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An Investigation Of Interpersonal Profiles Of Eating Disorder Characteristics Using The Interpersonal Circumplex

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AN INVESTIGATION OF INTERPERSONAL PROFILES OF EATING DISORDER CHARACTERISTICS USING THE INTERPERSONAL CIRCUMPLEX

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ABSTRACT

Eating disorders are pervasive mental illnesses with varied conceptualizations, etiologies, and treatments including cognitive behavioral and family-based therapies. A number of theories have developed regarding risk factors and personality components of eating disorders, and one receiving recent interest regards interpersonal functioning. Hartmann, Zeeck, and Barrett (2010) hypothesized that interpersonal difficulties may be an underlying core component of eating disorders in males and females. Some research investigating this hypothesis has utilized the interpersonal circumplex, which has suggested that individuals with eating disorders have higher levels of negative interactions with others, lower assertiveness, higher rates of aggressiveness and social anxiety, and deficits in social skills (Hartmann et al., 2010). However, research regarding the interpersonal functioning of individuals possessing eating disorder traits, such as body dissatisfaction, is less common and largely mixed. The present study seeks to clarify and extend past research by ascertaining the interpersonal features associated with eating disorder characteristics. These interpersonal features may have deleterious effects on interpersonal outcomes, but the evidence supporting this contention is usually cross-sectional, and hence, more prospective studies are needed. Based on the limited amount of previous research, it is hypothesized that individuals with high levels of body dissatisfaction, binge eating, purging, and emotional eating will have a hostile-submissive interpersonal style with corresponding interpersonal goals/motives, whereas individuals with high levels of body dissatisfaction and restriction will have a submissive interpersonal style. To the extent that subthreshold eating disorder characteristics are associated with hostility or submissiveness, significant associations should be demonstrated between each characteristic and loneliness, negative social experiences, and decreased social support. Lastly, it is hypothesized that subthreshold eating disorder

characteristics will predict the frequency of negative social exchanges at a two-week follow up. The present study has the potential to increase understanding of eating disorder traits in the interpersonal realm, which may have implications for the understanding of the etiology and revised treatment of eating disorders.

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CHAPTER 1

INTRODUCTION

Eating disorders are complex and burdensome mental health problems with current lifetime prevalence estimates between 0.3% and 1% for anorexia nervosa, 1% and 3% for bulimia nervosa, and 2% and 3.5% for binge eating disorder (Arcelus, Mitchell, Wales, & Nielsen, 2011; Ivanova et al., 2015; Striegel-Moore & Franko, 2003). These disorders are associated with significant impairment, including depressed mood, anxiety, relationship difficulties, and adverse health outcomes (Brewerton et al., 1995). Subclinical levels of disordered eating behaviors are important to consider as well due to their increased prevalence (e.g., 32% of girls and 20% of boys ages 9 to 14 report trying to lose weight) and because a small portion of these individuals will end up developing a diagnosable eating disorder at some point in their lives (Field et al., 1999; Shisslak, Crago, & Estes, 1995). Although eating disorders have been documented for centuries, the efficacy of treatment is limited (Bodell & Keel, 2010), especially for anorexia nervosa, which has contributed to the recognition of this disorder as having the highest mortality rate of all mental illnesses (Arcelus et al., 2011). Given the limited efficacy of treatment and the significant impairment associated with eating disorders and subclinical disordered eating, a better understanding of the psychosocial factors associated with the development and maintenance of these disorders is necessary (Polivy & Herman, 2002).

All eating disorders share a common characteristic – a dysfunctional relationship with food. Though there are others, three common eating disorders include anorexia, bulimia, and binge eating disorder. Generally, the peak age of onset for eating disorders appears to be the mid- to late-teenage years (Stice, Marti, & Rohde, 2013). In regard to gender, rates of anorexia and bulimia in males are approximately $1/10^{th}$ the rate observed in females (Fairburn & Beglin, 1990;

Wakeling, 1996), though recent studies suggest this gap is narrowing (Eisenberg, Nicklett, Roeder, & Kirz, 2011). Regarding binge eating disorder, it has been suggested that females have higher prevalence rates, but results are mixed (Striegel-Moore & Franko, 2003).

In addition to clinically diagnosable eating disorders, a variety of subthreshold symptoms and other individual differences are relevant given their association with the disorders and their harmful impact on the person. These subthreshold symptoms include body dissatisfaction, binge eating, purging, restricting, and emotional eating (Fiske, Fallon, Blissmer, & Redding, 2014).

Due to the complexity of eating disorders and associated characteristics, their etiologies are difficult to conceptualize. Perhaps one of the most common conceptualizations of eating disorders involves the issue of personal control. Individuals with eating disorders often perceive limited control in their lives, and it is thought that the intake of food is one way these individuals can exert some degree of control in their lives (Stein & Corte, 2003). It is within this context that disordered eating habits develop, possibly within a family system that is marked by diffuse boundaries, rigid roles, and/or lack of autonomy (Ketisch, Jones, Mirsalimi, Casey, & Milton, 2014; Minuchin, 1974).

The predominant treatment approach for eating disorders and associated characteristics is cognitive behavioral therapy, or CBT (Wilson, Grilo, & Vitousek, 2007; Wonderlich, Mitchell, Swan-Kremier, Peterson, & Crow, 2004). Cognitive behavioral models of bulimia and anorexia, for example, emphasize sociocultural factors and intrapersonal factors that contribute to the development and maintenance of these disorders. From a sociocultural perspective, portrayals of women by the media have increasingly emphasized thinness as an ideal. Exposure to this ideal in the United States is extensive with underweight female actors overrepresented on television (Fouts & Burggraf, 2000). Evidence suggests that this exposure alone can lead to significant

body image concern and disordered eating behaviors (Becker, 2004; Becker, Fay, Gilman, & Striegel-Moore, 2007; Becker et al., 2011).

Examples of intrapersonal factors in cognitive behavioral models of bulimia and anorexia include cognitions and internal processes related to body weight perception/expectation, personal meaning associated with body shape/thinness, and fear schemas associated with eating (Gonzalez & Vitousek, 2004; Pike, Devlin, & Loeb, 2004). These factors interact with dietary restriction, and ultimately, perpetuation of disordered eating. Treatment often consists of psychoeducation about the effects of restricted eating, factors that cause and maintain disordered eating patterns, normalization of eating patterns to eliminate dietary restriction, monitoring one's eating through food logs, changing avoidant behaviors through meal exposure, and challenging maladaptive cognitions that link self-worth with weight and body shape (Fairburn, 2008).

While this intrapersonal focus is important, there are three related and potentially problematic aspects of this focus. First, whereas cognitive-behavioral models clearly specify the importance of sociocultural factors, intrapersonal aspects of eating disorder characteristics (e.g., cognitions) have generally been handled separately from more "social" aspects. Second, psychoeducation is a significant aspect of CBT and the role of sociocultural factors in influencing symptoms of eating disorders is important to address with a client. However, since cognitions and social outcomes are viewed as separate processes (as well as for practical reasons, e.g., it is difficult to change sociocultural factors within a therapy room), intrapersonal features, such as cognitions, tend to be the focus of treatment. Third, research is demonstrating that psychotherapies that do not address interpersonal difficulties may be less effective in the long-term (Ambwani, Slane, Thomas, Hopwood, & Grilo, 2014; Arcelus, Haslam, Farrow, & Meyer, 2013; Fairburn et al., 2015).

Though less developed compared to cognitive behavioral perspectives, the interpersonal features associated with eating disorder characteristics are increasingly being recognized. In fact, Hartmann et al. (2010) noted that interpersonal difficulties may be an underlying core component of eating disorders due to the fact that relationships may function as an etiological factor, interpersonal processes seem to maintain the disorder over time, and interpersonal problems may be a result of the disorder (Ambwani et al., 2014; Broberg, Hjalmers, & Nevonen, 2001).

In this context, interpersonal difficulties broadly refer to difficulties communicating and relating to others. It has been noted in the literature that individuals with eating disorders have higher levels of negative interactions with others, aggressiveness, social anxiety, and lower levels of assertiveness, all of which may be due to deficits in social skills (Hartmann et al., 2010; Raykos, McEvoy, Carter, Fursland, & Nathan, 2014). Specifically, restricting behavior has been associated with difficulty expressing emotion, submissiveness, and social inhibition (Carter, Kelly, & Norwood, 2012; Raykos et al., 2014). In contrast, binge eating has been associated with greater levels of hostility, distrust, and conflict with others (Björck, Clinton, Sohlberg, Hällström, & Norring, 2003; Raykos et al., 2014).

Ambwani and Hopwood (2009) suggested that specific maladaptive behaviors are associated with interpersonal difficulties in patients with eating disorder characteristics. For example, some individuals respond to interpersonal stress by restricting their food intake, whereas other individuals respond to the same stress with binge eating. Thus, the same types of interpersonal deficits can manifest differently in different individuals with eating disorder characteristics. Unfortunately, a vicious cycle exists as not only do interpersonal difficulties increase risk for eating disturbances, but eating disturbances increase the risk for interpersonal

difficulties, which may explain the perpetuation of these symptoms (Ambwani & Hopwood, 2009).

Research has demonstrated that individuals with eating disorder characteristics and anxiety disorders who have more interpersonal problems benefit less from standard cognitive behavioral treatments (Borkovec, Newman, Pincus, & Lytle, 2002; Hilbert et al., 2007). This research, as well as the association between eating pathology and interpersonal problems, has led some clinicians to utilize interpersonal psychotherapy in the treatment of eating disturbances. There is growing evidence that interpersonal psychotherapy is effective for a variety of eating disorders and the traits that encompass them (Fairburn et al., 2015). Interpersonal models hypothesize that social processes play a significant role in the development and maintenance of maladaptive eating behaviors (Ansell, Grilo, & White, 2012). For example, interpersonal role disputes or interpersonal deficits may lead to psychological symptoms and problems in one's life.

The growing emphasis and research on the interpersonal correlates of maladaptive eating characteristics could benefit from a theoretical framework from which to organize research findings and direct future studies. The interpersonal perspective in clinical, social, and personality psychology is a well-suited and prominent conceptual framework from which to examine eating disorders and related characteristics. The structural model of this perspective – the interpersonal circumplex – posits that social behavior consists of two dimensions (See Figure 1). The first, affiliation, refers to the degree that a person is friendly versus hostile. The second, control, refers to the degree that a person is dominant versus submissive.

Hence, the interpersonal circumplex (IPC) represents interpersonal behavior in a two-dimensional manner in which the variables are arranged in a circle (Gurtman, 2009). Regressing

an individual difference variable on the two dimensions of the IPC allows one to determine the *interpersonal style* associated with that variable. Social motives, then, correspond with these dimensions of social behavior. For example, agency corresponds with control and communion corresponds with affiliation. Agency refers to being differentiated from others and striving for mastery and power, whereas communion refers to being a part of a larger social entity and striving for intimacy and union.

Whereas the IPC provides a descriptive account of interpersonal styles associated with individual difference variables, the principle of complementarity and transactional cycles (see Figure 2) helps explain how interpersonal behavior is elicited and maintained (Cundiff, Smith, Butner, Critchfield, & Nealey-Moore, 2015). Over extended periods of time, the interpersonal behavior of an individual leads to complementary responses that form patterns with predictable interpersonal correlates (Gurtman, 2001). On the affiliation axis, reciprocal responses will be similar to the individual's interpersonal style, but, on the control axis, reciprocal responses will be the opposite interpersonal style (Gurtman, 2009). For example, friendliness elicits friendliness; dominance elicits submissiveness. Due to the potential information gathered from the IPC, it is a useful tool in investigating the interpersonal deficits in individuals with eating disorders (Ambwani & Hopwood, 2009).

The current study aims to expand upon past research suggesting that interpersonal deficits are present in those with eating disorder characteristics. Because one of the main characteristics is body dissatisfaction, this study aims to investigate the differences in interpersonal styles of individuals with high and low body dissatisfaction (Möller & Bothma, 2001). In addition, other variables associated with eating disturbances and interpersonal functioning in past research, such as subthreshold binge eating, restricting, purging, and emotional eating will be investigated using

the IPC. It is hypothesized that individuals with high levels of body dissatisfaction, binge eating and purging, and emotional eating will have a hostile-submissive interpersonal style with corresponding interpersonal goals/motives, whereas individuals with high levels of body dissatisfaction and restriction will have a submissive interpersonal style. Based on the principle of complementarity, it is hypothesized that these eating disorder characteristics will be associated with more interpersonal problems, increased loneliness and negative social experiences, and decreased social support. Finally, this study will add to the literature by examining whether these associations with interpersonal problems, loneliness, and negative social experiences persist at a two-week follow up. In other words, due to their association with submissive and hostile interpersonal characteristics, disordered eating behaviors and body dissatisfaction will lead to transactional cycles over time in which adverse social outcomes (e.g., loneliness) are the result. The results of this study may ultimately make it possible to identify correlations suggesting that binge eating, purging, emotional eating, and restricting occur more frequently after negative social exchanges, which can lead to a better understanding of maintaining factors and treatment of these behaviors.

CHAPTER 2

REVIEW OF THE LITERATURE

The present study builds on the accumulated research from past studies and writings on the topic of eating disorders and their subthreshold characteristics. What follows are brief clinical descriptions of three main eating disorders – anorexia, bulimia, and binge eating disorder – as well as associated features seen in subthreshold manifestations of disordered eating. The predominant conceptualization of eating disorder characteristics is derived from cognitive behavioral therapy, and it has increased our understanding of these characteristics as well as improved treatment. However, interpersonal perspectives are now being advanced as alternative or supplementary approaches in the treatment of disordered eating. This review of the literature will conclude with what the interpersonal perspective of clinical, social, and personality psychology has to offer in regard to conceptualizing the development and maintenance of subthreshold eating disorder characteristics.

Clinical Description of Eating Disorders

The central feature of eating disorders is a disturbance in eating behaviors. The prevalence rates of confirmed diagnoses of anorexia, bulimia, and binge eating disorder are typically not high (Arcelus et al., 2011; Bulik et al., 2006). However, the prevalence of characteristics associated with eating disorders, such as body dissatisfaction and emotional eating, are higher (Fiske et al., 2014), particularly in college samples. The present study will not focus on confirmed diagnoses of eating disorders, but to adequately put these characteristics in an appropriate context, brief clinical descriptions of these three eating disorders are provided.

Anorexia Nervosa

Anorexia nervosa is characterized by restriction of food intake below the threshold of what is necessary to maintain a healthy weight, an intense fear of fat or gaining weight evidenced by behaviors that interfere with the maintenance of a healthy weight, and body image disturbance that is largely influenced by the shape of one's body or denial of low body weight. In accordance with DSM-5, individuals with anorexia can be classified into two subtypes – restricting and binge-eating/purging. For both subtypes, there is no longer a "hard" indicator of what constitutes low body weight (American Psychiatric Association, 2013).

Anorexia is notorious for being difficult to treat, and the proportion of individuals with past diagnoses of anorexia who continue to experience subthreshold symptoms or relapse is high (Carter, Blackmore, Sutandar-Pinnock, & Woodside, 2004). According to Arcelus et al. (2011), only 46% of individuals with anorexia fully recover, 33% improve with residual features, and 20% remain chronically ill over the course of their lives. However, some research has suggested that full recovery rates might be even lower (i.e., approximately 33%) (Herzog et al., 1999). The severity and chronicity of this disorder is reflected in its mortality rate, which is the highest of all mental illnesses. Annual mortality rate is approximately 5 per 1000 individuals with the highest rate of death between the ages of 20 and 29 (Arcelus et al., 2011).

A variety of factors have been investigated as risk factors for anorexia. Due to the high ratio of females with the disorder compared to males (i.e., 10:1), gender is clearly a risk factor. In addition, risk has been shown to increase in individuals who have family members with anorexia, which indicates a biological component (Bulik et al., 2006). Anorexia is also associated with depressive, anxiety, substance use, and obsessive compulsive disorders, which lead to an increased risk of severity and negative outcome in the treatment of anorexia (Polivy & Herman,

2002; Steinhausen, 2002). In regard to thinking patterns, those with the restricting subtype of anorexia often think in an obsessive, perfectionistic manner and persist in their thinking patterns due to the ego syntonic nature of the symptoms (Polivy & Herman, 2002).

Bulimia Nervosa

Bulimia nervosa is characterized by recurrent episodes of binge eating, defined as eating a much larger amount of food than what is considered normal in a short period of time and feeling a sense of loss of control. For a diagnosis of bulimia, recurrent purging behaviors with the goal to prevent weight gain, such as vomiting or laxative use, must occur at least once per week for a period of at least three months. Similar to those with anorexia, individuals with bulimia evaluate themselves almost solely based on weight and body shape (American Psychiatric Association, 2013).

Keski-Rahkonen et al. (2009) found that approximately 50% of individuals with bulimia fully recover five years after the onset of the disorder, whereas 20% remained chronically ill. Although these numbers appear similar to anorexia, Arcelus et al. (2011) have suggested rates of full recovery around 74%. It appears bulimia has high rates of both partial and full recovery when compared to anorexia's high rates of partial recovery and low rates of full recovery (Herzog et al., 1999). Mortality rates are also lower in bulimia as a large meta-analysis found the rate to be approximately 2 per 1000 individuals (Arcelus et al., 2011).

Risk factors for bulimia are similar to those for anorexia, although there are some key differences. As with anorexia, rates of bulimia are higher in females and a familial link is present, but family dynamics differ in that they are often characterized by parental intrusiveness. A connection between childhood sexual abuse and bulimia appears to exist as well. It has been hypothesized that abuse leads to difficulties in emotional regulation, which can lead to negative

coping mechanisms, such as dieting, for those who have no other effective way of handling crises (Polivy & Herman, 2002). Research suggests that the vicious cycle of dieting and bingeing might be due in part to these deficits in emotion regulation and feelings of loss of control (Keys, Brožek, Henschel, Mickelsen, & Taylor, 1950; Mann & Ward, 2004). In terms of personality characteristics, individuals with bulimia are often highly self-conscious and set very high, often unattainable, standards for themselves. Mood disorders, previous self-harm, suicide attempts, and substance use are frequently seen in conjunction with bulimia (Cooley & Toray, 2001; Fischer & le Grange, 2007).

Binge Eating Disorder

Binge eating disorder is similar to bulimia in that it is characterized by recurrent episodes of excessive consumption of food. These binge episodes must cause distress and occur at least once a week for three months. Binge eating has to include at least three of the following criteria: eating more rapidly than one normally would, feeling uncomfortably full, eating large amounts of food when not hungry, eating alone due to embarrassment, and feeling disgusted, guilty, or depressed regarding bingeing. The main differentiating factor between binge eating disorder and bulimia is the lack of compensatory purging behaviors (American Psychiatric Association, 2013).

Mortality rates for binge eating disorder are mixed in current research, but it has been suggested that rates are lower than both anorexia and bulimia. However, it could be argued that the increased rates of obesity in individuals with binge eating disorder also increase mortality rates (Suokas et al., 2013). Overall, it seems binge eating disorder is more closely associated with bulimia than anorexia (Wilson, 2011).

Risk factors for binge eating disorder have been hypothesized as similar to those for bulimia; however, a clear link based on gender is not established (Goldschmidt, Wall, Zhang, Loth, & Neumark-Sztainer, 2016). Factors such as a negative evaluation of the self, past traumatic events, comments from others regarding weight, and obesity and psychiatric disorders in parents have all been documented as childhood risk factors for individuals with binge eating disorder. One of the main differentiating factors between binge eating disorder and other eating disorders is high body weight as a risk factor. Essentially, a circular pattern exists in that being overweight puts individuals at higher risk for binge eating disorder, and having binge eating disorder leads to higher risk of being overweight (Goldschmidt et al., 2016).

Eating Disorder Characteristics

The above clinical descriptions reveal characteristics of eating disorders that can also be found at subthreshold levels in the general population. These characteristics include body dissatisfaction, binge eating, restriction, purging, and emotional eating. The higher prevalence of these subthreshold characteristics as well as their deleterious correlates (Furnham, Badmin, & Sneade, 2002) suggests that investigating subthreshold eating disorder characteristics would be valuable for the current research literature.

