Pathways to obesity in women: the role of coping and emotional eating

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PATHWAYS TO OBESITY IN WOMEN:
THE ROLE OF COPING AND EMOTIONAL EATING

by
Veronica N. Stotts

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Abstract

Obesity is a major health crisis in the United States, with approximately two-thirds of the population qualifying as overweight and, of those, almost one half qualifying as obese (CDC, 2007). While there are a myriad of causes of obesity, a great deal of evidence shows that many individuals, and particularly women, eat as a coping response to stress (e.g., Greeno & Wing, 1994). Therefore, one’s ability to cope, or the process by which individuals deal with situations that involve stress or threat, may be a factor that contributes to increased body mass index, or BMI, a common measure of obesity. Emotional eating was investigated as a potential mediating variable which could drive this relationship between coping and obesity.

Three specific coping strategies were explored in this study: problem-focused coping, avoidant coping, and emotional approach coping. It was hypothesized that all three coping strategies would be associated with obesity and that this relationship would be mediated by a continuous measure of emotional eating. Select subscales from the dispositional version of the COPE (Carver, Scheier, & Weintraub, 1989) were used to measure problem-focused and avoidant coping; two subscales designed by Stanton, Kirk, Cameron, and Danoff-Burg (2000) were added to measure emotional approach. A total scale score on the Emotional Eating Scale (EES; Arnow, Kenardy, & Agras, 1995) was used to measure emotional eating. The outcome variable, BMI, was calculated from reported height and weight and dichotomized into two categories: normal weight (BMI of 18.5-24.9) and overweight/obese (BMI of 25+).

The population of interest was adult, non-eating disordered women; women who were pregnant, underweight, or have had weight loss surgery were excluded. Participants
were recruited to take the online survey through listservs and through social networking sites, Facebook and craigslist. Three meditational analyses were done using both Baron and Kenny’s (1986) steps for mediation and bootstrapping techniques (Preacher and Hayes, 2004). Results showed significant findings that emotional eating partially mediates the relationships between all three coping strategies and BMI. The findings suggest that both coping and emotional eating are key variables in clinical intervention for both prevention and treatment of obesity.
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CHAPTER I

Introduction

It is no secret that obesity is a major health crisis in the United States, with approximately two-thirds of the population qualifying as overweight and, of those, almost one half qualifying as obese (CDC, 2007). In fact, since the mid-seventies the number of individuals classified as overweight or obese has increased dramatically for both adults and children. Data from National Health and Nutrition Examination Surveys show that among adults age 20-74, obesity rates have increased from 15% (in 1976-1980 survey) to 32.9% (in 2003-2004 survey) (CDC, 2007). Body mass index (BMI), a measurement which compares a person’s height and weight, is the most commonly used diagnostic tool to identify obesity problems within a population. The normal range of BMI is considered to be between 18.5 and 24.9. However, over time the country’s population as a whole has shown a steady increase in average BMI. The most rapid growth has been in the number of individuals who are significantly overweight, including over 23 million Americans with body mass indices of 35 or higher and over 8 million considered morbidly obese, with a BMI of 40 or higher (Flegal, Carroll, Ogden, & Johnson 2002; Sturm, 2003). Although highly unlikely, if current trends continue, 100% of Americans would be obese by the year 2230 (Foreyt & Goodrick, 1995).

Being overweight or obese comes with a number of consequences, including increased risk for several diseases and health conditions, such as hypertension, osteoarthritis, type 2 diabetes, coronary heart disease, stroke, gallbladder disease, sleep apnea, respiratory problems, and some cancers (CDC, 2008). In fact, 300,000 people in the U.S. alone die each year of obesity-related illnesses (Allison, Fontaine, Manson,
Stevens, VanItallie, 1999) and this condition affects more people than smoking, heavy drinking, and poverty (Davis, Levitan, Muglia, Bewell, & Kennedy, 2004). As a result of these innumerable health consequences, there is a considerable financial burden as well. According to Finkelstein, Fiebelkorn, and Wang (2003), the medical expenses of those who are overweight (BMI 25–29.9) and obese (BMI 30 or greater) may have reached as high as $92.6 billion in 2002, with about half of these costs being paid for by federal programs such as Medicaid and Medicare.

In addition to physical health consequences, mental health is also affected by being overweight or obese, especially for women. Obesity is associated with increased depression, impairment in social functioning, and lower quality of life for women, while men appear to be less affected (Mond, et al., 2007; White, O’Neil, Kolotkin, & Byrne, 2004).

What is perhaps most alarming is that obesity is now becoming a global problem that stretches beyond the United States. According to the World Health Organization (2008), what was once a problem only in high income countries is now drastically on the rise, particularly in urban areas of low and middle-income countries. In 2005, the WHO projected that approximately 1.6 billion adults (age 15+) worldwide were overweight and at least 400 million were obese (WHO, 2008).

Experts have identified several principal causes of obesity including genetics, physical inactivity, depression, and weight cycling (Bray & Delaney, 1992). Although biological and sociocultural factors clearly play a role, the prevalence of weight cycling (the repetitive loss and regain of weight) proves that individuals are able to lose weight but are unable to keep it off for long periods of time. Dieting is now a multi-billion
dollar industry in America, but Brownell and Rodin (1994) estimated that diet programs fail 90-95% of the time. This suggests that programs aimed at reducing weight are not tapping into the root causes that lead to obesity, one of them being overeating.

The need for further research on the pathways to obesity is at a critical point. By identifying factors that contribute to overeating, it could be possible to slow this rising epidemic. A great deal of evidence shows that individuals, and particularly women, eat in response to stress (e.g., Greeno & Wing, 1994). Therefore, one’s ability to cope, or the process by which individuals deal with situations that involve stress or threat, may be a factor that contributes to increased body mass index. Coping and emotional eating behaviors could provide one avenue to explore in the now global effort to prevent and treat obesity. Because women are especially vulnerable to emotionally eating, and because the mental health of women may be particularly impacted by obesity, this population was the focus of the study.

The purpose of the following study is to elucidate the relationship between coping and obesity and explore whether emotional eating may mediate this relationship. To demonstrate this, the relationships between specific coping strategies and obesity will be explored by looking at the role emotional eating may play in mediating these relationships. It is hypothesized that avoidant coping will have a positive relationship with obesity while problem-focused and emotional approach coping strategies will have negative relationships with obesity. Further, it is theorized that individuals relying on avoidant coping strategies may be more likely to engage in emotional eating in response to negative emotional states, in lieu of more adaptive, proactive strategies.
Coping

Factors such as managing emotions, healthy cognitive processes, control over one’s autonomic arousal, and the ability to regulate behavior, as well as the steps one takes to reduce or alter the sources of stress, all fall under the construct of coping (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001). Although several models of coping exist (e.g., Eisenberg, Fabes, & Guthrie 1997; Skinner & Wellborn, 1994), the most widely cited definition of coping is that of Lazarus and Folkman (1984). They define coping as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p. 141). Lazarus further defined coping as a goal-directed process in which an individual’s thoughts and behaviors are directed at resolving the source of stress and managing one’s emotional reactions to stress (1993). However, it is important to note that coping strategies are not always adaptive and healthy reactions to stressors. Coping includes all of the behaviors and thoughts implemented by an individual in response to stress, regardless of their efficacy in reducing it (Compas et al., 2001).

This definition of coping can be further broken down into two sub-types, emotion-focused coping and problem-focused coping. According to Folkman and Lazarus (1985), these subtypes cover the two major functions of coping, namely “the regulation of distressing emotions (emotion-focused coping) and doing something to change for the better the problem causing the distress (problem-focused coping)” (p.152). Emotion-focused coping emphasizes regulating the emotional distress associated with the stressful situation. This could include strategies such as focusing on
positive aspects of the situation, mental or behavioral disengagement such as
daydreaming or self-preoccupation, and seeking emotional support from others.
Problem-focused coping involves efforts to alter the stressful situation itself, whether by
minimizing it or solving it. This could include strategies such as information seeking,
planning, and taking action.

Lazarus (1993) posited that both problem-focused and emotion-focused coping
can reduce psychological distress and that individuals use both forms of coping in most
stressful incidents. However, certain coping strategies within these broader definitions,
such as social support or problem solving, are more adaptive than others, such as
avoidance or denial. Although Lazarus believed that most individuals rely on both,
research indicates that individuals tend to consistently use one coping style across time
and stressful situations (Edwards & Endler, 1989; Edwards & Trimble, 1992; Endler &
Parker, 1990; Hewitt & Flett, 1996). Therefore, one may rely primarily on certain
coping strategies when under distress and may continue to do so throughout their
lifetime, regardless of effectiveness. Evidence shows this may result partly from the
way individuals are socialized as children (Dusek & Danko, 1994; Kliewer, Fearnow, &
Miller, 1996; McKernon et al., 2001).

How do we know if one coping style is healthier than another? Although the
original definitions of emotion-focused and problem-focused coping were considered
value-free, a number of studies have suggested that problem-focused coping is more
adaptive for one’s mental health. In fact, Coyne and Racioppo (2000) noted that the
positive association between emotion-focused coping and psychological distress is
“perhaps the most consistent finding in the coping literature” (p. 657). According to
Compas et al. (2001), it is frequently reported in the psychology literature that greater emotion-focused coping is related to poor adjustment while greater problem-focused coping is related to positive adjustment. This is consistent with a literature review by Endler and Parker (1994), which posits that a number of studies demonstrate that problem-focused coping is either unrelated or positively related to mental health, while emotion-focused coping has been linked to increased mental distress.

However, while the predominant view in the stress and coping literature is that emotion-focused coping processes are maladaptive, because the range of emotion-focused coping strategies is so broad and varied, the effectiveness depends on the specific emotion-focused coping strategy employed (Baker & Berenbaum, 2007). While much of the literature suggests emotion-focused coping leads to negative physical and mental health, there are many reasons to be dubious of this research. For one, as Stanton, Kirk, Cameron, & Danoff-Burg (2000) have pointed out, some emotion-focused coping strategies encourage avoidance while others encourage approach; when these strategies are combined to create one aggregate scale, these distinctions are lost and the category as a whole loses both theoretical and statistical meaning. In addition, a number of studies have shown that many of the items on commonly-used coping measures are confounded with distress, which may lead to biased measurement of strategies which may otherwise be adaptive, such as emotional expression and emotional processing (e.g., Austenfeld & Stanton, 2004; Stanton, Danoff-Burg, Cameron, & Ellis, 1994; Stanton, Kirk, Cameron, & Danoff-Burg, 2000).

In order to account for these recent developments, the current study will not aggregate emotion-focused coping as has been frequently done in the past but will
instead look at two distinct sub-categories within emotion-focused coping: avoidant coping and emotional approach coping. Avoidant coping will be defined as strategies such as seeking diversions, ignoring, worrying, keeping the problem inside, or distracting oneself from the problem. Emotional approach coping will be defined as actively processing and expressing one’s emotions. Consistently, it has been shown that specific coping strategies have a strong association with mental health. Comparatively, the direct link between coping and objective indicators of physical health, such as BMI, has been less established. However, one may hypothesize that coping strategies considered more adaptive for one’s emotional well-being may also be beneficial physically, and vice versa. As individuals tend to consistently use the same coping style when under distress, it is an important avenue to explore how these types of coping may relate to physical indicators of health, such as obesity.

Link Between Coping and Obesity

In order to explore the meditational effect of emotional eating, the association between coping and obesity must first be established. Both connections between coping and general health outcomes and connections between coping and eating disorders indicate there would be a strong link between coping and measures of obesity. A recent meta-analysis of 34 studies by Penley, Tomaka, and Wiebe (2002) found many consistent associations between individual coping strategies and health outcomes. The analysis showed that, specifically, problem-focused coping strategies were positively correlated with overall health outcomes (both physical and psychological), though situational variables (i.e., stressor type, controllability, and duration) sometimes moderated the relationships. The two avoidance strategies examined demonstrated
significant negative overall associations with health outcomes. Other studies have shown the link between coping and determinants of physical health, largely conducted with samples of HIV/AIDS patients (e.g., Billings, Folkman, Acree, & Moskowitz, 2000; Reed, Kemeny, Taylor, Wang, Visscher, 1994; Solano et al., 1993), but also showing associations between coping and cardiovascular outcomes (Vitaliano, Russo, Paulsen, & Bailey, 1995) and lower levels of cholesterol (Vitaliano, Russo, & Niaura, 1995). There have also been numerous individual studies where increased use of certain problem-focused coping strategies have been shown to predict better quality of life for individuals with various other health conditions, such as those recovering from coronary bypass surgery (Scheier et al., 1989), those in treatment for early stage breast cancer (Ransom, Jacobsen, Schmidt, & Andrykowski, 2005), mothers infected with HIV (Sharts-Hopko, Regan-Kubinski, Lincoln, & Heverly, 1996), and preadolescents with spina bifida (McKernon, et al., 2001).

