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Goal Orientation, Motivational Climate, and Exercise as Predictors of Eating Disorder Risk Factors Among College Students

Carly Wahl

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GOAL ORIENTATION, MOTIVATIONAL CLIMATE, AND EXERCISE AS PREDICTORS OF EATING DISORDER RISK FACTORS AMONG COLLEGE STUDENTS

by

CARLY WAHL

(Under the Direction of Brandonn Harris)

ABSTRACT

College is a transition period in a young adult's life in which eating disorder symptomology is especially prevalent. Additionally, motivation-based factors such as goal orientation and motivational climate can influence these eating disorder-like behaviors, especially in a physical activity setting. The present study aimed to examine how goal orientation, motivational climate, and exercise could be used to predict a college students' eating disorder symptomology. Participants included 276 college-aged males and females from a university in the southeastern United States. These participants had experience using the university recreation activity center and were recruited from a required healthful living course. Each participant was asked to fill out demographic information as well as five questionnaires. Data was analyzed using multiple regression analyses, with *R* coefficients being used to evaluate prediction models. It was anticipated that certain variables from an individual's goal orientation and motivational climate would account for a significant amount of variance among eating disorder symptomology. Namely, it was hypothesized that both ego orientation and an ego-involving climate would significantly predict eating disorder symptomology in college-aged students. Additionally, it was expected that both task orientation and a task- or care-involving climate would not significantly predict eating disorder-like behavior. Finally, it was hypothesized that higher levels of reported exercise would correspond to increased eating disorder symptomology. The results of the current study suggested that goal orientation was the only significant predictor of eating disorder symptomology, with task orientation and goal orientation together accounting for 2.5%, task orientation by itself accounting for 1.3% of the variance, and ego orientation by itself accounting for 1.2% of the variance.

INDEX WORDS: Eating disorders, Ego orientation, Task orientation, Ego-involving climate, Task-involving climate, Care-involving climate, Exercise, University

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TABLE OF CONTENTS

CHAPTER

| | |
|--|----|
| 1 INTRODUCTION | 3 |
| 2 METHODS | 11 |
| Participants | 11 |
| Procedure | 11 |
| Instrumentation..... | 12 |
| Data Analysis..... | 16 |
| 3 RESULTS | 18 |
| 4 DISCUSION | 20 |
| REFERENCES | 27 |
| APPENDICES | |
| A LITERATURE REVIEW | 40 |
| B TABLE 1 | 66 |
| C TABLE 2 | 67 |
| D EATING ATTITUDES TEST-26..... | 68 |
| E GOAL ORIENTATION IN EXERCISE SCALE..... | 70 |
| F PERCEIVED MOTIVATIONAL CLIMATE IN EXERCISE | |
| QUESTIONNAIRE | 71 |
| G CARING CLIMATE SCALE..... | 73 |
| H GODIN LEISURE-TIME EXERCISE QUESTIONNAIRE..... | 74 |

Chapter 1

INTRODUCTION

Within the United States, the prevalence of eating disorders (ED) has risen dramatically in the last several decades (Hudson, Hiripi, Pope, & Kessler, 2007; Streigel-Moore & Franko, 2003; Wade, Keski-Rahkonen, & Hudson, 2011). Additionally, the rise of EDs and body image dissatisfaction increases during the collegiate years (Costa, Vasconcelos, Peres, 2010; Lofrano-Prado, Prado, Barros, & Souza, 2015). In fact, many EDs materialize between the ages of 18-21 (Hudson et al., 2007). According to the National Institute of Mental Health (2016), ED are often life-threatening conditions that have physical and emotional repercussions on the bodies of both males and females. Further, a number of factors have been identified that may influence an individual's decisions to engage in an ED-related behavior.

Many of the influences on eating-disorder behaviors are especially predominant in the adolescent and young adult populations as this group frequently reports a high dissatisfaction of personal body image (Luce, Crowther & Pole, 2008). Indeed, one fourth of university counseling centers in the United States recently reported increases in the number of cases of ED within the university setting (Schwitzer & Choate, 2015). Particularly in a collegiate setting, this may be the result of the sport or activity's stereotypes, new peer pressures, and personal desires to look aesthetically pleasing in a novel environment (National Eating Disorders Association, 2013). The media also plays a large role in the high rates of ED among college-aged individuals (Quick & Byrd-Bredbenner, 2013; Schwitzer, Bergholz, Dore, & Salimi, 1998). As a result, those who are predisposed to an ED may turn towards unhealthy exercise regimens as one means of managing their weight, shape, or dietary concerns (Ackard, Brehm, & Steffen, 2002; Cook et al., 2014).

Within exercise-related populations, it has been well documented that excessive exercise in particular can present as one method of compensatory behavior in individuals with bulimia nervosa and purging-type anorexia nervosa (PAN; American Psychiatric Association, 2013; Dalle Grave, Calugi, & Marchesini, 2008; Shroff et al., 2006). Although a universal definition for excessive exercise does not yet exist, Shroff and colleagues (2006) forwarded a comprehensive definition that was utilized in their large international study. The authors defined an individual as an excessive exerciser if they could identify with at least one or more of the following categories: “(a) exercise severely interferes with important activities; (b) exercising more than 3 hours per day and feeling distressed if unable to exercise; (c) frequent exercise at inappropriate times and places and little or no attempt to suppress the behavior; and (d) exercising despite more serious injury, illness or medical complication” (p. 456).

Examining physical activity in relation to ED is important, as it has been demonstrated that excessive exercise may actually precede the occurrence of dieting and other weight loss manipulators (Davis et al., 1997; Kostrzewa, Eijkemans, & Kas, 2013). Namely, individuals who are seeking to change their body shape or weight using compensatory behaviors may turn towards physical activity as the initial action. Davis and colleagues (1997) observed a statistically significant correlation between high childhood activity levels and the amount of exercise that same individual would engage in during the acute phase of their anorexia nervosa compared to other, less active individuals with the same ED. Therefore, studying ED in an exercise-based sample may lead to a larger population of individuals affected with ED-like symptomology.

In addition to exercise-based populations, research has also suggested that it may be important to account for gender differences with regards to ED, particularly because few

research studies in the past have included males in their samples (Stice, 2002; Weltzin et al., 2012). Despite this claim, and the fact that although much attention has been directed towards females in past research, approximately 25% of college-age males binge eat and 3% use compensatory purging behavior (Lavender, DeYoung, & Anderson, 2010). Likewise, O'Dea and Abraham (2002) found that almost 20% of the collegiate men sampled evidenced eating behaviors symptomatic of an ED. Additionally, there is evidence that males may have a higher rate of using exercise as a means to control their weight as compared to females (Hausenblas & Downs, 2002; Weltzin et al., 2012). Research has also suggested that women with unhealthy eating attitudes want to avoid negative social consequences and often times believe that exercise is the answer to get or maintain a socially acceptable physical appearance (Meyer, Blissett, Alberry, & Sykes, 2013). Therefore, it is important to consider the influence gender may have regarding ED and excessive exercise.

Not only gender, but also motivation-based factors, including goal-oriented behavior and motivational climates, may also be an aspect that can lead an individual to engage in an ED. One framework that integrates both the influence of both motivational climate and goal orientation on behavior is achievement goal theory (AGT). This theoretical framework suggests two types of psychologically motivated individuals exist. These include task-oriented and ego-oriented individuals (Nicholls, 1992). A task-oriented individual creates an intrinsically motivated goal and focuses on performance or technical development in order for the individual to improve at the desired task and achieve mastery. For example, an individual with this type of motivation may keep track of his or her exercise schedule and personal improvements, regardless of the results of classmates, teammates, or peers. Contrastingly, ego-oriented individuals create an external goal, which constantly requires a comparison of himself or herself to others. This

individual may not be satisfied with his or her accomplishments unless he or she is performing better than the surrounding peers.