Body Dissatisfaction

Body dissatisfaction is the negative evaluation of all or parts of one's body (Fiske et al., 2014). Estimates of body dissatisfaction are varied among adults in the United States, partially due to lack of consistency in research. According to Fiske et al. (2014), between 11% and 72% of women and 8% and 61% of men can be classified as experiencing body dissatisfaction. Not surprisingly, past research demonstrates a relationship between maladaptive eating behaviors and body dissatisfaction, such that higher levels of body dissatisfaction are associated with higher

levels of concern about gaining weight and more frequent dieting (Graziano & Sikorski, 2014). In addition, individuals who experience body dissatisfaction are also likely to display an inhibition of negative emotion. For example, there may be a reciprocal relationship between avoidance of emotional expression (especially when in conflict with others) and body dissatisfaction. These findings are complicated by the tendency of individuals with disordered eating characteristics to more easily attend to the feelings of other individuals over their own (Geller, Cockell, & Goldner, 2000). A variety of hypotheses have been proposed to explain this finding, including a tendency of these individuals to blur pure affect with bodily sensations, body dissatisfaction as an outlet for unexpressed sadness and anger, and body dissatisfaction and inhibition resulting from low self-esteem (Geller et al., 2000).

Binge Eating

Binge eating is characterized by episodes of eating large amounts of food within a short period of time with a sense of loss of control. Up to 40% of college students have engaged in subthreshold binge eating behaviors, which are also associated with being overweight or obese, and having poorer outcomes in treatment for weight loss. In addition, these behaviors are associated with depression, anxiety, and stress (Duarte, Pinto-Gouveia, & Ferreira, 2015).

Emotional Eating

Emotional eating has been posited as a risk factor for binge eating and is defined as an urge to eat in response to increased negative emotions. This type of eating pattern promotes consuming large amounts of food, which is reinforced by reduction of negative emotion (Danner, Evers, Stok, van Elburg, & de Ridder, 2012). When individuals engage in emotional eating, hunger and satiation cues become replaced by the regulation of emotion that eating provides.

Although it is not always present, research suggests that emotional eating may lead to increased eating pathology and binge eating behavior (Danner et al., 2012; Haedt□Matt et al., 2014).

Purging

Purging is characterized by self-induced vomiting, laxative abuse, or excessive exercise in an effort to lose or maintain weight (Forney, Buchman□Schmitt, Keel, & Frank, 2016). Although purging is characteristic of individuals with bulimia, subthreshold compensatory behaviors are also found in certain populations, namely college students. Even when subthreshold, research has noted that individuals who engage in compensatory behaviors are at moderate risk for additional eating disturbances (Schaumberg, Anderson, Reilly, & Anderson, 2014). It is for this reason that these behaviors are important to investigate in a nonclinical population.

Restriction

Restriction involves eating fewer calories than are recommended or needed based on an individual's body type and activity level. According to White, Reynolds-Malear, and Cordero (2011), approximately 22% of college students engage in restricting behavior in addition to compensatory behaviors, and many of these behaviors occur in individuals without a clinical diagnosis of an eating disorder. In addition, the risk may be highest for individuals in their first year of college as they attempt to avoid gaining weight in their new environment (Burke, Cremeens, Vail-Smith, & Woolsey, 2010). Similar to purging, binge eating, and emotional eating, subthreshold restriction leads to higher risks of future eating pathology and other psychopathology, such as depression, which points to the importance of a better understanding of this behavior (Galsworthy-Francis & Allan, 2014).

Predominant Conceptualizations and Treatments of Eating Disorders

Cognitive Behavioral Models

Eating disorders and associated characteristics are most commonly conceptualized through a cognitive behavioral framework. Due to this conceptualization, cognitive behavioral models have the widest research base in regard to both etiology and treatment (Spangler, 2002). A cognitive behavioral therapist, for example, might target the belief systems that individuals develop based upon past experience. When past experiences are adverse, individuals develop dysfunctional core beliefs about themselves, the world, and those around them. These dysfunctional core beliefs generate distorted thinking patterns and attentional biases that lead to negative expectations and decreased self-esteem and self-efficacy. These distortions end up producing automatic thoughts that are negative, situation-specific, difficult to control, and often go unnoticed and unquestioned (Jones, Leung, & Harris, 2007; Spangler, 2002). From a cognitive behavioral perspective, it is hypothesized that dysfunctional beliefs and automatic thoughts are able to better explain the etiology and maintenance of a variety of mental illnesses, including eating disorders, when compared to other theoretical models (Spangler, 2002).

One of the most important aspects of cognitive behavioral theory is the relationship among thoughts, emotion, and behavior. Although the ways in which thoughts influence emotions are often the primary variables investigated, behavioral components are also relevant when investigating eating disorders. One of the clearest illustrations of ways in which food intake impacts thought processes is the Minnesota Starvation Experiment. This experiment was conducted in 1944 in the midst of World War II, and it investigated the effects of starvation through data collected from 36 men over the course of nearly one year. Each man was required to lose 25% of his body weight through a six month restricted diet of 1,570 calories per day.

Findings showed that the men became obsessed with food as they would dream, fantasize, read, and talk about food. They also reported greater levels of depression and irritability (Keys et al., 1950). The effects of starvation or dietary restriction are significant in terms of how it adversely impacts cognitive functioning. For example, deficits in psychomotor speed, executive functioning, and mental rotation occur under conditions of experimental dietary restriction, which ultimately facilitates thought processes that are distorted and maladaptive (Benau, Orloff, Janke, Serpell, & Timko, 2014). The above findings offer compelling evidence that behaviors interact with thoughts and emotions to make some persons more susceptible to the development of an eating disorder.

In addition to the change in thought processes that occur during starvation, cognitive behavioral theory conceptualizes eating disorders in a variety of other ways. Dysfunctional beliefs about appearance seem to be specific to eating disorders and include beliefs about weight, shape, eating, and food (Jones et al., 2007; Spangler, 2002). In general, cognitive distortions have been hypothesized as one of the core components of eating disorders. Individuals with eating disorders are likely to have underlying beliefs that thinness is important or weight loss corresponds with control. These beliefs lead to automatic thoughts that correspond with the intermediate beliefs, such as “thinness makes me special” or “people will love me if I’m thin” (Jones et al., 2007).

According to Spangler (2002), dysfunctional beliefs about appearance predict a variety of eating disorder characteristics including dietary restraint, body dissatisfaction, possessing a thin-ideal, and lowered self-esteem. Individuals with eating disorders are often perfectionistic, engage in black and white thinking, and have extremely rigid thinking patterns (Polivy & Herman, 2002). These thinking patterns lead to high rates of beliefs related to defectiveness, shame, social

isolation, and social undesirability. Due to these documented negative belief systems and their impact on symptoms, researchers and clinicians have been quick to conceptualize eating disorders and their associated characteristics based on cognitive behavioral theory (Spangler, 2002).

Evidence for the effectiveness of cognitive behavioral therapy is mixed depending on the eating disorder characteristic being treated. Cognitive behavioral therapy has been accepted as a useful intervention for individuals with anorexia and subthreshold restricting (Galsworthy-Francis & Allan, 2014). However, evidence for its effectiveness is varied, which has led cognitive behavioral therapy to not be adopted as an evidence-based treatment for anorexia. Multiple randomized controlled trials have demonstrated the effectiveness of cognitive behavioral therapy on depressive symptoms, self-esteem, negative thinking, and eating disorder symptoms. However, conflicting research has suggested cognitive behavioral therapy may not be any more effective than other treatments, and one study found follow-up results in favor of supportive clinical management over cognitive behavioral therapy (Galsworthy-Francis & Allan, 2014).

Cognitive behavioral therapy for binge eating and purging has shown much more favorable results. It has been recognized as an evidence-based treatment for bulimia by the National Institute of Clinical Excellence. Approximately 30–50% of individuals who receive cognitive behavioral therapy for bulimia fully recover from their disorder. It has been shown to lead to fewer weekly binges and eating disorder behaviors; likewise, depressive symptoms, eating disorder symptoms, and overvaluation of weight and shape have been shown to continue to improve over time. In fact, positive results have been found in studies up to 12 years after initial treatment (Fischer, Meyer, Dremmel, Schlup, & Munsch, 2014). However, it is suggested

that other treatments be investigated in conjunction with cognitive behavioral therapy because a large proportion of individuals still do not improve with treatment and other treatment methods have shown similar response rates thus far (Glasofer & Devlin, 2013; Westen, Novotny, & Thompson-Brenner, 2004).

Family System Models

Although eating disorders are often conceptualized through some variant of cognitive behavioral theory, an example of a family system theoretical approach, the family model, is also commonly utilized, especially with adolescents. Although this model clearly involves interpersonal factors based on the family system, it is most often linked with family system theory. Minuchin et al. (1975) characterized families of individuals with eating disorder characteristics as enmeshed, overprotective, rigid, and avoidant of conflict based on clinical observations. Enmeshment is seen as an extreme form of overinvolvement with very intense family interactions to the point that there is very little differentiation between individuals. Overprotectiveness is defined as the high degree of concern for each other with a preoccupation for nurturing one another. Rigidity involves having difficulty coping with change, which makes it difficult to adapt in a variety of situations. Finally, families often avoid conflict when it surfaces by changing the subject, which unfortunately, leads to a chronic state of conflict (Dare, Le Grange, Eisler, & Rutherford, 1994).

When families possess these maladaptive interpersonal patterns, it is hypothesized that children may develop psychosomatic symptoms that function to regulate the patterns of the family system. It is only when a child is physiologically and psychologically vulnerable that they are prone to psychological disturbances, such as eating disorder symptoms. If a family possesses the previously mentioned characteristics, the child exhibiting eating disorder symptoms takes on

the sick role. When in this role, the child is able to maintain the family's pattern of avoiding conflict, which leads to positive reinforcement of their symptoms. In families that are enmeshed, the child searches for autonomy they cannot otherwise find in their family system. For individuals with eating disorder characteristics, food is one aspect of their life that feels controllable, so they begin to forge autonomy by focusing on their weight and food intake. While it can be difficult to involve the family in treatment, the family model is important to consider when conceptualizing the characteristics associated with eating disorders, especially when considering children or adolescents enmeshed within their family system (Dare et al., 1994).

Although cognitive behavioral therapy has become the most widely researched and utilized treatment for dysfunctional eating and associated characteristics, the Maudsley method, based on the family model, is often utilized for children and adolescents. The Maudsley method aims to reduce the amount of guilt felt by the parents by making the eating disorder characteristics the enemy rather than the family system. The parents are seen as a valuable resource for recovery rather than the cause. The Maudsley method also attempts to allow the parents to have control over the symptoms while allowing the child to maintain their independence throughout the process (Rhodes, 2003).

The Maudsley method has three phases of treatment. The first phase consists of focusing specifically on refeeding the child while setting other psychological concerns to the side. It is encouraged for parents to set goals in relation to their child's health, but the emphasis should be based on aspects of appearance, such as fullness of the face and lack of bone protrusion, rather than weight. It is common during this stage for therapy sessions to involve eating meals with the child and parents. The second phase continues to focus on refeeding, but also begins to give more responsibility to the child in regard to eating rather than the parents. This phase does not

begin until the child has reached 87% of their ideal weight. The third phase consists of increasing the child's independence to the point that they are completely in control of their eating. In addition, issues related to adolescence are explored (Rhodes, 2003).

Limitations of Past Research

Cognitive Behavioral Theory

While the intrapersonal focus of cognitive behavioral therapy is important, there are potentially problematic aspects of this narrow focus. First, intrapersonal aspects of the disorder (e.g., cognitions) have been handled separately from more interpersonal aspects of the disorder even though cognitive behavioral models specify the importance of sociocultural factors. For example, the cognitions associated with disordered eating are dealt with separately from the decreased social support that is often associated with eating disorder characteristics. While cognitions and social support are clearly related, they tend to be viewed as separate processes. Second, psychoeducation is an important aspect of CBT and the role of sociocultural factors in influencing eating disorder symptoms is important to address with the client. However, cognitions and social outcomes are viewed as separate processes, which leads to intrapersonal features, such as cognitions, being the focus of treatment. Third, psychotherapies that do not address interpersonal difficulties in relation to subthreshold symptoms and characteristics may be less effective overall in the long term (Ambwani et al., 2014; Arcelus et al., 2013; Fairburn et al., 2015). If progress is made on changing internal thought processes, but the patient still has ongoing interpersonal difficulties, relapse may be more likely.

Past research has attempted to explain the lack of robust response rates regarding cognitive behavioral therapy, especially for individuals with anorexia and subthreshold restriction, in a variety of ways. It has been suggested that the psychoeducation and skill

acquisition present in cognitive behavioral therapy may be difficult for individuals with eating disorders, especially those who engage in restriction, because of the cognitive rigidity and abnormal cognitive processing they display (Galsworthy-Francis & Allan, 2014). In support of this notion, Westen et al. (2004) presented evidence suggesting that psychoeducation and skill acquisition may not be necessary components in interpersonal therapy for bulimia. For example, in their review article, the interpersonal therapy used for bulimia did not address eating behaviors or thought processes, but it led to response rates that were not significantly different than those for cognitive behavioral therapy. Due to the similar effects of a variety of treatment methods, including specialist supportive clinical management, cognitive behavioral therapy, interpersonal therapy, and motivational enhancement therapy, it seems the emphasis cognitive behavioral theory places on thoughts is not the sole explanation of eating disorders or subthreshold symptoms (Cooper, 2005).

The core factors of cognitive behavioral therapy focus on eating concern, shape concern, weight concern, and dietary restraint. However, research has suggested the lack of strong treatment outcomes may be due to the fact that these core factors do not encompass all factors maintaining eating disorder characteristics, such as interpersonal difficulties (Tasca, 2016). According to Tasca (2016), when cognitive behavioral therapy is supplemented with a focus on interpersonal factors, positive treatment outcomes have been observed in clinical and subthreshold symptoms of anorexia, bulimia, and binge eating disorder. Interpersonal theory appears to supplement cognitive behavioral theory in that problematic relationships and interactions with others lead to negative emotions, which then lead to eating disorder symptoms. The interpersonal model is an alternative perspective of subthreshold eating disorder

characteristics and behaviors that moves beyond the specific focus of cognitive behavioral theory (Tasca, 2016).

Family System Theory

The family model expands upon cognitive behavioral theory in that it focuses more on the physical and interpersonal aspects of dysfunctional eating rather than focusing largely on the intrapersonal components. However, the theory underlying the Maudsley method is often questioned as it is unknown whether the family system alone leads to the development of disordered eating and associated characteristics. It appears that the Maudsley method leads to positive outcomes in many individuals with clinical eating disorders, but the fact that its positive treatment effects are largely limited to adolescents with anorexia is problematic. It appears to have missed key components (e.g., interpersonal difficulties outside the family system, such as negative social interactions) that explain the etiology and maintenance of eating disorder characteristics (Rhodes, 2003).

Not surprisingly, working with the family system to assist in the treatment of dysfunctional eating is especially beneficial for adolescents and young adults, but much of the positive benefit ends with those age groups. In addition, research and implementation of the Maudsley method is largely focused on clinical populations of anorexia due to the family model's focus on refeeding and weight, which leads to neglect of other eating disorders in addition to subthreshold characteristics and behaviors. These limitations make the Maudsley method a good option for a narrow population, but many individuals with subthreshold eating disorder characteristics would not benefit due to the structure of the method (Rhodes, 2003).

Interpersonal Considerations

As described above, eating disorders and associated characteristics have interpersonal considerations that are sometimes overlooked or under-emphasized by other theoretical models. Body dissatisfaction is a core component of eating disorders, and research suggests it may have connections to interpersonal functioning as well. Findings from Cash, Thériault, and Annis (2004) suggest that individuals with higher levels of body dissatisfaction have higher levels of anxiety in interactions with other people. It is thought that a more negative body image may lead to more discomfort and concern about acceptance and approval from others (Cash et al., 2004). However, it is less clear whether a relationship actually exists between body dissatisfaction and interpersonal deficits (Wallis, Ridout, & Sharpe, 2018). Due to these inconsistencies, the question of whether body dissatisfaction is related to interpersonal functioning remains unanswered.

Anorexia has been associated with social anxiety, which leads to social withdrawal and avoidance (Geller et al., 2000; Raykos et al., 2014). According to Carter et al. (2012), individuals with anorexia often have great difficulty with assertiveness, which leads them to be submissive and put other individuals' needs before their own. This submissiveness may be associated with a dependent personality style characterized by high needs of reassurance, concern of what others think, and need to avoid conflict (Jackson, Weiss, Lunquist, & Soderlind, 2005; Jones, Lindekilde, Lübeck, & Clausen, 2015).

In addition to submissiveness, these individuals are often hypersensitive in interpersonal situations and compare themselves to others in a harsh manner. It seems that these individuals' core social processing is impaired as they have difficulty with perceived social inferiority, reduced self-agency, and sensitivity to social dominance (Ambwani et al., 2016). These

difficulties are thought to be associated with negative evaluations of the self, which is one of the main components of anorexia (Jones et al., 2015).

Research has supported deficits in interpersonal functioning in bulimia, too, and the relationship between bulimia and interpersonal difficulties is likely bi-directional. Some research has found more severe interpersonal difficulties in those with bulimia than anorexia (Hopwood, Clarke, & Perez, 2007). In addition to greater severity, the specific deficits appear to be different from those cited in anorexia. In contrast to submissiveness found in individuals with anorexia, those with bulimia appear to experience higher rates of interpersonal distrust, conflict, and negative interactions with others. The hostility they display towards others is also directed inward, which leads to low self-esteem (Björck et al., 2003). It has been suggested that the interpersonal style of individuals with bulimia is more dramatic, expressive, and impulsive than the anxious-fearfulness of anorexia (Arcelus et al., 2013; Hartmann et al., 2010).

Similar to individuals with anorexia, those with bulimia believe themselves to be largely ineffective and doubt their abilities. Social avoidance is also common and can lead to an inability to form close attachments, which has been hypothesized as a risk factor for bingeing (McEvoy, Burgess, Page, Nathan, & Fursland, 2013). Although research is mixed, it is suggested that individuals with bulimia experience more social difficulties due to self-consciousness about how others view them (Atlas, 2004).

Unfortunately, the interpersonal style associated with bulimia is often associated with higher rates of treatment drop-out and hostility towards therapists (Jones et al., 2015). It is important to note that descriptions of interpersonal difficulties associated with bulimia vary in the research as some findings show similar interpersonal difficulties to anorexia, such as a need to please others and dependence, whereas others show the previously mentioned difficulties with

hostility (Thelen, Farmer, Mann, & Pruitt, 1990). For example, findings by Hopwood et al. (2007) suggest that interpersonal difficulties are not homogeneous in bulimia as individuals cluster into different interpersonal groups.

As with anorexia and bulimia, binge eating disorder has also been connected to a variety of interpersonal deficits. Individuals with binge eating disorder are similar to individuals with bulimia in displaying greater interpersonal hostility, more difficulty with interpersonal problem solving, and higher levels of negative interactions with marital partners and strangers (Duchesne et al., 2012; Ivanova et al., 2015). They also have greater interpersonal rigidity and either extreme submissiveness or dominance (Blomquist, Ansell, White, Masheb, & Grilo, 2012). These interpersonal features and the resulting interpersonal problems are thought to maintain the disorder. For example, when facing interpersonal problems, they may be more prone to binge eat due to deficits in coping ability (Ivanova et al., 2015).

