

Binge Eating, Stress, and Coping Strategies Among College Undergraduates

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ABSTRACT

The object of this study was to investigate the relationship between binge eating, stress, and coping among college men and women. Previous research has suggested that binge eating is correlated to perceived stress (Striegel-Moore, Silberstein, Frensch, & Rodin, 1989) and may be a means of coping with stress (Koff & Sangani, 1996). To date, the relationship between these variables is not well understood in the college-aged population, especially in men. Given the changes and stressors associated with the transition to college living, it seems possible that binge eating habits may develop in response to stress, particularly when more effective coping strategies are not in a student's repertoire. In order to better understand the relationship between these variables, the present study was conducted. One hundred and ninety-six students participated in the study, which involved completing questionnaires on binge eating, determining the degree of stress experienced, and using of a variety of coping strategies. The results indicated that participants who reported greater binge eating tendencies also reported more perceived stress. Binge eating was also found to be correlated to avoidance-type coping strategies (such as behavioral and mental disengagement, and use of alcohol and drugs). On the other hand, problem-focused coping (active coping and planning) was negatively related to binge eating. In this study, binge eating was not found to be correlated with a higher BMI. In terms of male-female differences, women were found to binge eat more than men and use somewhat different coping strategies (such as seeking social and emotional support and venting emotions). On the other hand, men were found to cope by using drugs and alcohol more than women. The implications and limitations of these findings are discussed and suggestions for future research are provided.

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It is well documented that obesity has become an epidemic in the United States. In 2000, it was estimated that approximately two-thirds of the United States adult population was considered to be overweight, with over 30% being obese [National Institute of Health (NIH), 2000]. These findings represent a rapid increase, given that the U.S. obesity rate was 13% just forty years ago (NIH, 2000). The prevalence of overweight among children and adolescents is also at an alarming rate of 15% (NIH, 2000). Obesity has been linked with serious health risks that include stroke, heart disease, cancer, diabetes, high cholesterol, and psychological disorders (NIH, 2000). In terms of its health impact on younger individuals, Dietz (2004) found that 25% of obese children and adolescents continue to be obese in adulthood, and such persistent obesity often leads to even more severe health consequences. For example, it has been found that 60% of these children and adolescents have one additional cardiovascular disease and 25% have two additional cardiovascular diseases in adulthood (Dietz, 2004). Because of these health risks, it is clearly important that the causes of obesity (particularly in younger individuals) be understood so that proper prevention and intervention programs can be developed.

There are a variety of reasons that a person can become overweight or obese, including genetics, lack of exercise, changes in eating habits (e.g., increased calories, types of foods consumed), lifestyle changes, and eating disorders. For college students in particular, major lifestyle changes and disordered eating, such as binge eating, may contribute to weight problems. For example, Mcivor (2005) found that 44% of college men and women engage in binge/purge behavior, which is a symptom of the eating disorder bulimia nervosa. Another recent study found that out of 71 college students, an alarming 30% had a diagnosable eating disorder (Kugu, Akyüz, Dogan, Ersan, & Izgiç, 2002). In addition to disordered eating among college students, it has been documented that many students gain weight during their first years of college. For example, one study examined entering college freshmen and found that at the end of

their sophomore year 70% of 290 reevaluated students had gained weight (Racette, Deusinger, Strube, Highstein, & Deusinger, 2005). Results from the 1995 College Health Risk Behavior Survey suggest that the sedentary and dietary patterns of many college students can contribute to future health risks and problems (Douglas, Collins, & Warren, 1997). Improving our understanding of and addressing college students' eating behaviors and weight gain may be an important step in reducing health problems that may develop later in life.

As noted previously, disordered eating may contribute to the development of overweight. Binge eating (the consumption of a large quantity of food in an uncontrollable manner in a distinct amount of time; [American Psychiatric Association, 1994]), in particular, is a form of disordered eating that may be associated with obesity, given that higher rates of binge eating are found in people among community samples seeking treatment for obesity. For example, binge eating has been reported to occur in more than 25% of the people who are entering obese treatment programs (Pull, 2004). Prevalence rates in a community sample of overweight and obese individuals indicate that approximately 9% of men and 13% of women may be classified as "binge eaters" (Linde, Jeffery, Levy, Sherwood, Utter, Pronk, & Boyle, 2004). Among college-aged individuals, 41% of 242 women in one sample acknowledged engaging in binge eating behavior, and 15% of these women reported binge eating once a day or more (Vanderlinden, Grave, Vandereycken, & Noorduyn, 2001). In another college sample of 1,642 undergraduates, 5.2% of men and 9% of women reported binge eating at least once a week (Wolff, Crosby, Roberts, & Wittrock, 2000).

Unlike eating disorders like bulimia nervosa and anorexia, the prevalence of binge eating behavior in the absence of more severe eating disordered behavior (such as purging) appears to be more evenly distributed between the sexes. In some studies (e.g., Barry, Grilo, & Masheb, 2002) rates of binge eating are equal between men and women, whereas in other studies (e.g., Mitchell & Mazzeo, 2004) women have been found to report higher rates of binge eating than men. In terms of college-aged men versus women, there is much less data, as men are often excluded from research in the area of disordered eating in college students (Vanderlinden et al., 2001). Wolff et al.'s (2000) study was one of the few examining binge eating behavior in college men. It would be useful to further assess and compare binge eating behavior in college-aged men and women.