Emotional approach coping has also been shown to be positively correlated with physical health outcomes. A study by Stanton et al. (2000) examining the use of various coping strategies, including emotional approach and avoidance-oriented coping in women with stage 1 or 2 breast cancer found that patients with increased emotional expression, one of the two components of emotional approach, had fewer medical appointments, enhanced physical health, and decreased distress in the three months following diagnosis. Conversely, the authors found that avoidant copers became more distressed and had less positive emotion over time. Emotional approach coping was also found to be related to better functioning in fibromyalgia patients, compared to avoidance coping (Van Middendorp et al., 2008).
Overall, research has shown that adaptive coping skills, defined as an emphasis on more proactive coping strategies (such as problem-focused coping and emotional approach coping) over avoidant coping strategies, tend to correlate with positive health status. However, the link between coping and health remains ripe for further exploration. Aldwin and Park (2004) implored researchers to “explore in greater depth the influence that coping processes, broadly defined, may have on physical health” (p. 278) in order to identify a number of pathways through which coping impacts overall health. Several gaps in the current state of research further illustrate the need to investigate the potential association between coping and indicators of physical health, such as BMI.

The link between coping and eating disorders, a similar construct to obesity in many ways, has also been shown to be consistently strong. Inadequate coping has long been hypothesized to play an important role in the etiology of disordered eating (Ball & Lee, 2000). Although one may expect women to develop eating disorders as a result of extreme stress or negative events in their lives, this is actually not the case. Studies have shown that life events and stresses reported by those with eating disorders appear to fall within the range of normal experiences for women of the same age range. For example, eating disordered women have a similar frequency of lifestyle changes, separation from a significant other, and long term illness of a significant person in their life compared to women without eating disorders (Cattanach & Rodin, 1988; Gomez & Dally, 1980). These findings suggest that it may not be the stress itself that is leading to eating disorders but the inability to cope effectively with the stressors (Ball & Lee, 2000). To further support this, a number of studies have found that women with eating disorders
cope differently with problems than do women without eating disorders (e.g., Soukup, Beiler, & Terrell, 1990; Troop, Holbrey, & Treasure, 1998). Overall, women with eating disorders appear to cope with stress in more maladaptive ways, including avoidance of problems and greater use of distraction coping strategies, than women without eating disorders (Ball & Lee, 2002; Koo-Loeb, Costello, Light, & Girdler, 2000; Koff & Sangari, 1997). A recent dissertation study by Arthur (2008) found that, for female athletes recovering from eating disorders, greater recovery was related to greater use of problem-focused and emotional approach coping and less use of avoidant-style coping providing further evidence that avoidant coping tends to be positively related to disordered eating.

It is possible that this association between avoidant coping and eating disorders may also be true for overweight and obese women who could be considered on the opposite end of the disordered eating spectrum. Though there are clearly distinctions between individuals who are considered overweight or obese and those who have a classified eating disorder, there is also some overlap between the two populations. It has been estimated that between 15-50% of participants in weight-control programs, the majority who are overweight or obese and primarily women, meet the criteria for binge eating disorder (BED), an eating disorder not otherwise specified (EDNOS), according to the 4th edition (revised) of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; American Psychiatric Association, 2000). It has also been shown that there are similarities among the personalities of women seeking treatment for obesity, bulimia, and alcoholism when compared to the general population (Palme & Palme, 1999). Women in all three groups tended to have higher scores on measures of anxiety,
muscular tension, psychastenia, and suspiciousness and lower scores on socialization. According to this study, obese women had a similar personality profile compared to bulimic women, though differed less drastically from the control sample taken from the general population.

Therefore, though few studies have directly explored the connection between specific coping strategies and obesity, related studies have shown that problem-focused and emotional approach coping are positively related and avoidant coping inversely related to good physical health. In addition, eating disorder studies, which also look closely at eating behaviors, have shown coping to be a key factor in both treatment and prevention. The fact that there is some overlap between eating disordered and obese populations, as well as similarities in personality traits, suggest that coping may also be a key factor in the etiology of obesity.

Overall, evidence suggests that women who rely more on certain coping strategies when facing stressful events have better physical health outcomes and less eating disorder symptomatology than those who rely more on other coping strategies. Based on this evidence, it can be hypothesized that women who are overweight or obese are less likely to rely on more proactive coping strategies during times of stress and more likely to rely on avoidant coping strategies. If it is true that overweight and obese women cope with stress differently than those who are considered normal weight, these women must then be engaging in specific coping behaviors that lead to their increased BMI. Emotional eating may be one such coping behavior which could underly the connection between coping and BMI.
Emotional Eating

There is a great deal of evidence that one way individuals respond to stress is to engage in eating behaviors, and women in particular are vulnerable to this phenomenon (Greeno & Wing, 1994; Solomon, 2001). This act is referred to as emotional eating, generally defined as overeating or binge eating as a result of negative emotional states, such as anxiety, depression, fear, or anger (Arnow, Kenardy, & Agras, 1995; Lowe & Fisher, 1983; McKenna, 1972; Waller & Osman, 1998). According to Bloks et al. (2004), eating behaviors in general may serve as a form of stress release in individuals lacking other adequate (and, arguably, healthier) coping strategies for dealing with stress. Researchers have gone so far as to suggest that overeating acts as a coping mechanism to relieve tension similar to the way one may abuse other substances, such as drugs and alcohol (Solomon, 2001). It has also been suggested that binge eating is motivated by a desired to escape from self-awareness or, in other words, to narrow attention to the immediate stimulus environment, also suggesting it may be related to avoidant coping (Heatherton & Baumeister, 1991).

It is intuitive that, if one were to engage in emotional eating every time she faced a negative emotional state or situation, because she lacked more proactive coping strategies, this might contribute to weight gain and ultimately, obesity. Body weight often changes for women when they move from one area of the world to another, when they enter the college environment, and when they marry or break up (Levitsky, 2005). The fact that many women report gaining weight during stressful times in their lives illustrates this connection between coping style and emotional eating behaviors, a key path in the proposed mediation model.
In order to establish mediation, it is also imperative that a third pathway exists which connects the proposed mediating variable, emotional eating, to the outcome variable, obesity. This is perhaps the most significant of the three pathways as there is an abundance of literature demonstrating that increased emotional eating leads to higher BMI and is often associated with being overweight or obese (Allison & Heshka, 1993; Davis, Strachan, & Berkson, 2004; Ganley, 1989; Lowe & Fisher, 1983; Slochower, Kaplan, & Mann, 1981). The link between emotional eating and BMI has been shown to be a key factor in weight loss, as demonstrated by Blair, Lewis, and Booth (1990), who found that adults who reduced their initially high level of emotional eating reported a significantly higher weight loss than those who continued to report high levels of emotional eating after one year’s time. These connections between stress, eating, and weight suggest an inverse relationship exists between adaptive, proactive coping strategies and emotional eating. Reliance on more maladaptive, avoidant coping strategies may be associated with increased emotional eating, which in turn leads to increased BMI. Therefore, as this study proposes, emotional eating may serve as the mechanism which underlies the relationship between coping and BMI.

Purpose of the Study

The purpose of the study is to explore how emotional eating may be associated with the links between three specific coping styles and obesity. If evidence shows that coping is related to health factors, such as obesity, what variables could potentially account for or explain this relationship based on our theoretical knowledge of these complex variables? One hypothesis that was explored in this study is that emotional eating, a variable that is theoretically linked with both coping and obesity, could
mediate this relationship. In order to assess for mediation this study will aim to, first, lay out the theoretical basis for the proposed path model (Figure 1), and second, show statistically that a mediated relationship exists.

The proposed mediated model suggests that emotional eating could serve as a mediator between coping and obesity. BMI, an indicator of healthy weight distribution, will be used to classify participants as falling into an “overweight/obese” weight category (i.e., a BMI classification of 25 or more) compared to those considered “normal” weight (i.e., a BMI falling into the range of 18.5-24.9). The rationale for the model is that individuals who rely more on problem-focused or emotional approach coping strategies when faced with a stressful problem may use proactive strategies in order to resolve the stressor and resultant emotions, and therefore are less likely to engage in emotional eating behaviors. On the other hand, individuals who rely more on avoidant coping skills may tend to respond to negative stressors by engaging in emotional eating in lieu of these more adaptive, proactive strategies and to avoid the problem at hand. Therefore, the type of coping strategies one generally employs to deal with stress may determine the level of emotional eating and, therefore, the likelihood that an individual would fall into the obese weight category.

**Hypotheses**

The primary research question in the study is whether emotional eating mediates the relationships between three different coping strategies and obesity for non-eating disordered women. One of the primary goals is to establish the various pathways in the model both theoretically and statistically. Although there is a dearth of research on the direct relationships between specific coping strategies and obesity, poor coping skills
have been found to be associated with greater weight gain following treatment for obesity. In addition, significant relationships have been found between specific coping strategies and physical health outcomes and between coping strategies and eating pathology, including binge eating, providing theoretical rationale for this pathway. The pathway between emotional eating and obesity is the strongest and most well-documented, but there is also considerable evidence of a causal relationship between coping and emotional eating. Because all three of the pathways in the model have been established to various degrees theoretically, this suggests that emotional eating could be the intermediary process by which coping and obesity are linked.

As stated above, the dependent variable, obesity, will be operationalized with two categories of weight classification, “normal weight” (BMI range of 18.5 to 24.9) and “overweight/obese” (BMI of 25 or greater). Based on the rationale of the study, there will be three hypotheses: a) there will be a significant negative relationship between problem-focused coping and obesity and this relationship will be mediated by emotional eating and b) there will be a significant negative relationship between emotional approach coping and obesity and this relationship will be mediated by emotional eating c) there will be a significant positive relationship between avoidant coping and obesity and this relationship will be mediated by emotional eating.

**Implications of the Study**

Establishing a significant relationship between coping strategies and obesity could provide important knowledge about the role of coping in the field of weight loss and obesity prevention. Secondly, demonstrating mediated relationships among the variables could elucidate some of the many pathways by which individuals become
obese, as well as expand upon the existing, somewhat tenuous connections between coping and emotional eating.
Figure 1. Tests of the theorized mediation models
CHAPTER II

Literature Review

The purpose of the study is to examine whether emotional eating mediates the relationship between coping strategies and obesity. The five main variables - problem-focused coping, emotional approach coping, avoidant coping, emotional eating, and obesity - will be examined in the following literature review in order to further support the proposed relationships and the mediated model. Based on previous findings in the literature, the rationale for the proposed study is that women who use more proactive coping strategies such as problem-focused coping (e.g. coping that involves efforts to alter the stressful situation itself) and emotional approach coping (e.g. coping that involves actively processing and expressing the resultant emotions from a stressful situation) are more likely to deal with a stressor in a proactive way, therefore less likely to turn to emotional eating as a way to cope with the stressor, and consequently less likely to be obese. Women who use more avoidant coping strategies (e.g. coping that leads to activities or mental states that keep them from directing addressing a stressful situation) are more likely to avoid the resultant emotions when faced with a stressor – one way which may be by turning to emotional eating – and therefore are more likely to be obese. In all three of these scenarios it is hypothesized that emotional eating will mediate the relationship between coping and obesity, as illustrated in Figure 1. In order to gain a clearer perspective on the variables involved, the following chapter will provide a review of the relevant literature.
Coping Strategies

The variable of coping has been shown to be a key contributor to both mental and physical health. In addition, it is commonly believed to be a significant precipitate to eating disorders, suggesting it is an important factor to consider when studying both emotional eating and obesity. Coping is arguably one of the most frequently studied constructs in the behavioral sciences. One frequently cited definition of coping is the “efforts, both action-oriented and intrapsychic, to manage (i.e., master, tolerate, reduce, minimize) environmental and internal demands, and conflicts among them, which tax or exceed a person’s resources” (Lazarus & Launier, 1978, p. 311). Researchers often further distinguish between two primary types of coping: problem-focused and emotion-focused coping. Problem-focused coping involves efforts to change the problem at hand and typically includes strategies such as generating options to solve the problem, evaluating the pros and cons of various options, and implementing steps to solve the problem (Lazarus & Folkman, 1984). Emotion-focused coping is generally defined as efforts to manage the resultant emotional distress associated with the situation at hand. Emotion-focused coping strategies may include denial, seeking social support, focusing or venting of emotions, and positive reinterpretation of events (Lazarus & Folkman, 1984).