In addition to interpersonal deficits, health-relevant interpersonal correlates such as loneliness, negative social exchanges, and social support may play a role in the development and maintenance of eating pathology and have been found to be associated with eating disorders (Levine, 2012; Linville, Brown, Sturm, & McDougal, 2012; Ruehlman & Karoly, 1991). Levine (2012) has hypothesized that anorexia is used as a coping skill to help manage loneliness when relationships fail and is used to assist in numbing emotions, whereas individuals with bulimia and binge eating disorder binge and/or purge to manage these feelings. It has also been hypothesized that negative social experiences strain an individual's coping ability, which may lead those with eating disorders to turn to the negative coping behaviors that perpetuate their illness (Ruehlman & Karoly, 1991). In addition, individuals perceive less social support when more negative social experiences are present, which leads to negative outcomes (Brookings &

Bolton, 1988). Findings suggest that individuals with eating disorders have fewer individuals to rely on for support, with individuals with bulimia having the least support overall (Linville et al., 2012; Rorty, Yager, Buckwalter, & Rossotto, 1999).

An Interpersonal Approach to Eating Disorders

Similar to what has been done with depression and hypochondriasis (Hames, Hagan, & Joiner, 2013; Jordan, Williams, & Smith, 2015; Williams, Smith, & Jordan, 2010), the above conceptualizations and corresponding treatments (i.e., cognitive behavioral and family systems) could be expanded by incorporating interpersonal considerations more specifically. Eating disorder symptoms often occur within an interpersonal context. What is needed is a conceptual and methodological framework from which interpersonal considerations can be examined. The interpersonal tradition offers one such perspective, and its methodological tools – particularly the interpersonal circumplex – can be used to assess the interpersonal features associated with eating disorder characteristics and generate theory-driven hypotheses of expected correlates (Horowitz & Strack, 2011).

The Interpersonal Perspective of Clinical, Social, and Personality Psychology and Its Application to Eating Disorder Characteristics

The interpersonal perspective developed from Harry Stack Sullivan's theory of psychiatry in which he argued that the interpersonal situation should be the main focus when attempting to understand both normal and abnormal personality in a psychiatric or psychological setting (Sullivan, 1953). Sullivan hypothesized that individuals have integrating tendencies, which bring them together as they pursue both satisfaction and security. It is in this "togetherness" that expression of one's personality is best investigated. Interactions range from rewarding to anxiety provoking, and it is in these interpersonal situations that learning takes

place, which influences the development of interpersonal behavior and the concept of the self (Pincus & Ansell, 2013; Pincus & Gurtman, 2006).

Sullivan laid the groundwork for arranging interpersonal behavior in a circular fashion, which was later refined by the Kaiser Foundation Psychology Research Group and Timothy Leary (Wiggins, 1996). Sullivan believed the interpersonal situation possessed two hypothetical dimensions that were connected by two distinct, opposing forces. The disjunctive force prevents closeness and intimacy, whereas the conjunctive force fosters closeness and intimacy. Notably, circular representations of human nature have been abundant throughout history and can be traced back to ancient astrology, so Sullivan was not the first individual to hypothesize situations in this manner. It seems as though he understood it is only through use of a circular design that an integrative framework that specifies relationships among interpersonal behaviors could be represented in an organized and testable way (Wiggins, 1996).

The interpersonal perspective begins with a basic assumption about individual differences, which is well illustrated by Sullivan's quote about personality:

> Personality is the relatively enduring pattern of recurrent interpersonal situations which characterize a human life (Sullivan, 1953, pp. 110-111).

This assumption suggests that individual difference variables, many of which seem to operate within the person, actually become evident interpersonally. The social behavior that makes up these recurrent interpersonal situations varies along two dimensions – affiliation and control – and these dimensions can be pictorially represented by the interpersonal circumplex (IPC). Therefore, an individual difference variable, such as body dissatisfaction, can be represented within the interpersonal space of the IPC depicting the extent to which it is associated with affiliation and control.

The first application of the IPC was by Timothy Leary in 1957 and was based on behavioral observations of patients in a group therapy setting (Leary, 1957). Based on these observations, an initial set of interpersonal variables were developed and presented on a circular continuum. The following are the sixteen variables first presented in a circumplex format: dominating, advising, generous, supportive, loving, cooperative, trustful, respectful, submissive, modest, distrustful, complaining, critical, punitive, rejecting, and proud. In the original circumplex model, each variable was arranged along two dimensions: submission and hostility. The variables are arranged in a circular format with variables closer to each other being more similar and those farther away being more dissimilar. In addition, the principle of behavioral intensity states each variable's interpersonal content and intensity increases as its rating moves farther away from the center of the circle (Pincus & Gurtman, 2006). The modern version of the interpersonal circumplex consists of the following octants: assured-dominant/domineering, gregarious-extroverted/intrusive, warm-agreeable/overly nurturant, unassuming-ingenuous/exploitable, unassured-submissive/nonassertive, aloof-introverted/avoidant, coldhearted, and arrogant-calculating/vindictive (see Figure 1).

Sullivan's original theory suggested that the goals of human relationships are self-esteem and security. Sullivan's ideas about interpersonal goals are now articulated as the concepts of agency and communion, which correspond to the dimensions (i.e., affiliation and control) of the IPC. Agency refers to being an individual who is differentiated from others and consists of a striving for power, mastery, and accomplishment. Communion refers to being a part of a larger social group and consists of striving for union and intimacy with that group. As shown in Figure 1, agency corresponds to the vertical dimension of the IPC (i.e., control) whereas communion corresponds to the horizontal dimension of the IPC (i.e., affiliation). It is along these two

dimensions that social behavior and certain aspects of personality can be classified (Pincus & Gurtman, 2006).

The conceptual and methodological framework of the interpersonal perspective is further articulated by a principle and model of social transactions (see Figure 2). The principle of complementarity suggests that interpersonal behaviors have a tendency to pull or elicit responses from others. It is through repeated interpersonal situations with others that response patterns begin to emerge and characterize interpersonal functioning. The principle of complementarity states that individuals respond in an opposite fashion on the dimension of control, such that dominance pulls for submission and submission pulls for dominance. In contrast, individuals respond similarly on the dimension of affiliation, such that friendliness pulls for friendliness and hostility pulls for hostility (Gurtman, 2009; Pincus & Gurtman, 2006). If an individual has a pattern of extreme, rigid interpersonal behaviors, a cycle begins to emerge in interpersonal interactions with others that has an adverse impact and often leads to repeated negative responses. These interpersonal patterns lead to negative effects on an individual's interpersonal functioning and subsequent personality (Pincus & Gurtman, 2006). This is thought to occur via transactional cycles over time.

With its application to eating disorder characteristics, the structural model of the interpersonal perspective (i.e., the IPC) can describe enduring individual differences in social behavior. This description is known as *interpersonal style*. Through circumplex weighting, the dimensions of affiliation and control can be calculated from interpersonal inventories such as the Interpersonal Adjectives Scale or the International Personality Item Pool – IPC (Gurtman & Pincus, 2000; Markey & Markey, 2009). When one regresses an individual difference variable, such as body dissatisfaction, on these calculated variables (i.e., affiliation and control), the

resulting *F* value for the multiple *R* provides information about whether the interpersonal content of the individual difference variable is significant and the sign of the beta coefficients provides information on which side of the IPC the individual difference variable is located. Given the research presented above on the interpersonal correlates of eating disorder characteristics, one would expect body dissatisfaction to have a significant multiple *R* (suggesting interpersonal content) and a beta coefficient for affiliation that would be negative (suggesting hostility). The predicted sign of the beta coefficient for control would be negative, too, suggesting submissiveness. Therefore, the interpersonal style of body dissatisfaction would be *hostile-submissive*.

Once the interpersonal style is ascertained, theory-driven hypotheses can then be derived. In the foregoing instance, a hostile-submissive style would pull for hostile-dominant responses from others based on the principle of complementarity. Through repeated transactional cycles, it is hypothesized that an individual difference variable that is associated with hostile-submissiveness would have the following interpersonal correlates based on the literature: lower self-reported social support, and more self-reported loneliness and negative social exchanges.

Potential Benefits of the Application of the Interpersonal Perspective to Eating Disorder Behaviors and Characteristics

As previously stated, interpersonal features are not the direct focus of cognitive behavioral theory, but research is accumulating that suggests interpersonal difficulties are a possible underlying component of the development and maintenance of eating disorders. Interpersonal theory and its methodological component, the interpersonal circumplex, can help to clarify the constructs of body dissatisfaction, purging, restriction, emotional eating, and binge eating. Although mixed evidence exists for some of these constructs, at least a small amount of

positive evidence has been recorded for all of the constructs in connection to deficits in interpersonal functioning, which further illustrates the potential drawbacks of overlooking interpersonal factors in the current conceptualizations of eating disorder characteristics (Ambwani & Hopwood, 2009; Ambwani et al., 2014; Blomquist et al., 2012; Hartmann et al., 2010).

Further support for interpersonal theory can be drawn by examining the effectiveness of interpersonal therapy. Interpersonal therapy has been found to have comparable recovery rates to cognitive behavioral therapy for bulimia and binge eating disorder (Rieger et al., 2010). It appears that interpersonal therapy also leads to improvements in self-esteem, eating disorder pathology, interpersonal functioning, and depressive symptoms (Arcelus et al., 2009). Given the documented interpersonal deficits and empirical support for interpersonal therapy, conceptualizations of eating disorders that do not specifically address their interpersonal features may be inadequate (Rieger et al., 2010).

Present Study

The present study has three purposes. First, this study will expand upon past research by more fully applying the interpersonal perspective and its methodological tools to subthreshold eating disorder characteristics. Many traits and characteristics associated with eating disorders are correlated with interpersonal deficits. For example, body dissatisfaction, subthreshold binge eating, purging, restricting, and emotional eating have all been linked to the etiology of eating disorders and their subsequent interpersonal deficits (Ambwani & Hopwood, 2009; Ambwani et al., 2014; Blomquist et al., 2012). Current interpersonal conceptualizations of eating disorders have focused on clinical samples (Blomquist et al., 2012; Carter et al., 2012; Hopwood et al., 2007), and they have tended to use only one interpersonal assessment, such as interpersonal

problems (Hartmann et al., 2010). Hence, greater clarity may be achieved by using a fuller application of the interpersonal perspective in which circumplex-based inventories of interpersonal style (i.e., control vs. affiliation), interpersonal problems, and corresponding social motives (i.e., agency vs. communion) are used.

The second purpose of this study is to specifically rely upon the principle of complementarity to generate theory-driven hypotheses about the expected correlates of eating disorder characteristics. The principle of complementarity states that hostility elicits hostility, and submission invites dominance. Hostility, and to a lesser extent, submission, are correlated with adverse outcomes (Björck et al., 2003; Locke et al., 2017). Therefore, to the extent that eating disorder characteristics are associated with a hostile or submissive interpersonal style, one would expect more deleterious interpersonal outcomes, such as increased loneliness and decreased social support.

The third purpose of this study is to determine whether the findings related to the second purpose above continue to persist at a two-week follow-up assessment. This study allows for a unique investigation into the utility of the interpersonal circumplex and the resulting interpersonal profiles of subthreshold eating disorder characteristics to confirm that the predicted social correlates persist over time. It appears to be the first research study to date that will investigate interpersonal styles, problems, and goals in this manner, and hence, it may provide a clearer picture of the interpersonal functioning of individuals with eating disorder characteristics.

By investigating the interpersonal profiles of individuals with various eating disorder characteristics, it may be possible for research to account for aspects of eating disorders that are overlooked by other conceptual models. Based on the principle of complementarity, theory-driven predictions can be generated in regard to the expected correlates of the interpersonal

styles associated with eating disorder characteristics. It is by investigating the accuracy of these initial predictions that this study may be the first step in determining the link between negative social exchanges and subthreshold eating disorder characteristics. For example, it may ultimately be possible to identify correlations suggesting that binge eating, emotional eating, purging, and restricting occur more frequently after negative social exchanges, which can lead to a better understanding of maintaining factors and treatment of these behaviors.

Hypotheses

1) Individuals with high levels of body dissatisfaction (i.e., Body Shape Questionnaire), subthreshold binge eating and purging as evidenced by the open-ended diagnostic section of the Eating Disorder Examination (EDE-Q), eating, weight, and shape concern assessed by the appropriate subscales of the Eating Disorder Examination (EDE-Q), and high levels of emotional eating as evidenced by the Emotional Eating Scale (EES) will have a hostile-submissive interpersonal style with corresponding interpersonal goals/motives and problems as evidenced by the interpersonal assessment battery (i.e., International Personality Item Pool, IPIP-IPC, Inventory of Interpersonal Problems, IIP-SC, and Circumplex Scales of Interpersonal Values, CSIV). Individuals with subthreshold restriction as evidenced by the dietary restraint subscale of the EDE-Q will have a submissive interpersonal style and corresponding interpersonal goals/motives and problems as evidenced by the IPIP-IPC, IIP-SC, and CSIV.
    a. Additionally, combinations of specific eating disorder characteristics will render specific interpersonal styles. Individuals high in dietary restraint and body dissatisfaction will have a submissive interpersonal style.

   b. Individuals high in bingeing and body dissatisfaction will have a hostile-submissive interpersonal style. Individuals high in purging and body dissatisfaction will have a hostile-submissive interpersonal style.

2) Given the principle of complementarity and transactional cycles, it is predicted that subthreshold eating disorder characteristics will be associated with increased loneliness as evidenced by the UCLA (University of California, Los Angeles) loneliness scale, negative social experiences as evidenced by the Test of Negative Social Exchanges, and decreased social support as evidenced by the Interpersonal Support Evaluation List.
3) Subthreshold eating disorder characteristics assessed at Time 1 will continue to predict negative social exchanges at the two-week follow up. These relationships will be mediated by interpersonal style (i.e., control and affiliation).

CHAPTER 3

METHODOLOGY

Overview and Design

The present study included both cross-sectional and prospective designs investigating a variety of characteristics associated with subthreshold eating disorders and their interpersonal profiles. It utilized a college student sample that consisted of self-report questionnaire data. The focus of the current study was to determine the interpersonal functioning associated with characteristics that have been documented in individuals with eating disorders.

Participants

The initial participant pool was drawn from undergraduate students at a medium-sized state university. Participants were largely recruited from introductory psychology classes and awarded course credit for their participation. They were not be penalized if they did not wish to participate. Participants were required to be female and at least 18 years of age to be eligible for the study. This requirement is based on previous research suggesting prevalence rates of eating disorders and their characteristics to be much higher in females than males.

Participants completed a variety of questionnaire measures including those used to assess eating disorder characteristics, interpersonal characteristics and profiles, negative social experiences, and loneliness. After questionnaires were completed, participants were asked to provide their email address to complete an additional questionnaire measuring negative social experiences two weeks after the initial testing. Invalid protocols were defined by insufficient completion time for the questionnaire measures. It was expected that Caucasians would comprise the largest group in the final sample due to the location and demographic makeup of the university from which the sample is being drawn.

Measures

Eating Disorder Examination- Questionnaire

The eating disorder examination questionnaire (EDE-Q; Fairburn, 2008) is a questionnaire version of the well-established investigator-based eating disorder examination interview. The eating disorder examination questionnaire is designed to assess core behavioral features of eating disorders and consists of the following four subscales: dietary restraint, eating concern, weight concern, and shape concern. The questionnaire consists of 32 items, and each item is rated using a seven-point forced-choice format with higher scores reflecting greater severity or frequency (Grilo, Reas, Hopwood, & Crosby, 2015) The eating disorder examination questionnaire correlates highly with the eating disorder examination as internal consistency exceeds .70. Internal consistency of the four subscales have the following reported ranges: .71 to .75 for dietary restraint, .75 to .90 for eating concern, .67 to .70 for weight concern, and .70 to .82 for shape concern (Byrne, Allen, Lampard, Dove, & Fursland, 2010). The EDE-Q was utilized in hypothesis one by investigating subthreshold binge eating, purging, and restriction. Restriction is measured dimensionally by items 1–5 of the dietary restraint subscale and binge eating is measured dimensionally by items 13–15 and purging by items 16–18 of the open-ended diagnostic section and operationalized by utilizing DSM-5 diagnostic criteria. To review the EDE-Q, see appendix A.

Body Shape Questionnaire

The body shape questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairburn, 1987) is designed to measure concern about body weight and shape experienced by individuals with eating disorders or related to body image problems. It addresses important body image symptoms, such as preoccupation with weight and shape, embarrassment in public, avoidance of

exposure of the body, and excessive feelings of fatness after eating (Rosen, Jones, Ramirez, & Waxman, 1996). The body shape questionnaire consists of 34 items, and each item is rated on a six-point Likert scale ranging from never to always (Cooper et al., 1987). Internal consistency has been documented at .97, and test-retest reliability has been documented at .88 (Pook, Tuschen-Caffier, & Brähler, 2008; Rosen et al., 1996). The BSQ was utilized in hypothesis one by investigating body dissatisfaction. To review the BSQ, see appendix B.

Emotional Eating Scale

The emotional eating scale (EES; Arnow, Kenardy, & Agras, 1995) is a questionnaire designed to measure an individual's desire to eat when experiencing emotional states. The EES consists of three subscales including anger/frustration, anxiety, and depression. The scale consists of 25 items and is displayed in a table-like format where participants are asked to rate their desire to eat using checkmarks on a five-point scale ranging from no desire to eat to an overwhelming urge to eat. Overall, internal consistency has been documented at .81 with the subscales ranging from .72 to .78 (Arnow et al., 1995). The EES was utilized in hypothesis one by investigating emotional eating. To review the EES, see appendix C.

International Personality Item Pool- Interpersonal Circumplex

The international personality item pool- interpersonal circumplex (IPIP-IPC; Markey & Markey, 2009) is a questionnaire consisting of personality items that were originally part of an extensive collection that is publicly available online. The IPIP-IPC consists of four personality items selected to be representative of each of the eight octants of the interpersonal circumplex. The scale consists of 32 items, and is rated using a five-point scale ranging from very inaccurate to very accurate. The internal consistency of the warmth and dominance dimensions have been previously reported to be .85 and .86 (Markey & Markey, 2009) The IPIP-IPC was utilized in

hypotheses one and three by determining the location of individual traits on the interpersonal circumplex, thus determining their interpersonal style and predicting future behavior. To review the IPIP-IPC, see appendix D.

Inventory of Interpersonal Problems- Short Circumplex

The inventory of interpersonal problems- short circumplex (IIP-SC; Alden, Wiggins, & Pincus, 1990) is a questionnaire based on the original inventory of interpersonal problems, which assesses interpersonal problems that include interpersonal behaviors that are "hard for you to do" and interpersonal behaviors that "you do too much." The short circumplex version consists of 32 items encompassing all eight octants of the interpersonal circumplex and has four items for each octant. The short circumplex is rated using a five-point scale. Internal consistency of the octants range from .66–.83, which are only slightly lower than the original inventory (Hopwood, Pincus, DeMoor, & Koonce, 2008). The IIP-SC was utilized in hypothesis one. To review the IIP-SC, see appendix E.

Circumplex Scales of Interpersonal Values

The circumplex scales of interpersonal values (CSIV; Locke, 2000) is a questionnaire designed to assess the value individuals place on agentic and communal interpersonal goals that are associated with each of the eight octants of the interpersonal circumplex. The circumplex scales of interpersonal values consists of 64 items, and subjects are asked to rate how important each listed interpersonal experience is for them on a five-point scale ranging from not important to extremely important. High internal consistency has been recorded as scores for the scales range from .76–.86 (Locke, 2000). The CSIV was utilized in hypothesis one. To review the CSIV, see appendix F.

Interpersonal Support Evaluation List

The interpersonal support evaluation list (ISEL; Cohen & Hoberman, 1983) is a questionnaire designed to measure the perceived availability of four different support resources, which include tangible support, appraisal support, self-esteem support, and belonging support. The ISEL consists of 12 items with six framed in a positive manner and six framed in a negative manner. Subjects rate their responses on a four-point scale ranging from probably true to probably false. High internal consistency has been reported at .83 (Brookings & Bolton, 1988). The ISEL was utilized in hypothesis two by investigating social support. To review the ISEL, see appendix G.

UCLA Loneliness Scale

The UCLA loneliness scale (Russell, 1996) is a questionnaire designed to assess how lonely individuals describe their experiences. It consists of 11 negatively worded items associated with loneliness and nine positively worded items not associated with loneliness. Subjects are asked to rate each statement on a four-point scale ranging from never to always. Test-retest reliability has been documented at .73, and internal consistency ranges from .89–.94 (Russell, 1996). The UCLA loneliness scale was utilized in hypothesis two by investigating loneliness. To review the UCLA loneliness scale, see appendix H.