Binge eating has a number of antecedents, but one that seems to be more predominant is a person's degree of perceived stress (Striegel-Moore, Silberstein, Frensch, & Rodin, 1989). Perceived stress is a person's perception of their stress, rather than the actual number of stressful life events. Interestingly, research has typically focused on the relationship of disordered eating and the number of objective stressful life events, and not on one's perception of their stress (Ball & Lee, 2000), which may be a more important factor in contributing to dysfunctional eating than are actual life stressors (Ball & Lee). Freeman and Gil (2003) reported that women with a higher level of psychological stress have an associated increased risk of a same-day binge eating episode. Similarly, Crowther, Sanftner, Bonifazi, and Shepard (2000) found that women who reported binge eating also reported a higher level of daily stress (i.e., daily hassles) and consumed a much larger number of calories on the days that they reported more stress. Another study (Wolff et al., 2000) found similar results; women who reported binge eating also reported that they had more perceived stress on that same day, and they consumed more calories than women who did not engage in binge eating. Interestingly, the binge eaters in this study reported the same number of stressful situations as non-binge eating women, suggesting that although objective stress may not delineate binge eaters from nonbinge eaters, subjective stress (i.e., perceived stress) may.

Although the above studies are correlational, and thus cannot determine that stress is the cause of binge eating, they do clearly depict the existence of a relationship between the way an individual who binge eats perceives his stress and his eating behavior. To date, there is limited experimental research on this topic, though one such study supports the phenomenon of stress-induced binge eating. Hansel and Wittrock (1997) experimentally manipulated stress levels in binge-eating and nonbinge-eating women using two variations of stress induction and found that the binge-eating group reported more stress in both the high and low stress conditions across variations than the nonbinge-eating control group. This

suggests that women who binge eat may be more predisposed or sensitive to experiencing stress than women who do not binge eat.

Binge eating has not only been associated with different types of stress, but also with ways in which one copes with his/her stress, which are referred to as “coping strategies.” According to Parker and Edler (1992), there are two central types of coping strategies: problem-focused coping and emotion-focused coping. This dichotomy is frequently described in literature and is the basis for many assessments of coping. Problem-focused coping refers to the use of problem-solving techniques to minimize the effect of the stressors with which a person has been faced. This type of coping is often said to be more positive because the person is dealing with the issue at hand, and not displacing or ignoring it (Hansel & Witrock, 1997). On the other hand, emotion-focused coping refers to the use of some type of emotional response to stress, such as fantasizing a certain outcome, or becoming preoccupied with self so one does not have to deal with a particular problem. This coping strategy is said to be more of a negative coping strategy because a person is not directly dealing with the stressor; rather, one is displacing the emotion surrounding the problem (Hansel & Wittrock).

Although these previously mentioned broad coping strategies (emotion-focused, problem focused) are consistently discussed in today’s literature, there are many more specific strategies that are commonly used by individuals. A few studies have specifically examined the stressors and subsequent coping strategies frequently used by college students. One stressor with which college students often attempt to cope is family conflict (Lee, Su, & Yoshida, 2005). Family conflict often arises in college students when there is a discrepancy between the student’s desire for independence and his/her parents’ desire to maintain control. Both problem-solving coping and social-support seeking have been identified as common strategies with which to deal with such family conflict (Lee et al., 2005). Problem-solving coping is thought to be more useful when family conflict is low and social-support seeking appears to be more useful when family conflict is high (Lee et al.). Other stressors faced by college students are final exams, which can be critical to a student’s final grade. Zhang, Zhang, and Jin (2004) examined college students during an exam period and found that students practiced six common coping strategies: reviewing and learning, begging sympathy, seeking support from family or friends, escape and abandonment, teamwork and effective time management, and fantasy. The only coping strategy that was positively associated with effective coping was use of teamwork and effective time management (Zhang et al., 2004).

Another coping strategy used by college students may be binge eating, which is sometimes classified in the eating disorder literature as “avoidance coping.” Specifically, the escape model, first outlined by Heatherton and Baumeister (1991), states that an individual may engage in a behavior that narrows one’s cognitive attention to one stimulus in order to help him or her avoid a broad range of more meaningful (albeit perhaps more painful) thoughts. This strategy is therefore considered an escape from self-awareness. Such avoidance coping can take on many different forms and can encompass essentially any behavior in which an individual concentrates on one stimulus to avoid another. One such behavior is binge eating.

Recent research suggests that there is a significant relationship between avoidance coping and binge eating. For example, Blackburn, Johnston, Blampied, Popp, and Kallen (2006) examined a non-clinical population of 129 women. Each woman completed a set of measures, including subscales from the COPE Inventory that intended to measure avoidance-coping (i.e., Denial, Mental Disengagement, Behavioral Disengagement, and the Use of Alcohol and Drugs). They found that negative affect was a strong predictor of avoidant-coping and binge eating. Unfortunately, the authors did not report how each of the individual COPE subscales related to binge eating (or whether they were inter-correlated), a fact which may provide a limited view of the relationship between binge eating and specific coping strategies.

Freeman and Gil (2003) evaluated stress and coping strategies as predictors of binge eating among college women identified as binge eaters. Based on their daily dairies of binge eating, stress, and coping, it was concluded that avoidant coping was associated with an increased risk of a same-day binge and with future episodes of binge eating. Koff and Sangani (1996) found similar results, noting that the higher use of avoidant-coping was associated with higher scores on a measure of disordered eating. More

specific to college students, Paxton and Diggins (1997) categorized 149 undergraduates into three groups: restrained/non binge eaters, restrained/binge eaters, and non-restrained/binge eaters (“restrained” meaning the behavior of limiting food intake or calories). Regardless of level of restraint, binge eaters were more likely to use avoidance-coping and have depressive symptoms than non-binge eaters. However, when controlling for depression, avoidance-coping did not predict binge eating. Similarly, Schwarze, Oliver, and Handal (2003) found that undergraduate binge eating women had more depressive symptoms, substance abuse, and avoidance-coping than nonbinge eaters, but binge eating did not differentiate groups when depression was controlled. Examining coping and binge eating in a group of overweight women, Henderson and Huon (2002) assessed self-reported negative affect, binge eating severity, and dispositional coping styles [using three subscales of the COPE inventory, one from each of the broader coping style categories (problem-focused, emotion-focused, avoidance-coping)]. The study concluded that overweight women who had a higher severity of binge eating and lower negative affect used more dysfunctional coping.