Endler and Parker (1990) noted that, “if there is a consensus in the coping literature, it is the important distinction between emotion-focused and problem-focused coping” (p. 846). In fact, a number of studies have shown problem-focused coping to be inversely correlated with emotion-focused coping (Carver, Scheier, & Weintraub 1989; Scheier, Weintraub, & Carver, 1986). Research over the past twenty-five years has
generally deemed emotion-focused coping as “maladaptive” and problem-focused coping as “adaptive;” however, this was not inherent in Lazarus and Folkman’s original conceptualization of the constructs, within which they emphasize that both sets of coping strategies have adaptive potential. Problem-focused coping strategies are “purposeful responses that are directed toward resolving the stressful relationship between the self and the environment,” while emotion-focused coping strategies are aimed to “palliate negative emotions that arise as a result of stress” (Compas et al., 2001, p. 88). Neither was meant to be more or less adaptive or beneficial when conceptualized by Lazarus and Folkman, yet over the years the two styles have come to represent “all good” or “all bad” in the literature.

If both were originally conceptualized as adaptive ways to deal with stress, why then has emotion-focused coping so consistently been associated with negative physical and mental health outcomes in the literature? Several theories have been proposed. For one, several distinct coping strategies are often grouped under the title “emotion-focused coping.” For example, strategies that may be considered healthy forms of coping, such as venting emotions, are generally grouped with items that may be considered less healthy, such as avoiding or denying emotions. Therefore, some strategies under the name emotion-focused coping facilitate approaching the stressor in some way while other strategies facilitate avoiding the stressor; this leads to a muddled conceptualization when the items are clustered to create an aggregate score. Secondly, it has been proposed that the way emotion-focused coping has been operationalized in commonly used coping measures, such as the COPE (Carver et al., 1989), could also be a reason emotion-focused coping is so overwhelmingly considered maladaptive in the
literature. Stanton, Danoff-Burg, Cameron, and Ellis (1994) found that published measures of coping through processing and expressing emotion were confounded with psychopathology; for example, statements such as “I get upset and let my emotions out” (Carver et al., 1989) suggest a relationship between distress and emotional expression. The authors also found that these commonly used measures of coping are missing items or scales that represent positive coping efforts to identify, understand, and express emotions resulting from a stressful event, which they call emotional approach coping. In order to compensate for these measurement issues, Stanton, Kirk, Cameron, and Danoff-Burg (2001) developed two scales to include on coping inventories to ensure the items are not contaminated with emotional distress. Based on this research, a new perspective on emotion-focused coping has emerged where it is neither “all bad” nor “all good.” Rather, certain aspects of emotion-focused coping, such as emotional processing and emotional expression, could be considered positive ways of dealing with a stressor. This new conceptualization could account for how many emotional-focused coping strategies, such as mindfulness or even many types of psychotherapy, are found to have positive benefits for those who use them. Problem-focused coping has been consistently found to be adaptive in the coping literature because it involves proactive ways of approaching and resolving a stressor. In many ways, emotional approach is theoretically similar to problem-focused coping in that a person using this strategy is proactively dealing with the resultant emotions from a stressor through emotional processing and expression.

While emotion-focused coping as a whole is no longer considered maladaptive, as demonstrated above, there are aspects of emotion-focused coping that may
potentially be less effective. Avoidant coping, which is also classified as an emotion-focused coping strategy, involves strategies to avoid the stressor as well as any resultant emotions. This could include a number of strategies such as crying, worrying, withdrawing, distraction, self-blame, wishful thinking, screaming, and inhibiting emotions. Research findings have shown that approach coping strategies, such as problem-focused coping and emotional approach, are related to better functioning compared to avoidant coping strategies (Endler & Parker, 1990; Frydenberg & Lewis, 1999; 2004). Therefore, while emotion-focused coping as an aggregate measure may be neither adaptive nor maladaptive, it may be split into two conceptually distinct coping strategies: emotional approach coping and avoidant coping.

*Coping and Health Outcomes*

We can then look at these three distinct coping strategies and their relation to eating and obesity, the main variables of interest in the present study. If avoidant coping is truly less adaptive, one might expect it to lead to more negative behaviors and, in turn, poorer health (with the opposite true for both problem-focused and emotional approach coping). The relationship between coping and disordered eating behavior is fairly well-established and the idea that individuals use eating behaviors as a way to deal with or reduce stress (i.e., cope) has appeared in the literature for the last three decades (Loro & Orleans, 1981; Root & Fallon, 1989; Schmidt, Tiller, & Treasure, 1993; Sohlberg & Strober, 1994; Wilson, 1976). In addition, coping has been used in a number of studies exploring its relation to physical health outcomes. As detailed below, the relationship between coping and disordered eating, combined with evidence of relationships between coping and indicators of physical health, lead one to deduce there
will be a significant relationship between the three coping strategies in the proposed study and obesity.

Several studies have shown that coping skills are related to eating behaviors, as hypothesized in the proposed model. An exploratory study done conducted by Hasking (2006) with a sample of 347 Australian adolescents suggests that coping skills training could affect obesity. The study found that coping strategies may counter the effects of an underlying predisposition to dysfunctional eating (classified as both binging and restrictive eating behaviors). The study used the Adolescent Coping Scale (ACS; Frydenberg & Lewis, 1993) which measures the use of three higher order coping strategies: problem-solving, reference to others, and non-productive coping. Use of non-productive coping strategies significantly predicted eating attitudes ($\beta = .21, p < .01$); although the relationship between problem-solving coping and eating attitudes was not statistically significant, use of problem solving was significantly related to adolescent drinking behavior ($\beta = -.18, p < .05$). The results indicate that addressing the use of non-productive coping strategies may prevent eating disorders in adolescents high in behavioral inhibition and may result in fewer dysfunctional attitudes toward eating in adolescents sensitive to reward. Hasking (2006) noted that school-based coping skills training, often implemented as a preventative measure against drug and alcohol use, may also be effective for preventing the development of restrictive and binge eating, which could in turn prevent the development of obesity.

Consistent with this study of adolescents, other research findings suggest that adult women who are seeking treatment for eating disorders appear to cope with stress in more maladaptive ways, including avoidance of problems and greater use of
distraction coping strategies, than women without eating disorders (Ball & Lee, 2002; Koo-Loeb et al., 2000; Koff & Sangari, 1997). Mayhew and Edelman (1989) found that high scorers on the Eating Disorder Inventory (EDI; Garner, Olmstead, & Polivy, 1983) had greater use of avoidance coping and infrequent use of behavioral strategies directed towards actively dealing with stress (i.e., problem-focused coping strategies) compared to low scorers. Freeman and Gil (2004) found that vulnerability to binge eating in women may vary as a function of their coping responses to stress; consistent with previous research, distraction coping (a type of avoidant coping) was associated with an increased risk of binge eating both later the same day and the next day.

According to Spoor, Bekker, Van Strien, and Van Heck (2007) a large number of studies have consistently demonstrated that avoidance or distraction coping strategies are positively correlated with dieting, binging and disordered eating attitudes (e.g., Ball & Lee, 2002; Denisoff & Endler, 2000; Fitzgibbon & Kirshenbaum, 1990; Freeman & Gil, 2004; Koff & Sangani, 1997). Bloks et al. (2001) found that less reliance on avoidant coping strategies was associated with less eating pathology and better psychological functioning. This makes logical sense, as binge eating has been suggested to be an avoidant reaction to a stressor where there is a shift in attention towards a more proximal stimulus, such as hunger (Troop, 1998). A significant association between disengagement coping strategies and binge eating has also been found (Tobin, Holroyd, Reynolds, & Wigal, 1989). This literature provides evidence that using coping strategies that are avoidant may lead to disordered eating, eating pathology, and unhealthy behaviors such as binge eating, and supports the proposed link between maladaptive coping and obesity.
Evidence of a link between coping and health also supports the proposed relationship between coping and obesity, an indicator of health. A recent study by Diong et al. (2005) used structural equation modeling to conceptualize a model of the interrelationship of anger, stress, coping strategies, perceived social support, and health. The authors found that Active Coping, one of the problem-focused coping strategies measured on the Coping Orientation to Problems Experienced scale (COPE; Carver, Scheier, & Weintraub, 1989) and Reappraisal Coping (i.e., a combination of two emotion-focused coping strategies on the COPE, Positive Reinterpretation & Growth and Acceptance) were related to better psychological and physical health. Diong et al. (2005) also found that Avoidance Coping, which includes the strategies Denial, Mental Disengagement, and Behavioral Disengagement, was associated with poorer health.

Emotional approach coping has also been found to be adaptive when faced with certain health-related stressors, such as chronic pain. Smith, Lumley, and Longo (2002) studied 80 adults with chronic myofacial pain and found that, not only was emotional approach coping distinct from other emotion-focused coping strategies, but also that it was an adaptive coping strategy when faced with chronic pain. Emotional approach coping has also been found to be adaptive for pregnant women (Huizink et al., 2002), couples undergoing treatment for infertility (Berghuis & Stanton, 2002), and women receiving diagnoses and treatment for breast cancer (Reynolds et al., 2000; Stanton et al., 2000).

Overreliance on avoidant coping strategies has also been shown to be associated with indices of poor psychological health including depression (Billings, and Moos, 1984; Coyne, Aldwin, & Lazarus, 1981), excessive alcohol consumption (Moos,
Brennan, Fondacaro, & Moos, 1990), and increased psychological disturbance (Smith, Patterson, & Grant, 1990). These studies support the hypothesis that avoidant strategies are more likely to be associated with poor health outcomes, both physically and psychologically, while problem-focused and emotional approach coping have been found to be adaptive.

More specifically pertaining to obesity, a study by Nilsson et al. (1997) showed a significant relationship between poor coping capacity and obesity. The authors investigated the differences in coping capacity (generally defined as the relation between one’s appraisal of a situation and the development of an effective coping response in relation to this appraisal) between obese and disabled individuals. They compared 76 obese adults (82% female) with 59 unemployed long-term sick leave patients (46% female). Although both groups showed low coping capacity when compared to the normative data, the obese adults had greater difficulty coping with both general problems in life and specific health problems than those on long-term sick leave (Nilsson et al., 1997). Although a number of studies show the connection between coping and mental and physical health, Nilsson and colleagues provide specific evidence supporting the proposed relationship between coping and obesity.

Overall, the literature suggests that use of more proactive coping strategies, or tactics that approach rather than avoid dealing with a stressful situation, are adaptive to both physical and mental health. In addition, it is a consensus in the eating disorders literature that maladaptive coping (generally defined as avoidant coping) leads to disordered eating, whether excessive or restrictive in nature. Based on these findings, one can deduce that increased use of problem-focused coping or emotional approach
strategies would be related to the healthier, normal weight category and increased use of avoidant coping strategies would be related to the less healthy, obese weight category in non-eating disordered women (as BMI is both a measure of physical health, as well as related to excessive eating behavior). However, it is important to also consider other variables which could account for this connection. It is proposed that a third variable, emotional eating, is the mechanism mediating the relationship between coping and obesity.

*Emotional Eating*

Why is it, then, that women who deal with stress in less adaptive ways are more likely to be obese? With innumerable causes of obesity, which of these factors could account for this connection? One theory proposed by this study is that women who depend on avoidant coping strategies are more likely to turn to food as a way to cope, in an effort to avoid or distract from their negative emotions. This is defined as emotional eating, or eating in response to negative emotions or a stressful life event. Because typical physiological responses to negative emotions and stress mimic the internal sensations associated with satiety, loss of appetite and decreased food intake is usually considered the natural physical response under these conditions; therefore, emotional eating is considered an ‘inapt’ response (Heatherton, Herman, & Polivy, 1991; Spoor et al., 2007). According to Greeno and Wing (1994) however, stress-induced models, which are derived primarily from animal studies, suggest that eating may be a universal response to stress. An alternative stress-induced model proposes that specific individual characteristics (whether innate personality traits or learned behaviors) predispose certain people to be more likely to respond to stress by eating (Greeno & Wing, 1994).
This model is fairly consistent with psychosomatic theory and affect regulation models of emotional eating, which propose that emotional eaters may overeat in response to negative emotions and stress because they have learned that this behavior alleviates them from negative mood states, such as depression and fear (Spoor et al., 2007).

Women in particular are vulnerable to engage in emotional eating in times of stress (Greeno & Wing, 1994; Solomon, 2001). In addition, there have been several reviews of emotional eating in relation to body weight (e.g., Allison & Heshka, 1993; Ganley, 1989; Van Strien, Schippers, & Cox, 1995) and, while there have been some conflicting results, most indicate that obese individuals tend to overeat in response to negative states compared to normal weight individuals, though there is some evidence that eating disordered women (e.g., Agras & Telch, 1998) and normal-weight dieters (e.g., Polivy, Herman, & McFarlane, 1994) engage in emotional eating as well.

