests that rumination may be a risk factor for EDAB by promoting continuous thinking about negative affect and negative thoughts regarding weight and shape concerns. Thus, a tendency to ruminate has been associated with an exacerbation of symptomology in specific EDAB.

The effects of the two subdivisions of rumination, brooding and reflection, on EDAB have also been explored. Brooding is defined as a maladaptive response that is negative in nature and involves comparison of one's current standing to a desired, unachieved goal (Treynor, Gonzales, & Nolen-Hoeksema, 2003). Reflection on the other hand, is an adaptive turning-inward with an end goal of problem solving (Treynor, Gonzales, & Nolen-Hoeksema, 2003).

Cowdrey and Park (2011) compared global EDE-Q scores of healthy individuals, ages 16-65 years old (n = 375), with eating disorder-specific rumination scores and found that brooding rumination and reflection were positively correlated with EDAB. Furthermore, brooding rumination predicted the occurrence of EDAB in a healthy population, but reflection did not. Cowdrey and Park (2012) found that for individuals with a self-reported AN diagnosis, EDE-Q global scores were positively correlated with brooding rumination on eating, weight, and shape concerns. Cowdrey and Park's (2012) findings support the notion proposed by Park and others (2002) that the presence of rumination perpetuates the psychopathology of EDAB. This emphasizes that the relationship between rumination and EDAB warrants further investigation.

While most of the literature has used correlational methodology to study the relationship between rumination and EDAB, some has employed experimental methodology. Naumann, Tuschen-Caffier, and Voderholzer (2015) randomly assigned participants with AN (n = 38), BN (n = 37), and controls (n = 36) to one of two response manipulation tasks (either distraction or rumination). After inducing sadness by listening to a sad song, participants read 45 sentences for eight minutes that were either ruminative or distractive in nature. The level of sadness, desire to restrict, desire to abstain, and desire to binge were measured before and after response manipulation tasks. Results demonstrated that subjects diagnosed with BN reported significant increases in a desire to binge and individuals with AN reported an increase in the desire to restrict after the rumination task. Participants with AN and BN also reported that they were more likely to engage in rumination instead of distraction in an attempt to regulate their mood. This is in contrast with controls who utilized distraction more frequently than rumination as an emotion regulation strategy. This indicates that individuals with EDAB are more likely to ruminate than healthy individuals.

Rumination not only impacts specific EDAB, but also the general psychopathology that underlie them such as depression. Findings from Naumann et al. (2015) identified that rumination was associated with higher depressive scores. After controlling for the impact of depressive symptoms on EDE-Q scores, rumination remained significantly associated with EDAB symptomology. Therefore, while rumination and depression are closely linked, rumination is associated with EDAB through some other mechanism aside from depression (Naumann et al., 2015).

Rumination and perceived social support. The interactions between perceived social support and rumination are complex. Individuals who ruminate experience frequent negative affect and that negative affect is often the focus of their attention (Selby et al., 2008). If support-seekers have a tendency to ruminate, they may not receive adequate support (Civiciti, 2015). Focusing on one's shortcomings and failures has been associated with decreased social support and increases in stress levels (Civiciti, 2015). In addition, negative affect of support-seekers blunted the protective mechanisms of social support on stress and predicted increases in interpersonal stress (Flynn et al., 2010). This may be a result of two factors. First, experiencing negative affect may give rise to negative-laden perceptions, thus rendering individuals more likely to perceive social interactions as negative (Flynn et al., 2010). Second, frequent negative affect may lead ruminators to engage in excessive reassurance seeking, pessimism, insecure attachment styles, and may hinder problem solving skills further (Flynn et al., 2010). Additionally, ruminators are likely to violate social norms in regard to how long it should take to "get over" a negative event (Nolen-Hoeksema et al., 1999). Listeners may respond with annoyance or may advise on how to "move on" from the issue, which may be judged as

unsupportive (Nolen-Hoeksema et al., 1999). Such behaviors and attitudes may be perceived as undesirable to others, potentially leading to withdrawal of support.

Furthermore, ruminators perceive themselves as needing more social support, but are unable to find it. Pervasive negative affect may increase an individual's need for social support (Civitici, 2015) while decreasing satisfaction with support that is received (Flynn et al., 2010). Nolen-Hoeksema et al. (1999), suggested that this may be due to ruminators having a greater number of negative thoughts and feelings to sift through. According to Flynn et al. (2010), a greater need for social support may stem from the inability to self-regulate emotions and reduce negative affect. Thus, social support is sought out to regulate one's emotions and to reduce negative affect. When asked what type of social support is desired, ruminators report needing a companion to share distressing thoughts and overall feelings with (Flynn et al., 2010). This may lead ruminators to seek social support at higher than average rates than non-ruminative counterparts. However, ruminators report receiving less social support in comparison to non-ruminators, suggesting that individuals who experience negative affect may encounter difficulty meeting their greater demands (Civitici, 2015; Flynn et al., 2010). Flynn et al. (2010), suggests this may be a result of having an increased need for support, perhaps more than family, friends, and significant others are willing to give. In addition, negative affect influences individuals to perceive the quality of support as low and the amount as inadequate (Flynn et al., 2010). This may suggest that ruminators are receiving social support that meets societal norms; however, disgruntlement may arise when there is failure to obtain support exceeding that of societal norms. Therefore, perceptions of insufficient amounts and inadequate quality may predispose ruminators to negatively perceive their social support systems.

Although ruminators may be dissatisfied with their social support systems, they are more likely to benefit from positive social interactions. When individuals meet their increased need for social support, ruminative thoughts are decreased (Nolen-Hoeksema et al., 1999). This may be a result of friends, family, or significant others encouraging ruminators to challenge negative thoughts and create a positive shift in perceptions (Nolen-Hoeksema et al., 1999). In addition, individuals who had a tendency to ruminate reported decreases in distress when receiving adequate social support. However, it remains that ruminators receive less social support and have lower quality social support than non-ruminators (Nolen-Hoeksema et al., 1999). Elucidating potential impacts of rumination and social support in EDAB is warranted.

Summary

Previous research has demonstrated that rumination involves the process of dwelling on negative affect. In addition, rumination has been associated with the occurrence of EDAB and exacerbates co-occurring symptomology such as anxiety and depression. Rumination greatly impacts social support systems and increases the severity of EDAB when coupled with the occurrence of factors such as perfectionism and body dissatisfaction. However, there is limited research on the impact of rumination on the relationship between social support and EDAB, thus, further research is needed. Additionally, much of the research that has been conducted on rumination and EDAB focuses on adolescent or metropolitan populations. Therefore, the current study aims to elucidate this relationship in a sample of university students attending a rural university.

Chapter III: Methodology

The purpose of this study was to elucidate factors that may have an impact on the occurrence of EDAB in university students. The first objective was to determine if there is a relationship between EDAB and perceived social support. The second objective was to identify if there is an association between EDAB and rumination. Third, this study aimed to investigate whether rumination and perceived social support interact in the prediction of EDAB. Specifically, it was hypothesized that low perceived social support and high rumination would predict greater EDAB. The following chapter will discuss subject selection, instrumentation, data collection, procedures, data analysis, and limitations.

Subject Selection and Description

University students were the target population for this study. Students were selected based on three primary reasons. First, university students are considered an at-risk population for eating disorders (Eisenberg et al., 2011). Second, students attending the University of Wisconsin-Stout were easily accessible to the investigator since they attended the same academic institution. Third, limited research has investigated EDAB in relation to perceived social support and rumination outside of large, urban cities. Undergraduate and graduate students currently enrolled at the University of Wisconsin-Stout were recruited via email for participation in this study. The University of Wisconsin-Stout is located in a rural town in the Midwest and is considered a small university with a population of 9,619 students (University of Wisconsin-Stout, 2017). Approval of the current study was obtained from the Institutional Review Board at the University of Wisconsin-Stout (Appendix A). Implied consent was secured for all participants (Appendix B).

The University of Wisconsin-Stout Office of Planning, Assessment, Research, and Quality was contacted to obtain a random sample of email addresses for 1,900 university

students. Email addresses for both undergraduate and graduate students were obtained. Any student currently enrolled in the university was eligible. An email invitation to participate in graduate student research was sent to students by the investigator. Multiple attempts were made to reach participants. There was a 16% response rate for this study, which is slightly lower than the typical range, 19-27%, found at other colleges and universities (Lipson & Sonneville, 2017).

Instrumentation

Subjects completed a demographic form which can be found in appendix C, and a battery of three questionnaires totaling 84 questions. Participants accessed the survey using a link sent to them by email. The survey was administered online, and data were collected and managed by Qualtrics. Participants were able to complete the survey in an environment of their choosing.

Survey questions included information regarding demographics, EDAB, perceived social support, rumination, and reflection. Demographic information included age, gender, relationship status, race, major of study, year in university, GPA, employment, and living arrangements. Survey questions were reviewed by a small sample of university students prior to the study to gage appropriateness of content and ease of comprehension. Participants completed demographic questions first and the following surveys preceded in the order that they are introduced below. The survey took approximately 15-20 minutes to complete.