Previous research conducted in sport settings regarding the effects of motivation and achievement goals on athletes' attitudes towards ED has yielded interesting findings. For example, Scoffier, Corrion, and d'Arripe-Longueville (2013) found that athletes who were ego-oriented with their goals also reported higher incidences of ED. Further, research has also revealed a correlation in athletics with the motivational climate and ED. Stark and Newton (2014) also found that dancers who are in a task- or care-involving climate have a more positive body image than those in an ego-involving climate. Although these results are important, particularly for the athletic populations, few studies have attended to the prospect of similar relationships among avid exercisers and subsequent ED using the same achievement goal theory framework. This is an important aspect to discuss as there are approximately 481,000 student-athletes compared to the almost 20.5 million non-athlete students attending college who have access to the recreational exercise facilities on campus and could be influenced by these motivational-based factors (Institute of Education Sciences, 2016; National Collegiate Athletic Association, 2016).

With regards to gender differences, there have been some discrepancies in research conducted in the collegiate setting. Li, Harmer, and Acock (1996) found that among undergraduate students in a physical education class, males scored significantly higher in ego orientation, with no significant differences found between genders for task orientation. In an athletic setting, Duda (1989) found that female athletes were significantly more task-oriented than male athletes; these male athletes were also significantly more ego-oriented than females. Females viewed mastery of the task in their sport and cooperation with teammates to be most

important in their sport whereas males placed a higher emphasis on competitiveness, social status, and potential for high status career opportunities (Duda, 1989). Additionally, Hanrahan and Biddle (2002) found that females scored significantly higher on task orientation than males; however, no differences were noted between genders on ego orientation for athletes in their sample.

In addition to the goal orientation of an individual, the motivational climate also influences the motivations of individuals. According to AGT, two types of motivational climates exist: a task-involving and an ego-involving climate (Ames, 1992; Duda, 1993). Recently, literature has also included a third variation of the motivational climate known as the care-involving climate (Newton et al., 2007). All three motivational climates are characterized by the social environments that surround an individual. For example, a task-involving climate would involve peers, parents, and other influential individuals who help the individual focus on self-progress. (Ames, 1992; Duda, 1993). Leaders place an emphasis on the value of teamwork and that mistakes are part of the learning experience (Nicholls, 1984). Research has noted that task-involving climates allow individuals to have a greater sense of enjoyment, more motivation to work, and feelings of higher competence (Huddleston, Fry, & Brown, 2012).

Contrary to the task-involving climate, the ego-involving climate includes a social network of individuals who place an emphasis on winning and social comparison to others (Ames, 1992; Duda, 1993). Group leaders encourage rivalries between group members and communicate that mistakes are reason for concern (Nicholls, 1984). Finally, the care-involving climate is facilitated by welcoming, non-judgmental leaders or peers who would allow the individual to feel respected and safe (Newton et al., 2007). When comparing the various climates to one another and their prospective influences on behavior, individuals who feel they are in a

high task- and care-involving climate are more likely to reap positive benefits as a result (Brown & Fry, 2014). In relation to the exercise environment, these exercisers may have high levels of social support, with caring individuals who invest an interest in the individual's mental and physical well being and who care that the exerciser reaches their personal goals and is constantly improving and performing techniques correctly. A systematic review of fourteen studies completed by Ntoumanis and Biddle (1999) concluded that, in general, a task-involving climate is more conducive to enjoyment and learning in the physical activity setting.

Gender differences in perceptions of the motivational climate have also been examined in exercise environments. For example, researchers found that males perceived a higher ego-involving climate in their collegiate physical education classes compared to females (Brown & Fry, 2014). These results showed that between genders, males and females have different psychological perceptions of their environments in regards to their physical self-concept. These results are consistent with other studies in the physical activity environment (Marsh, Papaioannou, Martin, & Theodorakis, 2006).

The goal orientation of individuals and the climate surrounding the individual have the potential to explain collegiate students' decisions to engage in ED. For example, Quick and Byrd-Bredbenner (2013) reported that one-third of the individuals in their study of 2,604 college-aged students used inappropriate means of controlling their weight in order to reach their desired body image, including self-induced vomiting, excessive exercise, and the misuse of medicines. They suggested that many of these unsuitable desires developed from friends, family, peers, and the media, which was previously described as the same individuals who make up one's motivational climate. Thus, the expectations of thinness and a desirable body weight can be related to the motivational climate and can subsequently lead individuals to engage in ED.

Becoming aware of these maladaptive desires and motivations in the collegiate exercise setting would be advantageous in order to identify and conceivably prevent these maladaptive and clinically significant behaviors from developing.

Research has also been dedicated to AGT and disordered eating within athletics. Correlations have been observed between ego orientation and higher rates of dieting and weight-related peer pressures among collegiate athletes (de Bruin, Bakker, & Oudejans, 2009; Scoffier et al., 2013). Additionally, athletes' perceptions of a task-oriented or mastery climate has shown fewer accounts of dieting and weight-related coach and peer pressure (de Bruin et al., 2009; Stark & Newton, 2014). While important findings have resulted from these studies, limited research has been conducted that includes AGT and ED in general exercise populations. Among those studies conducted, results have indicated that athletes and exercisers share similar concerns with regards to body dissatisfaction and drive for thinness, which can lead directly to ED-related behavior (Krane, Waldron, Stiles-Shipley, & Michalenok, 2001).

Given the aforementioned research and its limitations, it would seem important to examine two orientations of individuals (task-oriented and ego-oriented) as well as the influence of three aspects of the motivational climate (task-involving, ego-involving, and care-involving situations) as they relate to college-aged individuals who may respond to internal and external stressors by altering their eating. College-aged individuals are of particular interest to sample for the current study given the potential generalizability of such results for other college campuses (American Psychiatric Association, 2013; National Eating Disorders Association, 2016). Thus, the purpose of the current study is to examine the predictive relationships among goal orientation, the motivational climate, and exercise on ED in a collegiate-aged sample.

It is anticipated that certain variables from an individual's goal orientation and motivational climate will account for a significant amount of variance among ED symptomology. Based on previous research, it is hypothesized that ego orientation will significantly predict ED symptomology as these individuals may feel the need to compare themselves to others at the exercise facility and may feel the need to engage in ED-like behavior. It is also hypothesized that there will be no significant predictive value with respect to task orientation and ED-like symptomology given these individuals are likely to focus on their own personal improvements at the recreational fitness facility and will not engage in ED-like behavior. It is also hypothesized that a task- or care-involving climate will not significantly predict an ED symptomology. Moreover, it is expected that an ego-involving climate will significantly predict an ED because this population may feel pressured by the surrounding facility staff, peers, or advertisements and therefore would have high symptomology of ED behavior. With regards to gender and goal orientation, it is hypothesized for both males and females that ego orientation will account for the most variance in ED symptomology. Additionally, given previous research and the tendency for males to use exercise as a compensatory behavior, it is anticipated that a model will emerge among males where exercise duration and intensity, ego orientation, and ego-involving climate will account for the most variance associated with ED-like behavior. Finally, it is hypothesized that higher levels of reported exercise would correspond to increased ED symptomology.

Chapter 2

METHODS

Participants

The sample consisted of 471 college-aged students from a university in the southeastern United States. Since participants needed to have visited the university recreation activity center a minimum of five times during the current academic school year as well as *not* be a collegiate student-athlete, only 276 participants were retained for analysis. The ages ranged from 18-52 years ($M = 18.87$, $SD = 2.27$) and both males ($n = 128$) and females ($n = 141$) were recruited to participate. The participants' race was asked in the demographic questionnaire and the following frequencies were established: White ($n = 207$; 75%), African American ($n = 47$; 17%), Mixed race ($n = 5$; 1.8%), Asian ($n = 5$; 1.8%), and Other ($n = 11$; 4%). The average participant's BMI was considered slightly overweight ($M = 25.38$, $SD = 5.13$).