Test of Negative Social Exchange

The test of negative social exchange (TENSE; Ruehlman & Karoly, 1991) is a questionnaire designed to measure the amount of negative social exchanges an individual experiences, which includes interactions involving hostility, rejection, conflict, ridicule, insensitivity, and criticism. The test consists of 24 items that describe behaviors, and subjects are asked to rate how often individuals in their lives have engaged in each behavior over the course

of the last month. Ratings consist of a five-point scale ranging from not at all to about every day. Internal consistency has been documented to be .90 (Jordan, Masters, Hooker, Ruiz, & Smith, 2014). The TENSE was utilized in hypothesis two and three by investigating negative social experiences in both initial and follow-up testing. To review the TENSE, see appendix I.

Procedure

Participants were recruited from psychology classrooms and asked to sign up for the study through an online subject pool management system where their email addresses were obtained. They were informed that the study required participants to bring their own laptops and involved completing two testing sessions two weeks apart. They were also informed that they would be provided with course credit for completing both components if they decided to participate, but would not be penalized if they decided not to participate. Upon entering the lab, they were provided with information about the study and a written informed consent before they began completing their questionnaires. All participants were given unique subject numbers and the resulting data did not include any identifying information. After obtaining informed consent, participants were emailed a link to a Qualtrics survey containing all of the previously listed questionnaires and were asked to complete the questionnaires on their personal laptops in the lab.

The final section of the Qualtrics survey informed participants of the second part of the study. They were asked for consent to use their email address for later contact about their interpersonal behavior. They were instructed that a short survey regarding their interpersonal experiences would be emailed to them in two weeks. Each participant had the opportunity to deny or consent to the request for follow-up information, but was instructed that additional course credit would be available based on the completion of the follow-up survey.

After a two week period of time, each participant was sent an email that contained a link to a Qualtrics site containing the TENSE and the EDE-Q, which measured negative social interactions and eating behaviors at follow up. The email also contained a subject number required to complete the follow up measure on Qualtrics. The subject number, in addition to questions regarding sex and age, corresponded to the participant's original questionnaire data to maximize confidentiality and allow subsequent data to be matched to its original data. Each participant was given one week to complete the follow-up measures and was contacted with a reminder email two to three days after the initial email with up to three contacts total.

Statistical Analyses

All data was analyzed using the IBM SPSS Statistics Package. The dimensions of social behavior (i.e., control and affiliation) were calculated first by using circumplex weighted equations. The equation for control is .03 [(zPA – zHI) + .707(zNO + zBC – zFG – zJK)]. The equation for affiliation is .03 [(zLM – zDE) + .707(zNO – zBC – zFG + zJK)]. These weightings are derived from empirical estimates of each octant's relative contribution to the dimensions of the interpersonal circumplex (Wiggins & Broughton, 1991). Regression analyses were then used to determine the interpersonal style (i.e., control and affiliation) associated with the individual difference variables (e.g., each individual difference variable was regressed on the calculated variables of control and affiliation). For hypotheses 1a and 1b, the analysis was flipped. For example, body dissatisfaction and restricting were used as predictors and the IPC variables (i.e., control and affiliation) were entered one at a time as dependent variables. This analysis allowed the researcher to determine whether someone high in body dissatisfaction *and* restricting had a different interpersonal style compared to someone high in body dissatisfaction *and* bingeing/purging.

Correlational analyses were used to examine the Time 1 associations among the eating disorder characteristics and interpersonal correlates such as social support, loneliness, and negative social exchanges. Finally, correlational analyses were conducted to examine the association among the eating disorder characteristics at Time 1 and negative social exchanges at Time 2. The Process macro for SPSS was then used to determine whether interpersonal style (i.e., control or affiliation) mediated the relationship between eating disorder characteristics at Time 1 and negative social exchanges at Time 2.

CHAPTER 4

RESULTS

Statistical Analyses

The data was screened for missing data before completion of statistical analyses. There were 40 participants who had some missing data (missing data points ranged from 1–15; mean = 4.3). The participant's mean score for that measure was substituted for the missing responses(s) on that measure. The final data set consisted of 141 participants for Time 1 and 108 participants for Time 2. For a description of participants see Table 1.

Descriptive Analyses

Table 2 presents the mean, standard deviation, range, and internal consistency for the primary research variables at Time 1. The means for the EDE-Q subscales were consistent with previously published norms from college students in the United States (Luce, Crowther, & Pole, 2008; Quick & Byrd-Bredbenner, 2013). The mean for the Body Shape Questionnaire was in the above average range indicating a mild concern with shape (Cooper et al., 1987). The mean for the anger/frustration, anxiety, and depression subscales of the Emotional Eating Scale were in the average range (Arnow et al., 1995).

At Time 1, disordered eating characteristics varied based on race/ethnicity. In general, non-Hispanic white participants demonstrated higher means on the scales measuring disordered eating behaviors or attitudes. For the EDE-Q, they had higher scores on restraint ($t = -3.20$, $p < .01$), shape concern ($t = -2.68$, $p < .01$), and weight concern ($t = -2.60$, $p < .05$). They differed significantly on the BSQ ($t = -3.77$, $p < .01$). These findings are consistent with past research (Atlas, Smith, Hohlstein, McCarthy, & Kroll, 2002). However, these differences did not impact primary analyses, so the results presented below do not include race/ethnicity as a covariate.

In regard to the two-week follow-up results, 77% completed the questionnaires at Time 2. Independent samples t tests were conducted to examine whether participants who completed the two week follow-up questionnaires were different in terms of demographics or disordered eating behavior characteristics. No differences were found for age (t = -1.45, p = .15) or BMI (t = -.89, p = .37). Similarly, no differences were found for restraint (t = -1.28, p = .20), eating concern (t = -.27, p = .51), shape concern (t = -1.11, p = .27), weight concern (t = -1.46, p = .15), purging (t = .14, p = .89), or bingeing (t = .05, p = .96).

Primary Analyses

To determine the interpersonal style of subthreshold eating disorder characteristics, the eating disorder characteristic scores calculated from the EDE-Q subscales, BSQ, and EES subscales were individually regressed on the affiliation and control dimension scores from the IPIP-IPC, the IIP-SC, and the CSIV. The affiliation and control scores were derived by calculating each participant's mean response to the four items (or eight items for the CSIV) in each octant, converting these raw responses to Z-scores, and then computing two sums that yield the affiliation and control dimension scores. The circumplex weighted equations for the sum are: DOM = .03 [(zPA – zHI) + .707(zNO + zBC – zFG – zJK)] and AFF = .03 [(zLM – zDE) + .707(zNO – zBC – zFG +zJK)]. These weightings are empirical estimates of the relative contribution of each octant score to the affiliation and control dimensions of the interpersonal circumplex (Wiggins & Broughton, 1991). When regressing the eating disorder characteristic scores on affiliation and control, the multiple R indicates the extent to which the construct is "interpersonal" in nature, and the Beta weights indicate the specific interpersonal style (i.e., high or low on affiliation, high or low on control) (Gurtman, 1991).

Therefore, to test hypothesis 1, the scores of each eating disorder characteristic were individually regressed on the appropriate axes of the interpersonal assessment battery (i.e., International Personality Item Pool, IPIP-IPC, Inventory of Interpersonal Problems, IIP-SC, and Circumplex Scales of Interpersonal Values, CSIV). In Tables 3, 4, and 5, the multiple regression results are presented. Starting with Table 3, as can be seen most of the subscales were not significantly associated with the IPIP-IPC. The exceptions were the EDE restraint and BSQ scales providing some support for hypothesis 1; the significant association for purging behavior, on the other hand, was in the opposite direction than what was predicted.

As can be seen in Table 3, the multiple *R* for the EDE restraint scale was significant (Multiple $R = .24$, $p < .05$) suggesting that the measure is significantly associated with interpersonal content. To determine the specific interpersonal style, the Beta weights were examined, and the EDE restraint scale was significantly associated with control (Beta = -.21, $t = -2.48$, $p < .05$), suggesting that individuals scoring higher in restraint are interpersonally submissive. The multiple *R* approached significance (Multiple $R = .20$, $p = .068$) for the BSQ scale suggesting that the measure was approaching a significant association suggestive of interpersonal content. To determine the interpersonal style, the Beta weights were examined, and for the BSQ, it was significantly associated with control (Beta = -.17, $t = -2.02$, $p < .05$) suggesting that body shape dissatisfaction is associated with an interpersonal style marked by submissiveness. Purging behavior had a multiple *R* that approached significance (Multiple $R = .20$, $p = .082$) suggesting that the measure was approaching a significant association suggestive of interpersonal content. Upon examination of the Beta weights, purging behavior was positively associated with affiliation (Beta = .20, $t = 2.25$, $p < .05$), which goes directly against the

predicted direction (i.e., that purging behavior would be associated with a hostile-submissive interpersonal style).

Continuing with hypothesis 1, the eating disorder symptoms scales were individually regressed on Inventory of Interpersonal Problems (IIP-SC). Again, most of the scales were not significantly associated with the IIP-SC (see Table 4). The exception was the EDE restraint scale that had a significant Multiple *R* (.27, $p < .01$), and a significant association with control (Beta = -.22, $p < .01$) suggesting a submissive interpersonal style. As for the Circumplex Scales of Interpersonal Values (CSIV), three eating disorder symptoms scales were significantly associated with the CSIV (see Table 5). The EDE shape concern scale had a significant Multiple *R* (.22, $p < .05$), and the Beta weight was significant for control (-.21, $p < .05$). The EDE weight concern scale had a significant Multiple *R* (.24, $p < .05$), and the Beta weight was significant for control (-.21, $p < .05$). Finally, the BSQ scale had a significant Multiple *R* (.25, $p < .05$), and the Beta weight was significant for control (-.23, $p < .01$). As displayed in Table 5, none of the other eating disorder symptoms scales were significantly associated with the CSIV.

In regard to hypothesis 1, the author also predicted that individuals who had high levels of body dissatisfaction *and* dietary restraint versus bingeing or purging would have distinct interpersonal styles and corresponding interpersonal goals/motives and problems. These analyses were accomplished by using the eating disorder characteristics as predictors and the affiliation and control scores, individually, as a criterion. Regressing control on dietary restraint and body dissatisfaction resulted in a multiple *R* of .20 ($F = 2.74$, $p = .07$). Beta weights were -.15 ($p = .17$) and -.06 ($p = .55$), respectively. Regressing affiliation on dietary restraint and body dissatisfaction resulted in a multiple *R* of .12 ($F = .94$, $p = .39$) and Beta weights of .08 ($p = .48$) and .05 ($p = .63$), respectively. Regressing control on bingeing and body dissatisfaction resulted

in a multiple *R* of .21 ($F = 2.95$, $p = .056$), and Beta weights of .18 ($p = .08$) and -.24 ($p < .05$), respectively. Regressing affiliation on bingeing and body dissatisfaction resulted in a multiple *R* of .12 ($F = .92$, $p = .40$), and Beta weights of -.07 ($p = .51$) and .14 ($p = .18$), respectively. Regressing control on purging and body dissatisfaction resulted in a multiple *R* of .19 ($F = 2.39$, $p = .10$), and Beta weights of .10 ($p = .28$) and -.21 ($p < .05$), respectively. Regressing affiliation on purging and body dissatisfaction resulted in a multiple *R* of .20 ($F = 2.64$, $p = .08$), and Beta weights of .17 ($p = .08$) and .06 ($p = .51$), respectively.

Regressing IIP-control on eating restraint and body dissatisfaction resulted in a multiple *R* of .24 ($F = 4.29$, $p < .05$), and Beta weights of -.22 ($p < .05$) and -.03 ($p = .75$), respectively. Regressing IIP-affiliation on eating restraint and body dissatisfaction resulted in a multiple *R* of .16 ($F = 1.69$, $p = .19$), and Beta weights of .12 ($p = .26$) and .05 ($p = .68$), respectively. Regressing IIP-control on bingeing and body dissatisfaction resulted in a multiple *R* of .25 ($F = 4.36$, $p < .05$), and Beta weights of .22 ($p < .05$) and -.27 ($p < .01$), respectively. Regressing IIP-affiliation on bingeing and body dissatisfaction resulted in a multiple *R* of .12 ($F = .90$, $p = .41$), and Beta weights of .003 ($p = .98$) and .12 ($p = .25$), respectively. Regressing IIP-control on purging and body dissatisfaction resulted in a multiple *R* of .22 ($F = 3.20$, $p < .05$), and Beta weights of .12 ($p = .20$) and -.23 ($p < .05$), respectively. Regressing IIP-affiliation on purging and body dissatisfaction resulted in a multiple *R* of .18 ($F = 2.06$, $p = .13$), and Beta weights of .12 ($p = .21$) and .09 ($p = .33$), respectively.

Finally, regressing CSIV-control on eating restraint and body dissatisfaction resulted in a multiple *R* of .24 ($F = 4.23$, $p < .05$), and Beta weights of -.002 ($p = .99$) and -.24 ($p < .05$), respectively. Regressing CSIV-affiliation on eating restraint and body dissatisfaction resulted in a multiple *R* of .10 ($F = .64$, $p = .53$), and Beta weights of -.04 ($p = .72$) and .12 ($p = .29$),

respectively. Regressing CSIV-control on bingeing and body dissatisfaction resulted in a multiple *R* of .25 ($F = 4.02$, $p < .05$), and Beta weights of .13 ($p = .18$) and -.28 ($p < .01$), respectively. Regressing CSIV-affiliation on bingeing and body dissatisfaction resulted in a multiple *R* of .14 ($F = 1.21$, $p = .30$), and Beta weights of -.04 ($p = .73$) and .15 ($p = .14$), respectively. Regressing CSIV-control on purging and body dissatisfaction resulted in a multiple *R* of .24 ($F = 3.89$, $p < .05$), and Beta weights of -.03 ($p = .74$) and -.23 ($p < .05$), respectively. Regressing CSIV-affiliation on purging and body dissatisfaction resulted in a multiple *R* of .14 ($F = .138$, $p = .26$), and Beta weights of -.04 ($p = .64$) and .16 ($p = .10$), respectively.

Overall, the results of examining the interpersonal styles, problems, and goals of participants high in body dissatisfaction and restraint versus those high in body dissatisfaction who binge or purge as well did not support hypothesis 1. Generally, the combination of disordered eating characteristics resulted in interpersonal styles, problems, and goals that were similar to the primary analyses of regressing the disordered eating characteristics, individually, on control and affiliation (i.e., restraint and body dissatisfaction were associated with an interpersonal style and problems marked by submissiveness; shape concern, weight concern, and body dissatisfaction were associated with submissive interpersonal goals).

To test hypothesis 2, the eating disorder symptoms scales were correlated with the social outcome variables (i.e., ISEL, TENSE, Loneliness). These results are presented in Table 6. The EDE eating concern, shape concern, weight concern scales, as well as the BSQ and EES depression scales were all significantly associated with the TENSE, UCLA loneliness, and ISEL in the expected direction. The other eating disorder symptoms scales had less consistent associations across these social outcomes but the significant associations were also in the expected direction.

To test hypothesis 3, the author first examined the correlations among the eating disorder characteristics from the Eating Disorder Examination Questionnaire and Body Shape Questionnaire at Time 1 and Time 2 (see Tables 7 and 8). Most of the Eating Disorder Examination subscales at Time 1 were significantly correlated with the Eating Disorder Examination subscales at Time 2. Similarly, most of the Eating Disorder Examination subscales at Time 2 were significantly correlated with the Body Shape Questionnaire at Time 1. In both cases, the exception was purging behavior, which demonstrated fewer significant associations. Partial correlations were conducted in which the respective Time 1 eating disorder characteristic was controlled for. For the most part, these correlations remained significant with the exception of weight concern at Time 2, which was no longer significantly correlated with body dissatisfaction at Time 1 (see Table 8).

Continuing with hypothesis 3, correlational analyses were conducted among Time 1 eating disorder characteristics and negative social exchanges at Time 2. At Time 1, the eating concern, shape concern, and weight concern subscales of the Eating Disorder Examination Questionnaire, the Body Shape Questionnaire, and the anger and depression subscales of the Emotional Eating Scale were all positively associated with negative social exchanges at Time 2 (see Tables 9 and 10). This suggests a tendency for individuals with higher scores on these characteristics to have more negative social exchanges not only at Time 1 (see Table 6), but also at a two-week follow-up assessment. These findings are consistent with hypothesis 3.

The partial correlations, however, in which Time 1 negative social exchanges were controlled for led to non-significant relationships among the eating disorder characteristics at Time 1 and their association with negative social exchanges at Time 2 (see Tables 9 and 10). While the original correlations were small to begin with (ranging from .245–.286), these partial

correlations suggest that it is a relevant consideration to examine the Time 1 negative social exchanges when looking at correlations across time.

Coinciding with these findings are the positive relationships among some of the social correlates at Time 1 (i.e., loneliness, social support, and negative social exchanges) and some of the eating disorder characteristics at Time 2 (see Table 11). These findings suggest that loneliness and low social support at Time 1 predict some symptoms related to disordered eating at Time 2. The partial correlations in this instance are somewhat more complex compared to the preceding paragraphs. Similar to the previously mentioned partial correlations, a number of relationships were no longer significant after controlling for Time 1 eating disorder characteristics (see eating concern and weight concern, for example, in Table 11), but some relationships remained significant (see bingeing, for example, in Table 11). Yet, some partial correlations became significant when the Time 1 eating disorder characteristic was controlled for. The partial correlation *was significant* between Time 1 negative social exchanges and eating restraint at Time 2. This finding suggests that the experience of interpersonal problems is positively correlated with future eating restraint over and above what the initial value of eating restraint would suggest. A similar pattern emerged for the relationship between social support at Time 1 and purging behavior at Time 2. The partial correlation was significant suggesting the more social support at Time 1 is negatively associated with purging behavior at Time 2 over and above what the initial value of purging would suggest.

Interestingly, one partial correlation actually switched directions. The partial correlation between social support at Time 1 and weight concern at Time 2 was positive ($r = .22$, $p < .05$) when Time 1 weight concern were controlled for. This finding suggests that more social support

at Time 1 was positively associated with weight concern at Time 2. This result is perplexing and will be addressed further in the discussion section below.

Finally, with hypothesis 3, interpersonal style at Time 1 as measured by the IPIP-IPC (i.e., control and affiliation) were individually examined as mediators of the relationship between the eating disorder characteristics at Time 1 that predicted negative social exchanges at Time 2. The indirect effect was tested using a bootstrap estimation approach with the PROCESS macro for SPSS (Hayes, 2013). None of these analyses approached significance in terms of mediation with the 95% confidence interval of each indirect effect overlapping with 0. Generally, while the bivariate associations suggested that some eating disorder characteristics predicted negative social exchanges at Time 2, these mediation analyses did not support hypothesis 3, which was that a person's interpersonal style (i.e., control versus affiliation) would function as a mechanism.

Given that the EDE restraint scale had the strongest association with the IPIP-IPC, and hence, a submissive interpersonal style, the author created a change score for the restraint scale (i.e., Time 2 EDE restraint minus Time 1 EDE restraint). A multiple regression analysis was conducted with the BSQ scale and the EDE restraint change score as predictors and the TENSE total score (i.e., negative social exchanges) at Time 2 as the criterion. This regression was significant ($R = .33$, $F(2,104) = 6.52$, $p < .01$). In the multiple regression equation, the BSQ had a Beta weight of .23 ($t = 2.45$, $p < .05$) and the EDE restraint change score had a Beta weight of .24 ($t = 2.62$, $p = .01$). This finding is consistent with hypothesis 3 in that negative social exchanges are more common in individuals who are dissatisfied with their body and are increasing their restricting habits over time.