Again, little experimental data has been generated around the topic of coping strategies utilized by binge eaters in response to stress. One study (Sanftner, 2000), however, involved a manipulation of stress among 48 binge eating women and 41 nonbinge eating women. Participants were randomly assigned to conditions where they received positive versus negative feedback (regardless of performance) after completing a creative thinking task. After each subject received their assigned feedback, she participated in a taste-test designed to elicit the use of coping strategies to manage the negative feedback. The results showed that the women in the binge eating group reported more avoidance-coping and more self-nurturance than did the control group. Interestingly, regardless of type of feedback-positive or negative-the binge eating group had a higher level of negative affect than did the control group. Collectively, these findings suggest that binge eating may be more related to negative affect than a general avoidance coping style, though the lack of experimental research in this area and limited types of populations studied (particularly men) make drawing conclusions challenging. There is also minimal data related to the tendency to binge eat and the use of specific coping strategies, particularly in college men and women.

In summary, given the risks associated with obesity it is imperative that we better understand and prevent habits that contribute to overweight. Binge eating is one of many behaviors that have been associated with overweight and are relatively common in both men and women. Thus, understanding the mechanisms involved in the development and maintenance of binge eating behavior is relevant to the prevention and treatment of obesity. Because stress and coping appears to be pertinent to understanding binge eating, it is of value to more clearly assess the relationship between stress, coping strategies, and binge eating. This is particularly true among the college student population because of the multiple stressors and changes they face when moving from the family home into an unfamiliar environment. This adjustment is sudden and most students are unprepared to deal with such a significant change. To date, no studies have specifically examined the relationship between stress, coping, and the tendency to binge eat among college men and women. Therefore, this study aims to explore these relationships and to assess whether perceived stress and the types of coping strategies utilized predict binge eating behavior among college men and women.

The hypotheses of the present study were as follows:

1. Binge eating is associated with greater levels of perceived stress.
2. Binge eating is associated with the use of greater avoidant coping strategies, specifically Behavioral Disengagement, Mental Disengagement, Use of Alcohol and Drugs, and the Focus on and Venting of Emotions.
3. Binge eating is associated with the use of fewer Active Coping and Planning Strategies, both of which are categorized as problem-focused coping strategies.
4. Binge eating is associated with more use of Denial and less use of Positive Reinterpretation and Growth, both of which are emotion-focused coping strategies.
5. Binge eating is associated with higher Body Mass Index (BMI).

6. College-aged women binge eat more than do college-aged men.

Method

Participants

Participants included 93 female and 103 male undergraduate students at a Midwestern state university who were between the ages of 18 and 25 years. The age 25 was established as the cutoff in order to limit the sample to participants who are traditionally categorized as “young adults” and those that are most likely to be experiencing the transition from living at home to more independent living. That is, there are unique stressors and lifestyle changes that tend to occur in the transition from living with one’s family to living on one’s own, such as making independent decisions about finances, eating, activities, etc., and these are mostly likely to occur between the ages of 18 to 25. Participants were then recruited from the population of students taking psychology courses in the spring semester of 2006, particularly General Psychology. Students could sign up to participate in a study on an identified school website that listed all ongoing research studies for which students could exchange participation for course credit in specified psychology courses.

Measures

Participants were asked to complete some basic demographic information (e.g., age, height and weight, year in school, living situation) in addition to three self-report surveys: the Binge Eating Scale (BES; Gormally, Black, Daston, & Rardin, 1982), the COPE Inventory (COPE; Carver, Schier, & Weintraub, 1989), and the Perceived Stress Scale (PSS; Cohen, Kamarack, & Mermelstein, 1983).

The Binge Eating Scale. The BES is a 16-item self-report scale that assesses the frequency and severity of binge eating, including the ability to control overeating, food preoccupations, overeating emotions, and secretive eating. The BES has eight questions that pertain to the cognitions and feelings related to binge eating and eight questions that pertain to the behavioral manifestations of binge eating (Gormally et al., 1982). The items are arranged in sets of three to four statements that vary in degree of eating pathology, if any is evident (See table 1). The higher the score, the greater the reported binge eating symptoms. Although the BES cannot diagnose binge eating as a psychological disorder (i.e., binge eating disorder), scores on the BES are highly correlated with clinician assessed binge eating status via interview (Marcus, 1988). In current research, the BES is a frequently used scale in detecting the behavior of binge eating.

Perceived Stress Scale. The PSS is a 14-item self-report assessment that measures the degree to which a person perceives their life situations as stressful (see table 2 for examples of questions). The PSS has been found to be reliable, both in terms of internal consistency (alpha coefficient = 0.78; Cohen, 1988) and test-retest reliability (0.85; Cohen et al., 1983). It has been correlated with other psychological scales, self-reports of health behaviors, physical illness, and is strongly correlated with other life-impact score measures, suggesting that it is a valid measure of perceived stress (Cohen, 1998; Cohen et al., 1983).