Eating disorder examination questionnaire (EDE-Q). The EDE-Q is comprised of 33 questions and can be found in appendix D. The EDE-Q assesses eating disorder symptomology, that one expresses through attitudes and behaviors and is common to individuals with eating disorders. The questionnaire is divided into four subscales: dietary restraint, eating concern, shape concern, and weight concern, with each producing a subscale score. In addition, a global score can be calculated by obtaining the average of the four subscale scores. Higher subscale or

global scores are indicative of greater symptom severity (Fairburn, 2008). The EDE-Q also includes questions assessing OBE, OBE-LOC, SBE, compulsive/driven exercise, purging, and laxative misuse. However, these questions are not factored into subscale or global scores. Community means for females (Fairburn & Beglin, 1994), general population norms and percentile ranks for young adult women have been established for the EDE-Q (Mond, Hay, Rodgers, & Owen, 2006). Norms for university males have also been established (Lavender et al., 2010). The EDE-Q has good concurrent validity (Mond, Hay, Rodgers, Owen, & Beumont, 2004) and has been assessed for test-retest reliability and internal consistency (Luce & Crowther, 1999). The internal reliability for this study was good ($0.9 \geq \alpha \geq 0.8$) to excellent ($\alpha \geq 0.9$). Cronbach's alpha was .95 for the global EDE-Q score, .82 for the dietary restraint subscale, .90 for the weight concerns subscale, .94 for the shape concerns subscale, and .84 for the eating concerns subscale.

Rumination-reflection questionnaire (RRQ). The RRQ is a 24-item questionnaire rated on a Likert scale from 1 (strongly disagree) to 5 (strongly agree) (Appendix E). The RRQ prompts subjects to answer questions regarding two types of self-attentiveness: rumination and reflection. Twelve questions measure rumination and twelve questions address reflection. Average scores are calculated for rumination and reflection separately (Trapnell & Campbell, 1999). The RRQ has high internal reliability (>.90; Joireman, Parrott, & Hammersla, 2002) and good validity and psychometric properties in undergraduate students (Trapnell & Campbell, 1999). Cronbach's alpha for the overall RRQ score is .88, .88 for the rumination subscale, and .88 for the reflection subscale.

Multidimensional scale of perceived social support (MSPSS). The MSPSS is a 12-item questionnaire assessing perceived social support from three domains: family, friends, and

significant others (Appendix F). Four questions measure each domain of support and thus a subscale score can be calculated for each source. In addition, an overall average score can be calculated to measure general perceived social support (Zimet et al., 1988). The MSPSS has demonstrated good internal reliability, test-retest reliability, and validity (Zimet et al., 1988). Cronbach's alpha was excellent for total social support at .93, .91 for the family subscale, .93 for the friends subscale, and .95 for the significant others subscale.

Data Collection Procedures

Data were collected from October 2017 to November 2017. The initial email invitation was sent on October 23rd, 2017 and two reminder emails were sent by the investigator on October 31st, 2017 and November 14th, 2017. The recruitment email included a hyperlink which directed participants to the survey (Appendix G). The email stated that participation was optional, provided a brief description of the study's purpose, a short summary describing the nature of the questions included in the survey, and provided a link to enter a gift-card drawing. Participation was anonymous. Identifying information was not collected and survey responses could not be linked to email addresses. A separate hyperlink was used to enter participants into a gift-card drawing. This was done to ensure that email addresses of individuals entering the gift-card drawing could not be traced to survey responses. Both survey data and gift-card entries were stored on a secure program, Qualtrics. Qualtrics is an online data management software hosted at the University of Wisconsin-Stout. Only investigators had access to the data. A secure username and password were used to access the data and data were not saved on additional devices or servers.

There were minimal risks associated with participation. Subjects were informed that they may experience emotional discomfort as a result of answering survey questions. Therefore,

University of Wisconsin-Stout Counseling Center contact information was provided twice, in the implied consent form at the beginning of the survey and again in a debriefing form at the end of the survey (Appendix H). Participants were instructed to contact the counseling center if they needed support regarding an eating disorder or other mental health concerns.

Compensation of Subjects and Cost to Subjects

Participants were given the option to enter to win one of five, $20 gift-cards to Amazon after completing the survey. A separate link was provided in the email invitation to preserve anonymity. Upon selecting the gift-card entry link, participants were directed to Qualtrics and prompted to enter their email address and first name (Appendix I). A name randomizer was used to select five winners. There were no costs to subjects to participate in the study.

Data Analysis

Data analyses were performed using the Statistical Package for the Social Science version 24.0 (SPSS, 2016). Reliability analyses were utilized to obtain Cronbach's alpha to determine reliability of the EDE-Q, RRQ, and MSPSS. Demographic information was analyzed using descriptive statistics and frequencies. Descriptive statistics were also used to evaluate EDAB, perceived social support, and rumination scores. A Pearson's correlation test was used to assess the relationship between perceived social support and EDAB. A second Pearson's correlation test was used to analyze the relationship between rumination and EDAB.

Ten moderated regression analyses were performed, one for each EDE-Q subscale (shape concerns, weight concerns, eating concerns, and dietary restraint), OBE, OBE-LOC, SBE, and compensatory behaviors (compulsive/driven exercise, purging, and laxative misuse) to determine if rumination moderated the relationship between EDAB and perceived social support. The corresponding EDE-Q subscale was entered as the dependent variable and perceived social

support subscales (family, friends, and significant other) as independent variables in model one. Race/ethnicity, BMI, gender, GPA, and employment status were also included as independent variables to account for covariation. The interaction variables (rumination x family support, rumination x friends support, and rumination x significant other support) were then added as independent variables in model two. The same steps were repeated for the remaining six moderated regressions with either OBE, OBE-LOC, SBE, compulsive/driven exercise, purging, or laxative misuses as the dependent variable in model one.

The variables rumination, BMI, age, and perceived social support from friends, family, and significant others were centered prior to analysis to standardize scores. Additionally, dummy variables were created for race/ethnicity (White/Caucasian, Black/African-American, Hispanic or Latino, Asian, Native Hawaiian or other Pacific Islander, American Indian or Alaska Native, Bi- or Multi-racial, and other), gender (male, female, or other), and employment status (employed full-time, part-time, or unemployed). The BMI variable was created from self-reported height and weight using Microsoft Excel.

Limitations

A few limitations of this study should be considered. First, results of the study may not be generalizable to university students nationwide. The University of Wisconsin-Stout is located in a small, rural town where prevalence rates of EDAB may differ from the rest of the United States. In addition, it is important to consider that there may be characteristic differences between individuals who chose to partake in the survey and those who did not. It is possible that students with existing eating disorders may have been either more or less inclined to participate. Additionally, individuals who have low social support or individuals who have a strong tendency

to ruminate may have been more or less likely to participate due to personal experience in these areas.

Additionally, the response rate for this study was lower than expected. However, multiple attempts were made to reach participants over a span of three weeks. Students received two follow-up emails. The first reminder was sent one week after the initial invitation and a second reminder was sent two weeks thereafter. Another limitation is that participants were given four response options instead of seven on questions 22-28 of the EDE-Q due to a survey administration error. In this study, participants had "not at all" (designated as 0), "slightly" (designated as 2), "moderately" (designated as 4), and "markedly" (designated as 6) to select from. Finally, as discussed previously, the EDE-Q is not a diagnostic tool. Therefore, this study cannot attest to eating disorders as specific diagnoses. However, results may be useful in identifying EDAB that are commonly present in eating disorders. It is also important to note that the EDE-Q may not be as accurate as the EDE in detecting EDAB.

Summary

The goals of this study were to determine the relationships between EDAB, perceived social support, and rumination in university students. In addition, this study aimed to identify whether rumination moderated the relationship between EDAB and perceived social support. Students at the University of Wisconsin-Stout were recruited via email to partake in an anonymous online survey including demographic questions, the EDE-Q, MSPSS, and RRQ. Data analysis was performed using SPSS. Two Pearson's correlation tests and ten moderated regression analyses were used to assess the relationships between EDAB, perceived social support, and rumination.

Chapter IV: Results

This study aimed to identify the relationships between perceived social support and EDAB, and rumination and EDAB. Additionally, a primary aim was to determine if rumination moderated the relationship between perceived social support and EDAB. Specifically, it was predicted that low social support and high rumination scores would predict greater EDAB. A survey was administered to university students and data were subsequently analyzed using the Statistical Package for the Social Science version 24.0 (SPSS, 2016). The following chapter presents the findings of this study.

Demographic and Anthropometric Data

A total of 300 students participated in the survey. The mean age of students was 22.99 (*SD* = 6.91) years old (Table 1). Female participants comprised 57.9% (*n* = 190) of the total sample, 31.7% (*n* = 104) identified as male, and 1.7% (*n* = 190) identified with other genders (Table 1). BMI were calculated in Microsoft Excel from self-reported height and weight. The average BMI was 25.08 kg/m^2 (*SD* = 5.07) (Table 1) with 43.3% (*n* = 142) falling within the normal to healthy range (Table 1).