Several studies have clearly established an association between high levels of emotional eating and increased obesity (e.g., Allison & Heshka, 1993; Ganley, 1989; Lowe & Fisher, 1983; Slochower et al., 1981). Ganley (1989) did a thorough review of the post-1957 literature on the relationship between emotion and eating in adult obesity based on both clinical and laboratory studies. In his review, he found that for massively obese subjects (i.e., more than 75% overweight) seeking treatment, emotional eating was prominent in 60-90% of individuals across socioeconomic levels. For mild to severely obese subjects (i.e., 15-75% overweight) seeking treatment, about 75% reported emotional eating across socioeconomic levels. For both groups emotions such as depression, anxiety, and anger were the most frequently cited precipitants of emotional eating. The findings were much more prominent for obese women, with less
consistent findings for obese men (Ganley, 1989). This review of over thirty years of clinical and experimental research provides convincing evidence that a significant, positive association exists between emotional eating and BMI.

A study by Davis et al. (2004) proposed that emotional eating may mediate the relationship between poor decision-making and BMI. The authors theorized that poor decision-making (as assessed by a computerized gambling task) “contributes to an increase in BMI by fostering overeating during periods of negative emotion” (p. 933). Though the authors did not find any substantial mediating effects for emotional eating, they did find that self-reports of emotional eating were significantly related to higher BMI, even in a small sample of only 44 participants. The consistent finding that emotional eating is highly prevalent in obese individuals seeking treatment further supports the notion that identifying a root cause for emotional eating would be beneficial in the treatment of obesity.

A number of studies suggest that coping would be a beneficial avenue to explore when investigating the root causes for emotional eating. A study by Slochower, Kaplan, and Mann (1981) showed that during periods of stress, such as during examination time, overweight students consumed more food than they did three weeks later. However, normal weight students did not vary their eating as a function of life stress. In particular, it seems to be negative stress that leads to overeating, while positive stress may actually have the opposite effect for those who are overweight/obese.

This phenomenon was also demonstrated in a study by Geliebter and Aversa (2003) who examined emotional eating in response to both positive and negative emotional states and situations in 15 underweight, 15 normal weight, and 15 overweight
individuals, as determined by categories based on BMI. Participants were administered a questionnaire that asked them to rate, on a scale from 1 to 9, whether they ate much less, the same, or much more than usual in response to various negative and positive emotional states (e.g., sad, playful) and situations (e.g., after an argument, falling in love). As expected, overweight individuals reported eating more in response to negative emotions and situations compared to those who were normal weight or underweight, while the underweight group reported undereating in these instances. Contrary to their hypothesis, they found that the underweight group ate more than either of the other groups in response to positive emotions and situations. However, a limitation of the study should be noted in that a sample size of 45 is relatively small. The authors concluded that emotional eating may play a role in weight gain for those in the overweight category of BMI and may play a role in weight loss for those who are underweight. The fact that only the overweight group ate more in response to negative stress, compared to the normal weight and underweight women, supports the proposed pathway that it may be this act of emotional eating that is the driving the connection between coping and obesity.

Lowe and Fisher (1983) found similar results in a study where they had 47 undergraduate women classified as either normal weight ($n = 30$) or overweight ($n = 17$) and had them track their food intake and corresponding moods for 13 consecutive weekdays. Results showed that although overweight subjects consumed 6% more calories overall than normal weight participants, they ate a smaller percentage of their calories following positive or neutral moods and a larger percentage following negative
moods, providing further evidence emotional eating is related to both coping and weight classification.

Based on the above findings, it is plausible to propose that overeating to avoid dealing with negative stress and emotions, in place of more proactive coping strategies, may then lead to an increased BMI. Literature suggests that overeating may increase for obese individuals during stressful times, which further supports the theory that emotional eating may be related to an underuse of adaptive coping skills.

Solomon (2001) proposed an intricate model incorporating stress, negative mood states, coping, and overeating. The author hypothesized that stress evokes eating as coping, that eating than becomes a stressor itself, and that a coping repertoire specific for overeating is then required in order to moderate the associated mood states. Solomon (2001) tested the model with a sample of 79 women aged 19 to 50 who self-reported that they had a history of overeating. One key finding relevant for the purposes of the current study is that use of problem-focused coping behaviors was associated with the attenuation of negative mood states. Consistent with previous studies of emotional eating, this finding suggests that individuals who use more proactive coping may not have to turn to overeating in order to avoid or distract from negative emotions, as these coping strategies alone are effective in diminishing negative affective states. On the other hand, Lee, Greening, and Stoppelbein (2007) found the opposite effect when studying avoidant coping in female dieters; participants who scored higher on a standardized measure of avoidant coping consumed significantly more ice cream than those who scored lower, regardless if they were in an ego threat or no threat condition.
The purpose of the proposed study is to test a conceptual model of how three coping strategies, problem-focused coping, emotional approach coping, and avoidant coping, may impact obesity through their relationship to a fourth variable, emotional eating. As demonstrated above, coping has been shown to affect both physical and mental health in a number of ways. However, one goal of this study is to identify a key behavior that may be impacting an epidemic health problem. It is hypothesized that the behavior of emotional eating may be a crucial link in the conceptual puzzle. Emotional eating is generally defined as eating in response to negative emotions or stress. Based on a review of the literature, emotional eating is closely tied to the coping strategies one tends to employ under stress. Women who use avoidant coping strategies (in other words, do not find active ways of dealing with stressors) look for ways to distract from or avoid negative emotions, and may then turn to emotional eating. According to the literature as reviewed above, this process of engaging in emotional eating leads to an increased BMI. Therefore, women who frequently engage in emotional eating are more likely to fall into a weight category which is considered overweight or obese and those who engage in this behavior are also more likely to use avoidant coping. On the other hand, women who use proactive coping strategies, such as problem-focused and emotional approach coping, are more likely to actively manage the stressor or deal with the negative emotions, and therefore less likely to turn to emotional eating behaviors. Hence, women using these coping strategies are less likely to be obese. These various pathways of connection suggest that emotional eating may be the mechanism that accounts for the significant relationship between coping and obesity.
Conclusion

As the studies outlined in this section show, the variable of coping has been studied extensively in the context of both eating disorders and physical health outcomes. Based on this literature, one can make the rational conclusion that there would be a significant relationship between specific coping strategies and obesity.

Furthermore, evidence supports the hypotheses that reliance on avoidant coping would lead to greater emotional eating than reliance on either problem-focused or emotional approach coping and that increased emotional eating leads to obesity. This review of the literature indicates that emotional eating is significantly related to both coping and obesity, suggesting the potential for a mediated relationship.

Because women have been found to be more vulnerable to emotional eating (Greeno & Wing, 1994; Solomon, 2001) and because an extensive review has shown that emotional eating more consistently leads to obesity in women than men (Ganley, 1989), the proposed study will be focused on normal weight and overweight/obese women. The aim of the proposed study is to contribute to the literature by exploring how specific coping strategies may influence both emotional eating and, ultimately, obesity. Significant findings would suggest that increasing the use of proactive coping strategies could be beneficial in treating this rapidly growing epidemic. In order to test the proposed mediated model, three hypotheses will be explored, as illustrated in Figure 1: a) there will be a significant negative relationship between problem-focused coping and obesity and this relationship will be mediated by emotional eating and b) there will be a significant negative relationship between emotional approach coping and obesity and this relationship will be mediated by emotional eating c) there will be a significant
positive relationship between avoidant coping and obesity and this relationship will be mediated by emotional eating.
Chapter III

Method

Design

The study was an ex post facto design, as no experimental manipulation took place. Problem-focused coping, emotional approach coping, and avoidant coping served as independent variables in the model. The dependent variable, BMI, was dichotomized into two categories, Normal weight (BMI range 18.5-24.9) and Overweight/Obese (BMI range 25+). Individuals considered underweight (BMI <18.5) were excluded from the study. A fourth variable, emotional eating, was added to each model to test for mediational effects. The population of interest was non-eating disordered, adult women.

Participants

The goal was to recruit a diverse sample of participants from different areas of the country, with a range of ages, racial or ethnic backgrounds, weights, and varying socioeconomic status. Only women were asked to participate for several reasons. As noted previously, women are more likely to engage in emotional eating; also, the majority of literature on both eating disorders and emotional eating has primarily used female samples and the connection between emotional eating and obesity in women is more established in the literature (Ganley, 1989; Greeno & Wing, 1994; Solomon, 2001). Participants were recruited online by emailing listservs and using snowball sampling through social networking sites including Facebook and Craigslist.

Exclusion criteria. Only females were used in the study. Participants were also excluded if they met diagnostic criteria for anorexia or bulimia. Although the connection between coping and eating disorders has been established in the literature,
the goal of the study was to assess how coping may relate to obesity in non-eating disordered women.

Individuals who have had weight loss surgery, whether using a banding or gastric bypass procedure, were also excluded as this would introduce a confounding variable that could affect both emotional eating and BMI. Participants had to be at least 18 years old (as most of the theoretical literature underlying the study is based on adult samples) and could not have been currently pregnant.

Power Analysis

Following the recommendations of Cohen (1988), a power analysis was conducted in order to determine the sample size needed in order to provide a level of power at or above 80%. Although no studies currently exist that test a mediated model of emotional eating with coping and BMI, analogous studies testing each pathway of the model do exist that can be used to obtain an estimate of the number of subjects needed in order to achieve adequate power.

Penley, Tomaka, and Wiebe (2002) conducted a meta-analytic review of the association between coping and overall health outcomes in non-clinical adult samples and found small to moderate associations. The authors found that the effect sizes for various emotion-focused coping strategies on health outcomes ranged from -.05 to -.42 with a median value of $r^2 = .09$. The effect sizes for problem-focused coping strategies on health outcomes ranged from -.15 to .08 with a median value of $r^2 = .01$. Thirty-four studies were used in the analysis, with sample sizes ranging from 27 to 323; the median sample size of the studies included in the analysis was 103. Penley et al. (2002) qualified the results of the study by noting that type of health outcome (i.e., physical vs.
psychological) and situational characteristics (i.e., stressor type, controllability, and duration) moderated many of the overall associations and added that this meta-analysis demonstrates a need for additional research, particularly for the association between coping and physical health outcomes. Bloks et al. (2004) studied the association between coping strategies and eating disorders and found significant relationships between Passive Reacting and Bulimia at $r^2 = .082$ and Seeking Social Support and Bulimia at $r^2 = .085$ at the start of treatment for the 47 bulimics in the study.

Several studies have examined the connection between emotional eating and BMI. Blair, Lewis, and Booth (1990) found a correlation of .35, with a median adjusted $r^2 = .123$ between emotional eating and obesity in a study of 162 adults in the U.K. Geliebter and Aversa (2003) examined emotional eating in 90 overweight adults and found an $r^2$ value of 0.12. Waller and Osman (1998) examined emotional eating in 51 non-eating disordered women and found significant relationships between the Anger Frustration and BMI ($r^2 = .084$) and Depression and BMI ($r^2 = .084$) on the Emotional Eating Scale (EES; Arnow et al., 1995), but did not find a significant relationship between Anxiety subscale and BMI ($r^2 = .032$).

The adjusted values for the coping and obesity relationship ranged from .0002 to .064, with a median adjusted $r^2 = .036$. The adjusted values of the relationship between emotional eating and obesity ranged from .012 to .118 with a median adjusted $r^2 = .065$. In order to be conservative, the lower $r^2$ value was used in the power analysis. Using the methods of Cohen and Cohen (1983) it was determined that, setting the alpha level at the traditional .05, the estimated power of the analysis for sample sizes of 200 and 300 would be .79 and .92, respectively. Therefore, a sample size of 250 will be collected,
which is estimated to yield a greater than 80% chance of rejecting the null hypothesis for an $r^2$ of .036.

**Measures**

*Demographic information.* A demographic questionnaire was developed in order to collect information needed to describe the sample. Information including age, education level, socioeconomic status, and race/ethnicity was collected from the participants, as well as activity level, body satisfaction, and whether the participants were currently on a diet or trying to gain or lose weight. Current height and weight were collected in order to calculate BMI and assign the proper weight classification. To exclude potential participants who have had a form of weight loss surgery, a single item was included with the demographic questions, asking the participant “Have you ever had gastric bypass surgery or a stomach banding procedure in order to lose weight?”

*Obesity.* Weight and height were collected on the demographic questionnaire in order to calculate the body mass index (BMI) for each participant. BMI is a commonly used and reliable indicator of total body fat based on height and weight that is valid for both adult men and women (NHLBI, n.d.). It can be calculated using a simple mathematical formula (weight (lbs.)/[height (in.)]$^2$ x 703). BMI can be used as a continuous variable or can be used to denote categories of weight. Typical categories are Underweight (BMI < 18.5), Normal weight (BMI = 18.5-24.9), Overweight (BMI = 25-29.9), and Obese (BMI = 30+).