These participants were recruited from three sections of a healthy living course that all undergraduate students are required to take. Thus, the sample included students from multiple disciplines, making the study more generalizable to other collegiate student populations. As mentioned previously, inclusion criteria consisted of those students who utilize the university's recreation activity center on campus for a minimum of five times as it is assumed these students were exposed to the same environment for a reference as their physical activity-based motivational climate. The participants of the current study averaged 43.85 ($SD = 36.20$) visits to the recreation activity center in the 2016-2017 academic school year.

Instrumentation

All packets contained five questionnaires. Each packet began with an informed consent document, which outlined the study, procedure, and contained the signature of both the

participant and the researcher. A demographic questionnaire followed the informed consent and was composed of eight questions that asked the individual to circle or fill in the response that best corresponded to them. These questions include age, gender, height, weight, approximate number of times visiting the university's recreational activity center, race, ethnicity, and athletic status.

Eating attitudes. The Eating Attitudes Test (EAT-26) was originally developed by Garner and Garfinkel (1979) with a revised edition developed by Garner and colleagues (1982). It is currently one of the most widely used self-report instruments for assessing risk factors of ED (Sandberg & Erford, 2013). Extensive research has been conducted on the reliability and validity of the EAT-26, with studies concluding that it has a high level of convergent validity, concurrent validity, and internal reliability (Garner et al., 1982; Mayo & George, 2014). Garner and colleagues (1982) reported a Cronbach's alpha level of 0.90. Cronbach's alpha for the current study was found to 0.79.

The EAT-26 consists of 26 questions and has been used in both clinical and non-clinical settings, among males and females as well as adults and adolescents (Garner, 2004). It consists of three subscales characteristic of ED including (a) dieting, (b) bulimia and food preoccupation, and (c) oral control. There are three portions to the EAT-26. The first section includes demographic information, including height, weight, and age which will be used to calculate BMI. Section two consists of 26 items that are answered on a Likert-type scale ranging from 0 (never) to 3 (always). An example item in this section is "I avoid foods with sugar in them". The third and final section asks participants five questions that indicated the frequency they engage in ED behavior (Sandberg & Erford, 2013). An example of this item includes "[have you] ever made yourself sick (vomited) to control your weight or shape?".

The scores attached to each of the 26 items are then summed and a total number is calculated. A sum of greater than or equal to 20 is considered to be a high concern for dieting, body image concerns, and ED behaviors. For the additional five behavior questions in the third section, any participant who answers “yes” to one or more of the questions is also in the concerning range for a potential ED (Mayo & George, 2014).

Goal orientation in exercise. Kilpatrick, Bartholomew, and Reimer (2003) developed the Goal Orientation in Exercise Scale (GOES) modeling it off of the Task and Ego Orientation in Sport Questionnaire (TEOSQ; Duda & Nicholls, 1992). It was designed to assess the motivational orientation of individuals in an exercise setting, such as a more task-oriented individual or a more ego-oriented individual. The instrument was tested on a diverse population, including both males and females and ranging in age from 18 to 43. Construct validity was found to be good. Internal consistency has been tested, showing an alpha measurement of 0.79 for the task subscale and 0.90 for the ego subscale (Kilpatrick et al., 2003). For the current study, a Cronbach’s alpha of 0.84 was found for the task subscale and 0.81 for the ego subscale.

The GOES includes 10 items with two subscales: five task-related items and five ego-related items. An example of a task-oriented question includes “I can learn something while exercising and it makes me want to participate more”. An example of an ego-oriented question includes “I can do better than my friends”. The GOES uses a 5-point Likert-type scale with responses ranging from 1 (strongly disagree) to 5 (strongly agree; Kilpatrick et al., 2003). The averages of each subscale are then obtained.

Motivational climate in exercise. In order to assess motivational climate in an exercise setting, Huddleston, Fry, and Brown (2012) developed the Perceived Motivational Climate in Exercise Questionnaire (PMCEQ), which is an adaption of the Perceived Motivational Climate

in Sport Questionnaire (PMCSQ; Seifriz, Duda, & Likang, 1992). The instrument measures the perception that individuals perceive a task-involving or ego-involving climate in exercise settings, such as fitness centers (Brown, Fry, & Little, 2013). Construct and criterion validity for this instrument has been tested and found to be good (Brown et al., 2013). All subscales of the questionnaire proved to have adequate reliability with Cronbach's alpha ranging from 0.82 to 0.90 for internal consistency (Huddleston et al., 2012). Huddleston and colleagues (2012) also reported an internal consistency value of 0.88 for the task-involving climate and 0.86 for the ego-involving climate. For the present study, Cronbach's alpha for the task-involving climate was 0.90 and was 0.82 for the ego-involving climate.

The PMCEQ is a 27-item questionnaire that has been tested in the adult population for both males and females and includes two scales: a task-involving climate and an ego-involving climate. An example of a task-involving question includes "At the wellness center, the staff encourages us to try new exercises". An example of an ego-involving question includes "At the wellness center, the staff has their favorites". The instrument uses a 5-point Likert scale with responses ranging from 1 (strongly disagree) to 5 (strongly agree). The items are then summed and an average is calculated for each of the two scales (Brown et al., 2013). The scale in which the individual scored the highest results is that individual's perception of the climate of their exercise environment.

Caring climate. The Caring Climate Scale (CCS), developed by Newton and colleagues (2007) examines the extent to which individuals feel their exercise setting is supportive, safe, and welcoming. It has been utilized extensively with samples of youth athletes (Newton et al., 2007), young adults (Brown et al., 2013), and within a variety of exercise modes including dance (Stark & Newton, 2014) and general exercisers (Brown et al., 2013). The CCS has excellent internal

reliability, with a Cronbach's alpha equal to 0.92 (Newton et al., 2007). Cronbach's alpha for the current study was found to be 0.85.

The CCS is a 13-item questionnaire that measures the individual's perception of a supportive environment. The instrument uses a 5-point Likert scale with responses ranging from 1 (strongly disagree) to 5 (strongly agree). An example of a question on the CCS includes "athletes feel comfortable on this team". A mean score is computed across the 13 items (Newton et al., 2007).

Leisure time exercise. The Godin Leisure-Time Exercise Questionnaire (GLTEQ) was developed by Godin and Shephard (1985) and is used to classify individuals in exercise categories based on their self-reported responses. For the present study, the GLTEQ will be used to measure each participant's duration and intensity of physical activity to determine the predictive nature of an ED as it relates to exercise, goal orientation, and motivational climate. This questionnaire has been used in numerous studies using a variety of ages among both males and females (Jacobs, Ainsworth, Hartman, & Leon, 1993; Sallis, Buono, Roby, Micale, & Nelson, 1993). Concurrent validity was tested and found to be good, as was reliability in a test-retest method. Multiple validation studies have shown concurrent validity between the GLTEQ and VO_2 max and body fat percentage using test-retest reliability (Godin & Shephard, 1985).

The GLTEQ consists of four items. These questions ask how many times during a typical 7-day period that an individual will do more than 15 minutes of exercise in the following categories: strenuous exercise, moderate exercise, and mild exercise. The appropriate self-reported number is placed in each category. The fourth question asks how frequently (often, sometimes, or rarely/never) does the individual engage in any regular activity long enough to work up a sweat during a typical 7-day period. To calculate the intensity of exercise, the number

in the strenuous exercise column is multiplied by nine, the number in the moderate column is multiplied by five, and the number in the mild column is multiplied by three. Those products are then added together for a total sum, which leads to the individual's exercise score. The fourth question is used to calculate the frequency of hard, high-intensity exercise (Godin & Shephard, 1997).