Table 1

Descriptive Statistics and Frequencies of Demographic Information

Characteristic	Frequency	Percentage (%)	*M*	*SD*	Range (yrs.)
Gender (*n* = 299)					
Male	104	31.7	-	-	-
Female	190	57.9	-	-	-
Other	5	1.7	-	-	-
Age (*n* = 287)	-	-	22.99	6.91	18-56

BMI (kg/m^2) (*n* = 253)	-	-	25.08	5.07	-
BMI Classifications (kg/m^2) (*n* = 253)					
Underweight (<18.5)	7	2.1	-	-	-
Normal (18.5-24.9)	142	43.3	-	-	-
Overweight (25.0-29.9)	65	19.8	-	-	-
Obesity (Type I) (30.0-34.9)	28	8.5	-	-	-
Obesity (Type II) (35.0-39.9)	9	2.7	-	-	-
Extreme Obesity (≥40.0)	2	0.6	-	-	-
Race/Ethnicity (*n* = 299)					
White/Caucasian	260	87.0	-	-	-
Black or African American	3	1.0%	-	-	-
American Indian or Alaska Native	2	0.7	-	-	-
Asian	17	5.7	-	-	-
Hispanic/Latino	2	0.7	-	-	-
Bi- or Multi-racial	11	3.7	-	-	-
Other	4	1.3	-	-	-
Year in College (*n* = 300)					
First year	52	15.9	-	-	-
Second year	51	15.5	-	-	-
Third year	62	18.9	-	-	-
Fourth year	58	17.7	-	-	-
Fifth year ≤	28	8.5	-	-	-
Graduate student	49	14.9	-	-	-

Living Arrangement (*n* = 300)					
Alone	25	7.6	-	-	-
With family	29	8.8	-	-	-
With roommate	214	65.2	-	-	-
With significant others	32	9.8	-	-	-
Employment Status (*n* = 299)	-	-	-	-	
Full-time	44	13.4	-	-	-
Part-time	178	54.3	-	-	-
Unemployed	77	23.3	-	-	-
Work Location (*n* = 236)	-	-	-	-	
On-campus	93	28.4	-	-	-
Off-campus	143	43.6	-	-	-
GPA (*n* = 299)					
4.0 – 3.6	122	40.8	-	-	-
3.5 – 3.0	121	40.4	-	-	-
2.9 – 2.5	46	15.4	-	-	-
2.4 – 2.0	9	3.0	-	-	-
1.9 – 1.5	1	0.4	-	-	-
1.4 – 0	-	-	-	-	-

EDAB, Perceived Social Support, and Rumination Data

Students reported receiving their highest social support from family members (*M* = 5.40, *SD* = 1.36), followed by significant others (*M* = 5.36, *SD* = 1.62), and friends (*M* = 5.30, *SD* = 1.33) (Table 2). Average EDE-Q scores were as follows: global score (*M* = 1.80, *SD* = 1.45),

dietary restraint (*M* = 1.58, *SD* = 1.57), shape concerns (*M* = 2.19, *SD* = 1.72), weight concerns (*M* = 2.09, *SD* = 1.75), and eating concerns (*M* = *0*.91, *SD* = 0.87) (Table 3). On average, students engaged in OBE 3.92 (*SD* = 6.14) times per month, OBE-LOC 1.72 (*SD* = 4.14) times per month (Table 4) and SBE 2.08 (*SD* = 4.18) days per month (Table 4). Misuse of laxatives, purging, and compulsive/driven exercise to control weight or shape were relatively low (Table 5). There were 18 responses across the OBE, OBE-LOC, SBE, and compulsive/driven exercise questions that were disqualified for analysis due to ambiguous responses such as "not sure", "potentially", "many times", etc. Average rumination scores were 3.29 (*SD* = .87) (Table 2).

Table 2

Descriptive Statistics of Perceived Social Support and Rumination Scores

	n	*M*	*SD*	Possible Range
Total Social Support	239	5.35	1.17	1-7
Family	239	5.40	1.36	1-7
Friends	239	5.30	1.33	1-7
Significant Other	239	5.36	1.62	1-7
Rumination	249	3.29	.87	1-5

Note: Utilize the following parameters to classify social support: Scores between 1-2.9 are considered low support; scores between 3-5 are considered moderate support; scores from 5.1-7 are considered high support.

Table 3

Means and Standard Deviations of EDE-Q Global and Subscale Scores

	n	*M*	*SD*
Dietary Restraint	281	1.58	1.57
Male	98	1.24	1.37
Female	177	1.68	1.57
Other	5	3.64	2.35
Shape Concerns	281	2.19	1.72
Male	98	1.39	1.37
Female	177	2.58	1.37
Other	5	4.3	2.16
Weight Concerns	281	2.09	1.75
Male	98	1.30	1.36
Female	177	2.47	1.76
Other	5	4.40	2.25
Eating Concerns	282	.91	1.27
Male	98	.37	.67
Female	177	1.12	1.28
Other	5	3.08	2.76
Global	282	1.80	1.45
Male	98	1.14	1.04
Female	177	2.07	1.45
Other	5	3.95	2.26

Note: Possible responses range from 0-6. Utilize the following to classify severity of scores: 0 indicates absence of a feature; 1 indicates that the feature is almost, but not quite absent; 2 does not have a severity associated with it; 3 indicates severity midway between 0 and 6, 4 does not have a severity associated with it; 5 indicates severity almost meriting a rating of 6; 6 indicates that the feature is present to an extreme degree.

Table 4

Descriptive Statistics for OBE, OBE-LOC, and SBE (n = 281)

	M (Times/Month)	*M* (Days/Month)	*SD*	Range Reported by Students (Days)
OBE	3.92	-	6.14	0-30
OBE-LOC	1.72	-	4.14	0-30
SBE	-	2.08	4.18	0-28

Note: Means reflect average number of days or times an individual has engaged in binge eating in the preceding 28 days at time of completing survey.

Table 5

Descriptive Statistics for Compensatory Behaviors (n = 281)

	M (Times/Month)	*SD*	Range (Days)
Laxative Misuse	.30	2.34	0-28
Purging	.38	2.18	0-28
Compulsive/Driven Exercise	3.25	6.71	0-28

Pearson's correlation analyses were utilized to explore two research objectives: 1) to determine whether there was an association between rumination and EDAB, and 2) to determine if there was an association between perceived social support and EDAB. Rumination was significantly associated with EDAB global scores ($r = .59$, $p = .000$), shape concerns ($r = .62$, $p = 000$), and weight concerns ($r = .59$, $p = .000$) with large effect sizes. Rumination was also significantly associated with eating concerns ($r = .50$, $p = .000$) and dietary restraint ($r = .38$, $p = .000$) with medium effect sizes (Table 6). Perceived social support was negatively correlated with EDAB global scores ($r = -.19$, $p = .003$), shape concerns ($r = -.19$, $p \leq .01$), weight concerns ($r = -.18$, $p = .006$), eating concerns ($r = -.14$, $p = .029$), and restrained eating ($r = -.15$, $p = .020$)

with small effect sizes (Table 6). Of the three sources of support, family members had the strongest association with global EDEQ scores (r = -.30, p = .000), weight concerns (r = -.32, p = .000), and shape concerns (r = -.31, $p \leq .01$) with a medium effect size and eating concerns (r = -.26, p = .000) and dietary restraint (r = -.18, p = .007) with a small effect size (Table 6). Social support from friends was significantly correlated with global EDEQ (r = -.16, p = .016), dietary restraint (r = -.17, p = .009), weight concerns (r = -.15, p = .018), and shape concerns (r = -.13, p = .041), but not eating concerns (Table 6). Social support from significant others was not significantly correlated with global or subscale EDEQ scores (Table 6).

Table 6

Pearson's Correlations Among EDAB, Perceived Social Support, and Rumination (n = 239)

	1	2	3	4	5	6	7	8	9	10
1. EDEQ Global	(.95)									
2. EDEQ Restraint	.82**	(.82)								
3. EDEQ Shape	.96**	.69**	(.94)							
4. EDEQ Weight	.92**	.62**	.92**	(.90)						
5. EDEQ Eating	.85**	.62**	.77**	.75**	(.84)					
6. Rumination	.59**	.38**	.62**	.59**	.50**	(.88)				
7. PSS	-.19**	-.15*	-.19**	-.18**	-.14**	-.17**	(.93)			
8. PSS-Family	-.30**	-.18**	-.31**	-.32**	-.26**	-.24*	.77**	(.91)		
9. PSS-Friends	-.16*	-.17**	-.13*	-.15*	-.12	-.14*	.83**	.49**	(.93)	
10. PSS-Sig. Other	-.03	-.04	-.04	.01	.01	-.05	.84**	.42**	.55**	(.95)

Note: $p \leq .05$*, $p \leq .01$** levels. Internal reliability scores are presented in parenthesis on the diagonal.

An additional Pearson's correlation analysis was used to assess the relationships between binge eating, compensatory behaviors, perceived social support, and rumination. OBE-LOC was positively associated with rumination (r = .26, p = .000) and negatively associated with total perceived social support scores (r = -.13, p = .041) and social support from family (r = -.14, p = .031) (Table 7). SBE was also positively associated with rumination (r = .14, p = .028), but was not related to perceived social support (Table 7). Similarly, compulsive/driven exercise to control weight and shape was positively correlated with rumination (r = .28, p = .000) but not perceived social support (Table 7).

Table 7

Pearson's Correlations of Binge Eating, Compensatory Behaviors, Perceived Social Support, and Rumination (n = 281)

	1	2	3	4	5	6	7	8	9	10	11
1. Rumination	(.88)										
2. PSS	.17**	(.93)									
3. OBE	.04	-.08	--								
4. OBE-LOC	.26**	-.13*	.51**	--							
5. SBE	.14*	-.05	.55**	.76**	--						
6. Purging	.12	-.06	.24**	.37**	.37**	--					
7. Laxatives	.09	-.11	.16**	.41**	.29**	.74**	--				
8. Exercise	.28**	-.04	.25**	.16**	.19**	.28**	.30**	--			
9. PSS-Family	-.24**	.77**	-.10	-.14*	-.05	-.09	-.11	-.02	(.91)		
10. PSS-Friends	-.14*	.83**	-.06	-.13	-.05	-.08	-.10	-.06	.49**	(.93)	
11. PSS- Sig. Other	-.05	.84**	-.03	-.07	-.02	.00	-.06	-.01	.42**	.55**	(.95)

Note: $p \leq .05$*, $p \leq .01$** levels. Internal reliability scores are presented in parenthesis on the diagonal.