The COPE Inventory. The COPE is a self-report assessment of dysfunctional and functional coping strategies. Unlike some measures of coping that assess only the broad coping styles (e.g., problem-focused coping), the COPE assesses 15 more specific strategies that fit within three main categories of coping approaches (see table 3). In particular, five subscales measure emotion-focused coping, five subscales measure problem-focused coping, three subscales measure less adaptive coping strategies, and two are not categorized; (Carver, Scheier & Weintraub, 1989). Within each subscale, a higher score indicates a greater use of that particular coping strategy. There is considerable intercorrelation between the subscales ($r = 0.45$ to 0.92 ; Carver, Scheier & Weintraub, 1989), suggesting the measure is internally consistent.

Procedure

Participants were to attend one of the five different times slots that were available. Attendance ranged from 5 to over 100 students per time slot. To ensure anonymity (thereby increasing the likelihood that participants would respond honestly), attendance was not taken, nor was there any way to identify students by their name or identification number, and each student was given a consent form.

When students arrived at the study, they were first asked to read the consent form but not to sign or return it. They were then given a summary of the study and asked if they had any questions. After all questions were answered, the survey and the credit slips were distributed. The credit slip and the survey were distributed together because there were questions that were labeled as “personal” on the survey, so if students were not comfortable finishing the survey they did not have to do so. After finishing the survey, each student returned it to the researcher and was then dismissed.

Results

After 196 surveys were completed, the results were scanned and imported into a statistical software program (SPSS 13.0). Two subjects’ data were completely omitted from the study; one due to failure to complete the majority of the survey, and the other due to exceeding the age limit of 25 years. Thus, a total of 194 subjects were included in the data analysis. A number of these subjects failed to answer one or more questions. Not surprisingly, the most commonly skipped items related to alcohol use and/or binge eating behavior. The missing data were managed in one of two ways: 1) if only one or two items in a measure/scale were skipped, the average of that particular individual’s scale or subscale score was used to replace the missing item score, or 2) if more than two items from a scale were skipped, the entire scale (or subscale) was omitted from the analyses (which was the case for two subjects).

Description of Sample

Of the 194 eligible subjects, 102 were male and 92 were female. The mean age was 19.5 years and the mean BMI was 23.8. The majority of the subjects lived with peers who were also attending college. See table 4 for more complete descriptive data of the sample.

The remaining results from this study are presented by hypotheses, followed by additional exploratory analyses. See Table 5 for a summary of correlations between the BES, PSS and all subscales of the COPE Inventory.

Hypothesis 1: Binge eating is associated with greater levels of perceived stress.

To examine this hypothesis, a correlation was calculated between the BES and the PSS total scores. As suspected, there was a strong positive correlation ($r = .34, p = .01$) between these two variables, indicating that higher rates of binge eating were associated with greater levels of perceived stress.

Hypothesis 2: Binge eating is associated with the use of greater avoidance-coping strategies, specifically Behavioral Disengagement, Mental Disengagement, Use of Alcohol and Drugs, and the Focus on and Venting of Emotion.

Correlations were calculated between the BES and identified subscales of the COPE (Behavioral Disengagement, Mental Disengagement, Use of Alcohol and Drugs, and the Focus on and Venting of Emotion). As hypothesized, all four of these COPE subscales were significantly correlated with binge eating (Behavioral Disengagement, $r = .24, p = .000$; Mental Disengagement, $r = .15, p = .02$; Use of Alcohol and Drugs, $r = .15, p = .018$; Focus on and Venting of Emotion, $r = .19, p = .005$).

Hypothesis 3: Binge eating is associated with the use of fewer Active Coping and Planning Strategies.

In the assessment of this relationship, correlations were calculated between the BES and two of the problem-focused coping strategies from the COPE that appear most related to binge eating. There was

a negative correlation between binge eating and both Active Coping and Planning strategies ($r = -.14, p = .03$ for Active Coping; $r = -.17, p = .01$ for Planning).

Hypothesis 4: Binge eating is associated with greater use of Denial and less use of Positive Reinterpretation and Growth, both of which are emotion-focused coping strategies.

The correlations between BES scores and two of the emotion-focused subscale from the COPE (Denial and Positive Reinterpretation and Growth) were examined in order to address this hypothesis. The results indicated a negative correlation between binge eating and Positive Reinterpretation and Growth ($r = -.16, p = .012$); however, there was no statistically significant correlation between binge eating and Denial ($r = .07, p = .182$).

Hypothesis 5: Binge eating is associated with higher BMI.

The correlation between scores on the BES and self-reported BMI was calculated. This relationship was not statistically significant ($r = .11, p = .066$), though there was a trend in the anticipated direction.

Hypothesis 6: College-aged women binge eat more than college-aged men.

To examine this hypothesis, a one-way ANOVA was conducted in order to compare men and women on their BES scores. In accordance with the hypothesis, binge eating was more prevalent among college-aged women than college-aged men, $F(1, 192) = 14.765, p < .001$.

In addition to the main hypotheses, this study sought to describe a college-aged population and compare men versus women in terms of their tendency to binge eat, degree of perceived stress, and typical coping strategies employed. Table 6 outlines the descriptive data related to these variables for men versus women. For both the BES and the PSS, one-way ANOVAs were calculated to assess the magnitude of the differences between men and women. As previously noted, women reported substantially more binge eating than men. Women also perceived experiencing significantly more stress than did the men, $F(1, 192) = 9.46, p < .01$. A MANOVA was used for a between-groups comparison of the COPE subscales to assess if there were differences between the sexes in terms of the types of coping strategies they reported utilizing. The MANOVA (Wilks' Lambda value = 0.011) was statistically significant, $F(15, 177), p < .001$, indicating that there was a statistically significant difference between men and women on at least one of the COPE subscales. Therefore, univariate F -tests were performed in order to assess where these differences lay. Men and women significantly differed in their reported use of four of the 15 specific coping strategies assessed by the COPE. Specifically, women tend to seek more instrumental social support than men [$F(1, 193) = 8.93, p < .01$] and seek more emotional support than men [$F(1, 193) = 26.63, p < .000$]. Women also focused on venting of emotions much more than the men [$F(1, 193) = 39.95, p < .000$]. On the other hand, men tended to use more drugs and alcohol as a means of coping than did women [$F(1, 193) = 10.63, p < .001$]. The sexes did not differ in terms of problem-focused coping in the areas of active coping, planning, suppression, and restraint. In the area of emotion-focus coping, there was no significant difference between men and women in Denial, Positive Reinterpretation and Growth, Acceptance, and Turning to Religion. In terms of the utilization of the less useful coping strategy, there was no difference between men and women on the Behavioral Disengagement and Mental Disengagement subscales.