For the present study, two broad BMI categories were used: Normal weight (BMI = 18.5-24.9) and Overweight/Obese (BMI=25 or greater). Data from participants who fall below a BMI of 18.5, indicating they are underweight, were excluded for the
purposes of this study. There are a few limitations to using BMI, including the fact that it may overestimate body fat in athletes or those who have a muscular build and may underestimate body fat in older persons or those who may have lost muscle mass (NHLBI, n.d.). However, for the vast majority of the population it is considered a reliable measure of obesity (CDC, 2008).

*Emotional eating.* The Emotional Eating Scale (EES; Arnow et al., 1995), a 25-item, 5-point Likert-type scale grouped into three factors (Anger/frustration, Anxiety, and Depression) that measures eating as a response to negative emotional states; one total scale score was used in the current study. Participants indicate to what extent certain feelings (sample items include Resentful, Excited, Rebellious, Lonely) lead them to feel an urge to eat, anchored on one end by 1 “no desire to eat” and the other by 5 “an overwhelming desire to eat.” Higher scores indicate a greater level of emotional eating. The three subscales used in the EES were based on previous research by Arnow, Kenardy, and Agras, which showed that anger/frustration, anxiety, and sadness/depression accounted for 95% of the antecedent feelings reported by obese respondents prior to binge eating (Arnow et al., 1995). The authors found the internal consistency of the full scale was a coefficient alpha of .81, indicating acceptable internal consistency. The coefficient alphas for each of the three subscales, Anger/Frustration, Anxiety, and Depression, were .78, .78, and .72, respectively. Factor analysis showed that the 11 items loading on anger/frustration accounted for 19.7% of the variance, 9 items loading on anxiety had 12.5% variance, and the 5 items loading on the depression subscale accounted for 10.4% of the variance in binge eating episodes (Arnow et al., 1995).
Discriminant validity was assessed by comparing the EES to measures of attitudes toward eating, psychological adjustment, and self-esteem. The EES was compared to the Three Factor Eating Questionnaire (TFEQ; Stunkard & Messick, 1985) and no association was found between the EES subscales and the Cognitive Restraint Factor on the TFEQ. However, significant associations were found between the EES Anger/frustration \((r = .29, p < .05)\) and Depression \((r = .29, p < .05)\) subscales and the TFEQ Disinhibition scale. Arnow et al. proposes that this is to be expected given that six of the items in the Disinhibition scale are related to emotional eating.

Two measures of psychological adjustment were compared to the EES subscales to test for discriminant validity, including the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the Symptom Checklist (SCL-90-R; Derogatis, Lipman, & Covi, 1973). The BDI did not correlate significantly with Anger/Frustration \((r = .15, p > .05)\), Anxiety \((r = .01, p > .05)\), or Depression \((r = -.01, p > .05)\) subscales of the EES. The SCL-90-R also showed discriminant validity, with Anger/Frustration \((r = .24, p > .05)\), Anxiety \((r = .18, p > .05)\), and Depression \((r = .17, p > .05)\) subscales all demonstrating nonsignificant correlations. The measure of self-esteem, using the Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1979) was also not found to be significantly related to the EES subscales (Anger/Frustration, \(r = .22, p > .05\); Anxiety, \(r = .15, p > .05\); Depression, \(r = .15, p > .05\)), supporting the discriminant validity of this measure.

Construct validity was supported by the findings that there was significant correlations between EES subscales and severity of binge eating, as measured by the
Binge Eating Scale (BES; Gormally et al., 1982), and frequency of eating over a 7-day period (Arnow et al., 1995).

A study by Waller and Osman (1998) demonstrated the validity of the EES among non-eating-disordered women and found higher levels of internal consistency than Arnow et al. (1995) reported, with an alpha level for the whole scale at .93. Also using Cronbach’s alpha, internal consistencies for the subscales were slightly higher than those found by Arnow et al., (Anger/Frustration, $r = .87$; Anxiety, $r = .84$; Depression, $r = .80$), demonstrating the EES has acceptable levels of internal consistency. Although Arnow et al (1995) had only validated the EES on obese binge eaters, Waller and Osman (1998) reported the normative scores for a non-eating-disordered population. The authors found that, though the scores for this population were lower, the scale may have a role in the early identification of eating problems in non-clinical groups.

*Coping response*. An instrument developed by Carver, Scheier, and Weintraub (1989) called Coping Orientation to Problems Experienced (COPE) was used to assess for the three coping strategies. The full COPE is a 60-item self-report questionnaire containing a total of 15 different coping strategies (four items for each) (Carver et al., 1989). The dispositional or “trait-like” version was used, whereby respondents report the extent to which they usually do the things listed when they are under stress. This version was used instead of the time-limited version as the current study is interested in how women generally cope over their lifetime. The instructions ask participants to answer in regard to “what you generally and usually do and feel when you experience stressful events” and rate individual items on a scale from 1 (I usually don’t do this at
all) to 4 (I usually do this a lot). Sample items include “I concentrate my efforts on
doing something about it” and “I focus on dealing with this problem, and if necessary
let other things slide a little.”

Based on both theory and the high inter-correlations among the coping
strategies, several subscales on the COPE were combined to yield the composite
variables problem-focused coping and avoidant coping. Five coping strategies
comprised problem-focused coping, including: Active Coping, Planning, Suppression of
Competing Activities, Restraint, and Use of Instrumental Social Support. Three
strategies comprised avoidant coping, including: Denial, Mental Disengagement, and
Behavioral Disengagement. Two subscales designed by Stanton et al. (2000), emotional
processing and emotional expression, were added to measure emotional approach. Each
subscale contains 4 items on the measure, bringing the total number of items to 40.

Initial validation studies provided substantial evidence for the validity and
reliability of the COPE scales. The scales were found to have acceptably high internal
consistency, with Cronbach alpha levels for the coping scales ranging from .45 (Mental
Disengagement) to .92 (Turning to Religion) (Carver et al., 1989). Internal consistency
for the two subscales comprising emotional approach, Emotional Expression (α = .78)
and Emotional Processing (α = .66) were reported by Stanton et al. (2000). The measure
and its original factor structure have also shown to be psychometrically sound in
additional studies. Highly similar factors emerge across various populations and
stressors, including assessment of slump-related coping in athletes (Eklund, Grove, &
Heard, 1998), assessment of coping in adolescents (Phelps & Jarvis, 1994), and
Estonian (Kallasmaa & Pulver, 2000) and Italian versions of the measure (Sica, Novara, Dorz, & Sanavio, 1997).

*Eating disorders.* Participants were administered the Eating Disorder Diagnostic Scale (EDDS; Stice, Telch, & Rizvi, 2000) to exclude participants with scores suggesting they have anorexia or bulimia, as the study is only interested in the non-eating disordered population. The EDDS is a brief, self-report instrument designed to assess for psychological characteristics associated with anorexia nervosa, bulimia, and binge eating disorder. The scale contains 22 items; sample items include “During the past 6 months have there been times when you felt you have eaten what other people would regard as an unusually large amount of food (e.g., a quart of ice cream) given the circumstances?” and “How many times per week on average over the past 3 months have you made yourself vomit to prevent weight gain or counteract the effects of eating?.”

There have been several indicators of the reliability and validity of the EDDS. Test-retest reliability after 1-week was found to be .87 for the overall symptom composite. The EDDS full scale was found to have acceptable internal consistency using Cronbach’s alpha for the standardized items (mean $\alpha = .89$), suggesting the measure may be useful not only as a brief measure of eating disorder diagnoses but also as a continuous measure of overall eating disorder symptomatology (Stice et al., 2000). An additional study by Stice, Fisher, and Martinez (2004) also showed evidence of criterion validity with interview-based diagnoses, convergent validity with risk factors for eating pathology, and similar internal consistency for the symptom composite ($\alpha = .89$).
**Procedure**

The protocol for the study was administered solely online using a website created through psychdata.com. Data was collected anonymously to ensure confidentiality. Participants were recruited through two methods: the first was through listserv emails and the second through social networking websites. For listserv emails, the webmasters for the APA Division 17 listserv as well as APAGS (the graduate student group of APA) were contacted and permission was requested to disperse a recruitment email asking for “women of all shapes and sizes” to participate in a brief survey, with the chance to win a $100 Amazon.com gift card. In addition, a similar but more personal recruitment email was sent out to the listserv for doctoral students in counseling psychology at the University at Albany. In all cases, brief information about the nature of the survey was provided along with the psychdata link, which then led potential participants to the consent form with more detailed information.

Secondly, IRB approval was granted to recruit participants through social networking sites Facebook.com and craigslist.org in order to advertise the study URL to a broader base of potential participants. Brief advertisements were posted on craigslist.org asking for female participants to link to an online survey about coping and eating behaviors; it was advertised that the survey would take approximately 15-20 minutes and would give them the chance to win a $100 gift card. The advertisements were posted on both the Albany, NY and Los Angeles craigslist websites under Jobs: ETC. On Facebook.com, a message was sent to approximately 200 of the study author’s friends (both male and female) asking them to participate in the study if they were female and providing the link. The message also asked recipients to forward it on to
their Facebook friends, creating a snowball sample. In addition to personal messages, the URL with a brief statement inviting individuals to participate was posted as this author’s status message for several days (visible only to the 200 authorized friends). Finally, a brief recruitment message with the link was posted on the message board of a Facebook group of which the author is a member, which is comprised entirely of graduate students.

When potential participants followed the study URL, the first page included a consent form as well as notification of the minimal risks and benefits associated with the study and contact information for the researchers. Participants had to click a button saying “I agree” in order to consent and proceed. The first four questions on the protocol were exclusion questions to screen out males, females under 18, women who were pregnant, and women who have had weight loss surgery. If the participant did not meet the inclusion criteria, they would be taken to the last page of the study. If the participant qualified for the study, she would then proceed with the demographic questionnaire and additional measures. The entire study protocol took approximately 15-20 minutes to complete. All questions were voluntary and could be skipped at any time. When the participant completed the questions, the last page gave her an opportunity to submit her name and email (which will be stored separately from their responses) in order to enter a drawing for a $100 gift certificate to Amazon.com. Following completion of the analyses, a participant who had entered the drawing was chosen at random and emailed an electronic gift card for $100 to Amazon.com.
Analysis

SPSS 17.0 was used to analyze the data. Preliminary analyses were conducted in order to gather descriptive and correlational data, as well as to assess normality, missing data, and response patterns. In order to test the main three hypotheses, both logistic and linear regression were used for analysis, due to the dichotomous nature of the dependent variable. The outcome for each case were dummy coded (Y=0 for Normal weight; Y=1 for Overweight/obese). The alpha level was set at .05 in order to reduce the likelihood of Type I error. A series of three mediational analyses were then used to explore whether the relationships between the three coping strategies and the two weight categories can be accounted for by the addition of the variable emotional eating.

According to Baron and Kenny (1986), there are a series of three regression equations that are performed in order to establish that a variable (e.g., emotional eating) mediates the relationship between a predictor variable and an outcome variable (e.g., weight category). If the model is fully mediated, the relation between the coping strategy and weight category will drop to zero once emotional eating is added to the model. In the final step of the analyses, bootstrapping techniques were used to test for the magnitude of indirect effects.
Chapter IV
Results

A total of 511 responses were received on the psychdata website. Four participants identified as minors, six identified as currently pregnant, two reported they had had weight loss surgery, and 33 identified as male; they were omitted from the sample because they did not meet the inclusion criteria. An additional six participants left one of the four inclusion questions blank, leaving 460 female participants. Thirteen women were classified as underweight based on their BMI, so they were also excluded from the sample. In addition, as the study focused on non-eating disordered women, the EDDS was used to assess for women meeting the criteria for anorexia or bulimia nervosa. While no women met the criteria for anorexia, 12 women met the criteria for bulimia and were also excluded from the sample. A significant number of participants did not complete all of the questions and were coded as system-missing values in SPSS. Because pair-wise deletion was used, the number of valid cases in the three main analyses ranged from 295-300 for the hypotheses with problem-focused coping ($n = 295$), emotional approach coping ($n = 300$), and avoidant coping ($n = 296$).

The age range of participants was from 19 to 67 years old, with a mean age of 34.55 and a mode age of 29. Of the final sample, 21% identified as current college students. Participants self-identified as having the following primary racial/ethnic heritage: White or European descent (80.3%), Latino or Hispanic (7.8%), Asian/Asian American or Pacific Islander (5.2%), African American/Black (4.3%), and Bi-racial or Multi-racial (2.3%).
In terms of relationship status, 55.3% of the sample reported being married, 35.5% reported being single, 8.3% identified as divorced/separated, and 0.9% identified as widowed. The sample had a high average education level, with the majority having a master’s degree (30.9%), bachelor’s degree (27.5%), or a Ph.D. or professional degree (such as J.D. or M.D.) (21.2%). The remainder of the sample reported having some college (17.5%) or a high school/GED equivalent (2.9%). The majority of the sample self-identified their current socioeconomic status as middle class (52.4%), while 22.6% identified as working class, 20.9% identified as upper middle class, 2.6% as lower class, and 1.4% as upper class.