A series of moderated regression analyses were performed to determine whether rumination moderates the relationship between perceived social support and EDAB. After controlling for age, gender, race/ethnicity, BMI, GPA, and employment status, a significant interaction emerged for EDAB: rumination × perceived social support from significant others predicted shape concerns (B = .171, *S.E.* = .071, β = .148, p = .016) (Figure 1; Table 8), weight concerns (B = .215, *S.E.* = .072, β = .185, p = .003) (Figure 2; Table 9), and eating concerns (B = .115, *S.E.* = .051, β = .151, p = .025) (Figure 3; Table 10), but not dietary restraint. The models predicting shape concerns F = (16, 203) = 11.835, r^2 = .47, p = .016, weight concerns F = (16, 203) = 11.835, r^2 = .45, p = .003, and eating concerns F = (16, 203) = 7.652, r^2 = .36, p = .003 were significant. Significant interactions were graphed using excel to visualize directionality of the interaction. Analysis indicated that high social support from significant others coupled with high rumination scores predicted greater shape, weight, and eating concerns. Therefore, the hypotheses that low social support and high rumination would predict EDAB was not supported.

Table 8

Moderated Regression Predicting Shape Concerns from Perceived Social Support and Rumination (n = 239)

	Model 1			Model 2		
Variable	*B*	*SE B*	ß	*B*	*SE B*	ß
Step 1						
Constant	3.14	.26		3.07	.26	
BMI	.07	.02	.21***	.07	.02	.21***
Age	.01	.02	.04	.02	.02	.06
Black	-.52	.76	-.04	-.58	.75	-.04
Asian	.55	.41	.07	.62	.40	.08
Hispanic	-.10	1.32	-.00	.54	1.36	.02
Multi-race	.07	.43	.01	.14	.42	.02
Other race	1.66	1.00	.09	1.65	1.0	.09
Other Gender	.25	.72	.02	.177	.72	.01
Males	-.55	.21	-.15*	-.53	.21	-.15*
GPA	-.47	.14	-.22**	-.44	.14	-.20**
Rumination	.97	.12	.47***	.99	.12	.48***
PSS-Family	-.26	.08	-.20**	-.25	.08	-.20**
PSS-Friends	-.01	.09	-.01	.00	.09	.00
PSS-Sig. Other	.05	.07	.05	.04	.07	.04
Unemployed	.39	.22	.10*	.34	.22	.09
Employed Fulltime	-.35	.33	-.07	-.37	.33	-.08

F-value	11.84***			
Adj. R^2	.46			
Step 2				
Rumination x Family		-.04	.09	-.03
Rumination x Friends		-.02	.10	-.02
Rumination x Sig. Other		.17	.07	.15*
F-value	10.50***		.01	
Adj. R^2			.47	

Note: $p \leq .05$*, $p \leq .01$**, $p < .001$*** levels. All variables were centered at their means.

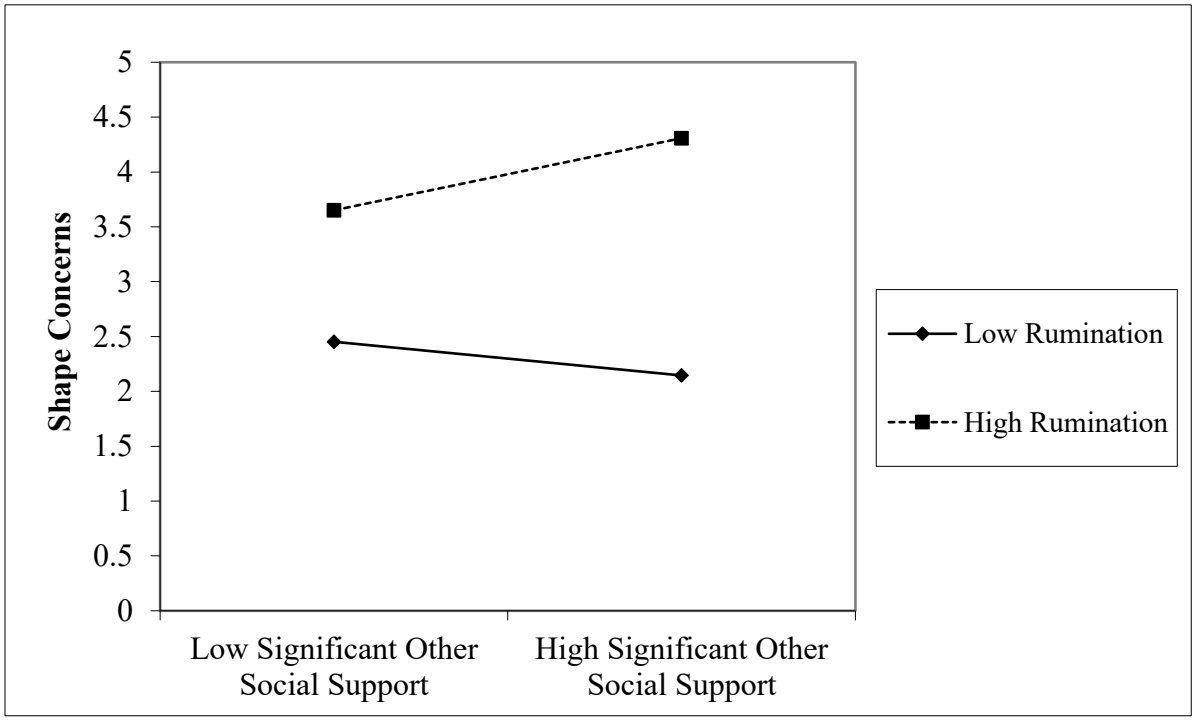

Figure 1. Perceived social support and rumination predict shape concerns (n = 239). Note: An interaction has been detected if the lines appear as if they will intersect with one another.

Table 9

Moderated Regression Predicting Weight Concerns from Perceived Social Support and Rumination (n = 239)

	Model 1			Model 2		
Variable	*B*	*SE B*	ß	*B*	*SE B*	ß
Step 1						
Constant	2.78	.27		2.67	.27	
BMI	.06	.02	.19***	.07	.02	.19**
Age	.03	.02	.13	.04	.02	.15*
Black	-.80	.78	-.06	-.90	.77	-.06
Asian	.02	.42	.00	.10	.41	.013
Hispanic	-.27	1.36	-.01	.37	1.39	.015
Multi-race	.09	.44	.01	.20	.43	.02
Other race	1.19	1.03	.07	1.21	1.02	.07
Other Gender	.43	.75	.03	.33	.74	.03
Males	-.64	.22	-.18**	-.61	.22	-.17**
GPA	-.30	.14	-.13*	-.26	.14	-.12
Rumination	.85	.12	.41***	.87	.12	.42***
PSS-Family	-.30	.08	-.23**	-.27	.09	-.21**
PSS-Friends	-.10	.09	-.08	-.09	.09	-.07
PSS-Sig. Other	.13	.07	.13	.12	.07	.11
Unemployed	.41	.22	.10	.35	.22	.09
Employed Fulltime	-.60	.34	-.13	-.60	.34	-.13

F-value	10.53***		
Adj. R^2	.43		
Step 2			
Rumination x Family	-.08	.09	-.05
Rumination x Friends	-.08	.10	-.05
Rumination x Sig. Other	.22	.07	.19**
F-value		9.63***	
Adj. R^2		.45	

Note: $p \leq .05$*, $p \leq .01$**, $p < .001$*** levels. All variables were centered at their means.

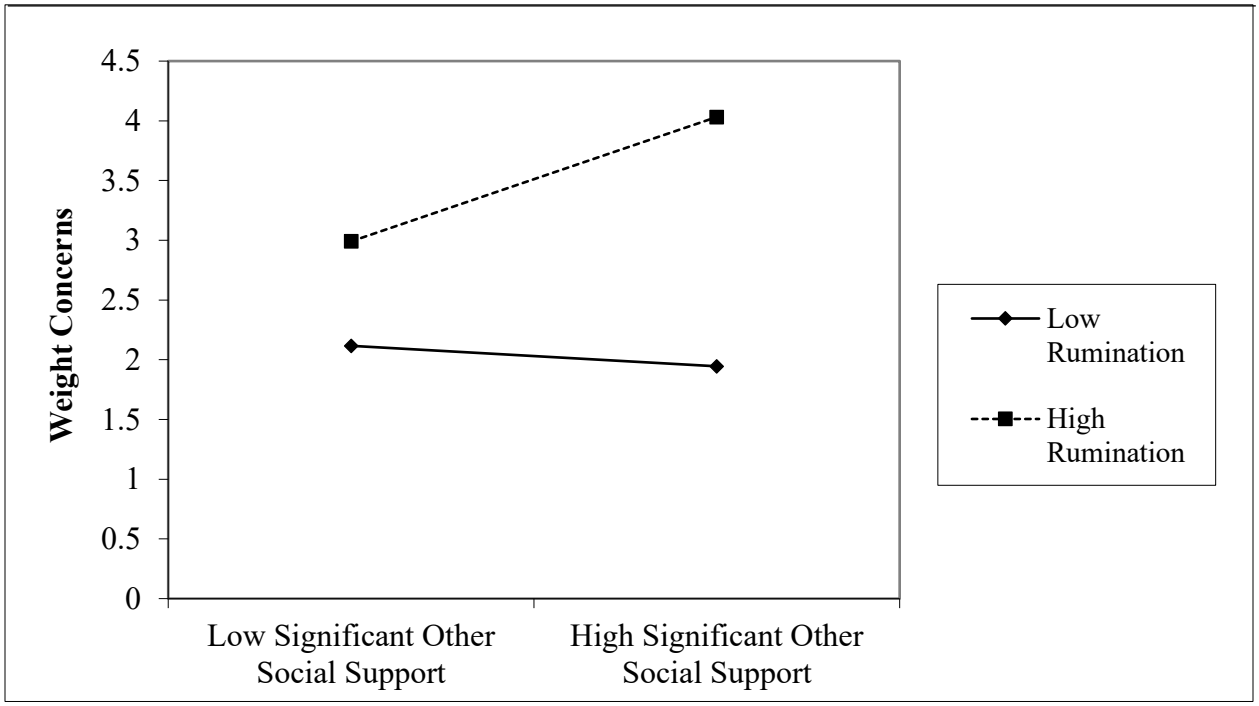

Figure 2. Perceived social support and rumination predict weight concerns (n = 239). Note: An interaction has been detected if the lines appear as if they will intersect with one another.