Examining the three broad approaches to coping (problem-focused, emotion-focused, escape-focused) the researchers found that there was a significant negative correlation between binge eating and problem-focused coping ($r = -.14, p = .03$), but not between binge eating and emotion-focus coping ($r = .01, p = .43$). Interestingly there was a strong positive correlation between binge eating, emotion-focus coping, and problem-focus coping ($r = .55, p = .003$) indicating that the more a person binge eats the more likely they are to use a variety of approaches to coping. Also of note, avoidant-coping (which was calculated by adding the behavioral disengagement, mental disengagement, the use of alcohol and drugs, and the focus on venting of emotion subscales of the COPE Inventory) was positively correlated with

binge eating ($r = .21, p = .002$). The construct of less useful coping strategies that Carver, Scheier & Weintraub, (1989) incorporated in the COPE (which consisted of focusing on venting of emotion, behavioral disengagement, and mental disengagement) had a positive correlation with binge eating ($r = .28, p < .000$).

Discussion

This study set out to examine binge eating behavior among college-aged men and women, particularly as it relates to stress and coping strategies. One hundred and ninety-six students were assessed by three self-report measures of binge eating, perceived stress, and coping. One of the most notable findings was the moderate correlation between binge eating and perceived stress among this sample. This finding suggests that students who have more perceived stress are more likely to binge eat. This relationship is also consistent with previous literature (e.g., Hansel & Wittrock, 1997; Wolff et al., 2000), though because this is correlational research, it is unclear if there is a causal relationship. It could be that stress triggers binge eating, or that the types of people who perceive their lives as more stressful than most have a tendency to binge eat. Additionally, it could be that binge eating causes people to experience increased stress due to their loss of control and/or increase of calories consumed. Finally, it may be that some other variable, such as negative affect, mediates this relationship.

Another notable finding of the present study was the relationship between binge eating and use of certain coping strategies. Specifically, it was found that binge eating was associated with all four of the COPE subscales that have been theoretically linked to avoidant coping (i.e., Use of Alcohol and Drugs, the Focus on and Venting of Emotion, Behavioral Disengagement, and Mental Disengagement). This suggests that students who engage in binge eating are also more likely to use alcohol and/or drugs as a means of coping, are more likely to think about and express their emotions in attempt to cope with their stress, and are also more likely to give up trying to solve the problem (both mentally and behaviorally). Thus, the present study supports the idea that binge eating may be a way that some college students avoid dealing with stress or negative effect. Similar results were found in a non-clinical population of women (Blackburn et al., 2006) and are consistent with the escape model of binge eating that suggests persons will occupy themselves with an activity to avoid a current stressor.

An alternative explanation for the relationship between binge eating and avoidant coping is that depression may account for both behaviors. For example, Schwarze et al. (2003) found that although binge eating was associated with avoidant coping, when depression was controlled the relationship between binge eating and avoidant coping no longer existed. This may suggest that negative affect, rather than coping style, may account for binge eating. The present study did not assess depression and thus such an explanation cannot be ruled out, yet further research should examine this possibility among men and women.

Along with avoidant coping, problem-focused coping (including active coping, planning, suppression of competing activities, restraint, and seeking of instrumental social support) was also examined. It was initially thought that active coping and planning were the two specific strategies most related to binge eating. That is, it was hypothesized that binge eating would have a negative correlation with active coping and planning coping as these are both considered more productive ways of dealing with a problem (Hansel & Wittrock, 1997), whereas binge eating is arguably not productive. The results of this study supported the hypothesis that the more binge eating behaviors in which a person engages, the less active coping and planning they tend to utilize. This is an important correlational discovery because it specifically identifies areas in which binge eaters may have deficits in terms of their ability to cope with stressors. When combined with the evidence that binge eating is associated with increased perception of stress, this data suggest that it may be particularly useful to develop interventions with college students aimed at increasing their use of problem-solving and active coping strategies when faced with stress. By increasing students' resources to cope in a productive manner, binge eating may be reduced or eliminated in those who utilize bingeing as a means of coping.

A variety of emotion-focused coping strategies were also assessed in the present study. Interestingly, denial was not significantly correlated with binge eating, though positive reinterpretation was. That is, binge eating was not associated with a tendency to use denial as a way to cope with a problem. This was somewhat surprising because one would assume that if a person binge eats as a means to avoid or escape the problem, denial would serve the same function. Instead, it may be that a person who binge eats is not in denial of their problem, but that they recognize the problem and feel unable or unwilling to deal with it in a more effective manner. Thus they may avoid thinking about the problem by binge eating. As noted, there was a negative correlation between binge eating and positive reinterpretation. This suggests that the more one binge eats, the less likely he or she tends to consider the positive aspects of a problem as means of coping with that problem. For example, a student using this strategy may cope with a recent argument with his parents by deciding that such arguments are a healthy means of gaining independence, despite the immediate discomfort experienced. The finding that as binge eating increases, the use of this strategy decreases seems consistent with the idea that people may binge eat when they feel overwhelmed by a problem and cannot see a positive side to the problem or a way out.