Procedures

Following Institutional Review Board (IRB) approval, two instructors of the Healthful Living course were contacted for permission to recruit students for the study. The questionnaire contents were counterbalanced so that the order of completion was randomized. Upon approval from the instructors, the researcher visited the classrooms and explained the nature of the study. Following the participants' signatures on the informed consent forms, the questionnaire packets were provided to those students willing to participate. All students were told that participation is voluntary and that their answers would be kept confidential. No identifying questions were asked. Further, it was explained to the students that no penalty, academically or otherwise, would occur if the student did not wish to participate. Once all questionnaires were completed, the researcher collected the questionnaires and locked them in a secured drawer in a locked office for storage.

Data Analysis

The present study examined the predictive relationships among achievement goals and eating disorder risk factors for college-aged exercisers. Using SPSS version 23.0, descriptive statistics were calculated on age, height, weight, BMI, and the EAT-26, PMCEQ task-involving climate, PMCEQ ego-involving climate, GOES task-orientation, GOES ego-orientation, CCS, and GLTEQ constructs. Frequencies were assessed for gender, race, and ethnicity. BMI was

calculated based on the self-reported height and weight of the participating students. Cronbach's alpha coefficients were also calculated for all of the study's measures to test for reliability.

Multiple regression analyses were utilized with R coefficients being used to evaluate prediction models. Correlations were also run to determine significant relationships.

Additionally, beta values were used to examine the individual influence each variable had in predicting eating disorders. Assumptions for multiple regression analyses included a linear relationship between the independent and dependent variables, multivariate normality, no multicollinearity, no auto-correlation, and homoscedasticity among independent variables. Effect sizes were calculated via r^2 . Acceptable significance of the overall model and coefficients was set at 0.05.

Chapter 3

RESULTS

Descriptive Statistics

Mean scores, standard deviations, and alpha coefficients for all constructs were calculated and are presented in Table 1 in Appendix B. A reliability analysis was run, and, using Cronbach's alpha coefficients to calculate, reliability ranged from 0.79- 0.90 and was considered acceptable for all constructs.

There were outliers in the data set with regards to the EAT-26 data, however no outliers were removed due to the nature of the study and the potential prevalence of higher eating disorder symptomology, and therefore higher scores on the EAT-26. No outliers were removed from the remaining subscales either as these subscales still retained their normal distribution attributes. Due to the large number of outliers with respect to the EAT-26, homoscedasticity was tested and shown to be of normal variance on the regression line. No assumptions were violated in the analysis of this data. Additionally, there was a lack of multicollinearity in the data set. Analyses of the correlation matrix, with further assessment of the VIF and tolerance numbers, showed no correlations between the predictor variables, therefore each of the predictor variables were independent of one another. Both task orientation and ego orientation yielded tolerance numbers of .958 and VIF of 1.044.

Multiple Regression Analysis

A stepwise multiple regression analysis was run to predict eating disorder symptomology from the total EAT-26, the task-involving climate of the PMCEQ, the ego-involving climate of the PMCEQ, the task-orientation of the GOES, the ego-orientation of the GOES, the total CCS, and the total GLTEQ. Two models emerged and the second model was retained as it was deemed

to be a more parsimonious model in that it accounted for more variables than the first model.

More specifically, this second model accounted for 2.5% of the variance in eating disorder symptomatology and consisted of task orientation with a standardized beta value equal to 1.54 ($p = .013$) and ego orientation with a standardized beta value equal to $-.126$ ($p = .040$) $F(2, 270) = 4.42, p = .013$. Table 2 in Appendix C represents the correlation matrix for the multiple regression.

Chapter 4

DISCUSSION

The purpose of the present study was to examine goal orientation, motivational climate, and exercise as predictors of ED risk factors among college-age students. Initial hypotheses predicted that ego orientation and ego-involving climate would significantly predict ED symptomology while task orientation and task- and care-involving climates would not significantly predict an ED. It was also hypothesized that males and females with ego-like attributes would account for the most variance in ED symptomology, with a specific model emerging where exercise duration and intensity, ego orientation, and an ego-involving climate would account for the most variance associated with ED-like behavior.

The analysis did not support many of the primary hypotheses. Goal orientation was the only significant predictor of an ED, with task and ego orientations accounting for only 2.5% of variance attributing to this significance. This suggests that 97.5% of variance was unaccounted for in the present study as it pertains to ED symptomatology using achievement goal theory as a framework. Additionally, there was no significant difference between genders with respect to ED and no specific model emerged for males showing higher intensities of exercise, ego orientation, and an ego-involving climate to predict an ED as was hypothesized.

Isolating various predictor variables of the present study first before isolating them collectively can help to provide clarity regarding an explanation and interpretation of these findings. Previous research supports the hypothesis that among climates in particular, task- or care-involving climates would not predict ED symptomology in the collegiate population specifically. For example, perceptions of task- and care-involving climates correlated with body positivity and body-esteem in dancers (Stark & Newton, 2014), as well as less frequent dieting

and disordered eating in dancers and gymnasts (de Bruin et al., 2009). As far as recreational exercisers are concerned, within a corporate wellness setting, a task-involving climate was positively related to feelings of enjoyment, competence, and perceived value by employer (Huddleston et al., 2012). The current study did not find a statistically significant portion of variance accounted for within ego-involving climates with regards to ED symptomology, and that could be attributed to the fact that most of the students sampled did not find the university recreation center as an ego-involving climate; therefore no ED symptomatology would be predicted by this construct.

Among goal orientations, results of the current study suggested that task orientation was positively associated with ED symptomology and that ego orientation was negatively associated with ED symptomatology. Although previous research is limited in explaining why goal orientation would account for the most amount of variance in the present study, there is an explanation to understand these results. For example, goal orientation is not mutually exclusive; an individual can score high in both task orientation as well as in ego orientation; thus, this paradigm is considered more orthogonal in nature. In examining the data, many of the participants who scored high in the EAT-26 also scored high in *both* the task orientation and ego orientation constructs of the GOES. With respect to the AGT, Nicholls (1984) proposed that individuals with ego orientation are comparing themselves to other individuals, and task orientation usually focuses on intrinsic motivation, working towards personal mastery. Therefore, for the current study with an exercise population and those presenting with higher ED symptomology, these participants could possess ego characteristics in that they are comparing themselves to other exercisers and they can also possess task orientation characteristics because

they are unsatisfied with their body weight, shape, or nutritional habits as they are comparing themselves to a more ideal image of themselves and not to anyone else.

It was anticipated that a model would emerge among males where exercise duration and intensity, ego orientation, and ego-involving climate would account for the most variance associated with ED-like behavior. However, as neither gender nor motivational climate were significant predictors in predicting ED symptomology, further analyses were not necessary.

Previous research has been incongruent with regards to goal orientation and gender. For example, Duda (1989) found that female athletes were significantly more task-oriented than male athletes, whom were significantly more ego-oriented than females. Females viewed mastery of the task in their sport and cooperation with teammates to be most important in their sport whereas males placed a higher emphasis on competitiveness, social status, and potential for high status career opportunities (Duda, 1989). Hanrahan and Biddle (2002) found that females scored significantly higher on task orientation than males, however no differences were noted between genders on ego orientation for athletes in the community. Conversely, Li, Harmer, and Acock (1996) found that undergraduate male students in a physical education class scored significantly higher on ego orientation, with no significant differences found between genders for task orientation.