Table 10

Moderated Regression Predicting Eating Concerns from Perceived Social Support and Rumination (n = 239)

	Model 1			Model 2		
Variable	*B*	*SE B*	ß	*B*	*SE B*	ß
Step 1						
Constant	1.17	.19		1.13	.19	
BMI	.05	.01	.22**	.05	.01	.22***
Age	.01	.01	.06	.01	.01	.09
Black	-.27	.55	-.03	-.31	.54	-.03
Asian	.23	.30	.05	.28	.29	.06
Hispanic	.17	.96	.01	.90	.98	.06
Multi-race	.12	.31	.02	.15	.31	.03
Other race	2.26	.73	.20**	2.29	.72	.20**
Other Gender	.44	.54	.05	.31	.52	.04
Males	-.35	.15	-.15*	-.34	.15	-.14*
GPA	-.13	.10	-.09	-.11	.10	-.08
Rumination	.47	.09	.35***	.49	.09	.36***
PSS-Family	-.15	.06	-.18*	-.15	.06	-.17*
PSS-Friends	-.04	.06	-.05	-.02	.06	-.02
PSS-Sig. Other	.11	.05	.15*	.10	.05	.14*
Unemployed	.11	.16	.04	.09	.16	.04
Employed Fulltime	-.32	.24	-.10	-.34	.24	-.11

F-value	7.65***		
Adj. R^2	.40		
Step 2			
Rumination x Family		-.10	.06	-.10
Rumination x Friends		.06	.07	.06
Rumination x SigOther		.12	.05	.15
F-value		7.12***	
Adj. R^2		.42	

Note: $p \leq .05$*, $p \leq .01$**, $p \leq .001$*** levels. All variables were centered at their means.

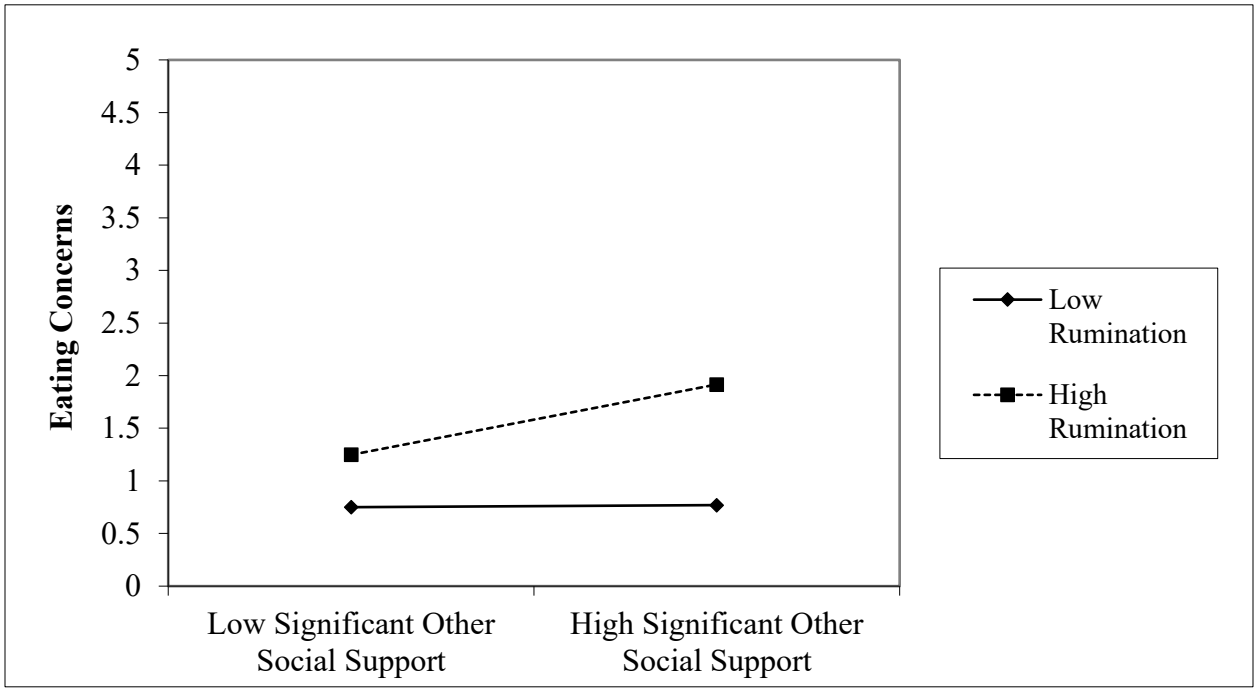

Figure 3. Perceived social support and rumination predict eating concerns (n = 239). Note: An interaction has been detected if the lines appear as if they will intersect with one another.

Rumination did not moderate the relationships between perceived social support from friends and EDAB or social support from family and EDAB. It is important to note that there

was no significant correlation between social support from significant others and EDAB; significance emerged once rumination was added as a moderating factor. Therefore, social support from significant others only has a significant impact on EDAB when individuals also ruminate.

Chapter V: Discussion, Conclusion and Recommendations

This study aimed to explore the relationships between EDAB and perceived social support and EDAB and rumination in a sample of undergraduate and graduate students at the University of Wisconsin-Stout. Additionally, this study sought to examine the moderating role of rumination on the relationship between EDAB and perceived social support. This study yielded the following main findings:

1. EDAB and perceived social support were negatively associated
2. OBE-LOC was negatively associated with overall perceived social support and perceived social support from family
3. EDAB and rumination were positively associated
4. OBE-LOC and SBE was positively associated with rumination
5. Rumination moderates the relationship between perceived social support from significant others and EDAB; rumination and perceived social support from significant others interact to predict the occurrence of EDAB

The findings of this study may be beneficial in the development of screening tools to better support students who struggle with EDAB. Advancement in this area may reduce the prevalence of EDAB and improve overall well-being of university students. Furthermore, identifying the mechanism by which greater social support from significant others coupled with rumination negatively effects EDAB, must be explored. Doing so may aid in determining methods to prevent and alleviate the negative consequences of EDAB. The following chapter includes an in-depth discussion of the results, explores conclusions, identifies strengths and limitations, and provides recommendations for future research.

Discussion

This study assessed the occurrence of EDAB in a sample of undergraduate and graduate students. Participants in the current study had EDE-Q scores that were comparable to that of established norms for Midwestern university women (Luce et al., 2008) and men (Lavender et al., 2010; Turton et al., 2017). Male averages for global (M = 1.14, SD = 1.04), dietary restraint (M = 1.24, SD = 1.37), shape concerns (M = 1.39, SD = 1.37), and eating concerns (M = .37, SD = .67) were slightly above university averages for men while weight concerns were similar (M = 1.30, SD = 1.36). Female global scores (M = 2.07, SD = 1.45), weight concerns (M = 2.47, SD = 1.76), and shape concerns (M = 2.58, SD = 1.37) were somewhat higher than university averages while eating concerns (M = 1.12, SD = 1.28) were similar and dietary restraint (M = 1.68, SD = 1.57) fell just below. However, all scores fell in line with established trends. In this study, females had higher EDE-Q scores than their male peers. This is expected because previous studies have identified that women are more likely to experience EDAB than males (Eisenberg et al., 2011). Determining the incidence of EDAB in university students is essential to ensuring adequate mental and physical health. Results such as these may be used to create new or improve existing campus resources.

Perceived social support and EDAB in university students. Results from this study highlight the relationship between perceived social support and EDAB. Overall social support (r = -.19, $p \leq .01$) and support from family members (r = -.303, $p \leq .01$) and friends (r = -.156, $p \leq .01$) were negatively associated with global EDAB scores. These results are supported by previous findings that high social support from family and friends is more impactful than support from significant others on EDAB (Rahat & Ilhan, 2016). Other research has suggested that same-sex friendships may be an especially helpful source of support for women regarding their EDAB

(Bardone-Cone, Balk, Lin, Fitzsimmons-Craft, & Goodman, 2016). While individuals may rate the support they receive as adequate, it is important to note that discussions with same-sex friends regarding body image, dieting, bingeing, and exercise may promote unhealthy behaviors (i.e. comparing one's body to another). Regardless, it is possible that women still consider social support from same-sex friends as adequate because they have someone to confide in regarding EDAB.