Ancillary Analyses

While eating restraint did display the predicted submissive interpersonal style as well as deleterious social correlates, the other disordered eating characteristics generally did not demonstrate distinct interpersonal styles. Based on the interpersonal perspective of clinical, social, and personality psychology, distinct interpersonal styles lead to distinct transactional cycles over time with predictable outcomes. Nevertheless, interpersonal difficulties may still characterize eating disorder symptoms, but instead of distinct interpersonal styles, these eating disorder symptoms may be associated with *general* difficulties in interpersonal functioning. Therefore, correlational analyses were conducted among the eating disorder characteristics and the total score of the Inventory of Interpersonal Problems (IIP-SC). The total IIP-SC score was significantly associated with EDE restraint ($r = .32$, $p < .001$), EDE eating concern ($r = .41$, $p < .001$), EDE shape concern ($r = .45$, $p < .001$), EDE weight concern ($r = .44$, $p < .001$), and EDE binge ($r = .26$, $p < .01$); EDE purge was non-significant ($r = .08$, $p = .33$). The total IIP-SC score was also significantly associated with the BSQ ($r = .47$, $p < .001$), EES anger ($r = .31$, $p < .001$), EES anxiety ($r = .29$, $p < .01$), and EES depression ($r = .24$, $p < .01$). The overall pattern of results, therefore, suggests that when there is a predominant interpersonal difficulty, it tends to be more submissive but broader, or more general, interpersonal difficulties might be more common based on the above findings.

A key exploratory question was whether certain relationships among the eating disorder characteristics and interpersonal correlates differed based on the presence of a third variable. To address this, the PROCESS macro for SPSS version 24 was used (Hayes, 2013). All predictors were mean-centered prior to the analysis. Only theoretically-informed analyses were conducted. The basic theme of the primary hypotheses in this study is that deleterious social correlates may

be more typical of individuals with disordered eating characteristics. Hence, eating disorder characteristics and interpersonal functioning at Time 1 may interact to predict negative social exchanges at Time 2. The following results present the significant findings.

Theoretically Informed Findings. To test the possibility that total negative interpersonal exchanges (TENSE) at Time 2 are a function of multiple factors at Time 1, and more specifically whether weight concern (EDE-WC) moderates the relationship between affiliative goals (CSIV-Aff) and TENSE total at Time 2, multiple regression analyses were conducted using the PROCESS macro. Variables EDE-WC, CSIV-Aff, and their interaction term accounted for a significant amount of variance in TENSE total at Time 2 (R^2 = .12, F(3, 103) = 4.78, p < .01). The interaction term was not significant (t = -1.32, p = .19). Although the interaction term was not significant, analyses of the simple slopes were examined for exploratory purposes. Analysis of the simple slopes (see Figure 3) revealed that at high levels of EDE-WC (i.e., 1 standard deviation above the mean), there is a conditional effect (t = -2.66, p < .01) of weight concern and CSIV-Aff predicting TENSE total at Time 2. The slope at high levels of EDE-WC is significant, meaning that participants low in affiliative goals (i.e., 1 standard deviation below the mean), have significantly more negative social exchanges at Time 2. The slope at an average level of EDE-WC was also significant (t = -2.09, p < .05), meaning that participants low in affiliative goals (i.e., 1 standard deviation below the mean), have significantly more negative social exchanges at Time 2. The slope at low levels of EDE-WC (i.e., 1 standard deviation below the mean) was not significant (t = -.55, p = .59)

Similar results emerged for eating concern (EDE-EC) and shape concern (EDE-SC). Variables EDE-EC, CSIV-Aff, and their interaction term accounted for a significant amount of variance in TENSE total at Time 2 (R^2 = .13, F(3, 103) = 5.21, p < .01). The interaction term was

significant (t = -2.36, p < .05). A conditional effect was found at high levels of eating concern (see Figure 4; t = -2.71, p < .01), meaning that participants high in eating concern and low in affiliative goals have significantly more negative social exchanges at Time 2. The slopes at average and low levels of eating concern were not significant (t = -1.26, p = .21 and t = .18, p = .86; respectively). For shape concern, variables EDE-SC, CSIV-Aff, and their interaction term accounted for a significant amount of variance in TENSE total at Time 2 (R^2 = .14, F(3, 103) = 5.52, p < .01). The interaction term was not significant (t = -1.40, p = .16). Again, although the interaction term was not significant, analyses of the simple slopes were examined for exploratory purposes. A conditional effect was found at high levels of shape concern (see Figure 5; t = -2.61, p < .05), meaning that participants high in shape concern and low in affiliative goals have significantly more negative social exchanges at Time 2. The slopes at average and low levels of shape concern were not significant (t = -1.87, p = .06 and t = -.40, p = .69; respectively).

Variables EES Depression, IIP-Control, and their interaction term accounted for a significant amount of variance in TENSE total at Time 2 (R^2 = .10, F(3, 103) = 3.94, p < .05). The interaction term approached significance (t = -1.75, p = .08). Again, although the interaction term was not significant, analyses of the simple slopes were examined for exploratory purposes. A conditional effect was found at high levels of EES Depression (see Figure 6; t = 2.31, p < .05), meaning that participants high in eating while sad and high in control have significantly more negative social exchanges at Time 2. The slopes at average and low levels of EES depression were not significant (t = 1.26, p = .21 and t = -.00, p = .99). For affiliation, variables EES Depression, IIP-Affiliation, and their interaction term accounted for a significant amount of variance in TENSE total at Time 2 (R^2 = .10, F(3, 103) = 3.92, p < .05). The interaction term approached significance (t = -1.77, p = .08). Again, although the interaction term was not

significant, analyses of the simple slopes were examined for exploratory purposes. A conditional effect was found at high levels of EES Depression (see Figure 7; $t = -2.43$, $p < .05$), meaning that participants high in eating while sad and low in affiliation have significantly more negative social exchanges at Time 2. The simple slopes at average and low levels of EES depression were not significant ($t = -1.51$, $p = .13$ and $t = .29$, $p = .77$; respectively). Overall, the preceding paragraphs suggest that negative social exchanges at Time 2 are more common for *some* participants but not all of them.

CHAPTER 5

DISCUSSION

The current study aimed to more fully apply the interpersonal perspective of clinical, social, and personality psychology and its methodological tools to subthreshold eating disorder characteristics with the goal of facilitating greater understanding of the social correlates of these disordered eating habits and traits. Conceptualizations of eating disorders have historically emphasized cognitive-behavioral and family system perspectives. These conceptualizations have informed treatment approaches that have benefitted many individuals with eating disorders. Nevertheless, when treatments do not specifically address interpersonal characteristics and correlates, such as interpersonal problems, less salubrious outcomes tend to result (Arcelus et al., 2009; Rieger et al., 2010). The current study demonstrates how an interpersonal perspective can be used to elucidate the social correlates of disordered eating behaviors and how these characteristics are potentially associated with more negative social exchanges and problematic eating behaviors at a two week follow up.

In the current study, undergraduate, female college students completed self-report measures of subthreshold eating disorder characteristics, social behavior, interpersonal problems, interpersonal goals, and social correlates (i.e., negative social exchanges, loneliness, and social support). A brief summary of the results for each hypothesis, possible reasons for the findings, implications, limitations and strengths of the study, and directions for future research are discussed below.

Interpersonal Characteristics of Individuals with Disordered Eating Behaviors

It was hypothesized that individuals with high levels of body dissatisfaction (i.e., Body Shape Questionnaire), subthreshold binge eating and purging as evidenced by the open ended

diagnostic section of the Eating Disorder Examination (EDE-Q), eating, weight, and shape concern assessed by the appropriate subscales of the Eating Disorder Examination (EDE-Q), and high levels of emotional eating as evidenced by the Emotional Eating Scale (EES) would have a hostile-submissive interpersonal style with corresponding interpersonal goals/motives and problems as evidenced by the interpersonal assessment battery (i.e., International Personality Item Pool, IPIP-IPC, Inventory of Interpersonal Problems, IIP-SC, and Circumplex Scales of Interpersonal Values, CSIV). It was further hypothesized that individuals with subthreshold restriction as evidenced by the dietary restraint subscale of the EDE-Q would have a submissive interpersonal style and corresponding interpersonal goals/motives and problems as evidenced by the IPIP-IPC, IIP-SC, and CSIV.

This hypothesis was partially supported. Similar to past research (Carter et al., 2012), dietary restraint was associated with a submissive interpersonal style and interpersonal problems specifically related to submissiveness (e.g., "It is hard for me to confront people with problems that come up"). Furthermore, individuals with body dissatisfaction as assessed by the BSQ had a submissive interpersonal style and interpersonal goals marked by submissiveness (e.g., "When I am with others, it is important that I conform to their expectations"), and individuals high in shape concern and weight concern similarly had submissive interpersonal goals. The present results are consistent with theorists who have developed expanded models of cognitive behavioral therapy to specifically include interpersonal elements. For example, Wonderlich, Mitchell, Peterson, and Crow (2001) argue that patients with eating disorders are motivated to avoid rejection, and hence, they adopt a submissive interpersonal stance marked by withdrawal. Furthermore, submissiveness may be a key feature of more severe eating disorder problems (Troop, Allan, Treasure, & Katzman, 2003).

The predicted interpersonal style for body dissatisfaction, bingeing, purging, eating concern, weight concern, shape concern, and emotional eating, however, did not have the hypothesized association with the hostility pole of the interpersonal circumplex. While individuals with these characteristics did have general interpersonal difficulties, they did not demonstrate a specific interpersonal style and associated problems as did dietary restraint. The finding of general interpersonal problems for these eating disorder characteristics and behaviors may be reflective of the overall heterogeneity of interpersonal presentations of individuals with eating disorders. There are some inconsistencies in the literature on the interpersonal characteristics associated with eating disorders with some individuals being overly affiliative whereas other individuals being cold and avoidant; and even some individuals with eating disorders have interpersonal styles marked by problematic control (Ansell et al., 2012; Geller et al., 2000; Hartmann et al., 2010; Hopwood et al., 2007). Whereas there is a tendency toward submissiveness in some characteristics associated with eating disorders, there may be an overall heterogeneity in the interpersonal features associated with disordered eating behaviors and characteristics. Therefore, the participants in the current study with disordered eating habits and characteristics may have also demonstrated heterogeneity of interpersonal features that effectively cancelled each other out leading to some of the null findings. In other words, if some individuals who binge were overly affiliative whereas others were overly hostile, this variability may have led to the lack of an association with this dimension of the IPC.

Another important consideration for the current study is the use of a non-clinical sample. The following quote illustrates the complexity of the interpersonal style associated with diagnosable eating disorders:

> "Nobody could convince me to eat normally, because I was getting so much enjoyment and contact time from conversations in which they expressed their worries… doing things like crying, getting angry, or refusing food started off conversation with a familiar and predictable script [what's wrong – oh, it's just – why don't you – yes but – etc.] I gained control of my interactions with other people" (Treasure, Corfield, & Cardi, 2012, p. 431).

There are layers of complexities seen in this quote in which hostility, affiliation, control, and submission are present. Therefore, in at least some of the sample, one may not find a distinct, well-defined interpersonal style and goals associated with eating disorder characteristics. The current results suggest that, when you do, the salient interpersonal features tend to be pulled in the submissive direction. This lack of a well-defined interpersonal style is not uncommon as varied interpersonal subtypes have been observed not only with eating disorders, but also depression, anxiety disorders, and posttraumatic stress disorder (Simon, Cain, Wallner Samstag, Meehan, & Muran, 2015). For example, Simon et al. (2015) found five interpersonal subtypes indicative of depression, including vindictive, intrusive, socially avoidant, exploitable, and cold. It is possible these subtypes are present for eating disorders and their subthreshold characteristics as well, which may explain the complexity of interpersonal styles demonstrated in the current study. Finally, the interpersonal complexity of eating disorders is also anecdotally seen in statements of individuals with bulimia ("I have no self-control") versus individuals with anorexia who may feel – at least at times – like they have a great amount of self-control. Again, the present study's reliance on a nonclinical sample with various eating disorder characteristics and behaviors may suppress some of the expected interpersonal findings that have been observed in previous studies.

The current study did have some contradictory findings associated with purging behaviors. These findings suggested that purging has some affiliative characteristics associated with it, which is perplexing to some extent. However, it is possible that interpersonal features are not always salient (in terms of etiology and maintenance) for individuals with these disordered eating behaviors. It may be that bingeing and purging are behaviors used to regulate affect as opposed to behaviors related to interpersonal characteristics. Experimental results suggest that induction of a negative mood leads to disordered eating behaviors (Meyer & Waller, 1999). Studies that examine disordered eating habits over time using diary methods also suggest a strong link between negative mood states and disordered eating behaviors (Wonderlich et al., 2015). Therefore, affect, physiology, and associated thoughts may be more relevant for some people who have tendencies to purge and/or binge.

The importance of considering affective states can be illustrated by examining the difference between objective versus subjective, or *perceived*, social correlates. For example, depressed individuals report lower social support satisfaction, or in other words, their perception of their social support is less than their non-depressed counterparts (Rueger, Malecki, Pyun, Aycock, & Coyle, 2016). The current study did not assess perceived or subjective social correlates. If mood state would have been assessed in the current study, it may have helped differentiate between state-related findings and more trait-related findings, such as interpersonal style. This possibility may be particularly relevant for the current study's strange findings with purging. There may be complex interrelations over time among eating disorder behaviors and control and affiliation. For example, a recent study suggested that lower binge eating at an earlier point in a 36 week treatment study was actually associated with reduced interpersonal warmth later in the study (Luo, Nuttall, Locke, & Hopwood, 2018). There may be within-person change

in control and affiliation over time, and this change may be in part due to mood state as mentioned above.

Interpersonal Correlates of Individuals with Disordered Eating Behaviors

It was also hypothesized that subthreshold eating disorder characteristics would be associated with increased loneliness, negative social experiences, and decreased social support. This hypothesis was largely supported. Body dissatisfaction and emotional eating were found to be associated with increased loneliness, negative social exchanges, and decreased social support; however, binge eating and purging were less conclusive. These correlates are important for a variety of mental health outcomes, and research has suggested they may contribute to both the development and the maintenance of eating disorders and their subthreshold characteristics (Levine, 2012; Linville et al., 2012; Ruehlman & Karoly, 1991). It has been hypothesized that eating disorder symptoms are used as a coping skill in response to loneliness and lack of social support (Levine, 2012; Tiller et al., 1997). A similar theory has been hypothesized regarding negative social experiences and eating disorder characteristics (Ruehlman & Karoly, 1991).

Interestingly, a behavioral tendency to purge was not associated with any of the adverse social correlates. Given the surprising finding of affiliative social behavior associated with purging, this finding makes sense due to the principle of complementarity. In other words, friendly (i.e., affiliative) social behaviors should not be associated with increased loneliness, negative social exchanges, or decreased social support, which is what the current findings suggest.

Because some of the above correlations included variables that were assessed at both Time 1 and Time 2, partial correlations were calculated to determine the relationship between two variables while holding constant the initial value. In other words, does the effect of a

variable on a Time 2 outcome remain after controlling for the initial value of said variable? In some instances, the effects remained (see the partial correlations in Table 8 among the BSQ at Time 1 and EDE scales at Time 2). This finding suggests that body shape dissatisfaction has an effect on the EDE scales at Time 2 over and above what one might expect based on the initial values of the EDE scales at Time 1. In other instances, however, the partial correlations rendered non-significant results. In general, when controlling for Time 1 negative social exchanges, the associations among the Time 1 values of the EDE scales, the BSQ, and emotional eating scales were no longer significantly associated with Time 2 negative social exchanges (see Tables 9 and 10). Similarly, when controlling for initial values of the EDE scales, some of the Time 1 variables of loneliness, negative social exchanges, and social support no longer predicted EDE scales at Time 2 (see Table 11). But in other instances, the effect remained (i.e., negative social exchanges and loneliness at Time 1 continued to predict bingeing behavior at Time 2) or strengthened (see the association between social support and bingeing). Unexpectedly, when controlling for the initial value of weight concern, the association between social support and Time 2 weight concern became significant and in the positive direction meaning that high social support was associated with more weight concern at Time 2. Though not significant, a similar sign reversal happened for shape concern (see Table 11). Overall, the complex findings in Table 11 likely reflect the complexities of eating disorder characteristics and their association with interpersonal outcomes over time.

The above findings specifically dealing with parceling out Time 1 negative social exchanges can be interpreted in several ways. First, it could mean that eating disorder characteristics and behaviors are not leading to negative interpersonal encounters, but rather, an unmeasured third variable is driving the relationship. Second, the findings could simply reflect

the short follow-up interval (i.e., two weeks). Third, and most importantly for the purposes of interpersonal theory, it is not surprising that a person's interpersonal style leads to consistent social correlates over time. Hence, one's report of negative social exchanges at Time 1 *should be* correlated with one's report of negative social exchanges at Time 2. The reasoning for this third interpretation is the principle of complementarity and ongoing transactional cycles. Social correlates should be consistent over time if a person has characteristic ways of interacting with others.

Prospective Findings

This study also took an important first step in determining whether interpersonal factors associated with eating disordered characteristics continue to exert their influence over time. Given the principle of complementarity, one would not only expect cross-sectional deleterious social consequences associated with eating disordered characteristics correlated with hostility or submissiveness; one would also expect a recurring transactional cycle to continue over time leading to ongoing social difficulties. This hypothesis was largely supported. Based on the interpersonal perspective utilizing the principle of complementarity, it is possible to make theory-driven predictions regarding interpersonal correlates, such as negative social exchanges (Wiggins, 1996). The current study demonstrated many of the eating disorder characteristics, including eating, shape, and weight concern, did successfully predict negative social exchanges after a two-week follow-up (though these findings need to be interpreted with the foregoing in mind). However, the proposed mediators (i.e., control and affiliation) were not confirmed in the current study.

Ancillary Findings

In addition to the primary hypotheses, this study had a number of additional findings that are important to note. Based on the pattern of results, it appears as though some individuals with subthreshold eating disorder characteristics may have broader interpersonal difficulties rather than a predominant interpersonal difficulty, such as a dominant or hostile interpersonal style. Furthermore, negative social exchanges at a later time point were common for certain eating characteristics, but these results did not generalize across all characteristics.

Importantly, the relationship between two variables may be moderated by a third variable. Given that the main outcome of interest at Time 2 was negative social exchanges, interactions between eating disorder characteristics and interpersonal features at Time 1 were examined in terms of their association with negative social exchanges at Time 2. Several interesting results were found suggesting that it is important to ask – for whom? – does a significant association exist.

The main findings as well as the ancillary analyses of the current study build upon past research positing interpersonal models of eating disorders. A basic premise of these past research studies is that cognitive behavioral therapy can have a relative lack of consideration for interpersonal factors in the etiology and maintenance of eating disorders (Clark, 1995). There have been calls to improve the treatments of eating disorders given relapse rates as high as 50% to 60% (Fairburn et al., 1995; Wilson, 1996), and there is now a recognition that subsets of patients do not respond to cognitive behavioral therapy (Mitchell et al., 2002). Interpersonally inclined researchers argue that all individuals with eating disorders (and in particular, the subset that does not respond to cognitive behavioral therapy), may benefit from a specific consideration of interpersonal features. Although the current study adds to this literature, many unresolved

questions remain, which future studies can address to help establish interpersonal features that both contribute to and maintain disordered eating habits and characteristics.

Limitations of the Study

This study had a number of limitations that could have affected the results. First, the sample consisted of female, Midwestern undergraduate students who participated to receive extra course credit. Because participation led to extra course credit, participants may not have taken adequate care in completing the questionnaires. Moreover, the female and college populations are characterized by increased prevalence of eating disorders and subthreshold characteristics (Bulik et al., 2006; Burke et al., 2010). Therefore, the sample's age, education, gender, geographic location, and subthreshold eating disorder characteristics may not be representative of the general population, and the use of a predominately educated college student population limits the generalizability of the results. Another limitation involving the sample is the fact that a clinical eating disorder population was not utilized. Due to using a subclinical sample, the results may not be consistent because of varying degrees of subthreshold eating disorder behaviors. Moreover, the use of a clinical sample may have yielded more consistent significant results in terms of the present hypotheses.