Because much of the present study's hypotheses were based on research with athletes, it is interesting to note previous research comparing athletes to recreational exercisers. Interestingly, Hanrahan and Cerin (2009) found no significant difference between recreational and competitive athletes in their study when comparing within genders for goal orientation. To elaborate, their study found that females scored significantly higher in task orientation than did

males and this significance did not change when comparing recreational exercisers to competitive athletes; females still scored higher in task orientation.

With regards to gender and the motivational climate, previous research has shown that males and females have different psychological perceptions of their environment in regards to their physical self-concept. (Brown & Fry, 2014; Marsh, Papaioannou, Martin, & Theodorakis, 2006). The present study did not find motivational climate to be a significant predictor of ED symptomatology, and therefore it was not relevant to analyze the motivational climate between genders.

The current study used AGT as its theoretical framework; however, as noted previously, 97.5% of the variance was unknown. The study did not reflect on parental, peer or social media influence, which are three main factors that contribute to ED-like behavior in the collegiate population because these factors have already been studied previously and are established before college. Parents are a major influence on their child's eating habits, as they often influence their attitudes and beliefs about food and eating. These beliefs carry on from childhood into adulthood, thus still influencing collegiate students (Kelder, Perry, Klepp, & Lytle, 1994; Nicklas, 1995). In a one-year longitudinal study, Field and colleagues (2001) studied over 10,000 boys and girls and found that those adolescences who reported that thinness was important to their parents became chronic dieters. Another study also found that children whose parents controlled their food had higher levels of body dissatisfaction, which can lead to an ED in the future (Brown & Ogden, 2004).

Social pressures play an important role in a college student's decision to begin maladaptive eating behaviors, which can lead to an ED. Gaines and Burnett (2014) found a positive correlation between disordered eating and peer pressures in both athletic and non-

athletic populations. This is likely attributed to the fact that when entering college, many individuals who live in a close environment tend to compare body physiques with one another as well as witness the eating habits of peers, which influences their personal eating choices. Other studies have also concluded that sociocultural expectations influence the desires to begin an ED (Lofrano-Prado et al., 2015).

Social media also affects an individual's desires to engage in ED-like behavior. Distorted body image perceptions and low self-esteem, which directly influence the motivation to engage in an ED, are often times exacerbated by society's drive for thinness (Quick and Byrd-Bredbenner, 2013). A study completed by Fernandez and Pritchard (2012) concluded that both males and females use media influence as the number one predictor for ED. Both genders were striving for the "beauty status" of being thin. Additionally, social pressures were the second most common reason for the females to engage in maladaptive eating behaviors.

Limitations

There were a few limitations to the present study. First, there were 87 questions in total and although class time was permitted for the students to complete the questionnaire, some students may not have taken advantage of the time allotted and answered at random. Second, as the topic of ED is a sensitive subject for most individuals, some participants may not have answered honestly to the Eating Attitudes Test-26. Additionally, although the study was pilot-tested with eighteen other university students, some students during the current study may not have understood the questions fully and answered at random as well.

Finally, the data was gathered from one university, therefore it is hard to generalize the results of this study to college students using campus recreation centers across the nation. Furthermore, with regards to ED symptomatology, the climate of the university recreation center

was reported as similar for most students since the motivational climate did not present as statistically significant. Therefore, there was not a variation in the climate of the study, which could be different from one university to the next.

Future Directions

Future studies can explore other motivational frameworks, which might help to explain the 97.5% of unknown variance as well. Like AGT, Self-Determination Theory (SDT) is a theoretical framework on motivation and has also been used to predict ED. Developed by Deci and Ryan (1985), the SDT studies intrinsic and extrinsic motivations and postulates that autonomy, competence, and relatedness are the three psychological needs for those motivations to occur.

For example, in one study, Matusitz and Martin (2013) tie autonomy, competence, and relatedness into the development of ED. They found that an autonomous individual may not be as influenced by the media, which, as noted previously, is a main influence for engaging in an ED. Additionally, if an individual feels they have the power to control their habits if they are gaining weight, they will engage in more healthy methods of weight loss. The researchers went on to conclude that a competent individual will have an understanding of their personal goals and how to achieve them in a healthy manner, using external resources if they have uncertainties about exercise or eating habits. Relatedness, or the need to have trusting relationships, can also be a factor in ED symptomatology as discussed by Matusitz and Martin (2013). They found that those individuals with an ED have a harder time trusting other individuals and therefore may not feel comfortable asking for help in order to receive the necessary treatment.

Thøgersen-Ntoumani and Ntoumanis (2016) used the SDT to study body image concerns and predict ED in aerobics instructors as well. They found that intrinsic motivation positively

predicted positive body self-esteem and that autonomy need satisfaction negatively predicted body image concerns, concluding that conditions of the STD can play a role in potential ED symptomatology.

Conclusions

Although many of our primary hypotheses were not supported by the results of the study, it is important to take note that goal orientation was a significant predictor of ED symptomatology. Due to the lack of previous research, these hypotheses were drawn from an athletic population, not a recreational exercise population, as the current study assessed. Future studies may address components of other theories of motivation to predict ED-like behavior in the collegiate, non-athlete population.

Overall, the results of the current study suggest that goal orientation is the only significant predictor of ED symptomology, with task orientation and goal orientation together accounting for 2.5%, task orientation by itself accounting for 1.3% of the variance, and ego orientation by itself accounting for 1.2% of the variance. For the purposes of the present study, the remaining 97.5% of variance is still unaccounted for. Although this is a significant amount of variance that remains unidentified, the present study provided preliminary evidence of the importance of studying AGT related variables that contribute to our understanding of ED symptomatology in the collegiate population.

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APPENDIX A

LITERATURE REVIEW

Due to the pressures of society, the media, and self-worth, the prevalence of eating disorders (ED) in the United States has risen dramatically over the last decade. According to the National Institute of Mental Health (2016), ED are often life-threatening conditions that take a physical and emotional toll on the bodies of both males and females. Contrary to what some may believe, ED are not a lifestyle choice, but instead a mental health issue.

The following section will be broken up into three parts: defining the three main types of eating disorders, ED in the collegiate population, and, finally, discussing ED in association with exercise.

Defining Eating Disorders

Anorexia nervosa. Between 0.5% and 1% of all American women suffer from anorexia nervosa (AN) and approximately 90-95% of those afflicted with this mental disease are young girls and women (National Eating Disorders Association, 2016). According to the *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5;* American Psychiatric Association, 2013) AN is commonly seen during adolescence or young adulthood and rarely begins before puberty or after age 40. As with many mental disorders, anorexia nervosa is often associated with a stressful life event, such as entering college. The *DSM-5* states that there are three key features of AN in order for an individual to be diagnosed. These include persistent energy intake restriction (semi-starvation); intense fear of gaining weight or of becoming fat, or persistent behavior that interferes with weight gain; and a disturbance in self-perceived weight or shape (American Psychiatric Association, 2013). Warning signs of AN include, but are not limited to, severe weight loss; anxiety and persistent comments in reference to feeling “fat”; preoccupation with counting calories and dieting; and avoidance of usual

activities with friends and family members, especially in regards to meals (National Eating Disorders Association, 2016). Individuals suffering from anorexia nervosa will appear thinner than normal and have an obsession with weight gain and food intake. They will also be in a state of denial of the severity of their underweight bodies.

There are several health consequences to individuals with anorexia nervosa. Acute symptoms include brittle hair and nails, dry and yellowing skin, constipation, amenorrhea, and lanugo, which is the growth of fine hair across the body. As the disorder continues, more devastating consequences can occur, including damage to the structure and function of the heart, osteopenia or osteoporosis, muscle wasting and weakness, brain damage, and infertility (National Institute of Mental Health, 2016). Death most commonly comes as a result of suicide, which affects as many as 12 individuals per 1000,000 patients each year, or by complete organ failure (American Psychiatric Association, 2013). The APA reports that most individuals with AN experience remission within 5 years of presenting symptoms if they receive psychological assistance.