OBE-LOC was negatively correlated with overall support (r = -.13, $p \leq .05$) and support from family (r = -.14, $p < .05$). This is supported by previous research which found that low familial support was associated with greater risk of EDAB (Ghaderi & Scott, 2001). Conversely, in the current study, social support from significant others was not related to EDAB, OBE, OBE-LOC, SBE, or compensatory behaviors. It is possible that university students rely more heavily on family and friends for support rather than significant others. Perhaps relationships with family and friends have been established for longer periods of time and thus support-seekers feel more comfortable confiding in these individuals. Students may also be more inclined to confide in their friends who have had similar life experiences. If individuals feel that they share the same struggles as their friends, they may be considered a more comforting or valuable source of support.

Additionally, significant others may be unable to provide support in domains such as eating, weight, or shape concerns to a degree that is perceived as adequate by support-seekers. This may be due to a lack of personal experience, relatability, or understanding by the significant other regarding EDAB concerns and may deter students from confiding in them. It is also important to note that not all university students have a significant other in their lives to draw on for support. The absence of a significant other in many students' lives may explain why no

significant association emerged between this domain of social support and EDAB. The results of this study provide information regarding which sources of social support are most crucial to the occurrence of EDAB in university students.

Rumination and EDAB in university students. This study found that rumination was strongly associated with EDAB global scores ($r = .59$, $p \leq .01$) in university students. This is consistent with results from Cowdrey and Park (2012). In this study, rumination was also associated with OBE-LOC ($r = .260$, $p \leq .01$) but not OBE. This finding may be partially explained by the detrimental effects of rumination that include heightening one's LOC over their emotions and behaviors (Nolen-Hoeksema et al., 2007; Selby et al., 2008). Individuals who ruminate may view their concerns as being out of their control and it is possible that LOC still persists during binge eating to alleviate distress.

Also, in the current study, SBE ($r = .14$, $p \leq .01$) was associated with rumination while OBE was not. These differences may be related to the nature of subjectivity and objectivity. It is possible that individuals are ruminating about the amount of food that they view as large but not the amount of food that others may judge as large. Therefore, the differences in results may be attributable to cognitive preoccupation on one's own definition of a "binge", versus an outsider's opinion. Additionally, it is possible that the EDE may be better suited for assessing binge eating since examiners are able to provide participants with in-depth explanations of questions, potentially eliminating confusion on the differences between OBE and SBE. Further research is needed to elucidate this matter.

It is common for individuals with EDAB to engage in compensatory behaviors. This study found that compulsive/driven exercise to control weight or shape ($r = .28$, $p \leq .01$) was significantly associated with rumination but purging and laxative misuse were not. This

association may be explained by ECM if university students chose to engage in exercise as a means of distraction from ruminative thoughts. Exercise may be a way for individuals to gain control over their emotions or circumstances, especially if ruminative thoughts are focused on weight or shape. This is reasonable considering that rumination worsens a person's LOC (Selby et al., 2008) and compulsive/driven exercise has been used to avoid negative affect (Noetel, Miskovic-Wheatley, Crosby, Hay, Madden, Touyz, 2016). Currently, compulsive/driven exercise is not included in ECM. Perhaps this is because exercise is typically viewed as a healthy coping strategy, especially when compared to binge eating which is associated with weight gain. However, compulsive/driven exercise should not be overlooked and may be better conceptualized as maladaptive when performed in excess. This is because excessive exercise has been associated with underweight and malnourishment (Kolnes, 2016). Thus, it is feasible that compulsive/driven exercise may be included in ECM after further research because of its potential adverse effects. An addition such as this may increase awareness of the tactics used by university students to alleviate distressing emotions and enhance therapists' abilities to target maladaptive behaviors used to control weight and shape.

Perceived social support and rumination predict EDAB. Although this study did not detect an association between social support from significant others and EDAB, social support from significant others predicted EDAB when coupled with rumination. The moderating effect of rumination is not surprising given the strong association that was found between rumination and EDAB global scores ($r = .59$, $p \leq .01$). However, the hypothesis that EDAB could be predicted by low social support and high rumination was not supported. The finding that higher social support from significant others predicts EDAB is perplexing. Hefner and Eisenberg (2015) found that higher frequency of contact with family members, but not friends or significant others,

was associated with greater EDAB in university students. The authors suggested that it is unclear whether the positive association is because of individuals contacting family members frequently for support on pre-existing EDAB concerns, or if frequent contact precipitates EDAB. This same explanation may be applicable to the relationship between significant others and support seekers in the current study. It is possible that individuals obtain high social support from significant others because of pre-existing EDAB, especially if EDAB is the focus of ruminative content. Additionally, it is possible that students viewed frequency of contact with significant others and quality of support as interchangeable. Therefore, individuals in this study may have had frequent contact with their significant other, but inadequate quality of support regarding EDAB. The notion that frequent contact with others does not ensure that social interactions exert a positive impact on the support-seeker is well supported (Hefner & Eisenberg, 2007).

Although university students receive social support from significant others, the support received may not be related to EDAB but to other stressors such as academic, interpersonal, or work difficulties. It is also important to consider that significant others may have similar EDAB cognitions that might promote unhealthy attitudes and behaviors regarding weight, shape, and eating concerns of the support-seeker. Research by Eisenberg, Berge, and Neumark-Sztainer (2013) supports this notion in which they found that a partner's dietary behaviors and encouragement to diet were associated with extreme weight control behaviors in young adults and binge eating in females. On the contrary, females whose partners did not encourage them to diet had significantly lower EDAB. It is possible that significant others of support seekers in the current sample either directly promoted or modeled unhealthy weight control behaviors, leading to EDAB. This highlights that EDAB may be exacerbated through encouragement from

significant others to diet and may be a potential explanation for the prediction of EDAB in the current study.

It is also important to acknowledge how rumination may negatively impact the relationship between perceived social support and EDAB. Ruminative content is typically negative laden. The negative nature of individuals' thoughts and feelings may be overwhelming and therefore lead them to seek support from significant others. However, the pervasive negative thoughts experienced by the support-seeker may negate the protective mechanisms that social support would typically exert against EDAB, even if support is adequate and promotes healthy behaviors. Therefore, the positive impacts of social support may be overridden by a tendency to ruminate (Flynn et al., 2010).

This study found that rumination and high social support from significant others did not predict dietary restraint. Prior studies have suggested that rumination is independently associated with eating, weight, and shape concerns, but not dietary restraint (Park et al., 2011). Although the Transdiagnostic View proposes that AN, BN, and OSFED share similar general and core psychopathology (Fairburn, 2008), it is possible that the cognitions underlying dietary restriction may differ from cognitions that perpetuate eating, weight, and shape concerns. These differing cognitions may not be influenced by the tendency to ruminate, which may explain why no significance was found. Additionally, eating concerns, shape concerns, and weight concerns mainly describe thought processes regarding EDAB while dietary restraint may represent the carrying out of behaviors to reduce intake. Therefore, it is important to note that high rumination and high social support from significant others may predict EDAB cognitions, but not behaviors.

Furthermore, the finding that perceived social support from significant others was not independently associated with dietary restraint may also explain why this model failed to predict dietary restraint.

Identifying why social support from significant others increased one's chance for EDAB should be further investigated. Understanding the relationship dynamics of students may aid in further building on the findings of this study. For example, elucidating whether students have healthy or unhealthy relationships with their significant others may be helpful. It is possible that unhealthy relationships negatively impact EDAB. Therefore, relationship dynamics should be an avenue for further research.

Conclusions

The current study determined that greater social support was associated with lower EDAB scores and OBE-LOC. This suggests that social support may have a protective role in the occurrence of EDAB. Additionally, rumination was positively associated with EDAB, OBE-LOC, and SBE in university students. Most surprisingly, it was determined that greater social support from significant others, coupled with rumination, predicted EDAB in university students.

Limitations

The current study had a few limitations. EDAB was self-reported using the EDE-Q. Height and weight were also self-reported in order to calculate BMI. While the self-report method for assessing EDAB and BMI is commonly used (Lipson & Sonneville, 2017; Mond et al., 2006; Mond et al., 2004), it may affect the accuracy of results and should be noted. Another limitation is that the MSPSS purposefully leaves the term significant other as ambiguous. This is done by referring to the significant other as a "special person" throughout the questionnaire, allowing participants to interpret "special person" as a close friend, family member, teacher,

mentor, romantic partner, etc. (Zimet et al., 1991). This means that it is possible that university students may not have had a romantic partner in mind when completing the survey.

Furthermore, this study did not have an ethnically diverse sample, with 87% of the sample comprised of Caucasian individuals. However, this is consistent with the population at the University of Wisconsin-Stout where 86% of the student population identifies as Caucasian (University of Wisconsin-Stout, 2017). An additional limitation to consider is that participants were given four response options instead of seven for questions 22-28 on the EDE-Q as a result of a survey administration error. However, participants still had the designated "not at all" (designated as 0), "slightly" (designated as 2), "moderately" (designated as 4), and "markedly" (designated as 6) as potential answers to select. These questions were able to be factored into analysis, however, this reduced the variance for questions 22-28.

Strengths

The current study had several strengths. This study explores the interaction between social support and rumination in the prediction of EDAB among rural university students. In addition, social support was measured from multiple sources: family, friends, and significant others. Furthermore, a large distribution of students from all grade levels: freshman, sophomore, junior, senior, and graduate level students were obtained in this sample.