Related to the diet and exercise behavior of the sample, the majority of women described their activity level as “moderately active,” or doing up to 30 minutes of light to moderate activity three to five days a week (50.3%). Nearly a third of the sample described their activity level as “not active,” or less than 30 minutes of light activity no more than twice a week (31.6%). Eighteen point one percent of participants in the sample described themselves as “very active,” indicating they do more than 30 minutes of moderate activity at least five times a week. The sample ranged in weight from 105 to 400 lbs, with the mean weight of 162 lbs. Only 0.6% of the sample (2 women) indicated they were currently trying to gain weight, while 69.3% of the sample indicated they were currently trying to lose weight. However, only 20.9% of women in the study indicated they are currently on a diet. In terms of body satisfaction, few women indicated they were “very satisfied” (4.3%) or “satisfied” (16.4%) with their weight/body fat composition. The majority of the sample indicated being either “somewhat satisfied” (35.7%) or “not satisfied” (43.5%) with their bodies.
The means and standard deviations for the independent variables and dependent variable were examined prior to testing the hypotheses and are listed in Table 1. Scores on the three composite variables from the COPE - avoidant coping, problem-focused coping, and emotional approach coping – were also examined as part of the preliminary analyses. The range for avoidant coping was from 1.00 to 3.42 and had the lowest mean, indicating the majority of participants endorsed rarely using this coping style (\(M = 1.77, SD = .47\)). Average scores for the problem-focused coping variable ranged from 1.75 to 3.70 (\(M = 2.79, SD = .40\)) and scores for the emotional approach variable ranged from 1.00 to 4.00 (\(M = 2.72, SD = .71\)).

Average scores on the Emotional Eating Scale ranged from 1.0 to 4.52 with a mean score of 2.16 and a standard deviation of .75. The dependent variable, body mass index, ranged from 18.54 to 60.81 with a mean BMI of 26.0. This value is above the 24.9 cutoff for normal weight classification, though it should be noted that participants classified as underweight were excluded from the sample so this mean is based on a truncated range. Since the dependent variable, BMI, was dichotomized, 151 of the participants (43.3%) were categorized as overweight/obese and 198 (56.7%) as normal weight.

Finally, skewness and kurtosis was assessed for the continuous variables in the study in order to test for normality of the data. The skewness value provides information regarding the symmetry of the distribution. The skewness value for emotional eating was .57, indicating a positive skew or low scale values. Avoidant coping was also positively skewed with a skewness value of 1.0. Both problem-focused coping (\(-.07\)) and emotional approach coping (\(-.20\)) were negatively skewed indicating a
clustering of scores at the higher end of the scale. According to Tabachnick and Fidell (2007) skewness will not “make a substantive difference in the analysis” (p. 80,) with a sample that is relatively large; also, while there was skewness in the sample, overall skewness values were low.

Kurtosis was also assessed for the sample in order to determine the ‘peakedness’ of the distribution. Positive kurtosis was indicated for avoidant coping (.64), indicating the distribution is clustered in the center on a normal curve. Kurtosis values below zero, as with emotional eating (-.23), problem-focused coping (-.28) and emotional approach coping (-.61) indicate a more flat distribution of values. However, while kurtosis can lead to an underestimate of variance, this is less of an issue with samples over 200 (Tabachnick & Fidell, 2007) and the overall kurtosis values were very low in the sample. Histograms schematically demonstrating the distribution of the data confirm these values.
Table 1.

*Means, Standard Deviations, and Ranges for Coping Strategies and Emotional Eating*

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td><strong>Coping Strategies</strong></td>
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<tr>
<td>Problem-focused coping</td>
<td>2.79</td>
<td>.40</td>
<td>1.75-3.70</td>
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<tr>
<td>Emotional approach coping</td>
<td>2.72</td>
<td>.71</td>
<td>1.00-4.00</td>
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<tr>
<td>Avoidant coping</td>
<td>1.77</td>
<td>.47</td>
<td>1.00-3.42</td>
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<tr>
<td>Emotional Eating</td>
<td>2.16</td>
<td>.75</td>
<td>1.00-4.52</td>
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</table>
Bivariate Correlations

Demographic variables and independent variables. Zero-order correlations were examined between the demographic variables and the three coping strategies (avoidant coping, problem-focused coping, emotional approach coping) as well as with the hypothesized mediator, emotional eating. As shown in Table 2, the independent variable, avoidant coping, was found to be significantly, negatively correlated with several of the demographic variables including SES ($r = -.22, p < .01$), education level ($r = -.26, p < .01$), activity level ($r = -.17, p < .01$), and body satisfaction ($r = -.16, p < .01$). These negative correlations suggest that women who tend to use more avoidant coping strategies may be of lower SES and lower education level, more likely to be single, and have lower levels of activity and body satisfaction.

Problem-focused coping also had a number of significant correlations with demographic variables, as listed in Table 2. The variable correlated positively with SES ($r = .16, p < .01$), education level ($r = .11, p < .05$), activity level ($r = .19, p < .01$), and body satisfaction ($r = .15, p < .01$). The findings suggest women who tend to use more problem-focused coping strategies may be more likely to be of higher SES and education level and may have higher levels of activity and body satisfaction. A third independent variable, emotional approach coping, demonstrated a somewhat similar pattern. It was also correlated positively with SES ($r = .12, p < .05$), education level ($r = .19, p < .01$), activity level ($r = .16, p < .01$), and body satisfaction ($r = .20, p < .01$). In addition, emotional approach coping had a significant negative correlation with the likelihood of currently being on a diet ($r = -.11, p < .05$).
The fourth independent variable, and the hypothesized mediator variable, emotional eating demonstrated significant correlations with SES ($r = -0.13$, $p < .05$), activity level ($r = -0.14$, $p < .01$), desire to lose weight ($r = 0.14$, $p < .01$), likelihood of currently being on a diet ($r = 0.16$, $p < .01$), and body satisfaction ($r = -0.36$, $p < .01$). These findings indicate that higher levels of emotional eating may be associated with lower SES, lower activity level, and an increased desire to lose weight and diet. They may also suggest that women who emotionally eat may be less satisfied with their bodies. There were also significant correlations amongst the independent variables. Avoidant coping was negatively correlated with both problem-focused ($r = -0.37$, $p < .01$) and emotional approach coping ($r = -0.23$, $p < .01$). Emotional approach and problem-focused coping were positively and significantly correlated ($r = 0.45$, $p < .01$). As hypothesized, there was a significant, positive association between emotional eating and avoidant coping ($r = 0.42$, $p < .01$) and a negative association with both problem-focused ($r = -0.27$, $p < .01$) and emotional approach coping ($r = -0.16$, $p < .01$). Though the independent variables were significantly correlated with one another, tests for collinearity show tolerance values at or above .74 for all four of the independent variables in the model. These significant correlations between the coping strategies and emotional eating are indicators emotional eating may serve as a mediating variable.

Demographic variables and dependent variable. The dependent variable, BMI category, is a dichotomous variable categorized based on the continuous measure, BMI. Participants in the sample were categorized as either normal weight or overweight/obese. Correlations between this dichotomous dependent variable and the demographic variables are shown in Table 2. BMI category correlated positively with
age ($r = .17, p < .05$) indicating that older women were more likely to be classified as overweight/obese than normal weight. It also correlated positively with likelihood of being on a diet ($r = .14, p < .05$) and desire to lose weight ($r = .23, p < .01$), suggesting those in the overweight/obese category were also more likely to be currently dieting and trying to lose weight. The dependent variable correlated negatively with SES ($r = -.12, p < .05$) and education level ($r = -.15, p < .01$) as well as activity level ($r = -.18, p < .01$) and body satisfaction ($r = -.52, p < .01$).

Independent variables and dependent variable. The correlations between the four independent variables, avoidant coping, problem-focused coping, emotional approach coping, and emotional eating, and the dependent variable, BMI category, are listed in Table 2. As hypothesized, the dependent variable is significantly and positively correlated with the potential mediator variable, emotional eating ($r = .30, p < .01$). However, the dependent variable is only correlated significantly with two of the three predictor variables; there is no significant correlation between problem-focused coping and BMI category. There is a significant, positive correlation between avoidant coping and BMI category ($r = .17, p < .05$), suggesting women relying more on avoidant coping may be more likely to fall into the overweight/obese category. There is also a significant, negative correlation between emotional approach coping and BMI category ($r = -.18, p < .01$) suggesting that women who more commonly use this strategy may be more likely to fall into the normal weight category. These significant correlations between coping strategy and BMI category suggest there may be potential for mediation given the significant correlations between the other indirect pathways in the model.
Table 2.

Zero-order Correlations Among Demographic Variables, Coping Strategies, Emotional Eating, and BMI.

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
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<th>14</th>
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<tbody>
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<td>1) Age</td>
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<td>2) SES</td>
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<td>4) Activity Level</td>
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<td>.17**</td>
<td>.14**</td>
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<td>5) Gain Weight</td>
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<td>.05</td>
<td>.00</td>
<td>-.10</td>
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<td>6) Lose Weight</td>
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<td>-.02</td>
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<td>.02</td>
<td>-.03</td>
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<td>7) On Diet</td>
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<td>-.02</td>
<td>-.03</td>
<td>.05</td>
<td>-.04</td>
<td>.30**</td>
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<td>8) Body Satisfaction</td>
<td>-.11*</td>
<td>.15*</td>
<td>.13*</td>
<td>.24**</td>
<td>.06</td>
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<td>9) College Student</td>
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<td>-.11*</td>
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<td>-.17**</td>
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<td>.11*</td>
<td>.19**</td>
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<tr>
<td>12) EA Coping</td>
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<td>.45**</td>
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<td>13) Emotional Eating</td>
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<td>-.13*</td>
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<td>.05</td>
<td>.14*</td>
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<td>-.36**</td>
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<td>.42**</td>
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<td>-.16**</td>
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<td>14) BMI Category</td>
<td>.17*</td>
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<td>-.15**</td>
<td>-.18**</td>
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<td>-.07</td>
<td>.17*</td>
<td>-.08</td>
<td>-.18**</td>
<td>.30**</td>
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</tr>
</tbody>
</table>

Note. Variables in italics are categorical. For variables 5, 6, 7, and 9: 1 = Yes, 2 = No. For variable 14: 0 = Normal weight, 1 = Overweight/obese. PF Coping = Problem-focused Coping. EA Coping = Emotional approach Coping. * p < .05. ** p < .01.
Reliability of Scales

Preliminary analyses were conducted to test for the reliability of the three coping scales and the emotional eating scale used in the analyses. All of the scales had internal consistency above a .8 and two were above .9. According to George and Mallery (2003), internal consistency above .8 is considered good while .9 or higher is considered excellent. For the measure of avoidant coping, the internal consistency of the 12 items on the scale was $\alpha = .827$. The internal consistency for the measure of problem-focused coping, which had 20 items, was $\alpha = .838$. The emotional approach scale, comprised of eight items, had a Cronbach’s alpha of .910. Finally, the internal consistency of the emotional eating scale used in the analyses, which had 25 items, was $\alpha = .942$.

Test of Hypotheses

The primary research question was whether emotional eating mediated the relationship between three types of coping strategies and BMI for non-eating disordered women. Three hypothesized mediation models (shown in Figure 1) were tested through a path model of mediation using both linear and logistic regression. According to Tabachnick and Fidell (1996), logistic regression analyses are recommended when the goal is to predict categorical group membership and can be used whether the predictors are categorical or continuous. Therefore, logistic regression was used when BMI category was the dependent variable in the pathway.

Baron and Kenny (1986) have suggested four steps to establish mediation: a) show that the coping strategy (X) is significantly related to BMI (Y); b) show that the coping strategy (X) is significantly related to emotional eating (M); c) show that the mediator, emotional eating (M), is significantly related to the outcome variable, BMI
(Y); d) to show full mediation, demonstrate that the effect of Y on X, controlling for M, is zero. The model is mediated if the relationship between the coping strategy and BMI drops significantly when emotional eating is added to the model (Baron and Kenny, 1986). This is calculated using a series of equations that take into account the effect of coping on BMI (ignoring the potential mediator), the effect of coping on emotional eating, and finally the unique effect of both coping and emotional eating on BMI.