Bulimia nervosa. As with anorexia nervosa, there are three key diagnostic features to bulimia nervosa (BN). According to the *DSM-5*, these features include: recurrent episodes of binge eating, recurrent inappropriate compensatory behaviors to prevent weight gain, and self-evaluation that is unduly influenced by body shape and weight (American Psychiatric Association, 2013). These criteria need to continue at least once per week for three months for a diagnosis to be made. BN affects 1-2% of adolescents and young adult women and approximately 80% of individuals affected are female (National Eating Disorders Association, 2016).

In order to better understand bulimia nervosa, it is important to define certain aspects of the *DSM-5* criteria. Binge eating includes two components in its definition (American Psychiatric Association, 2013). The first includes eating an amount of food that is definitely larger than what most individuals would eat in a similar period of time. This usually occurs during a short period of time, such as two hours. The second component of binge eating can be described as having a lack of control over eating during that stint of time. An individual will continuously eat, often times mindlessly, with the mental lack of control to stop the behavior. The quality of food is not limited to junk food either; binge episodes can occur with healthy food as well. The majority of individuals, however, indulge in foods that would be considered unhealthy to most people.

Additionally, bulimic individuals will use inappropriate means of compensating for their overindulging of food. These methods can include excessive exercise, misuse of laxatives and other medications, fasting, and self-induced vomiting, which is the most common maladaptive behavior (American Psychiatric Association, 2013). Individuals with BN often times do not limit themselves to one form of purging.

As with anorexia nervosa, bulimia nervosa often occurs after puberty and before the age of 40. Behaviors will likely be triggered before or after periods of dieting as well as after significant life events occur, such as leaving home for college or following childhood trauma such as sexual or physical abuse (American Psychiatric Association, 2013). Acute symptoms of BN include chronic sore throat, loss of electrolytes and dehydration, and intestinal distress from overuse of laxatives. More severe consequences that are often irreversible include tooth decay from the acidity of vomiting, acid reflux disorder, and skeletal and cardiac myopathies (National Eating Disorders Organization, 2016). However, unlike individuals with AN, those with BN

appear to have a healthy or normal body weight (National Institute of Mental Health, 2016).

According to the American Psychiatric Association, the crude mortality rate for those with bulimia nervosa is nearly 2% per decade (2013).

Binge-Eating Disorder. Prior to May 2013 when the *DSM-5* was released, binge-eating disorder (BED) was listed in the category of Eating Disorders Not Otherwise Specified in the *DSM-4* (American Psychiatric Association, 2000). Similar to bulimia nervosa, BED consists of binge eating during a discrete period of time, usually less than two hours. Unlike BN however, BED binges are not followed by compensatory behaviors (American Psychiatric Association, 2013). Post-binging, individuals often have feelings of extreme shame, guilt, and embarrassment. Affecting 3.5% of women, 2% of men, and up to 1.6% of adolescents, BED is the most common ED in the United States (National Eating Disorders Organization, 2016). Of those with BED, 60% are women and 40% are male, therefore the gender demographics are far less skewed than in anorexia nervosa or bulimia nervosa.

According to the *DSM-5*'s diagnostic criteria, BED includes the features of recurrent episodes of binge eating and marked distress regarding binge eating (American Psychiatric Association, 2013). These binge-eating episodes are associated with three (or more) of the following: eating much more rapidly than normal; eating until feeling uncomfortably full; eating large amounts of food when not feeling physically hungry; eating alone because of feeling embarrassed by how much one is eating; and feeling disgusted with oneself, depressed, or very guilty afterward.

BED can occur in normal weight as well as overweight individuals, although primarily obese individuals are afflicted with this mental disorder (National Institute of Mental Health, 2016). There are a number of physical and mental consequences of BED, including weight gain,

heart disease, type II diabetes, high blood pressure, as well as the associated shame and guilt for overindulging, “all-or-nothing” thinking in regards to eating, and perfectionistic tendencies (National Eating Disorders Organization, 2016). Unlike bulimia nervosa, attempts at dieting are usually followed by the binge-eating episode in BED patients. There is a high risk for suicide and co-occurring psychiatric disorders in individuals with BED (American Psychiatric Association, 2013).

Eating Disorders in the Collegiate Population

Prevalence. While the APA has published the prevalence rates of ED in regards to the general population, other researchers have studied the prevalence rates of ED in the collegiate population. Many EDs materialize between the ages of 18-21, therefore college-aged individuals are especially at risk for developing an ED (Hudson, Hiripi, Pope, & Kessler, 2007). The reasoning for this occurs for several reasons, which are discussed in the following section. Consequently, one fourth of university counseling centers in the United States report recent increases in the number of cases of ED (Schwitzer & Choate, 2015).

According to the American College Health Association’s National College Health Assessment (2008), 3% of females and 0.4% of males reported being diagnosed with anorexia nervosa; 2% of females and 0.2% of males reported a previous diagnosis of bulimia nervosa; and 4% of females and 1% of males reported using purging techniques in the last 30 days. Additionally, data from a 13-year period of time at one university in California was collected and analyzed to research the increasing rates of ED. White, Reynolds-Malear, and Cordero’s (2011) study found that the prevalence of ED in females increased from 23.4% in 1995 to 32.6% in 2008. In males, they found an increase from 7.9% in 1995 to 25.0% in 2008. These were statistically significant results, indicating that the prevalence of ED is increasing.

In accordance with the above statistics, an overwhelming number of studies have reported the high rates of ED in collegiate females (Eisenberg, Nicklett, Roeder, & Kirz, 2011; Lofrano-Prado, Prado, Barros, & Souza, 2015; Quick & Byrd-Bredbenner, 2013). However, while females are reported as having a higher rate of clinically diagnosed ED, males are also at risk for developing an ED. Data shows that 25% of college men binge eat and 3% use compensatory purging methods (Lavender, DeYoung, & Anderson, 2010). Mayo and George (2014) recently conducted a study on collegiate male students who show symptoms of an ED due to their high body dissatisfaction. Of the 331 males that were sampled at a public state university, 28% scored high on the Eating Attitudes Test (EAT), indicating that they were at risk for developing an ED and should seek clinical evaluation.

Potential reasoning of eating disorders among college students. As previously established, there is a heightened prevalence of ED among college students. There are many causes for this skewness, including social pressures, pursuing new romantic relationships, and striving for academic success (National Eating Disorders Association, 2013). The media also plays a large role in the high rates of ED among college-aged individuals (Quick & Byrd-Bredbenner, 2013; Schwitzer, Bergholz, Dore, & Salimi, 1998).

Social pressures play a large role in a college student's decision to begin maladaptive eating behaviors, which can lead to an ED. Gaines and Burnett (2014) found a positive correlation between disordered eating and peer and romantic pressures in both athletic and non-athletic populations. This is likely attributed to the fact that when entering college, many individuals who live in a close environment tend to compare body physiques with one another as well as witness the eating habits of peers, which influences their personal eating choices. Other

studies have also concluded that sociocultural expectations influence the desires to begin an ED (Lofrano-Prado et al., 2015).

Another factor that influences a student's eating habits is the media. American culture has been warning students about the dreaded "freshman 15" for several years, however in reality the hype surrounding this claim may, in fact, produce the opposite results. A large nationwide study conducted by Zagorsky and Smith (2011) found that, on average, students only gained between 2.5 and 3.5 pounds during their first year of college, which is contrary to the myth of students gaining 15 pounds. Their results also concluded that this was only a half-pound increase compared to their non-college peers. Therefore, a possible explanation to the rise of ED among college students is that instead of the freshman gaining weight, it is quite possible that they are trying to lose weight in order to avoid becoming part of the stigma.