One particularly interesting finding in this study was the lack of a significant relationship between overweight and binge eating in this college sample. One explanation for this may be related to the sample of college-aged students that were used. Although research supports binge eating being more common among obese and overweight people in community samples and those seeking weight loss treatment (Pull, 2004; Linde et al., 2004), no research has yet explored whether there is or is not such a relationship in a college sample. It may be that binge eating habits and overweight are less problematic in college students than in general community populations. In fact, this sample was less overweight than the U.S. adult population: less than 30% of the subjects in this study were overweight or obese compared to the national average of approximately 65%. This is a significant difference and suggests that the behavioral habits that lead to overweight may not be as developed in college students.

One of the other more notable findings of this study was the differences between men and women. One of these differences was that women reported greater levels of binge eating than men. Previous research comparing men and women has been inconsistent to date – some studies finding that men and women had a similar tendency to binge eat (e.g., Barry et al., 2002) and others finding women more likely to binge eat (e.g., Mitchell & Mazzeo, 2004). These differences might have been due to the different samples that were used in each study. For example, Mitchell and Mazzeo's participants consisted of a college sample, whereas Barry et al.'s study consisted of an adult population between the ages of 21 and 65. Another difference between these studies and the present study was that they were specifically examining gender differences in rates of binge eating disorder, which is a more severe form of binge eating (Barry et al.). Given that the present study's findings are in accord with Mitchell and Mezzzo's and that both used a college-aged sample, there is support for the idea that binge eating may be more common in women than men, but only at this younger age. It may be that men develop binge eating habits as they get older, whereas women learn this habit earlier in life.

In addition to binge eating behavior, men and women were compared on their use of coping strategies. It was interesting to find that men were more likely to cope by using drugs and alcohol than were women. This seems consistent with male/female differences in rates of substance abuse and dependence; which indicate that males have a higher prevalence rate of alcohol addiction (American Psychiatric Association, 2005). On the other hand, women were more likely to seek social support, seek emotional support, and vent their emotions than were men. Therefore, it appears that men and women have somewhat different coping styles and thus sex-specific intervention programs may be useful when teaching college students how to cope more constructively. In general, there is an underrepresentation of men in research pertaining to disordered eating, including binge eating. This is important because although disordered eating is more common in women, it has been found that men do have eating disorders, yet they are rarely the focus of studies on treatment and prevention. Male/female differences in use of coping strategies and manifestation of disordered eating may indicate that sex-specific interventions are indicated and thus a further assessment of such needs seems warranted.

Limitations and future directions

One limitation to this study was that it was correlational. Correlational research depicts relationships between variables; it does not determine the cause of the behavior. This study showed that there is a relationship between binge eating and stress, but not that stress causes binge eating or vice versa. A second limitation relates to the particular sample that was used. The sample included only men and women within the age group of 18 to 25 from one Midwestern state university with limited ethnic diversity. Thus, the results may not generalize beyond this type of population. However, that the intent was to examine college students, the results probably generalize to similar college-aged groups.

Although this study provides insight into the relationship between binge eating, stress, and specific coping strategies utilized by college men and women, it also raises a number of questions that warrant further research. One of these issues relates to the relationship between binge eating and overweight. Given both that binge eating tends to be more common among overweight individuals, and that there was no relationship between binge eating and being overweight in this college student population, one wonders whether there is a developmental component to binge eating. Thus, it might be useful to compare binge eating behaviors and BMI in 18 to 19 year-old freshman compared to upper classmen.

Another area of interest for further investigation is the way in which one copes with the transition from dependent to independent living. Making this transition is often challenging, and some students may turn to less productive coping strategies, such as binge eating. This premise could be examined by evaluating students who live with their parents before they enter college and reevaluate them after their first semester or year of college. Such a longitudinal study could clarify whether perceived stress, types of coping strategies used, and degree of binge eating change over time and whether or not they may be related to the transition in living styles.

Another aspect of coping that should be further examined is the means by which one learns to cope, particularly if it is in a way that triggers binge eating or disordered eating. This could be examined by again assessing students before entering college to identify the type of learning environment from which they have come. Then, the students would be examined again after their first year of school to see if their learning environment from home impacted their coping styles, and if coping styles changed once they moved out of the family home and attend college. It would be particularly interesting to examine the relationship between such changes in stress and coping during this transition and the development of disordered eating. This may provide clarification about the development of disordered eating (particularly binge eating).

Another area to further examine is the manner in which college students perceive different stressors and what stressors might be a common trigger for binge eating. This information is important because if the triggers are determined, then proper prevention programs can be implemented to help prevent binge eating. Additionally, the effects of an intervention aimed at improving effective coping with binge eating behavior would be particularly interesting. Such an intervention might involve randomly assigning one group of freshmen to a class teaching healthy and productive coping strategies for dealing with typical college entry stressors, and assigning another group as a control. A reassessment of binge eating and coping strategies would help determine whether learning about coping strategies could reduce or prevent binge eating behavior. This is potentially important because it would help prepare college students to cope with new types of stressors and would also contribute to these students' coping more productively throughout their lives.