Recommendations

Numerous efforts should be made to advance the field's understanding of EDAB in the university student population. Future research should investigate why social support from significant others was not independently associated with EDAB, but predicted EDAB when coupled with rumination. Additionally, it is important to operationally define who university students consider as a "special person". Perhaps a study utilizing an alternative instrument for

measuring perceived social support which uses terms such as boyfriend/girlfriend or significant other may be beneficial. Furthermore, it may be helpful to determine whether students with significant others differ from students without significant others in regards to prevalence of EDAB. This may advance our understanding of the role significant others play in EDAB, especially when coupled with rumination.

It is also important to determine the content that university students are ruminating about. Are students ruminating about weight or shape concerns? Eating concerns? Interpersonal or relational issues? Academic distress? Further exploring this matter may aid in understanding why some sources of support may be more advantageous than others. In addition, identifying the focus of ruminative thoughts will allow university counseling centers to better serve students during therapy sessions. Identifying this through experimental methods where rumination is induced may be helpful in the exploration of ruminative topics. Furthermore, the application of qualitative research methods to investigate ruminative content of university students is extremely limited. Conducting focus groups and interviews may be a good foundation for understanding exactly what students ruminate about. Themes obtained from these methods may be used to create survey tools that measure ruminative content, thus enhancing counseling centers' abilities to appropriately assess students' mental health.

Furthermore, studies should elucidate the relationship between OBE and SBE in regards to LOC. Theories explaining why SBE and OBE-LOC, but not OBE, were associated with rumination, are unclear and warrant further investigation. Utilizing an instrument specifically designed to measure binge eating habits may be helpful in this endeavor.

Information gained from this study may be used to reduce the prevalence of EDAB in the university population. Such information may be applied in the development of tools to better

support students. For example, universities may benefit from incorporating screens for perceived social support and rumination at intake appointments for on-campus counseling sessions. In addition, creating additional opportunities for students to interact outside of the classroom by holding more “break-out” social events may allow students to network with peers and build stronger social support systems. Furthermore, providing students with education regarding adaptive coping mechanisms for managing ruminative tendencies may help deter students from engaging in binge eating or compulsive/driven exercise to alleviate distressing thoughts.

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Appendix A: University of Wisconsin-Stout IRB Approval

October 9, 2017

Abigya Birmachu
Food and Nutrition
University of Wisconsin-Stout

RE: **Eating Disorder Attitudes and Behaviors, Perceived Social Support and Rumination in College Students**

Dear Abigya,

In accordance with Federal Regulations, your project, "*Eating Disorder Attitudes and Behaviors, Perceived Social Support and Rumination in College Students"* was reviewed on **October 9, 2017,** by a member of the Institutional Review Board and was approved under Expedited Review through **October 8, 2018.** If a renewal is needed, it is to be submitted at least 10 working days prior to the approvals end date.

If you are conducting an **online** survey/interview, please copy and paste the following message to the top of the form:
"This research has been approved by the UW-Stout IRB as required by the Code of Federal regulations Title 45 Part 46."

Responsibilities for Principal Investigators of IRB-approved research:

1. No subjects may be involved in any study procedure prior to the IRB approval date or after the expiration date. (Principal Investigators and Sponsors are responsible for initiating Continuing Review proceedings.)
2. All unanticipated or serious adverse events must be reported to the IRB.
3. All protocol modifications must be IRB approved prior to implementation, unless they are intended to reduce risk.
4. All protocol deviations must be reported to the IRB.
5. All recruitment materials and methods must be approved by the IRB prior to being used.
6. Federal regulations require IRB review of ongoing projects on an annual basis.

Thank you for your cooperation with the IRB and best wishes with your project.

Should you have any questions regarding this letter or need further assistance, please contact the IRB office at 715-232-1126 or email buchanane@uwstout.edu.

Sincerely,

Elizabeth Buchanan

Interim Director of Office of Research and Sponsored Programs and Human Protections Administrator,
UW-Stout Institutional Review Board for the Protection of Human Subjects in Research (IRB)

CC: Lindsay Heidelberger

Appendix B: Implied Consent Form

Consent to Participate in UW-Stout Approved Research

Title: Eating attitudes and behaviors, perceived social support, and rumination in college students.

Investigator: Abigya Birmachu
Phone: 612.590.1032
Email: birmachua1512@my.uwstout.edu

Research Advisor: Lindsay Heidelberger, PhD, RDN
Phone: 715.232.1408
Email: heidelbergerl@uwstout.edu

Description:
This investigation explores the relationships between eating attitudes and behaviors, stress response styles, and social support. A survey on these topics will be administered. It will take 10-20 minutes to complete – and the survey will be administered online using Qualtrics software.

Risks and Benefits:
There is minimal risk of participating in this study. You may experience emotional discomfort while answering survey questions. Results of this study may be used to guide the development and enhancement of student resources on university campuses. Results of this study will add to the general knowledge of eating disorder attitudes and behaviors and may be used to guide future research on preventative and treatment strategies.

Special Populations:
There are no special populations included in this study.

Time Commitment and Payment:
This study will take 10-20 minutes to complete. If you chose to participate, you may enter your name into a random lottery to win one of five, $20 gift cards to Amazon.

Confidentiality:
Your name will not be included on any documents. We do not believe that you can be identified from any of this information.

Right to Withdraw:
Your participation in this study is entirely voluntary. You may choose not to participate without any adverse consequences to you. You have the right to stop the survey at any time. However, should you choose to participate and later wish to withdraw from the study, there is no way to identify your anonymous document after it has been turned into the investigator. If you are participating in an anonymous online survey, once you submit your response, the data cannot be linked to you and cannot be withdrawn.

IRB Approval:
This study has been reviewed and approved by the University of Wisconsin-Stout's Institutional Review Board (IRB). The IRB has determined that this study meets the ethical obligations required by federal law and University policies. If you have questions or concerns regarding this study please contact the Investigator or Advisor. If you have any questions, concerns, or reports regarding your rights as a research subject, please contact the IRB administrator.

Investigator: Abigya Birmachu
Phone: 612.590.1032
Email: birmachua1512@my.uwstout.edu

Advisor: Lindsay Heidelberger, PhD, RDN
Phone: 715.232.1408
Email: heidelbergerl@uwstout.edu

IRB Administrator
Elizabeth Buchanan, Research Services
152 Vocational Rehabilitation Bldg.
UW-Stout
Menomonie, WI 54751
715.232.2477
irb@uwstout.edu

Statement of Consent:
By completing the following survey, you agree to participate in the project entitled "Eating disorder attitudes and behaviors, perceived social support, and rumination in university students".

Appendix C: Demographic Form

Q1 Please indicate your age.

Q2 What gender do you identify with?
- ❍ Female (1)
- ❍ Male (2)
- ❍ Other (3)

Q3 If other, please list.

Q4 What is your current relationship status?
- ❍ Single (1)
- ❍ In a relationship (2)
- ❍ Married (3)
- ❍ Divorced (4)

Q5 What is your race/ethnic background?
- ❍ White/Caucasian, non-Hispanic (1)
- ❍ Black/African-American, non-Hispanic (2)
- ❍ Hispanic or Latino (3)
- ❍ Asian (4)
- ❍ Native Hawaiian or other Pacific Islander (5)
- ❍ American Indian or Alaska Native (6)
- ❍ Bi- or Multi-racial (7)
- ❍ Other (8)

Q6 If other, please list.

Q7 What college is your major of study in?
- ❍ College of Arts, Communication, Humanities, and Social Sciences (1)
- ❍ College of Education, Hospitality, Health and Human Sciences (2)
- ❍ College of Science, Technology, Engineering, Mathematics, and Management (3)
- ❍ Graduate School (4)
- ❍ School of Art and Design (5)
- ❍ School of Education (6)
- ❍ School of Hospitality Leadership (7)

Q8 Please indicate your major in college.

Q9 What year are you in college?
- First year (1)
- Second year (2)
- Third year (3)
- Forth year (4)
- Fifth year or more (5)
- Graduate student (6)

Q10 What is your current GPA?

Q11 What is your current employment status?
- Not working (1)
- Working part-time (2)
- Working full-time (3)

Q12 Do you currently work...
- On-campus (1)
- Off-campus (2)

Q13 What is your living arrangement?
- Live alone (1)
- Live with family (2)
- Live with roommates (3)
- Live with significant others (4)

Q14 Please indicate where you currently live.
- Off-campus (1)
- On-campus (2)

Q15 How far away of a drive is your hometown from your current living space?
- Less than a 40-minute drive (1)
- Between 40 minutes and 2 hours (2)
- Between 2 hours and 4 hours (3)
- More than 4 hours (4)

Appendix D: Eating Disorder Examination Questionnaire

Instructions: The following questions are concerned with the past four weeks (28 days) only.

Please read each question carefully. Please answer all of the questions. Please only choose one answer for each question. Thank you.

Questions 1 to 12: Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days) only.