Not only does the "freshman 15" potentially play a role in ED of college students, but other aspects of the media also affect their decisions. Distorted body image perceptions and low self-esteem, which directly influence the motivation to engage in an ED, are often times exacerbated by society's drive for thinness (Quick and Byrd-Bredbenner, 2013). A study completed by Fernandez and Pritchard (2012) concluded that both males and females use media influence as the number one predictor for ED. Both genders were striving for the "beauty status" of being thin. Additionally, social pressures were the second most common reason for the females to engage in maladaptive eating behaviors.

Eating Disorders in Association with Exercise

Excessive exercise. It has been well documented that excessive exercise is presented as one method of compensatory behavior in individuals with bulimia nervosa and purging-type anorexia nervosa (PAN; American Psychiatric Association, 2013; Dalle Grave, Calugi, &

Marchesini, 2008; Shroff et al., 2006). Although one universal definition for excessive exercise does not yet exist, Shroff and colleagues (2006) created a comprehensive definition that was used in their large international study. They define an individual as an excessive exerciser if they could relate to at least one or more of the following categories: (1) exercise severely interferes with important activities; (2) exercising more than 3 hours per day and feeling distressed if unable to exercise; (3) frequent exercise at inappropriate times and places and little or no attempt to suppress the behavior; and (4) exercising despite more serious injury, illness or medical complication (p. 456).

Studying excessive exercise in regards to ED is important because it has been shown that excessive exercise may actually precede the occurrence of dieting and other weight loss manipulators (Davis et al., 1997; Kostrzewa, Eijkemans, & Kas, 2013). A study conducted by Kostrzewa and colleagues (2013) found that excessive exercisers are 2.5 times more likely to be diagnosed with an ED compared to individuals with lower levels of physical activity. Davis and colleagues (1997) even found a statistically significant correlation between high childhood activity levels and the amount of exercise that that same individual would do during the acute phase of their anorexia nervosa compared to other, less active individuals with the same ED. Therefore, early recognition of an individual's increased activity levels is paramount to detecting potential ED in the future.

Additionally, it is important to discuss the fact that individuals who suffer from an ED also engage in appearance-motivated exercise, as opposed to health-motivated exercise (Vinkers, Evers, Adriaanse, & de Ridder, 2012). The motivations to exercise is crucial to understand because it often dictates whether the exercise is healthy or unhealthy and whether it is done in excess or not. A 2012 study completed by Gonçalves and Gomes showed that of the 301 male

and female participants, 48% reported that they exercise for weight or shape concerns. These same individuals also showed higher reports in disturbed eating or were of high concern for developing an ED. Research has also shown that women with unhealthy eating attitudes want to avoid negative social consequences and often times believe that exercise is the answer to achieve or maintain a socially acceptable physical appearance (Meyer, Blissett, Alberry, & Sykes, 2013).

Despite the purging techniques associated with the diagnostic criteria of bulimia nervosa, studies have shown that excessive exercise was more frequently associated with anorexia nervosa compared to bulimia nervosa (Davis et al., 1997; Shroff et al., 2006). Davis and colleagues' (1997) research has shown that 50% of anorexia nervosa patients were more physically active during their childhood compared to other individuals their age as compared to bulimia nervosa patients, whose results showed that only 24% of those individuals were more physically active than individuals of the same age. In the same study, similar results were also obtained in adulthood, insofar as 56% of adult AN patients used exercise before dieting, whereas 65% of adult BN patients used dieting before exercising.

Eating Disorder Assessments

Although a number of ED assessments exist, the following are most frequently used in the collegiate ED population and include psychometric properties consistent of what the current researcher is assessing.

Eating Attitudes Test (EAT-26). The Eating Attitudes Test (EAT) was originally developed by Garner and Garfinkel in 1979, with a revised edition developed by Garner and colleagues in 1982, and is currently one of the most widely used self-report instruments for assessing risk factors of ED (Sandberg & Erford, 2013). Extensive research has been done on the reliability and validity of the EAT-26, with studies concluding that it has a high level of

convergent validity, concurrent validity, and internal reliability (Garner et al., 1982; Mayo & George, 2014). Garner and colleagues (1982) reported a Cronbach's alpha level of 0.90, which is categorized as "excellent" for internal consistency.

The revised addition (EAT-26), consisting of 26 questions, has been used in both a clinical and nonclinical setting, with males and females, as well as adults and adolescents (www.eat-26.com). It consists of 3 subscales characteristic of ED including (1) dieting, (2) bulimia and food preoccupation, and (3) oral control (Garner, 1982). There are three main parts to the EAT-26. The first section includes demographic information, including height, weight, and age which will be used to calculate BMI. Section two consists of 26 items that are on a Likert-type scale ranging from always to never. An example construct in this section is "I avoid foods with sugar in them". Each of the intervals equals a different score in point-fashion (always = 3; usually = 2; often = 1; and sometime, rarely, or never = 0). The third and final section asks participants five questions that indicates the frequency they engage in ED behavior (Sandberg & Erford, 2013). An example of this construct includes "[have you] ever made yourself sick (vomited) to control your weight or shape?".

The scores attached to each of the 26 items are then summed and a total number is calculated. A sum of greater than or equal to 20 is considered to be a high concern for dieting, body image concerns, and ED behaviors. For the additional five behavior questions in the third section, any participant who answers "yes" to one or more of the questions is also in the concerning range for a potential ED (Mayo & George, 2014). Anyone who scores ≥ 20 on the second section or answers "yes" to one or more in the third section should seek professional mental care.

Eating Disorder Examination Questionnaire (EDE-Q). The Eating Disorder Examination Questionnaire (EDE-Q) is a self-report version of the widely known Eating Disorder Examination (EDE; Fairburn & Beglin, 1994). Because the EDE is a clinical interview-style of seeking answers, it is often considered the “gold standard” for assessing ED (Garner, 1995; Mond, Hay, Rodgers, & Owen, 2006). However, it has many limitations, including the length of time required for administration and the appropriate training needed for interviewers (Luce, Crowther, & Pole, 2008). Therefore, following the development of the EDE by Fairburn and Cooper in 1993, the EDE-Q was developed in 1994 by Fairburn and Beglin.

The EDE-Q is an assessment that measures the attitudes, feelings, and behaviors as they relate to eating over a 28-day period of time. It has been used to assess adolescents (Mantilla & Birgegård, 2016) and the general population (Fairburn & Begli, 1994; Luce & Crowther, 1999), as well as undergraduate women (Luce et al., 2008) and men (Lavender et al., 2010).

The assessment consists of 28 items and includes four subscales: Restraint, Weight Concern (WC), Shape Concern (SC), and Eating Concern (EC). Each construct includes 5 questions. There is also a Global Score, which is an average of the four subscale scores (Luce et al., 2008). The questions are to be answered with the last 28 days only in mind. Some questions are open-ended and relate to the frequency with which a behavior may occur. An example of this type of question includes “Over the past 28 days, how many times have you eaten what other people would regard as an unusually large amount of food (given the circumstances)?”. Other questions are on a 7-point, Likert-type scale in which 0 = no days or not at all and 6 = every day or markedly, depending on the question. An example of an item of this type includes “Has your weight influenced how you think about (judge) yourself as a person?” (Fairburn & Begli, 1994). Each question represents one of the four subscales of the assessment, and the four subscales

averaged together equal the Global Score. The higher the Global Score (on a scale from 0-6), the more likely the individual has clinical significance that may lead to an ED (Quick & Byrd-Bredbenner, 2013).