WORKS CITED

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders (4th ed.)*. Washington, DC: Author.
- Ball, K., & Lee, C. (2000). Relationships between psychological stress, coping and disordered eating: A Review. *Psychology and Health, 14*, 1007-1035.
- Barry, D. T., Grilo, C. M., & Masheb, R. M. (2002). Gender differences in patients with binge eating disorders. *International Journal of Eating Disorders, 31*, 63-70.
- Blackburn, S., Johnston, L., Blampied, N., Popp, D., & Kallen, R. (2006). An application of escape theory to binge eating. *European Eating Disorders Review, 14*, 23-31.
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology, 56*, 267-283.
- Cohen, S. (1988). Perceived stress in a probability sample of the United States. In S. Spacepam & S. Oskamp (Eds.), *The social psychology of health: The Claremount Symposium on applied psychology* (pp. 31-67). Newbury Park, CA: Sage Publications
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 385-396.
- Crowther, J. H., Sanftner, J., Bonifazi, D. Z., & Shepherd, K. L. (2001). The role of daily hassles in binge eating. *International Journal of Eating Disorders, 29*, 449-454.
- Deitz, W. H. (2004). Overweight in childhood and adolescence. *New England Journal of Medicine, 350*, 855-857.
- Douglas, K. A., Collins, J. L., & Warren, C., Kann, L., Gold, R., Clayton, S., Ross, J. G., Kolbe, L. J. (1997). Results from the 1995 National College Health Risk Behavior Survey. *Journal of American College of Health, 46*, 55-66.
- Freeman, L. M. Y., & Gil, K. M. (2004). Daily stress, coping, and dietary restraint in binge eating. *International Journal of Eating Disorders, 36*, 204-212.
- Gormally, J., Black, S., Daston, S., & Rardin, D. (1982). The assessment of binge eating severity among obese persons. *Addictive Behaviors, 7*, 47-55.
- Hansel, S. L., & Wittrock, D. A. (1997). Appraisal and coping strategies in stressful situations: A comparison of individuals who binge eat and controls. *International Journal of Eating Disorders, 21*, 89-93.
- Heartherton, T. F., & Baumeister, R. F. (1991). Binge eating as escape from self-awareness. *Psychological Bulletin, 110*, 86-108.
- Koff, E., & Sangani, P. (1997). Effects of coping style and negative body image on eating disturbance. *International Journal of Eating Disorders, 22*, 51-56.

- Kugu, N., Akyüz, G., Dogan, O., Ersan, E., & Izgiç, F. (2002). Prevalence of eating disorders in a university student population and the investigation of its relation with self-esteem, family functions, childhood abuse and neglect. *Abstract: Psikiyatri Psikoloji Psikofarmakoloji Dergisi, 10*, 255-266. Retrived June 10th, 2006 from http://ca1.csa.com/ids70/view_record.php?id=6&recnum=4&SID=e9s3toc7lmge4v7eagtaadsg94&mark_id=search%3A6%3A6%2C0%2C10.
- Lee, R. M., Su, J., & Yoshida, E., (2005). Coping with intergenerational family conflict among Asian American college students. *Journal of Counseling Psychology, 52*, 389-399.
- Linde, J. A., Jeffery, R.W., Levy, R. L., Sherwood, N. E., Utter, J., Pronk, N. P., & Boyle, R. G. (2004). Binge eating disorder, weight control, self-efficacy, and depression in overweight men and women. *International Journal of Obesity and Related Metabolic Disorders, 28*, 418-425.
- Marcus, M. (1988). Binge Eating Scale. In M. Hersen & A. Bellack (Eds.), *Dictionary of behavioral assessment techniques* (pp.77-78). New York: Pergamo Press.
- Mcivor, D. L., (2005). Pathogenic eating behaviors and psychological risk factors of weight-preoccupied college students. *Dissertation Abstracts Internationa: Section A: Humanities and Social Sciences, 65(9-A)*, 3290.
- Mitchell, K. S. & Mazzeo, S. E., (2004). Binge eating and psychological distress in ethnically diverse undergraduate men and women. *Eating Behaviors, 5*, 157-169.
- National Institute Of Health (1999-2000). [Examination Survey]. NIH. Retrieved June 1, 2006, from <http://win.niddk.nih.gov/statistics/index.htm#howare>
- Parker, J. D. A., & Edler, N. S. (1992). Coping with coping assessment: A critical review. *European Journal of Personality, 6*, 321-344.
- Paxton, S. J., & Diggens, J. (1997). Avoidance coping, binge eating, and depression: An examination of the escape theory of binge eating. *International Journal of Eating Disorders, 22*, 83-87.
- Pendleton, V. R., Willems, E., Swank, P., Poston, W. S. C., Goodrick, G. K., Reeves, R. S., & Foreyt, J. P. (2001). Negative stress and the outcome of treatment for binge eating.
- Pull, C. B. (2004). Binge eating disorder. *Current Opinion in Psychiatry, 17*, 43-48.
- Racette, S. B., Deusinger, S. S., Strube, M. J., Heighstein, G. R., & Deusinger, R. H., (2005). Weight changes, exercise, and dietary patterns during freshman and sophomore years of college. *Journal of American College of Health, 53*, 245-253.
- Sanftner, J. L. (2000). The function of binge eating: A laboratory investigation of the avoidance-coping and self-nurturance hypothesis. *Dissertation Abstracts International: Section B: The Sciences and Engineering, 60(9-B)*, 4908.
- Schwarze, N. J., Oliver, J. M., & Handal, P. J., (2003). Binge eating as related to negative self-awareness, depression, and avoidance coping in undergraduates. *Journal of College Student Development, 44*, 644-652.
- Striegel-Moore, R. H., Silberstein, L. R., Frensch, P., & Rodin, J. (1989). A prospective study of disordered eating among college students. *International Journal of Eating Disorders, 8*, 499-509.