Though historically, Baron and Kenny method has been commonly used to test for mediation, some argue that there are more “statistically rigorous” ways to assess mediation, primarily by measuring indirect effects (Preacher & Hayes, 2004). Bootstrapping techniques can assess the magnitude of the mediated effect, even if the one of the four criteria proposed by Baron and Kenny are not satisfied. While Baron and Kenny’s method relies on a drop in the significance of the direct pathway between the independent variable and the outcome variable when the mediator is added to the model, bootstrapping is a more modern, computer-intensive way to look at the magnitude of the indirect pathways (i.e. the pathway from the IV to the mediator and the mediator to the outcome variable). Bootstrapping also uses re-sampling, where a number of re-samples are constructed randomly from the original data set. This has become an increasingly popular technique, and is frequently used in addition to or instead of Baron and Kenny’s method or as a replacement for the more conservative Sobel test (Shrout & Bolger, 2002). Therefore, it was used additionally in the current analyses. In the present study, 5000 re-samples, were used to measure the magnitude of indirect effects. Three separate tests for mediation were conducted to test the three hypotheses, as illustrated by models A, B, and C in Figure 1. Results indicated that the
relationships between the three coping strategies and BMI were each partially mediated by emotional eating, supporting all three of the study hypotheses.

**Problem-focused coping.** The first hypothesis was that there would be a significant negative relationship between problem-focused coping and BMI and that emotional eating would significantly mediate this relationship (model A on Figure 1). According to Baron and Kenny’s procedure (1986), the first step in establishing mediation is to show that there is a significant, direct relationship between the X variable, problem-focused coping, and the Y variable, BMI. Though the association was in the negative direction as predicted, results showed that this pathway was not significant \( B = -.57, p = .059 \). Because Baron and Kenny’s mediation steps are done in a step-wise fashion, further tests for mediation were not appropriate using this method.

According to MacKinnon and colleagues (2002), joint significance tests which take into account the product of coefficients have been found to have greater statistical power for detecting mediation effects than step-wise methods such as Baron and Kenny. Thus, in the current study bootstrapping was also conducted to assess for the magnitude of the indirect effects of problem-focused coping on BMI, through the proposed mediator, emotional eating. Bootstrapping estimated the indirect effect is \( -.39 (p < .05) \) with a standard error of .13. The 95% bias-corrected confidence intervals ranged from a lower limit of -.68 to an upper limit of -.18 (see Table 3). As this range does not include zero, results of bootstrapping disconfirm the findings using Baron and Kenny’s strategy and suggests that partial mediation is occurring in model A. Because of the greater statistical power of bootstrapping methods, this finding provides support for hypothesis 1.
Table 3.

*Direct and Indirect Effects for Mediation Model for Problem-focused Coping*

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*Note. N = 295. Number of Bootstrap Resamples = 5000. *p < .05. **p < .01.*
Emotional approach coping. The second hypothesis was that there would be a significant negative relationship between emotional approach coping and BMI, and that emotional eating would mediate this relationship. Again using Baron and Kenny’s (1986) strategy as detailed above, the first step in establishing mediation is to show that the X variable, emotional approach coping, is significantly related to the Y variable, BMI. Logistic regression shows the relationship to be significant \((B = -.57, p < .001)\), and in the negative direction as hypothesized (shown in Table 4). The second step is to show a significant relationship between the predictor variable, emotional approach coping, and the potential mediator, emotional eating, which will be treated as the criterion variable in this step. Linear regression shows a significant relationship for step two, with \(B = -.16, p < .05\). The third step was tested by examining the effect of emotional eating (M) on BMI (Y), while controlling for X. This relationship was also found to be significant using logistic regression \((B = .81, p < .001)\), suggesting that the mediator is significantly related to the outcome variable. Step four using Baron and Kenny’s approach is to test for full mediation; if the relationship between emotional approach coping and BMI is fully mediated by emotional eating, the effect of X on Y when controlling for M will drop to zero. Results indicated that the relationship between X and Y controlling for M was significant \((B = -.48, p < .01)\) but did not drop to zero, therefore criteria for full mediation was not met. However, following the steps proposed by Baron and Kenny (1986) partial mediation was established for the model.

Bootstrapping estimated the indirect effect is \(-.13 (p < .05)\) with a standard error of \(.06\) as shown in Table 4. The 95 percent bootstrap confidence interval (5000 trials) is from \(-.03\) to \(-.26\) and, because zero is not in the confidence interval, it can be concluded
that the indirect effect is different from zero. Therefore, hypothesis 2 was supported, though only partial mediation was established for model B.
Table 4.

**Direct and Indirect Effects for Mediation for Emotional Approach Coping**

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*Note.* \( N = 300. \) Number of Bootstrap Resamples = 5000. * \( p < .05. \) ** \( p < .01. \)
Avoidant coping. The third hypothesis posited that there would be a significant, positive relationship between avoidant coping and BMI and that this relationship would be mediated by emotional eating. As predicted, logistic regression shows the direct relationship between avoidant coping and BMI to be significant ($B = .65, p < .05$), and in the positive direction as hypothesized (shown in Table 5), satisfying the criteria for step one using Baron and Kenny’s approach. Linear regression shows a significant relationship for step two of their criteria, with $B = .66, p < .001$. Step three in establishing mediation, according to Baron and Kenny (1986), is to demonstrate significance of the pathway between the mediator variable, emotional eating, and the outcome variable, BMI (see Table 5), which was also shown to be significant ($B = .74, p < .001$). Step 4 indicated that the relationship between the X variable (Avoidant coping) and the Y variable (BMI) controlling for the mediator M (emotional eating) was not significant ($B = .19$) indicating the proposed mediator variable was affecting the relationship as hypothesized, but there was not full mediation.

Bootstrapping supports that partial mediation is occurring in model C, with an indirect effect of .50 ($p < .05$) with a standard error of .15 as shown in Table 5. The 95 percent bootstrap confidence interval (5000 trials) is from .23 to .79. As zero is not in the confidence interval, it can be concluded that the indirect effect is different from zero. Results confirm hypothesis 3 and suggest there is partial mediation occurring in model C as predicted.
### Table 5.

*Direct and Indirect Effects for Mediation Model for Avoidant Coping*

<table>
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*Note. N = 296. Number of Bootstrap Resamples = 5000. * p < .05. ** p < .01.*
Summary of Analyses

The primary research question was whether emotional eating mediated the relationship between three separate coping strategies and weight category, determined by BMI. It was also hypothesized based on the review of literature that both problem-focused and emotional approach coping would be negatively related to BMI category while avoidant coping would be positively related. While the relationships were in the predicted direction for all three coping strategies, the association between problem-focused coping and BMI was non-significant.

To test the primary research question, three meditational models were examined with the three coping strategies: problem-focused coping, emotional approach coping, and avoidant coping. The hypotheses were tested using a classic path model proposed by Baron and Kenny (1986), in addition to using bootstrapping resampling methods to test for indirect effects (Preacher & Hayes, 2004). For all three of the coping predictor variables, problem-focused, emotional approach and avoidant coping, emotional eating partially mediated the relationship between coping and BMI category. Therefore, results of the analyses show support for the three hypotheses.
Chapter V

Discussion

The purpose of this study was to investigate the relationship between coping strategies and obesity in non-eating disordered women. It was proposed that certain coping strategies commonly considered maladaptive in the coping literature, namely avoidant coping, would be more likely to be associated with a higher weight category (e.g. overweight or obese as defined by BMI). Conversely, it was proposed that coping strategies that have been found to be more adaptive in the coping literature, such as problem-focused and emotional approach coping strategies would likely be associated with a healthier, normal weight category. It was further proposed that a third explanatory variable, emotional eating may be the mediating variable that is underlying these relationships. As discussed in the review of literature, a number of theoretical and statistical relationships among these three variables supported the proposed mediation models. To the author’s knowledge, this was the first study to explore the relationships among coping, emotional eating, and obesity in this fashion.

As hypothesized there was a significant positive association between avoidant coping and BMI category, suggesting that women who endorsed using this type of coping were more likely to fall into the “overweight/obese” weight classification rather than the “normal weight” weight category. Further, the study found support for this relationship being partially mediated by emotional eating, supporting the hypothesis that those who use avoidant coping are more likely to engage in emotional eating, and therefore more likely to be overweight or obese.
It was hypothesized that there would be significant negative associations between the other two coping strategies examined in the study – emotional approach coping and problem-focused coping – and BMI category, such that women who endorsed these types of coping would be more likely to fall in the healthier “normal weight” weight classification. Contrary to this hypothesis, the direct relationship between problem-focused coping and BMI was not statistically significant, though it approached significance with a p value equal to .059. It was in the negative direction, however, and tests of mediation supported an indirect relationship between problem-focused coping and BMI supporting the hypothesis that emotional eating mediates the relationship. The association between emotional approach coping and BMI category was negative and significant, supporting the hypothesis that reliance on emotional approach coping would be associated with a healthier weight classification (i.e. “normal weight” vs. “overweight/obese”). This model was also shown to be significantly mediated by emotional eating. Overall these findings suggest that women who use either emotional approach or problem-focused coping are less likely to be overweight or obese than women who rely on avoidant coping strategies, and that this relationship is partially accounted for by how often the women are engaging in emotional eating. A discussion of the theoretical and clinical implications of these findings follows.

*Theoretical Implications*

*Problem-focused coping.* Bootstrapping techniques showed there was significant mediation occurring in the model with emotional eating partially mediating the relationship between problem-focused coping and BMI. However, while the measures of indirect effects were found to be significant, the direct pathway between problem-
focused coping and BMI was not found to be statistically significant, so criteria for mediation using Baron and Kenny’s (1986) methods were not satisfied. This finding is surprising given that problem-focused coping, generally defined as any coping strategies that attempt to actively resolve or ameliorate the stressor, has been found to be almost unequivocally positive and adaptive in the literature over the last twenty-five years, especially in terms of influencing health outcomes (Carver, Scheier, & Weintraub, 1989). However, one issue that may be related to the non-significant finding in the current study is that the effect sizes for the relationship between problem-focused coping and health outcomes, though consistent in direction, have generally been small to moderate. A meta-analysis with 34 studies found the effect sizes to range from -.15 to .08 with a median value of $r^2 = .01$ (Penley, Tomaka, and Wiebe, 2002). This meta-analysis suggests that, even with a sample as large as 295, there may not have been enough power in the present study to detect a significant relationship compared to the emotion-focused coping strategies, which have generally had higher effect sizes with health-related outcomes. This mirrors the finding in a study by Hasking (2006), where the relationship between problem-solving coping and eating attitudes was not statistically significant, while non-productive coping strategies significantly predicted eating attitudes.

The finding that emotional eating mediates the relationship between problem-focused coping and BMI, when indirect effects are examined, is consistent with much of the literature on both eating and coping behaviors. For example, while some stress-induced models suggest eating is a universal response to stress, others suggest that specific individual traits or learned behaviors can predispose certain individuals to
respond to stress by eating (Greeno & Wing, 1994). The present study supports the latter theory, suggesting individuals using certain learned coping behaviors (e.g. problem-focused and emotional approach coping) may be less likely to engage in emotional eating, while those using more avoidant coping behaviors may predispose individuals to emotionally eat and, therefore, have a higher BMI.

The mediated model also mirrors a previous study by Solomon (2001) that examined a path model that incorporated stress, negative mood states, coping, and overeating. Solomon found that women in the study who reported using problem-focused coping reported an attenuation of negative mood states and were less likely to overeat. Though Solomon did not include weight or BMI in his model, it seems likely that a decreased likelihood of overeating would be associated with a more healthy weight. The current study’s meditational model replicated and extended Solomon’s work, showing this negative relationship between problem-focused coping and emotional eating, with the addition of BMI added to the model.

A study by Diong et al. (2005) examined a specific type of problem-focused coping, Active Coping, and found that it was significantly related to better psychological and physical health. While the current study used a composite variable of problem-focused coping, this variable is actually comprised of a number of sub-strategies, including active coping, planning, suppression of competing activities, restraint, and use of instrumental support. It may be beneficial in future studies to further break down the variable of problem-focused coping and more closely examine how these various strategies may influence both emotional eating and BMI.
In sum, the findings provided support for the consensus in the literature that problem-focused coping is associated with both positive health outcomes and less disordered eating. The non-significant negative relationship between positive-focused coping and BMI can perhaps be justified by previous findings that there is generally a small effect size for the relationship between problem-focused coping strategies and health outcomes (Penley, Tomaka, & Wiebe, 2002). However, bootstrapping results of the overall model demonstrate that there is an association among this coping strategy, BMI category, and emotional eating. Significant findings for the indirect effects in the model suggest that obesity may be less prevalent in women who rely on problem-focused coping, as they are less likely to engage in emotional eating when faced with a stressor. This supports the notion that increasing problem-focused coping skills could be beneficial in addressing emotional eating problems that may be contributing to obesity in women.