	On how many of the past 28 days ……	No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day
1	Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
2	Have you gone for long periods of time (8 waking hours or more) without eating anything at all in order to influence your shape or weight?	0	1	2	3	4	5	6
3	Have you tried to exclude from your diet any foods that you like in order to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
4	Have you tried to follow definite rules regarding your eating (for example, a calorie limit) in order to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
5	Have you had a definite desire to have an empty stomach with the aim of influencing your shape or weight?	0	1	2	3	4	5	6
6	Have you had a definite desire to have a totally flat stomach?	0	1	2	3	4	5	6
7	Has thinking about food, eating or calories made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?	0	1	2	3	4	5	6
8	Has thinking about shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?	0	1	2	3	4	5	6

9	Have you had a definite fear of losing control over eating?	0	1	2	3	4	5	6
10	Have you had a definite fear that you might gain weight?	0	1	2	3	4	5	6
11	Have you felt fat?	0	1	2	3	4	5	6
12	Have you had a strong desire to lose weight?	0	1	2	3	4	5	6

Questions 13-18: Please fill in the appropriate number in the boxes on the right. Remember that the questions only refer to the past four weeks (28 days).
Over the past four weeks (28 days)…….

13	Over the past 28 days, how many <u>times</u> have you eaten what other people would regard as an <u>unusually large amount of food</u> (given the circumstances)?	…… …..
14	….On how many of these times did you have a sense of having lost control over your eating (at the time that you were eating)?	…… …..
15	Over the past 28 days, on how many **<u>DAYS</u>** have such episodes of overeating occurred (i.e. you have eaten an unusually large amount of food and have had a sense of loss of control at the time)?	…… …..
16	Over the past 28 days, how many <u>times</u> have you made yourself sick (vomit) as a means of controlling your shape or weight?	…… …..
17	Over the past 28 days, how many <u>times</u> have you taken laxatives as a means of controlling your shape or weight?	…… …..
18	Over the past 28 days, how many <u>times</u> have you exercised in a "driven" or "compulsive" way as a means of controlling your weight, shape or amount of fat or to burn off calories?	…… …..

Questions 19-21: Please circle the appropriate number. <u>Please note that for these questions the term "binge eating" means</u> eating what others would regard as an unusually large amount of food for the circumstances, accompanied by a sense of having lost control over eating.

19	Over the past 28 days, on how many days have you eaten in secret (ie, furtively)?.....Do not count episodes of binge eating	No days 0	1-5 days 1	6-12 days 2	13-15 days 3	16-22 days 4	23-27 days 5	Every day 6
20	On what proportion of the times that you have eaten have you felt guilty (felt that you've done wrong) because of its effect on your shape or weight? .....Do not count episodes of binge eating	None of the times 0	A few of the times 1	Less than half 2	Half of the times 3	More than half 4	Most of the time 5	Every time 6
21	Over the past 28 days, how concerned have you been about other people seeing you eat? .....Do not count episodes of binge eating	Not at all 0		Slightly 1	Moderately 2		Markedly 3	

Questions 22-28: Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days)

	On how many of the past 28 days ……	Not at all		Slightly	Moderately			Markedly
22	Has your weight influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
23	Has your shape influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
24	How much would it have upset you if you had been asked to weigh yourself once a week (no more, or less, often) for the next four weeks?	0	1	2	3	4	5	6
25	How dissatisfied have you been with your weight?	0	1	2	3	4	5	6
26	How dissatisfied have you been with your shape?	0	1	2	3	4	5	6

27	How uncomfortable have you felt seeing your body (for example, seeing your shape in the mirror, in a shop window reflection, while undressing or taking a bath or shower)?	0	1	2	3	4	5	6
28	How uncomfortable have you felt about others seeing your shape or figure (for example, in communal changing rooms, when swimming, or wearing tight clothes)?	0	1	2	3	4	5	6

What is your weight at present? (Please give your best estimate). …….

What is your height? (Please give your best estimate). ……..…...

If female: Over the past three-to-four months have you missed any menstrual periods? ……

If so, how many? ……..…….

Have you been taking the "pill"? ……..

THANK YOU

Appendix E: Rumination Reflection Questionnaire

Instructions:

For each of the statements located on the next two pages, please indicate your level of agreement or disagreement by circling one of the scale categories to the right of each statement. Use the scale as shown below:

Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1	2	3	4	5

1.	My attention is often focused on aspects of myself I wish I'd stop thinking about…….	1	2	3	4	5
2.	I always seem to be "re-hashing" in my mind recent things I've said or done…….	1	2	3	4	5
3.	Sometimes it is hard for me to shut off thoughts about myself……..	1	2	3	4	5
4.	Long after an argument or disagreement is over with, my thoughts keep going back to what happened…….	1	2	3	4	5
5.	I tend to "ruminate" or dwell over things that happen to me for a really long time afterward…….	1	2	3	4	5
6.	I don't waste time re-thinking things that are over and done with…….	1	2	3	4	5
7.	Often I'm playing back over in my mind how I acted in a past situation...	1	2	3	4	5
8.	I often find myself re-evaluating something I've done……..	1	2	3	4	5
9.	I never ruminate or dwell on myself for very long…….	1	2	3	4	5
10.	It is easy for me to put unwanted thoughts out of my mind……...	1	2	3	4	5
11.	I often reflect on episodes in my life that I should no longer concern myself with…….	1	2	3	4	5
12.	I spend a great deal of time thinking back over my embarrassing or disappointing moments……...	1	2	3	4	5
13.	Philosophical or abstract thinking doesn't appeal to me that much……...	1	2	3	4	5

14. I'm not really a meditative type of person…….. 1 2 3 4 5

15. I love exploring my "inner" self……. 1 2 3 4 5

16. My attitudes and feelings about things fascinate me…….. 1 2 3 4 5

17. I don't really care for introspective or self-reflective thinking……... 1 2 3 4 5

18. I love analyzing why I do things……. 1 2 3 4 5

19. People often say I'm a "deep", introspective type of person…….. 1 2 3 4 5

20. I don't care much for self-analysis……. 1 2 3 4 5

21. I'm very self-inquisitive by nature……. 1 2 3 4 5

22. I love to meditate on the nature and meaning of things…….. 1 2 3 4 5

23. I often love to look at my life in philosophical ways……. 1 2 3 4 5

24. Contemplating myself isn't my idea of fun…… 1 2 3 4 5

Appendix F: Multidimensional Scale of Perceived Social Support

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

Circle the "1" if you **Very Strongly Disagree**
Circle the "2" if you **Strongly Disagree**
Circle the "3" if you **Mildly Disagree**
Circle the "4" if you are **Neutral**
Circle the "5" if you **Mildly Agree**
Circle the "6" if you **Strongly Agree**
Circle the "7" if you **Very Strongly Agree**

	Very Strongly Disagree	Strongly Disagree	Mildly Disagree	Neutral	Mildly Agree	Strongly Agree	Very Strongly Agree
1. There is a special person who is around when I am in need.	1	2	3	4	5	6	7
2. There is a special person with whom I can share joys and sorrows.	1	2	3	4	5	6	7
3. My family really tries to help me.	1	2	3	4	5	6	7
4. I get the emotional help & support I need from my family.	1	2	3	4	5	6	7
5. I have a special person who is a real source of comfort to me.	1	2	3	4	5	6	7
6. My friends really try to help me.	1	2	3	4	5	6	7
7. I can count on my friends when things go wrong.	1	2	3	4	5	6	7
8. I can talk about my problems with my family.	1	2	3	4	5	6	7
9. I have friends with whom I can share my joys and sorrows.	1	2	3	4	5	6	7

10. There is a special person in my life who cares about my feelings.	1	2	3	4	5	6	7
11. My family is willing to help me make decisions.	1	2	3	4	5	6	7
12. I can talk about my problems with my friends.	1	2	3	4	5	6	7

Scale Reference:

Zimet GD, Dahlem NW, Zimet SG, Farley GK. The Multidimensional Scale of Perceived Social Support.

Appendix G: Recruitment Email

Dear Student,
I would like to invite you to participate in the study *Eating disorder attitudes and behaviors, perceived social support, and rumination in college students.* You have been asked to be part of this project, because you are a college student that attends UW-Stout. The goal of this project is to better understand the factors that influence eating disorders in college students. For this project, you will be asked to complete a brief survey (10-20 minutes long), using Qualtrics. You will be asked questions about yourself, social support, stress response styles, and eating-related questions.
At the end of the survey, you will be directed to a link that will enter you into a drawing to win a **$20 Amazon gift card**.

All participation is voluntary.

If you have any questions, please contact me:
Abby Birmachu (birmachua@my.uwstout.edu)

Please access the survey here: _____ (link will be provided)
Abby Birmachu
M.S. Food & Nutritional Sciences Student
Human Nutrition Track | University of Wisconsin - Stout
Bachelor of Science in Psychology | University of Minnesota
Graduate Assistant & Nutrition Education Coordinator | Food & Nutrition Department
birmachua1512@my.uwstout.edu | 612-590-1032

Appendix H: Debriefing Statement

At the end of the survey this statement appeared:

If you would like counseling support for an eating disorder or other mental health concerns, please contact the University of Wisconsin-Stout Counseling Center (715.232.2468). Counseling services are confidential and free of cost for enrolled students.

Appendix I: Gift-Card Entry

Please enter your first name and email address to be entered into the lottery to win one of five, $20 gift-cards to Amazon.

E-mail address: _____

First Name: _____

Appendix J: Permission to Use the EDE-Q

Dear Abigya Birmachu,

One-time non-exclusive world rights in the English language for print and electronic formats are granted for your requested use of the selections below in your Master's thesis.

Permission fee due: No Charge

This permission is subject to the following conditions:

1. A credit line will be prominently placed and include: the author(s), title of book, editor, copyright holder, year of publication and “Reprinted with permission of Guilford Press” (or author’s name where indicated).

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Best wishes,
Angela Whalen
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