- Wolff, G. E., Crosby, R. D., Roberts, J. A., & Wittrock, D. A. (2000). Differences in daily stress, mood, coping, and eating behavior in binge eating and non-binge eating college women. *Addictive Behaviors, 25*, 205-216.
- Vanderlinden, J., Grave, R. Dalle, Vandereycken, W., Noorduyn, C. (2001). Which factors do provoke binge-eating? An exploratory study in female students. *Eating Behaviors, 2*, 79-83.
- Zhang, Z., Zhang, Y, & Jin, H. (2004). Coping strategies of college students during exam period. *Chinese Mental Health Journal, 18*, 225-227.

Appendix A

Table 1

Examples of Items from the Binge Eating Scale

- Q3 I feel capable to control my eating urges when I want to.
 I feel like I have failed to control my eating more than the average person.
 I feel utterly helpless when it comes to feeling in control of my eating urges.
 Because I feel helpless about controlling my eating, I have become very desperate about trying to get in control.
- Q4 I don't have the habit of eating when I'm bored.
 I sometimes eat when I'm bored, but often I'm able to "get busy" and get my mind off food.
 I have a regular habit of eating when I'm bored, but occasionally, I can use some other activity to get my mind off food.
 I have a strong habit of eating when I'm bored. Nothing seems to break the habit.
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Appendix B

Table 2

Examples of Questions from the Perceived Stress Scale

- Q3 In the last month, how often have you felt nervous and stressed?
- Q4 In the last month, how often have you dealt successfully with irritating life hassles?
- Q6 In the last month, how often have you felt about your ability to deal with your personal problems?
- Q10 In the last month, how often have you felt on top of things?
-

Appendix C

Table 3

Examples of Items from the COPE Subscales

Active Coping

- I concentrate my efforts on doing something about it.
- I take additional action to try to get rid of the problem.

Planning

- I make a plan of action.
- I try to come up with a strategy about what to do.

Suppression of Competing Activities

- I keep myself from getting distracted by other thoughts or activities.
- I focus on dealing with this problem, and if necessary let other things slide a little.

Restraint Coping

- I restrain myself from doing anything too quickly.
- I hold off doing anything about it until the situation permits.

Seeking Social Support-Instrument

- I try to get advice from someone about what to do.
- I talk to someone to find out more about the situation.

Seeking Social Support-Emotional

- I discuss my feelings with someone.
- I try to get emotional support from friends or relatives.

Positive Reinterpretation and Growth

- I try to grow as a person as a result of the experience.
- I try to see in a different light, to make it seem more positive.

Acceptance

- I get used to the idea that it happened.
- I accept that this has happened and that it can't be changed.

Turning to Religion

- I put my trust in God.
- I seek God's help.

Focus on & Venting of Emotion

- I get upset and let my emotions out.
- I let my feelings out.

Denial

- I say to myself "this isn't real."
- I refuse to believe that it has happened to me.

Behavioral Disengagement

- I admit to myself that I can't deal with it, and quit trying.
- I just give up trying to reach my goal.

Mental Disengagement

- I turn to work or other substitute activities to take my mind off things.
- I go to the movies or watch TV, to think about it less.

Alcohol-Drug Use

- I use drugs and alcohol to make myself feel better.
- I try to loose myself for a while by drinking alcohol or taking drugs.

Humor

- I laugh about the situation.
- I make jokes about it.

Appendix D

Table 4

Descriptive Statistics for the Study Sample

Variable	Frequency	Percentage	<u>M</u>	<u>SD</u>
Age			19.6	1.4
BMI			23.8	3.7
Weight status				
Underweight	2	1.0		

Normal weight	136	70.1
Overweight	43	21.9
Obese	13	6.7
Year in college		
Freshman	96	49.2
Sophomore	59	30.3
Junior	30	15.4
Senior	10	5.1
Living situation		
Dorms	85	44.0
On campus apartments	41	21.2
Off campus housing	60	31.1
Other	7	3.6

Appendix F

Table 6

Descriptive Statistics for Males versus Females on the BES, PSS, and COPE Subscales.

Variable	Male		Female		F
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
BES	7.59	4.77	10.62	6.19	14.80**
PSS	38.59	6.47	41.68	7.51	9.46**
COPE subscales: Problem-focused coping (total)					
	52.46	8.06	52.88	8.72	0.12
Active coping	10.85	2.22	10.87	2.37	0.00
Planning coping	11.37	2.24	11.42	2.60	0.02
Suppression	9.94	2.16	9.69	1.98	0.71
Restraint	9.77	1.99	9.41	1.96	1.53
Seek social support	10.52	2.54	11.63	2.57	8.93**
COPE subscales: Emotion-focused coping (total)					
	49.56	7.33	50.96	7.89	1.67
Denial	6.85	2.35	6.54	2.33	0.86
Positive reinterpret. & growth	12.25	2.03	12.38	2.57	0.14
Acceptance	11.24	2.22	10.84	2.16	1.60
Turning to religion	9.38	3.79	9.37	3.86	0.00
Seeking emotional support	9.84	2.76	11.92	2.88	26.63***
COPE subscales:					
Less useful (total)	34.41	5.98	34.32	6.89	0.01
Focus on venting of emotion	8.57	2.34	10.80	2.59	39.95***
Behavioral disengagement	7.33	2.19	6.92	2.07	1.82
Mental disengagement	10.81	1.97	10.53	1.83	1.11

Use of alcohol and drugs	7.70	3.63	6.08	3.29	10.61***
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Note. BES scores could range from 0 to 41, with higher scores reflecting greater binge eating tendencies. The PSS scores could range from 14 to 70 (higher scores indicating greater perceived stress). The COPE scores could range from 62 to 248 with each subscale score ranging from 4 to 16 (higher scores reflect greater use of that strategy).

* $p < .05$. ** $p < .01$. *** $p < .001$.