An additional limitation involves the use of self-report measures as they may not have accurately assessed individual behaviors and experiences (Zysberg, 2014). Self-report measures have the potential to be influenced by social desirability due to face validity of the research questions. Furthermore, the current study utilizes a two-week follow-up period to examine prospective relationships over time. Although this time period is useful to investigate hypotheses derived from the principle of complementarity and transactional cycles over time, it is still a very short time frame, which may have affected the results.

Given the limited scope of the research questions, the current study was unable to assess many factors that have been found to be associated with eating disorders and subthreshold eating disorder characteristics. Some well-established factors include attachment, emotion regulation, alexithymia, and perfectionism. Individuals with eating disorders have been found to have greater attachment insecurity with prevalence estimates ranging from 70% to 100% (Tasca & Balfour, 2014). The prevalence of alexithymia is also high in eating disorders, and there appears to be linear relationships among alexithymia, body dissatisfaction, and more severe eating disorders (Behar & Arancibia, 2014; Carano et al., 2006). In terms of emotion regulation, according to Lafrance Robinson, Kosmerly, Mansfield-Green, and Lafrance (2014), women with greater difficulties with emotion regulation report more tendencies toward eating disorder behaviors. In fact, individuals with anorexia, bulimia, and binge eating disorder have reported difficulties with both attending to and modulating emotional arousal. Lastly, a meta-analysis found that individuals with eating disorders have significantly higher rates of maladaptive perfectionism (Franco-Paredes, Mancilla-Díaz, Vázquez-Arévalo, López-Aguilar, & Álvarez-Rayón, 2005). Perfectionism is associated with body dissatisfaction, diet, drive for thinness, and body image (Franco-Paredes et al., 2005). By not investigating these factors, important features of eating disorder characteristics may have been overlooked.

Strengths of the Study

Despite the limitations, the present study has a number of strengths. Although the study consisted of participants from a Midwestern University, the sample had a higher than expected amount of African American participants. Because of this demographic strength, the results of the present study have a greater ability to generalize in regard to ethnicity. Additionally, unlike much of the research involving eating disorders or their subthreshold characteristics, this study

utilized multiple measures of eating disorder characteristics to gain a broader picture of the characteristics of each subject. By not only using measures for subthreshold restriction, binge eating, and purging, but also for body dissatisfaction and emotional eating, it was possible to more fully understand the breadth of each individual's eating patterns and characteristics.

In addition to utilizing multiple measures of eating disorder characteristics, the present study also put to use a full battery of interpersonal measures. In the majority of past research regarding interpersonal factors or the interpersonal circumplex, measures investigate either interpersonal style, problems, or goals. However, the current study employed a measure of interpersonal style, the International Personality Item Pool-Interpersonal Circumplex (IPIP-IPC), a measure of interpersonal problems, the Inventory of Interpersonal Problems-Short Circumplex (IIP-SC), and a measure of interpersonal goals, the Circumplex Scales of Interpersonal Values (CSIV). By using a full battery of interpersonal measures, it was possible to determine not only the interpersonal style of individuals with varying subthreshold eating disorder characteristics, but also the problems and goals associated with these interpersonal styles.

Another strength of the current study lies in the two-week follow-up regarding negative social exchanges. This feature of the current study allowed for cross-sectional and prospective interpersonal findings. The majority of past research has explored interpersonal styles in a cross-sectional manner, so prospective findings help to establish temporal order and change over time. Overall, the wide range of measures for both eating disorder characteristics and interpersonal profiles and the cross-sectional and prospective nature of the present study allowed for a broader understanding and more potential for future implications for the conceptualization and treatment of eating disorders.

Implications and Future Directions

The present study has the potential to be the first step in determining the link between negative social exchanges and subthreshold eating disorder characteristics. It may ultimately be possible to identify correlations suggesting that binge eating, emotional eating, purging, and restricting occur more frequently after negative social exchanges, which can lead to a better understanding of maintaining factors of these behaviors.

Interpersonal psychotherapy has demonstrated positive treatment effects in individuals with eating disorders suggesting that interpersonal functioning is relevant to consider (Rieger et al., 2010). To further illustrate the importance of interpersonal factors, Ung et al. (2017) has suggested some interpersonal problems, including coldness and hostility, may interfere with treatment outcomes for individuals with eating disorders. Treatments that do not specifically consider these interpersonal features may be limited in terms of their efficacy. One of the most compelling implications of the present study is the demonstration that interpersonal functioning is not only relevant, but necessary to consider in the conceptualization and treatment of eating disorders if it is to be efficacious.

One possible future direction is an ecological momentary assessment study to repeatedly sample eating behaviors in real-time and to examine proximal factors that lead to disordered eating. Studies do suggest that interpersonal factors are relevant when day-to-day, ecologically valid assessments are used (Stein et al., 2007; Wonderlich et al., 2015). This type of assessment would be incredibly useful in helping to gain more reliable information that could not only assist in understanding the impact of interpersonal factors but also the conceptualization and treatment of eating disorders.

In addition, while there is research related to stigma associated with other mental disorders, such as schizophrenia, there has been much less research done on stigma associated with eating disorders. Recent research suggests that the endorsement of beliefs reflective of internalization of stigmatizing statements related to eating disorders is associated with more disordered eating symptoms (Griffiths, Mitchison, Murray, Mond, & Bastian, 2018; Griffiths, Mond, Murray, & Touyz, 2015)**.** This aspect of self-stigma has implications for treatment seeking, affect regulation, and coping skills. Future research could build upon these recent studies to examine how the internalization of stigmatizing statements may lead to isolating tendencies and/or interpersonal problems that exacerbate or maintain eating disorder symptoms.

Lastly, a recent study examined the association among socializing problems, self-esteem and eating disorders (Raykos, McEvoy, & Fursland, 2017)**.** Contrary to interpersonal conceptualizations of eating disorders (i.e., that interpersonal factors directly contribute to disordered eating behaviors), this study found that low self-esteem as well as anxiety were key determinants of eating disorder pathology. Therefore, it is likely that in future studies both intrapersonal and interpersonal variables need to be assessed to fully appreciate the complexity of eating disorders.

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Table 1

Participant Demographic Information

Trait	*n*	%
Race/Ethnicity		
Caucasian	77	54.6
African American	49	34.8
White Hispanic/Latino American	9	6.4
Pacific Islander, Arab, and Other	6	4.2
Age		
18	71	50.4
19	34	24.1
20	14	9.9
21	7	5.0
22	9	6.4
23+	6	4.2
Religion		
Atheist	9	6.4
Buddhist	1	0.7
Hindu	1	0.7
Jehovah's Witness	1	0.7
Muslim	1	0.7
Lutheran	4	2.8
Roman Catholic	9	6.4
Methodist	4	2.8
Presbyterian	1	0.7
Christian	80	56.7
Baptist	12	8.5
Pentecostal	5	3.5
Other	12	8.5
Year in School		
Freshman	87	61.7
Sophomore	28	19.9
Junior	18	12.8
Senior	8	5.7

Table 2

Means, Standard Deviations, Ranges, and Reliabilities for Subscales of EDE-Q, BSQ, and EES

Scale	Mean	Standard Deviation	Range	Cronbach's Alpha
EDE Restraint	11.65	6.89	5-34	.82
EDE Eating Concern	10.09	6.28	5-34	.82
EDE Shape Concern	28.79	14.05	8-56	.91
EDE Weight Concern	16.36	8.61	5-35	.86
EDE Bingeing	2.64	3.21	0-12	
EDE Purging	1.40	2.00	0-11	
BSQ Body Dissatisfaction	84.17	41.40	34-198	.98
EES Anger	19.58	7.60	11-44	.88
EES Anxiety	17.03	5.55	9-32	.73
EES Depression	12.13	3.91	5-24	.67

Note. EDE-Q represents the Eating Disorder Examination-Questionnaire, BSQ represents the Body Shape Questionnaire, and EES represents the Emotional Eating Scale. Mean, standard deviation, range, and Cronbach's alpha have been rounded to the nearest hundredth.

Table 3

Multiple Regression Results for Eating Disorder Symptoms Scales Predicted by IPIP-IPC Control and Affiliation Scores

Scale	α	*R*	*F*(2,138)	β Control	β Affiliation
EDE Restraint		.237	4.061*	-.208*	.138
EDE Eating Concern		.140	1.351	-.135	-.024
EDE Shape Concern		.151	1.580	-.143	.764
EDE Weight Concern		.145	1.467	-.130	.080
EDE Bingeing		.054	.181	.053	.002
EDE Purging		.195	2.551	-.003	.195*
BSQ Body Dissatisfaction		.198	2.741	-.171*	.119
EES Anger		.164	1.879	.005	-.164
EES Anxiety		.078	.414	-.016	-.075
EES Depression		.167	1.936	-.093	-.130

Note. IPIP-IPC represents the International Personality Item Pool-Interpersonal Circumplex, EDE represents the Eating Disorder Examination-Questionnaire, BSQ represents the Body Shape Questionnaire, and EES represents the Emotional Eating Scale.

$p < .05$; $^{**}p < .01$; $^{***}p < .001$ (two-tailed)

Table 4

Multiple Regression Results for Eating Disorder Symptoms Scales Predicted by IIP-SC Control and Affiliation Scores

Scale	α	*R*	*F*(2,140)	β Control	β Affiliation
EDE Restraint		.271	5.453**	-.224**	.119
EDE Eating Concern		.064	.284	-.064	-.001
EDE Shape Concern		.152	1.631	-.098	.102
EDE Weight Concern		.141	1.407	-.067	.114
EDE Bingeing		.117	.889	.100	.077
EDE Purging		.167	1.882	.058	.167
BSQ Body Dissatisfaction		.199	2.811	-.158	.097
EES Anger		.152	1.623	.127	-.065
EES Anxiety		.108	.808	.060	.100
EES Depression		.090	.558	-.058	-.078

Note. IIP-SC represents the Inventory of Interpersonal Problems-Short Circumplex, EDE represents the Eating Disorder Examination-Questionnaire, BSQ represents the Body Shape Questionnaire, and EES represents the Emotional Eating Scale.

*$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed)

Table 5

Multiple Regression Results for Eating Disorder Symptoms Scales Predicted by CSIV Control and Affiliation Scores

Scale	α	*R*	*F*(2,139)	β Control	β Affiliation
EDE Restraint		.155	1.681	-.149	.027
EDE Eating Concern		.182	2.338	-.153	-.117
EDE Shape Concern		.216	3.341*	-.211*	.026
EDE Weight Concern		.239	4.166*	-.214*	.086
EDE Bingeing		.044	.123	.008	.044
EDE Purging		.116	.888	-.115	.010
BSQ Body Dissatisfaction		.250	4.552*	-.234**	.065
EES Anger		.129	1.161	-.096	-.097
EES Anxiety		.146	1.488	-.138	-.064
EES Depression		.114	.889	-.029	-.113

Note. CSIV represents the Circumplex Scales of Interpersonal Values, EDE represents the Eating Disorder Examination-Questionnaire, BSQ represents the Body Shape Questionnaire, and EES represents the Emotional Eating Scale.

*$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed)

Table 6

Correlations of Eating Disorder Symptoms Scales at Time 1 with Negative Interpersonal Experiences, Loneliness, and Social Support at Time 1

Scale	TENSE (α = .96)	Loneliness (α = .89)	Social Support (α = .97)
EDE Restraint	-.068	.210*	-.031
EDE Eating Concern	.209*	.398**	-.231**
EDE Shape Concern	.255**	.423**	-.282**
EDE Weight Concern	.240**	.464**	-.325**
EDE Bingeing	.118	.177*	-.022
EDE Purging	-.004	.061	-.046
BSQ Body Dissatisfaction	.235**	.469**	-.293**
EES Anger	.187*	.185*	-.152
EES Anxiety	.086	.133	-.099
EES Depression	.178*	.231**	-.173*

Note. TENSE represents Test of Negative Social Exchanges, EDE represents the Eating Disorder Examination-Questionnaire, BSQ represents the Body Shape Questionnaire, and EES represents the Emotional Eating Scale.

*$p < .05$; **$p < .01$ (two-tailed)

Table 7

Correlations of Eating Disorder Examination Scales at Time 1 with Eating Disorder Examination Scales at Time 2

Scale	EDE Restraint	EDE Eating Concern	EDE Shape Concern	EDE Weight Concern	EDE Bingeing	EDE Purging
EDE Restraint2	.655**	.457**	.581**	.561**	.310**	.437**
EDE Eating Concern2	.521**	.676**	.702**	.694**	.543**	.354**
EDE Shape Concern2	.519**	.516**	.739**	.740**	.404**	.311**
EDE Weight Concern2	.515**	.535**	.763**	.814**	.369**	.310**
EDE Bingeing2	.325**	.655**	.546**	.498**	.767**	.247*
EDE Purging2	.187	.146	.204*	.159	.147	.476**

Note. EDE represents the Eating Disorder Examination-Questionnaire.

*$p < .05$; **$p < .01$ (two-tailed)

Table 8

Correlations between the Body Shape Questionnaire at Time 1 and the Eating Disorder Examination Symptom Scales at Time 2

Scale	BSQ
EDE Restraint2	.593**
	(.34**)
EDE Eating Concern2	.720**
	(.41**)
EDE Shape Concern2	.752**
	(.27**)
EDE Weight Concern2	.787**
	(.16)
EDE Bingeing2	.474**
	(.20^)
EDE Purging2	.138
	(.01)

Note. EDE represents the Eating Disorder Examination-Questionnaire and BSQ represents the Body Shape Questionnaire. Values in parentheses are partial correlations controlling for the respective Time 1 EDE value.

*$p < .05$; **$p < .01$; ^$p = .05$ (two-tailed)

Table 9

Correlations of Eating Disorder Examination Symptom Scales at Time 1 with Negative Interpersonal Experiences at Time 2

Scale	TENSE2
EDE Restraint	.006
	(.03)
EDE Eating Concern	.245*
	(.04)
EDE Shape Concern	.286**
	(.07)
EDE Weight Concern	.246*
	(.00)
EDE Bingeing	.094
	(.05)
EDE Purging	.122
	(.15)

Note. TENSE represents Test of Negative Social Exchanges and EDE represents the Eating Disorder Examination-Questionnaire. Values in parentheses are partial correlations controlling for the Time 1 TENSE.

*$p < .05$; **$p < .01$ (two-tailed)

Table 10

Correlations of Body Shape Questionnaire and Emotional Eating Scale Scores at Time 1 with Negative Interpersonal Experiences at Time 2

Scale	TENSE2
BSQ Body Dissatisfaction	.229*
	(-.02)
EES Anger	.210*
	(.01)
EES Anxiety	.126
	(.05)
EES Depression	.226*
	(.10)

Note. TENSE represents Test of Negative Social Exchanges, BSQ represents the Body Shape Questionnaire, and EES represents the Emotional Eating Scale. Values in parentheses are partial correlations controlling for the Time 1 TENSE.

*$p < .05$; **$p < .01$ (two-tailed)

Table 11

Correlations of Negative Interpersonal Experiences, Loneliness, and Social Support at Time 1 with Eating Disorder Examination Scales at Time 2

Scale	Social Support	TENSE	Loneliness
EDE Restraint2	-009	.149	.170
	(.00)	(.21*)	(.04)
EDE Eating Concern2	-.116	.253**	.284**
	(.06)	(.10)	(-.02)
EDE Shape Concern2	-.137	.176	.318**
	(.14)	(-.08)	(-.09)
EDE Weight Concern2	-.157	.195*	.339**
	(.22*)	(-.10)	(-.18)
EDE Bingeing2	-.151	.210*	.274**
	(-.29**)	(.24*)	(.20^)
EDE Purging2	-.072	.146	.127
	(-.06)	(.13)	(.10)

Note. TENSE represents Test of Negative Social Exchanges and EDE represents the Eating Disorder Examination-Questionnaire. Values in parentheses are partial correlations controlling for the respective Time 1 EDE value.

*$p < .05$; **$p < .01$; ^$p = .05$ (two-tailed)