*Emotional approach coping.* Findings showed that emotional approach coping was negatively associated with BMI, suggesting that women who tend to use more emotional approach coping strategies were less likely to fall into the overweight/obese weight classification. Results also showed that emotional eating significantly mediated this relationship, providing support for the hypothesized model. Emotional approach coping, a fairly new construct of coping, is considered a sub-type of the emotion-focused coping variable initially proposed by Lazarus and Folkman (1984). Emotional approach coping was originally constructed when researchers noticed that the measurement of emotion-focused coping was muddled with conflicting positive and negative emotional strategies, as well as confounded with psychopathology (Stanton,
Danoff-Burg, Cameron, & Ellis, 1994). In order to account for this, emotional approach coping was created as a construct and several items created to compensate for measurement issues on the COPE. Therefore, while the literature would suggest emotion-focused coping would relate to poor health and eating behaviors, this was not the case for emotional approach coping.

Findings for the meditational model suggest that reliance on emotional approach coping is associated with a greater likelihood of being normal weight, and that this relationship is partly affected by the finding that those using emotional approach coping are also less likely to engage in emotional eating. The results replicate previous studies showing the adaptive function of emotional approach coping. While it is still a fairly new construct, research has shown emotional approach coping to be adaptive for women with chronic pain and breast cancer (Smith, Lumley & Long, 2002; Stanton et al., 2000); this is the first study to show it may also be adaptive for the treatment and prevention of obesity. Similarly to problem-focused coping, the meditational model suggests that increasing use of emotional approach coping strategies, strategies that express emotions in adaptive ways, is associated with less emotional eating and, in turn, a healthier BMI.

Avoidant coping. Of the three coping strategies examined in this study, it was hypothesized that avoidant coping would be the only one of the three to be maladaptive. This hypothesis was supported, with avoidant coping showing significant, positive associations with both BMI category and emotional eating in the mediated model. These findings suggest that women who report using a higher level of avoidant coping strategies tend to be more likely to fall into the overweight/obese category as well as
tend to report higher levels of emotional eating. Results support the hypothesis that emotional eating, in fact, mediates the significant relationship between avoidant coping and BMI category, suggesting that emotional eating may be one mechanism that accounts for this association.

Avoidant coping falls under the broader umbrella term of emotion-focused coping. Although emotion-focused coping has generally been considered maladaptive in the past (e.g., Endler & Parker, 1990), this and other studies have since begun to divide the construct into its more theoretically distinct parts, including emotional approach and avoidant coping. However, avoidant coping (defined as coping strategies used to avoid the stressor and any resultant emotions) has consistently been found to be related to less healthy functioning, when compared with approach strategies such as emotional approach and problem-focused coping (Endler & Parker, 1990; Frydenberg & Lewis, 1999; 2004). The study results agreed with the consensus in the literature that avoidant coping would be related to less healthy functioning.

The current mediation model is consistent with a number of studies examining the relationships between avoidant coping and both eating behaviors and obesity. For example, a recent article by Spoor et al. (2007) discussed several regulation models which propose that emotional eaters overeat in response to negative emotions or stress because they have learned that this behavior temporarily alleviates the negative mood states. According to this theory, avoidant copers, as opposed to those using more proactive coping strategies, may emotionally eat as a way to distract from or temporarily alleviate the stressor. Since it has been consistently shown that emotional eating is associated with increased obesity (e.g., Allison & Heshka, 1993; Ganley, 1989;
Van Strien, Schippers, & Cox, 1995), the model in the present study is consistent with this theory, suggesting that reliance on avoidant coping is associated with increased emotional eating behaviors which can then lead to a greater chance of being obese.

The connections between avoidant coping, emotional eating, and BMI demonstrated in the current study also concur with several previous findings. Hasking (2006) found that use of non-productive coping strategies in Australian adolescents significantly predicted an underlying predisposition to dysfunctional eating, classified as both binging and restrictive eating behaviors. Similarly, Mayhe and Edelman (1989) found that high scorers on the Eating Disorders Inventory (EDI) also had greater use of avoidance coping compared to lower scorers on the EDI. Though the EDDS was used in the present study to screen out participants with eating disorders, results did indicate that women who scored high on the Emotional Eating Scale also had greater use of avoidance coping compared to low scorers, suggesting avoidant coping may lead to disordered eating, whether restrictive or overeating. Lee, Greening, and Stoppelbein (2007) found that when studying avoidant coping in female dieters; participants who scored higher on a standardized measure of avoidant coping consumed significantly more ice cream than those who scored lower, regardless if they were in an ego threat or no threat condition, mirroring the link found in the model between avoidant coping and eating behaviors. A number of other studies also support the study findings that avoidant coping is associated with both increased emotional eating and increased BMI (e.g. Freeman & Gil, 2004; Spoor, Bekker, Van Strien, & Van Heck, 2007; Tobin, Holroyd, Reynolds, & Wigal, 1989). Though these studies examined several of the individual pathways rather than a mediational model, they provide strong support for
the significant finding that the relationship between avoidant coping and BMI is mediated by emotional eating. This finding, combined with evidence from other studies, supports Hasking’s suggestion that coping skills training may be effective for preventing the development of both restrictive and binge eating, which could aid in the prevention of not only obesity but a number of other eating disorders as well.

Overall, the results suggest that while increased use of problem-focused and emotional approach coping is associated with a healthier BMI category, use of avoidant coping is associated with greater likelihood of being in the overweight/obese weight category and increased emotional eating. Results indicate emotional eating is mediating the relationship between avoidant coping and BMI. This finding suggests that women who tend to use avoidant coping strategies may turn to emotional eating as a way to avoid negative emotions, or in lieu of more adaptive strategies, which in turn may be increasing their likelihood of becoming obese.

Clinical Implications

In 2001, the United States Surgeon General issued a Call to Action to Prevent and Decrease Overweight and Obesity (U.S. Department of Health, 2001). This Call to Action proposed that targeting environment and behavior are the two areas with the greatest potential for treatment and prevention. Results from the current study suggest that targeting coping behavior is a promising avenue to explore in the treatment and prevention of obesity. Evidence shows that individuals are socialized from birth to rely on certain coping strategies and will often primarily rely on these particular strategies, regardless of how effective they may be (Dusek & Danko, 1994; Kliewer, Fearnrow, & Miller, 1996; MerKernon et al., 2001). However, this study has shown that certain
coping strategies, such as avoidant coping, may be maladaptive and can lead to poor health outcomes, in particular overweight and obesity. Reliance on other more adaptive coping strategies, such as emotional approach and problem-focused coping, can increase one’s likelihood of being normal weight.

Because coping is primarily a learned behavior, it is something that can be taught and is adaptable with proper training. Coping skills training of various types have already been shown to be successful with those with alcohol-related disorders (Monti & Rohsenow, 1999), adolescents with diabetes (Grey, Boland, Davidson, Li, & Tamborlane, 2000), as well as in reducing anxiety and depression among forward-deployed troops (Jones, Perkins, Cook, & Ong, 2008). Similar types of trainings aimed at reducing obesity could be done at an early age through schools-based programs. Coping skills training could also be used to treat adults already suffering from obesity through therapeutic interventions using behavioral, cognitive behavioral, and/or emotion-focused techniques. Using the findings from this study, clinicians working with overweight or obese clients may be able to work with clients from two perspectives, both increasing emotional approach and problem-focused coping strategies and decreasing use of avoidant coping strategies. Increasing emotional approach coping may include teaching techniques such as mindfulness or journaling or encouraging traditional talk therapy for the clients to express their emotions rather than hide from them. To increase problem-focused coping, clinicians may work with clients to approach problems in a manner that directly addresses the stressor and may teach problem-focused techniques such as using calendars, to-do lists, and listing pros and cons when evaluating options. These techniques could be taught while working with the
client using behavioral techniques to reduce avoidant behaviors, while also exploring the emotional reasons one may avoid addressing negative stressors.

In addition to coping skills training, it is also possible for clinical intervention to occur with the mediator variable, emotional eating. For example, clinicians may use behavioral interventions that help women become more aware of the connection between eating and their emotions. To do this, a therapist may have clients track specific instances when they emotionally eat and what their thoughts and feelings were at that time. Another intervention that could be beneficial, knowing the relationship emotional eating has with coping, could have clients track instances when they were feeling negative emotions (such as anger, sadness, or anxiety which are common precipitates to emotional eating) and list how they dealt with the emotion, whether through eating or some other coping mechanism. Evidence from the current study demonstrates that both the variables of coping and emotional eating have important clinical implications for the prevention and treatment of obesity.

Strengths and Limitations

This study adds to the existing research on the prevention and treatment of obesity, a health epidemic that is increasing in the United States at an alarming rate. Although emotional eating has long been believed to be a contributor to obesity, this appears to be the first study to also add the variable of coping to the model and to show significant relationships among the three variables. There were several strengths to this study, primarily in the diversity of the sample. Because they study was conducted online, there was a nationwide sample that varied in age, race/ethnicity, weight, education level, relationship status, activity level, and SES. Also, while much research
is based on convenience samples using college students, the present study reported that only 21% of the sample reported they were currently attending a university enhancing the generalizability of the findings to a broader spectrum of women. A final strength of the study is the relatively large number of participants in the samples used for the final analyses (ranging from 295-300) which increases both the power of the study and the external validity.

However, there are also several limitations to the study that are imperative to address. The limitations are related to the nature of the measures and data collection procedures, as well as the limited generalizability of the data to the entire population. The first limitation that is important to note is that all of the measures used in the study were self-report questionnaires. Participants may have been influenced by factors such as social desirability or transient mood states when answering the questions. There is also a fair amount of transparency in the measures whereas it is clear what may be considered a “negative” or less socially desirable response if participants wanted to skew their responses in a more positive way. However, every effort was made to ensure participants’ knew their answers would be anonymous, in attempts to alleviate this issue.

A second limitation related to self-report data is that there have been some findings that women tend to underestimate when reporting their weight (e.g. Cameron & Evers, 1990). Self-reported height and weight were used in the study to calculate BMI scores. However, a number of studies have consistently shown that self-reported weights correlate with recorded weights above .90 in women (Cash, Counts, Hangen, and Huffine, 1989; Palta, Prineas, Berman, and Hannan, 1982; Smith, Hohlstein, and
suggesting that the BMI calculations used in the current study are an accurate reflection of the sample.

A third limitation of the nature of the data is that self-report questionnaires inherently assume a certain level of self-awareness. For example, some women may emotionally eat but not be completely aware that a negative emotion has triggered the behavior. Coyne and Gottlieb (1996) have criticized the use of self-report coping scales for this very reason. However, according to Folkman and Moskowitz (2004), narrative approaches to measuring coping are not necessarily more accurate as, without prompting, participants may overlook ways they cope. The authors suggest “selecting the approach that is most appropriate and useful to the researcher’s question” (p. 751). Though there is no perfect way to measure coping, as evidenced by Folkman and Moskowitz, the measures used in the current study are commonly used to measure coping and have been empirically validated.

A fourth limitation to the study that should be noted in order to accurately interpret the results is that the sample is self-selected. Although 511 participants initially began the study survey (including a number of men and others who did not meet the qualification criteria), only 276 participants completed every single question on the survey. It is possible that the women who chose to complete the 15 minute questionnaire may have different characteristics than those who discontinued prior to completion and this could potentially limit the generalizability of the sample.

The final limitation of the study is the intentional homogeneity of the sample in terms of gender. With two thirds of the country’s population being overweight, and nearly half of those qualifying as obese, it is clear that obesity is a nationwide problem
that does not discriminate based on gender. In fact, nearly a third of men in the U.S. were obese in a 2005-2006 survey conducted by the federal government (CDC, 2007). Though for the purposes of this study women were the target population, the significant findings open the door for further research to expand the generalizability of the results to the entire population.

Future Research Directions

Results of the study suggest several directions for future research. As was previously mentioned, the study focused solely on women as much of the research on emotional eating has been based on women. However, coping and eating are universal constructs and, given the high obesity rate in men, could be important avenues to explore whether results would be similar or different from those based on a female sample. For example, given the ways males are typically socialized differently than females from birth, it would be interesting to examine whether men may use less emotional approach and more problem-focused coping and how this could affect both emotional eating behaviors and obesity.

A second avenue for future research is to expand upon the current study and examine more specific coping strategies within the broader categories. For example, within the umbrella term of avoidant coping there are a number of individual coping strategies such as denial and mental and behavioral disengagement. Future studies may investigate the coping variable with greater specificity to further understand the interactions among coping, obesity, and emotional eating.
Summary

In conclusion, this study found support for the meditational role of emotional eating on the relationship between coping strategies and BMI for non-eating disordered women. Results support previous literature suggesting links between coping styles, eating behaviors, and obesity. These findings have a number of clinical implications, most importantly the potential importance coping skills training could play in the prevention and treatment of obesity through the reduction of emotional eating behaviors. Results of this study provide support for the U.S. surgeon general’s Call to Action to Decrease Overweight and Obesity by identifying coping as a specific area for behavioral intervention. Areas for future research, including expanding the study to include men, and narrowing the scope to include more specific coping sub-strategies, were also identified.
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