Figure 1. The Interpersonal Circumplex

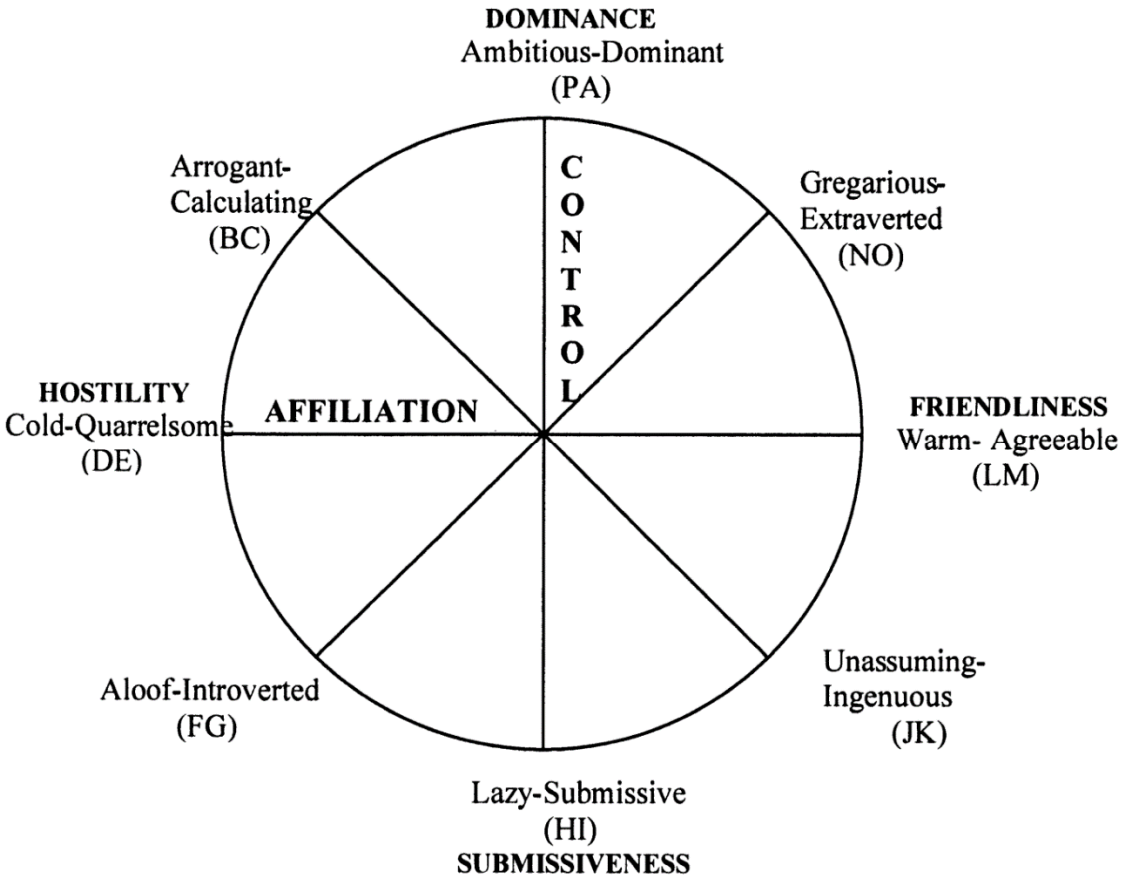


Figure 2. Transactional Cycle

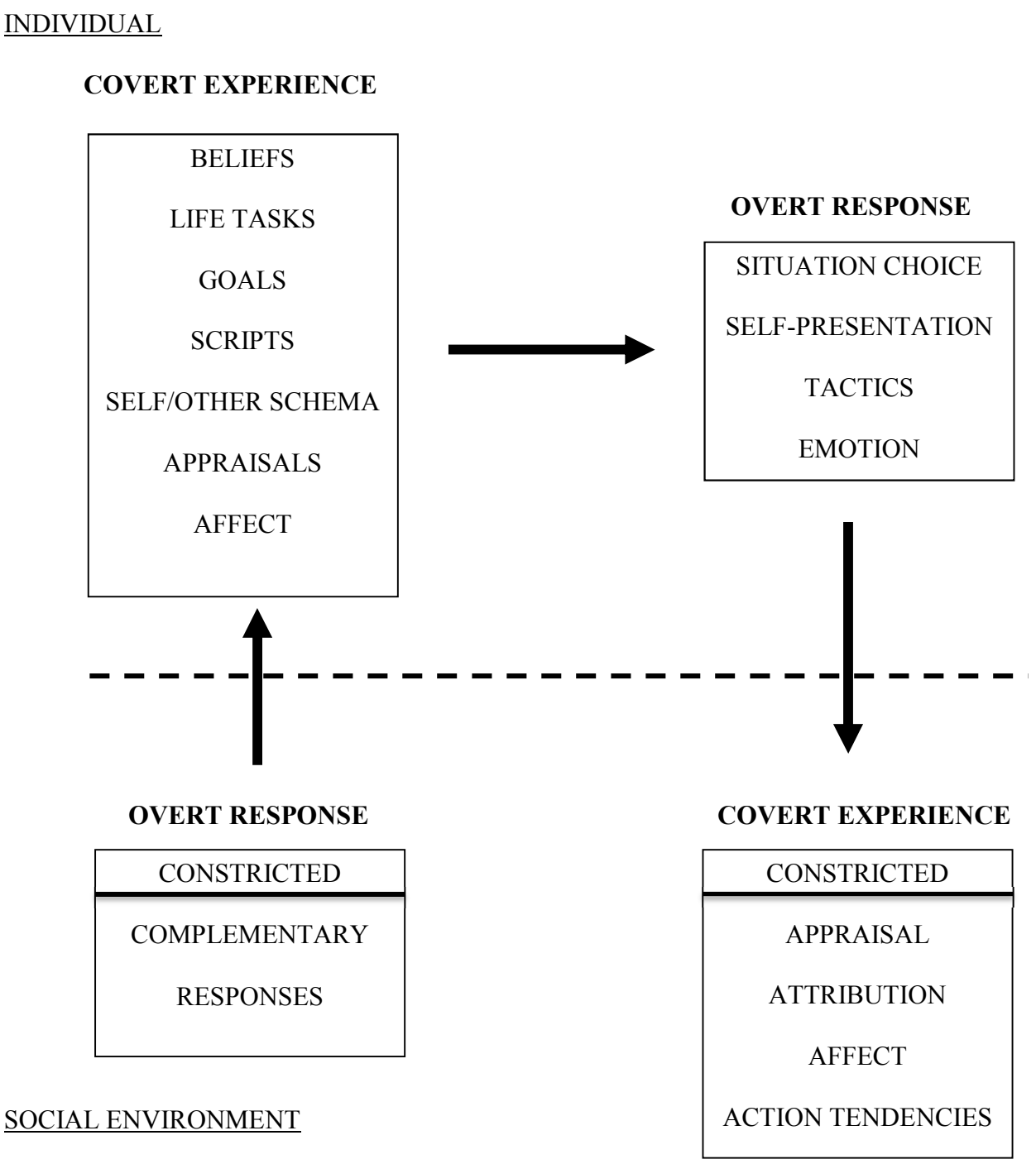
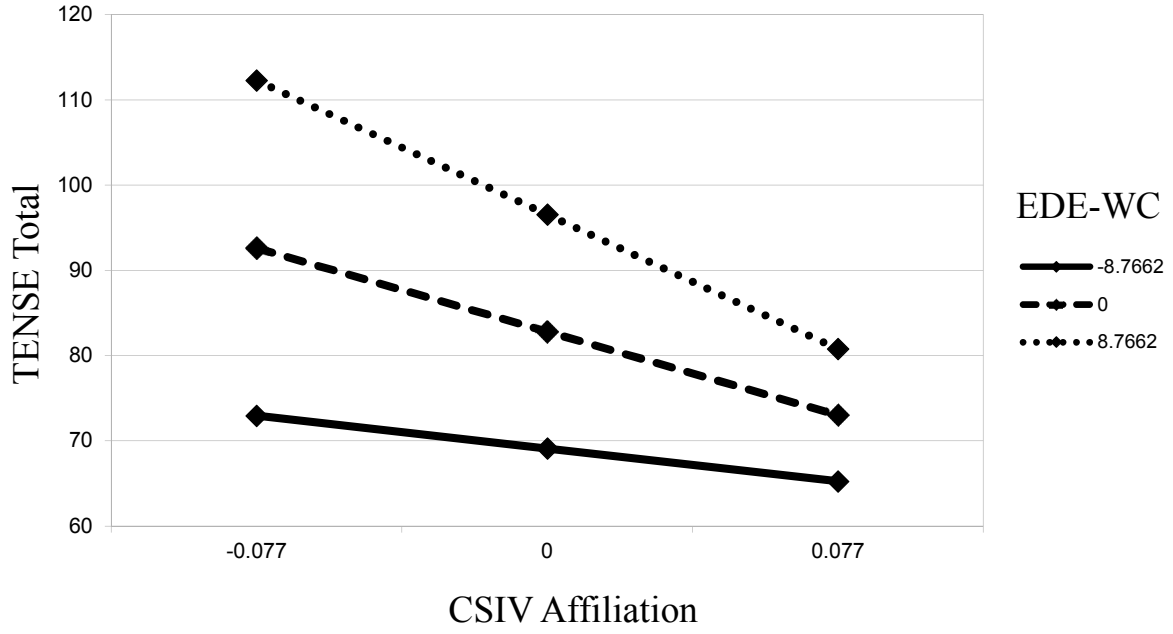
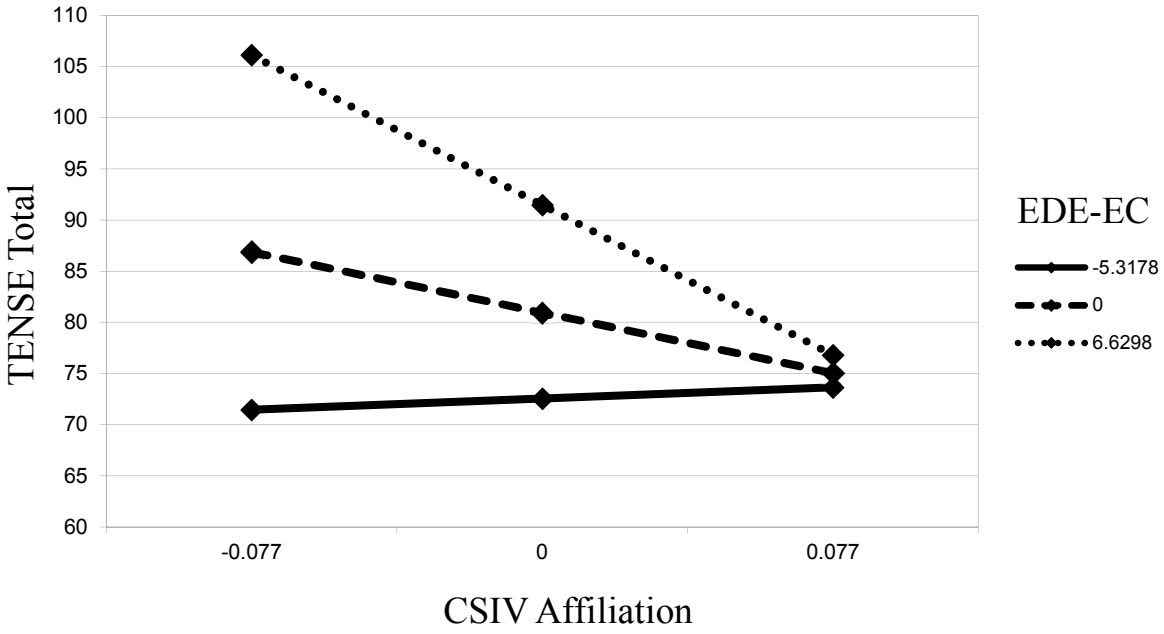


Figure 3. Time 1 Circumplex Scales of Interpersonal Values Affiliation, Time 1 Weight Concern, and Time 2 Negative Social Exchanges Total



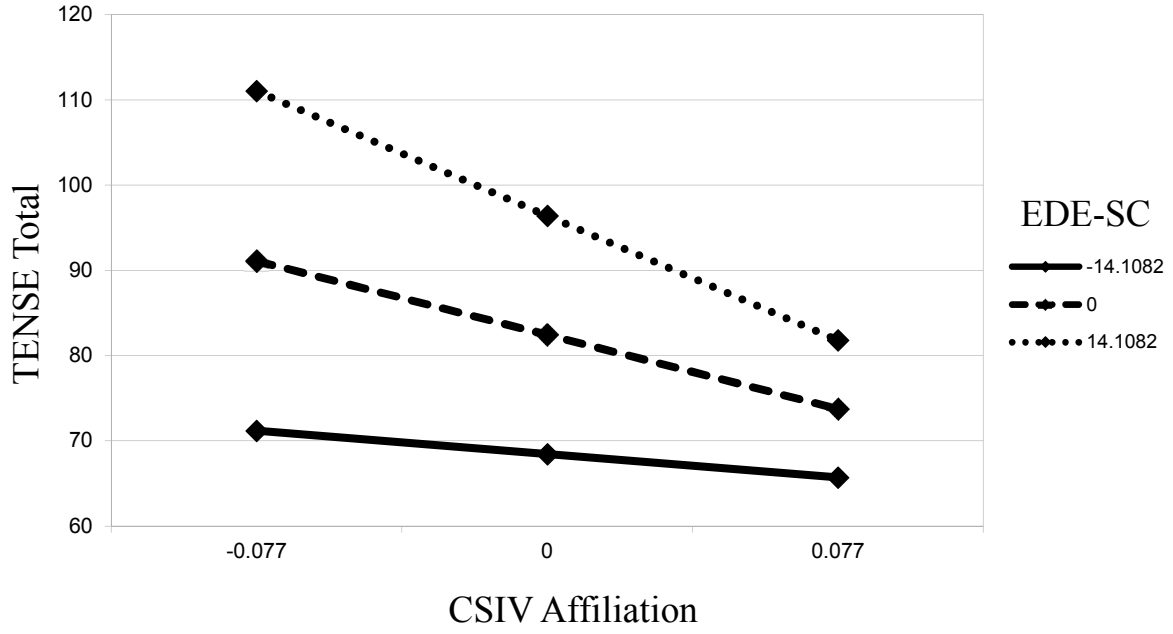
Interaction, p = .1911

Figure 4. Time 1 Circumplex Scales of Interpersonal Values Affiliation, Time 1 Eating Concern, and Time 2 Negative Social Exchanges Total



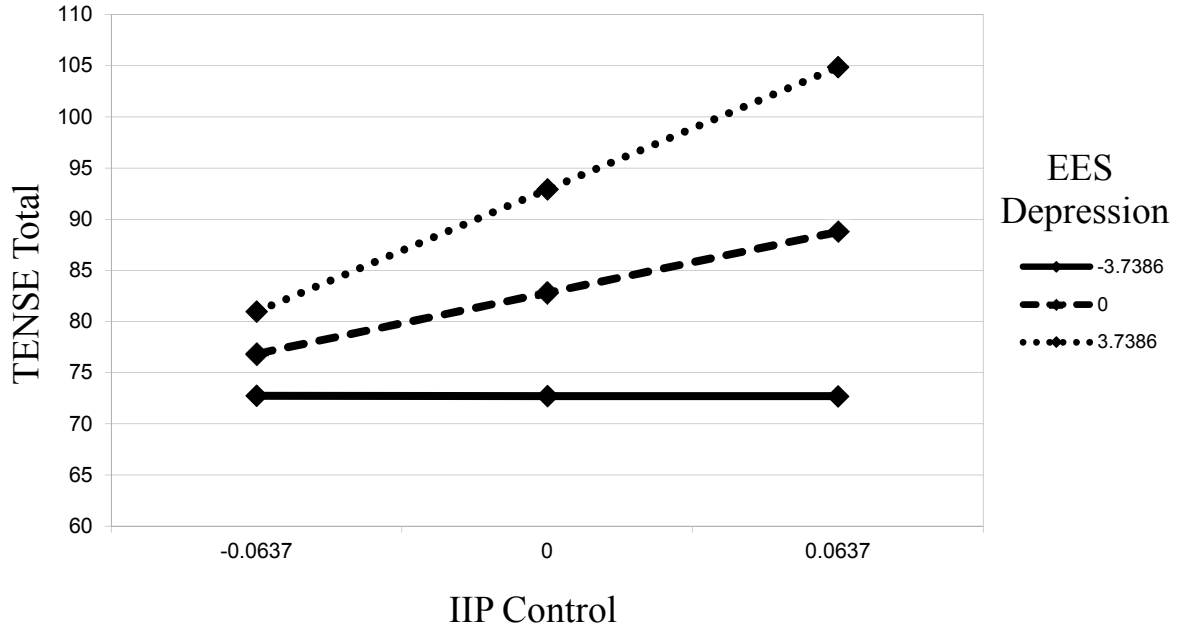
Interaction, p = .0204

Figure 5. Time 1 Circumplex Scales of Interpersonal Values Affiliation, Time 1 Shape Concern, and Time 2 Negative Social Exchanges Total



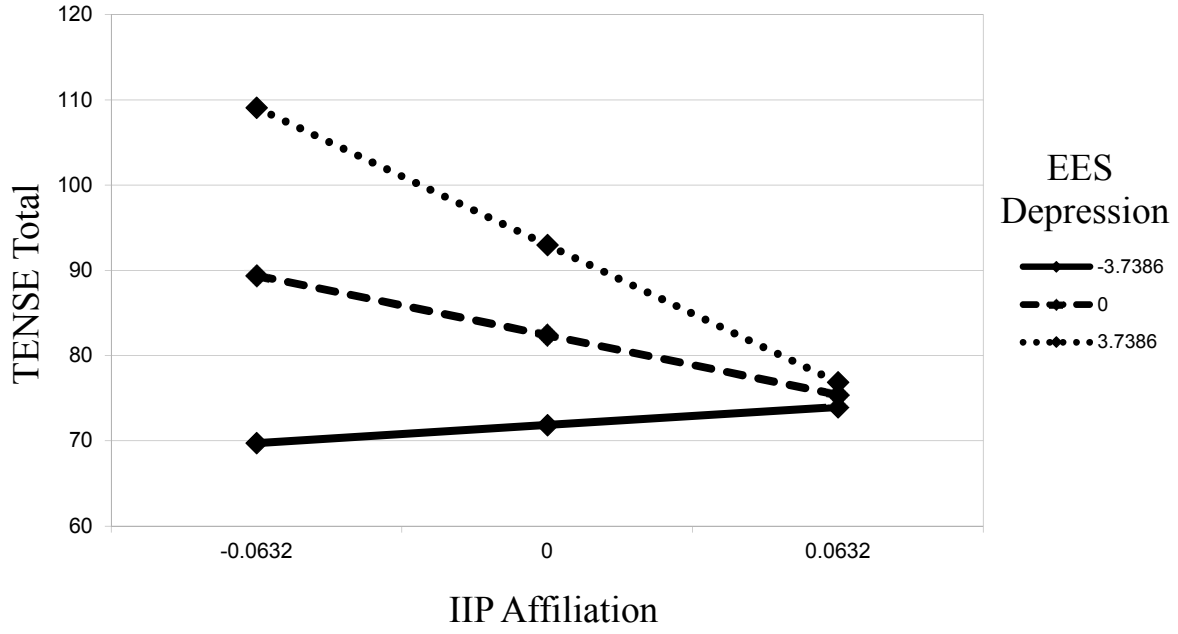
Interaction, p = .1636

Figure 6. Time 1 Inventory of Interpersonal Problems Control, Time 1 Depression, and Time 2 Negative Social Exchanges Total



Interaction, p = .0828

Figure 7. Time 1 Inventory of Interpersonal Problems Affiliation, Time 1 Depression, and Time 2 Negative Social Exchanges Total



Interaction, p = .0796

APPENDIX A

EATING DISORDER EXAMINATION- QUESTIONNAIRE

Name: _____ **Today's date:** _____

Your date of birth: _____

Appendix in Fairburn C.G. **Cognitive Behavior Therapy and Eating Disorders** Guilford Press, New York, 2008

- APPENDIX II -

EATING DISORDER EXAMINATION QUIESTIONNAIRE (EDE-Q 6.0)

INTRODUCTION

The EDE-Q (Fairburn and Beglin, 1994) is a self-report version of the Eating Disorder Examination (EDE), the well-established investigator-based interview (Fairburn and Cooper, 1993). It is scored in the same way as the EDE. Its performance has been compared with that of the EDE and other instruments in numerous studies (see Peterson & Mitchell, 2005): in some respects it performs well, but in others it does not. Community norms are available for adults (Mond et al, 2006) and adolescents (Carter, Stewart and Fairburn, 2001). *See below for recommended reading, and studies of this questionnaire.*

EATING QUESTIONNAIRE

Instructions: The following questions are concerned with the past four weeks (28 days) only. Please read each question carefully. Please answer all the questions. Thank you

Questions 1 - 12: Please indicate 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 <u>trying</u> 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 <u>tried</u> 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 <u>tried</u> 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

<u>Questions 1 - 12</u>: *Please indicate 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**
5.	Have you had a definite desire to have an <u>empty</u> 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 <u>totally</u> <u>flat</u> stomach?	0	1	2	3	4	5	6
7.	Has thinking about <u>food, eating, or calories</u> 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 <u>shape or weight</u> 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 on the right. **Remember that the questions refer to the past four weeks (28 days) only**.

Over the past four weeks (28 days)…

How many times have you eaten what other people would regard as an unusually large amount of food (given the circumstances)?

Referring to #13, on how many of those occasions did you have a sense of having lost control over your eating (at the time that you were eating)?

Referring to #13 and #14, on how many **DAYS** 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)?

How many times have you made yourself sick (vomit) as a means of controlling your shape or weight?

How many times have you taken laxatives as a means of controlling your shape or weight?

How many times 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 indicate the appropriate number on the right. **Please note that for these questions the term "binge eating" means** 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. Remember that the questions only refer to the past four weeks (28 days) only.

On how many of the past 28 days…

19. On how many days have you eaten in secret (i.e., furtively)? ...Do not count episodes of binge eating.	No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day
	0	1	2	3	4	5	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	A few of the times	Less than half the times	Half of the times	More than half of the times	Most of the times	Every time
	0	1	2	3	4	5	6
21. How concerned have you been about other people seeing you eat? …Do not count episodes of binge eating.	Not at all		Slightly	Moderately		Markedly	
	0	1	2	3	4	5	6

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

Over 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, wjhile 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?

31a. If so, how many?

31b. Have you been taking the "pill"?

APPENDIX B

BODY SHAPE QUESTIONNAIRE-34

We should like to know how you have been feeling about your appearance over the **PAST FOUR WEEKS**. Please read each question and circle the appropriate number to the right. Please answer <u>all</u> the questions.

OVER THE PAST <u>FOUR WEEKS:</u>

	Never	Rarely	Sometimes	Often	Very often	Always
1. Has feeling bored made you brood about your shape?.....	1	2	3	4	5	6
2. Have you been so worried about your shape that you have been feeling you ought to diet?.....	1	2	3	4	5	6
3. Have you thought that your thighs, hips or bottom are too large for the rest of you?.....	1	2	3	4	5	6
4. Have you been afraid that you might become fat (or fatter)?.....	1	2	3	4	5	6
5. Have you worried about your flesh being not firm enough?.....	1	2	3	4	5	6
6. Has feeling full (e.g. after eating a large meal) made you feel fat?.....	1	2	3	4	5	6
7. Have you felt so bad about your shape that you have cried?.....	1	2	3	4	5	6
8. Have you avoided running because your flesh might wobble?.....	1	2	3	4	5	6
9. Has being with thin women made you feel self-conscious about your shape?.....	1	2	3	4	5	6
10. Have you worried about your thighs spreading out when sitting down?	1	2	3	4	5	6

11. Has eating even a small amount of food made you feel fat?.....	1	2	3	4	5	6
12. Have you noticed the shape of other women and felt that your own shape compared unfavourably?.....	1	2	3	4	5	6
13. Has thinking about your shape interfered with your ability to concentrate (e.g. while watching television, reading, listening to conversations)?..... .	1	2	3	4	5	6
14. Has being naked, such as when taking a bath, made you feel fat?.....	1	2	3	4	5	6
15. Have you avoided wearing clothes which make you particularly aware of the shape of your body?.....	1	2	3	4	5	6
16. Have you imagined cutting off fleshy areas of your body?.....	1	2	3	4	5	6
17. Has eating sweets, cakes, or other high calorie food made you feel fat?	1	2	3	4	5	6
18. Have you not gone out to social occasions (e.g. parties) because you have felt bad about your shape?.....	1	2	3	4	5	6
19. Have you felt excessively large and rounded?.....	1	2	3	4	5	6
20. Have you felt ashamed of your body?.....	1	2	3	4	5	6
21. Has worry about your shape made you diet?.....	1	2	3	4	5	6
22. Have you felt happiest about your shape when your stomach has been empty (e.g. in the morning)?.....	1	2	3	4	5	6
23. Have you thought that you are in the shape you are because you lack self-control?.....	1	2	3	4	5	6
24. Have you worried about other people seeing rolls of fat around your waist or stomach?.....	1	2	3	4	5	6

25. Have you felt that it is not fair that other women are thinner than you?.	1	2	3	4	5	6
26. Have you vomited in order to feel thinner?.....	1	2	3	4	5	6
27. When in company have your worried about taking up too much room (e.g. sitting on a sofa, or a bus seat)?.....	1	2	3	4	5	6
28. Have you worried about your flesh being dimply?.....	1	2	3	4	5	6
29. Has seeing your reflection (e.g. in a mirror or shop window) made you feel bad about your shape?.....	1	2	3	4	5	6
30. Have you pinched areas of your body to see how much fat there is?.....	1	2	3	4	5	6
31. Have you avoided situations where people could see your body (e.g. communal changing rooms or swimming baths)?.....	1	2	3	4	5	6
32. Have you taken laxatives in order to feel thinner?.....	1	2	3	4	5	6
33. Have you been particularly self-conscious about your shape when in the company of other people?.....	1	2	3	4	5	6
34. Has worry about your shape made you feel you ought to exercise?.....	1	2	3	4	5	6

APPENDIX C

EMOTIONAL EATING SCALE

We all respond to different emotions in different ways. Some types of feelings lead people to experience an urge to eat. Please indicate the extent to which the following feelings lead you to feel an urge to eat by checking the appropriate box.

	No Desire to Eat	A Small Desire to Eat	A Moderate Desire to Eat	A Strong Urge to Eat	An Overwhelming Urge to Eat
Resentful					
Discouraged					
Shaky					
Worn out					
Inadequate					
Excited					
Rebellious					
Blue					
Jittery					
Sad					
Uneasy					
Irritated					
Jealous					
Worried					
Frustrated					
Lonely					
Furious					
On Edge					
Confused					
Nervous					
Angry					
Guilty					

Bored					
Helpless					
Upset					

Arnow, B., Kenardy, J. and Agras, W. S. (1995), The emotional eating scale: The development of a measure to assess coping with negative affect by eating. *Int. J. Eat. Disord., 18*: 79–90.

APPENDIX D

INTERNATIONAL PERSONALITY ITEM POOL- INTERPERSONAL CIRCUMPLEX

On this page, there are phrases describing people's behaviors. Please use the rating scale below to describe how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same gender as you are, and roughly your same age. Please read each statement carefully, and then fill in the number that corresponds to your response using the scale below.

		1 Very inaccurate	**2 Moderately inaccurate**	**3 Neither inaccurate nor accurate**	**4 Moderately accurate**	**5 Very accurate**
1.	Am quiet around strangers	O	O	O	O	O
2.	Speak softly	O	O	O	O	O
3.	Tolerate a lot from others	O	O	O	O	O
4.	Am interested in people	O	O	O	O	O
5.	Feel comfortable around people	O	O	O	O	O
6.	Demand to be the center of interest	O	O	O	O	O
7.	Cut others to pieces	O	O	O	O	O
8.	Believe people should fend for themselves	O	O	O	O	O
9.	Am a very private person	O	O	O	O	O
10.	Let others finish what they are saying	O	O	O	O	O
11.	Take things as they come	O	O	O	O	O

12.	Reassure others	O	O	O	O	O
13.	Start conversations	O	O	O	O	O
14.	Do most of the talking	O	O	O	O	O
15.	Contradict others	O	O	O	O	O
16.	Don't fall for sob-stories	O	O	O	O	O
17.	Don't talk a lot	O	O	O	O	O
18.	Seldom toot my own horn	O	O	O	O	O
19.	Think of others first	O	O	O	O	O
20.	Inquire about others' well-being	O	O	O	O	O
21.	Talk to a lot of different people at parties	O	O	O	O	O
22.	Speak loudly	O	O	O	O	O
23.	Snap at people	O	O	O	O	O
24.	Don't put a lot of thought into things	O	O	O	O	O
25.	Have little to say	O	O	O	O	O
26.	Dislike being the center of attention	O	O	O	O	O
27.	Seldom stretch the truth	O	O	O	O	O
28.	Get along well with others	O	O	O	O	O
29.	Love large parties	O	O	O	O	O
30.	Demand attention	O	O	O	O	O
31.	Have a sharp tongue	O	O	O	O	O
32.	Am not interested in other people's problems	O	O	O	O	O

Markey, P. M., & Markey, C. N. (2009). A brief assessment of the interpersonal circumplex: The IPIP-IPC. ***Assessment, 16*****, 352-361.**

APPENDIX E

INVENTORY OF INTERPERSONAL PROBLEMS- SHORT CIRCUMPLEX

Please consider each problem and rate how distressing that problem has been on a scale from 0 (not at all) to 4 (extremely).

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

1. It is hard for me to understand another person's point of view.	0	1	2	3	4
2. I am too easily persuaded by others.	0	1	2	3	4
3. It is hard for me to introduce myself to new people.	0	1	2	3	4
4. I open up to people too much.	0	1	2	3	4
5. I keep other people at a distance too much.	0	1	2	3	4
6. It is hard for me to be supportive of another person's goals in life.	0	1	2	3	4
7. I want to get revenge against people too much.	0	1	2	3	4
8. It is hard for me to be firm when I need to be.	0	1	2	3	4
9. I try to please other people too much.	0	1	2	3	4
10. I am too aggressive toward other people.	0	1	2	3	4
11. I put other people's needs before my own too much.	0	1	2	3	4
12. It is hard for me to confront people with problems that come up.	0	1	2	3	4
13. It is hard for me to ask other people to get together socially with me.	0	1	2	3	4
14. It is hard for me to feel good about another person's happiness.	0	1	2	3	4
15. It is hard for me to let other people know when I am angry.	0	1	2	3	4
16. I want to be noticed too much.	0	1	2	3	4
17. I am too suspicious of other people.	0	1	2	3	4
18. It is hard for me to attend to my own welfare when somebody else is needy.	0	1	2	3	4
19. I argue with other people too much.	0	1	2	3	4
20. It is hard for me to join in groups.	0	1	2	3	4
21. It is hard for me to show affection to people.	0	1	2	3	4
22. I tell personal things to other people too much	0	1	2	3	4
23. I am affected by another person's misery too					

much.	0	1	2	3	4
24. It is hard for me to experience a feeling of love for another person.	0	1	2	3	4
25. I let other people take advantage of me too much.	0	1	2	3	4
26. It is hard for me to feel close to other people.	0	1	2	3	4
27. I try to control other people to much.	0	1	2	3	4
28. It is hard for me to tell a person to stop bothering me.	0	1	2	3	4
29. It is hard for me to be assertive without worrying about hurting the other person's feelings.	0	1	2	3	4
30. It is hard for me to keep things private from other people.	0	1	2	3	4
31. It is hard for me to socialize with other people.	0	1	2	3	4
32. It is hard for me to be assertive with another person.	0	1	2	3	4

Hopwood, C. J., Pincus, A. L., DeMoor, R. M., & Koonce, E. A. (2008). Psychometric characteristics of the inventory of interpersonal problems-short circumplex (IIP-SC) with college students. *Journal of Personality Assessment*, *90*(6), 615-618.

APPENDIX F

CIRCUMPLEX SCALES OF INTERPERSONAL VALUES

For each item below, answer the following question: "When I am in interpersonal situations (such as with close friends, with strangers, at work, at social gatherings, and so on), in general how important is it to me that I act or appear or am treated this way?" Use the following rating scale:

0	1	2	3	4
not important to me	mildly important to me	moderately important to me	Very important to me	extremely important to me

Sample Item:

When I am with him/her/them, it is... 0 1 2 3 4 ...that I be well dressed

If when you are with others you generally consider it extremely important that you be well-dressed, you would circle 4. If it is not important that you be well dressed, you would circle 0. If you consider it moderately important that you be well-dressed, you would circle 2.

1. When I am with him/her/them, it is... 0 1 2 3 4 ...that I appear confident

2. When I am with him/her/them, it is... 0 1 2 3 4 ...that I not reveal my positive feelings for them

3. When I am with him/her/them, it is... 0 1 2 3 4 ...that I feel connected to them

4. When I am with him/her/them, it is... 0 1 2 3 4 ...that I appear forceful

5. When I am with him/her/them, it is... 0 1 2 3 4 ...that I conform to their expectations

6. When I am with him/her/them, it is... 0 1 2 3 4 ...that I am unique

7. When I am with him/her/them, it is... 0 1 2 3 4 ...that I keep my guard up

8. When I am with him/her/them, it is... 0 1 2 3 4 ...that I put their needs before mine

9. When I am with him/her/them, it is... 0 1 2 3 4 ...that they acknowledge when I am right

10. When I am with him/her/them, it is... 0 1 2 3 4 ...that I not make a social blunder

11. When I am with him/her/them, it is... 0 1 2 3 4 ...that they show interest in what I have to say

12. When I am with him/her/them, it is... 0 1 2 3 4 ...that I attack back when I am attacked

13. When I am with him/her/them, it is... 0 1 2 3 4 ...that I not get into an argument

14. When I am with him/her/them, it is... 0 1 2 3 4 ...that they not deceive me

15. When I am with him/her/them, it is... 0 1 2 3 4 ...that they not know what I am thinking or feeling

16. When I am with him/her/them, it is... 0 1 2 3 4 ...that they not see me as getting in their way

17. When I am with him/her/them, it is... 0 1 2 3 4 ...that I get the chance to voice my views

18. When I am with him/her/them, it is... 0 1 2 3 4 ...that I appear aloof

19. When I am with him/her/them, it is... 0 1 2 3 4 ...that they support me when I am having problems

20. When I am with him/her/them, it is... 0 1 2 3 4 ...that I keep the upper hand

21. When I am with him/her/them, it is... 0 1 2 3 4 ...that I do what they want me to do

22. When I am with him/her/them, it is... 0 1 2 3 4 ...that I express myself openly

23. When I am with him/her/them, it is... 0 1 2 3 4 ...that I not show I care about them

24. When I am with him/her/them, it is... 0 1 2 3 4 ...that I get along with them

25. When I am with him/her/them, it is... 0 1 2 3 4 ...that they respect my privacy

26. When I am with him/her/them, it is... 0 1 2 3 4 ...that I not make mistakes in front of them

27. When I am with him/her/them, it is... 0 1 2 3 4 ...that they understand me

28. When I am with him/her/them, it is... 0 1 2 3 4 ...that I put my needs first

29. When I am with him/her/them, it is... 0 1 2 3 4 ...that I live up to their expectations

30. When I am with him/her/them, it is... 0 1 2 3 4 ...that they respect what I have to say

31. When I am with him/her/them, it is... 0 1 2 3 4 ...that they keep their distance from me

32. When I am with him/her/them, it is... 0 1 2 3 4 ...that they not reject me

33. When I am with him/her/them, it is... 0 1 2 3 4 ...that I not back down when disagreements arise

34. When I am with him/her/them, it is... 0 1 2 3 4 ...that I not say something stupid

35. When I am with him/her/them, it is... 0 1 2 3 4 ...that they come to me with their problems

36. When I am with him/her/them, it is... 0 1 2 3 4 ...that I am the one in charge

37. When I am with him/her/them, it is... 0 1 2 3 4 ...that I not make them angry

38. When I am with him/her/them, it is... 0 1 2 3 4 ...that I have an impact on them

39. When I am with him/her/them, it is... 0 1 2 3 4 ...that I do better than them

40. When I am with him/her/them, it is... 0 1 2 3 4 ...that I make them feel happy

41. When I am with him/her/them, it is... 0 1 2 3 4 ...that they not tell me what to do

42. When I am with him/her/them, it is... 0 1 2 3 4 ...that I not expose myself to the possibility of rejection

43. When I am with him/her/them, it is... 0 1 2 3 4 ...that they are considerate

44. When I am with him/her/them, it is... 0 1 2 3 4 ...that I avenge insults and injustices against me

45. When I am with him/her/them, it is... 0 1 2 3 4 ...that I go along with what they want to do

46. When I am with him/her/them, it is... 0 1 2 3 4 ...that they show me respect

47. When I am with him/her/them, it is... 0 1 2 3 4 ...that they see me as cool and unemotional

48. When I am with him/her/them, it is... 0 1 2 3 4 ...that they approve of me

49. When I am with him/her/them, it is... 0 1 2 3 4 ...that I am obeyed when I am in authority

50. When I am with him/her/them, it is... 0 1 2 3 4 ...that I not expose myself to ridicule

51. When I am with him/her/them, it is... 0 1 2 3 4 ...that they stay with me when things aren't going well

52. When I am with him/her/them, it is... 0 1 2 3 4 ...that I win if there is an argument

53. When I am with him/her/them, it is... 0 1 2 3 4 ...that I not embarrass myself

54. When I am with him/her/them, it is... 0 1 2 3 4 ...that they see me as responsible

55. When I am with him/her/them, it is... 0 1 2 3 4 ...that I appear detached

56. When I am with him/her/them, it is... 0 1 2 3 4 ...that they think I am a nice person

57. When I am with him/her/them, it is... 0 1 2 3 4 ...that they admit it when they are wrong

58. When I am with him/her/them, it is... 0 1 2 3 4 ...that I keep my thoughts or feelings to myself

59. When I am with him/her/them, it is... 0 1 2 3 4 ...that they show concern for how I am feeling

60. When I am with him/her/them, it is... 0 1 2 3 4 ...that they mind their own business

61. When I am with him/her/them, it is... 0 1 2 3 4 ...that they not get angry with me

62. When I am with him/her/them, it is... 0 1 2 3 4 ...that they listen to what I have to say

63. When I am with him/her/them, it is... 0 1 2 3 4 ...that I not reveal what I am really like

64. When I am with him/her/them, it is... 0 1 2 3 4 ...that they not get their feelings hurt

Locke, K.D. (2000). Circumplex scales of interpersonal values: Reliability, validity, and applicability to interpersonal problems and personality disorders. *Journal of Personality Assessment, 75*, 249-267.

APPENDIX G

INTERPERSONAL SUPPORT EVALUATION LIST

This scale is made up of a list of statements each of which may or may not be true about you. For each statement check "definitely true" if you are sure it is true about you and "probably true" if you think it is true but are not absolutely certain. Similarly, you should check "definitely false" if you are sure the statement is false and "probably false" is you think it is false but are not absolutely certain.

1. If I wanted to go on a trip for a day (e.g., to the mountains, beach, or country), I would have a hard time finding someone to go with me.

____definitely true ____probably true ____probably false ____definitely false

2. I feel that there is no one I can share my most private worries and fears with.

____definitely true ____probably true ____probably false ____definitely false

3. If I were sick, I could easily find someone to help me with my daily chores.

____definitely true ____probably true ____probably false ____definitely false

4. There is someone I can turn to for advice about handling problems with my family.

____definitely true ____probably true ____probably false ____definitely false

5. If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me.

____definitely true ____probably true ____probably false ____definitely false

6. When I need suggestions on how to deal with a personal problem, I know someone I can turn to.

____definitely true ____probably true ____probably false ____definitely false

7. I don't often get invited to do things with others.

____definitely true ____probably true ____probably false ____definitely false

8. If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my house or apartment (the plants, pets, garden, etc.).

____definitely true ____probably true ____probably false ____definitely false

9. If I wanted to have lunch with someone, I could easily find someone to join me.

____definitely true ____probably true ____probably false ____definitely false

10. If I was stranded 10 miles from home, there is someone I could call who would come and get me.

____definitely true ____probably true ____probably false ____definitely false

11. If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.

____definitely true ____probably true ____probably false ____definitely false

12. If I needed some help in moving to a new house or apartment, I would have a hard time finding someone to help me.

____definitely true ____probably true ____probably false ____definitely false

Cohen, S., & Hoberman, H. (1983). Positive events and social supports as buffers of life change stress. *Journal of Applied Social Psychology, 13*, 99-125.

APPENDIX H

UCLA LONELINESS SCALE

INSTRUCTIONS: Indicate how often each of the statements below is descriptive of you.

C indicates “I often feel this way”

S indicates “I sometimes feel this way”

R indicates “I rarely feel this way”

N indicates “I never feel this way”

1. I am unhappy doing so many things alone	O S R N
2. I have nobody to talk to	O S R N
3. I cannot tolerate being so alone	O S R N
4. I lack companionship	O S R N
5. I feel as if nobody really understands me	O S R N
6. I find myself waiting for people to call or write	O S R N
7. There is no one I can turn to	O S R N
8. I am no longer close to anyone	O S R N
9. My interests and ideas are not shared by those around me	O S R N
10. I feel left out	O S R N
11. I feel completely alone	O S R N
12. I am unable to reach out and communicate with those around me	O S R N
13. My social relationships are superficial	O S R N
14. I feel starved for company	O S R N
15. No one really knows me well	O S R N
16. I feel isolated from others	O S R N
17. I am unhappy being so withdrawn	O S R N

18. It is difficult for me to make friends O S R N

19. I feel shut out and excluded by others O S R N

20. People are around me but not with me O S R N

Russell, D , Peplau, L. A.. & Ferguson, M. L. (1978). Developing a measure of loneliness. *Journal of Personality Assessment, 42,* 290-294.

APPENDIX I

TEST OF NEGATIVE SOCIAL EXCHANGE

During the last month, indicate the frequency with which someone . . .

Lost his or her temper with me.
1 2 3 4 5 6 7 8 9
Not at all Frequently

Was rude to me.
1 2 3 4 5 6 7 8 9
Not at all Frequently

Was insensitive to me.
1 2 3 4 5 6 7 8 9
Not at all Frequently

Wouldn't let me finish talking.
1 2 3 4 5 6 7 8 9
Not at all Frequently

Nagged me.
1 2 3 4 5 6 7 8 9
Not at all Frequently

Was cold towards me.
1 2 3 4 5 6 7 8 9
Not at all Frequently

Took my feelings lightly.
1 2 3 4 5 6 7 8 9
Not at all Frequently

Didn't pay attention to me.
1 2 3 4 5 6 7 8 9
Not at all Frequently

Was too demanding of my attention.
1 2 3 4 5 6 7 8 9
Not at all Frequently

Put me down.

1 2 3 4 5 6 7 8 9

Not at all Frequently

Argued with me.

1 2 3 4 5 6 7 8 9

Not at all Frequently

Ignored my wishes or needs.

1 2 3 4 5 6 7 8 9

Not at all Frequently

Seemed bored with me.

1 2 3 4 5 6 7 8 9

Not at all Frequently

Was inconsiderate of me.

1 2 3 4 5 6 7 8 9

Not at all Frequently

Reminded me of my past mistakes.

1 2 3 4 5 6 7 8 9

Not at all Frequently

Tried to get me to do things I didn't want to.

1 2 3 4 5 6 7 8 9

Not at all Frequently

Got angry with me.

1 2 3 4 5 6 7 8 9

Not at all Frequently

Tried to manipulate or influence me for his/her own benefit.

1 2 3 4 5 6 7 8 9

Not at all Frequently

Yelled at me.

1 2 3 4 5 6 7 8 9

Not at all Frequently