Extensive research has been conducted on the validity and reliability of the Eating Disorder Examination Questionnaire in female adolescents and adults. Excellent internal consistency has been established for all four subscales, with Cronbach alphas yielding high numbers (Luce & Crowther, 1999; Luce et al., 2008). Test-retest reliability of the assessment has also been studied and it is established to be excellent as well (Luce & Crowther, 1999). A comprehensive systematic review was conducted to confirm the excellent validity and reliability results of the EDE-Q (Berg, Peterson, Frazier, & Crow, 2011). However, this review also noted that few (if any) research has been conducted on the psychometric properties in males.

Eating Disorder Inventory-3 (EDI-3). The Eating Disorder Inventory (EDI) was originally published in 1983 by Garner, Olmstead, and Polivy and was used to evaluate traits and symptomology of individuals with potential ED. A revised version, the EDI-2, was subsequently created with the addition of several items and subscales (Garner, 1991). Following that revision was the EDI-3, the most current version of the Eating Disorders Inventory (Garner, 2004). Comparatively, in one study the EDI-3 correctly identified 99% of the patients diagnosed with an ED, whereas the EDI-2 identified only 48% of the patients (Segura-García et al., 2015). In that same study, the EDI-2 had a high amount of false negatives. The EDI-3 has been predominately used with females 13-53 years old, however some research has included girls as young as 11 and 12 (Sandberg & Erford, 2013).

The EDI-3 is a self-report measure consisting of 91 items and 12 subscales. Three of the subscales are directly related to ED (Drive for Thinness, Bulimia, and Body Dissatisfaction),

while the remaining nine subscales are specifically related to general psychological features (Low Self-Esteem, Personal Alienation, Interpersonal Insecurity, Interpersonal Alienation, Interoceptive Deficits, Emotional Dysregulation, Perfectionism, Asceticism, and Maturity Fears; Garner, 2004). Questions are on a 5-point Likert-type scale in which 0 = never or rarely and 4 = always. An example of one item includes, "If I gain a pound, I worry that I will keep gaining". Items for each subscale are then summed, which yields a subscale score. These scores are then compared to overall and specific normative diagnostic groups (Sandberg & Erford, 2013). Advantageous to the EDI-3 is that it contains three validity indicators in which the test administrator may be alerted to any irregularities in responses (Sandberg & Erford, 2013; Segura-García et al., 2015).

Psychometric properties have been analyzed for the Eating Disorder Inventory-3. Studies show that the EDI-3 has adequate discriminant and convergent validity (Cumella, 2006; Garner, 2004). Internal consistency for all of the subscales except one yielded moderate to high results ($\alpha = .77$ to $.92$) (Clausen, Rosenvinge, Friberg, & Rokkedal, 2011; Garner, 2004).

Although the EDI-3 has been used in numerous studies across the world, has strong evidence for reliability and validity, and is successful when diagnosing potential ED, there are a number of disadvantages of the instrument, including the fact that it is not suitable for use with males (Garner, 2004; Sandberg & Erford, 2013). Another disadvantage to the EDI-3 is that it requires B-level training to administer (Sandberg & Erford, 2013), therefore an individual has to have a Bachelor's degree in psychology, counseling, or related field in addition to proper graduate work. This limits who can administer the test. Additionally, the EDI-3 is an expensive test to purchase and score compared to other instruments such as the EAT-26 or the BITE, which are free-access tests (Sandberg & Erford, 2013).

Eating Disorder Diagnostic Scale (EDDS). Created in 2000 by Stice, Telch, and Rizvi, the Eating Disorder Diagnostic Scale (EDDS) is a self-report instrument used for diagnosing anorexia nervosa, bulimia nervosa, and binge-eating disorder. It has been used for studying frequent measurements of eating pathology and amongst clinical and non-clinical patients (Krabbenborg et al., 2012). In line with the collegiate population theme, it has been used to test undergraduate students, however, to date it has only been tested with female adolescents and women and not yet with males (Krabbenborg et al., 2012; Stice, & Ragan, 2002; Stice, Telch, & Rizvi, 2000).

The EDDS is a 22-item instrument that was created from the interview-style instrument, the Eating Disorder Examination (EDE; Stice, Telch, & Rizvi, 2000). As previously mentioned, the EDE is the “gold standard” of diagnosing ED, however it is relatively long, time consuming, and requires a great deal of training to administer. Stice and colleagues, therefore, created the EDDS, which has shown excellent psychometric properties for diagnosing without the disadvantage of being long and requiring additional examiner training. Research has shown that the EDDS has good test-retest reliability (mean $\kappa = .80$), internal consistency ($\alpha = .89$), criterion validity (mean $\kappa = .83$), content validity, and predictive validity (Stice, Fisher, & Martinez, 2004; Stice et al., 2000). Krabbenborg and colleagues’ (2012) study yielded similar psychometric properties as well established a cut-off score to differentiate between the clinical ED population and a healthy population. This cut-off score is equal to 16.5.

The EDDS’s 22 items are broken up into four sections (Stice et al., 2000). Part I includes four questions on a 7-point Likert-type scale ranging from 0 (not at all) to 6 (extremely) and is used to assess symptoms of AN and BN over the past three months. Part II consists of ten questions that assess the frequency of eating large amounts of food uncontrollably as well as

dichotomous yes-or-no questions relating to these binge episodes. The four items in Part III ask the frequency with which compensatory behaviors such as vomiting, laxatives, fasting, and exercise were used in the last three months. Finally, Part IV includes four open-ended questions regarding height, weight, birth control use, and missing menstrual cycles. An overall ED symptom score can be computed by standardizing and summing the items together, not including Part IV. Additionally, the symptom composite score was used to decipher the cut-off score of 16.5 for clinical and non-clinical patients (Krabbenborg et al., 2012). Testing administrators can use an SPSS computer coding algorithm to compute the scores (Stice et al., 2004).

Overall, research results have shown that the EDDS is very comparable to the gold standard EDE in diagnosing ED (Stice et al., 2000; Krabbenborg et al., 2012). This is good news for future testing of ED patients as the EDDS requires less time and training to administer compared to the EDE.

SCOFF Questionnaire. The SCOFF Questionnaire, an instrument used in screening anorexia nervosa and bulimia nervosa, was developed in 1999 by Morgan, Reid, and Lacey. Since it consists of only five questions, it takes about thirty seconds to complete, making it one of the quicker instruments for assessing ED (Mond et al., 2008). The questionnaire has been translated into six languages and is used in the United Kingdom as the “gold standard” to ED screens by most Primary Care Trusts (Hill, Reid, Morgan, & Lacey, 2010). It has been tested on both male and female college students (Eisenberg, Nicklett, Roeder, & Kirz, 2011; Parker, Lyons, & Bonner, 2005). It has not yet been validated on adolescents (Hill et al., 2010).

“SCOFF” is an acronym for the five questions depicted in the instrument. In the United States equivalent, the five questions are as follows (Parker et al., 2005):

1. Do you make yourself **Sick** because you feel uncomfortably full?

2. Do you worry you have lost **Control** over how much you eat?
3. Do you believe yourself to be fat when **Others** say you are too thin?
4. Have you recently lost more than **Fourteen** pounds in a 3-month period?
5. Would you say that **Food** dominates your life?

All questions can be answered with a yes or no and, in the original testing of the instrument, two or more “yes” responses yielded 100% sensitivity for AN or BN (Morgan, Reid, & Lacey, 1999). Other studies have yielded slightly lower sensitivity percentages (Parker, Lyons, & Bonner, 2005; Mond et al., 2007).

Compared to a clinical interview, the SCOFF questionnaire had good validity (Hill et al., 2010). Cronbach’s alpha for the SCOFF questionnaire has been controversial, however. Siervo and colleagues’ (2005) study found an alpha level of $\alpha = 0.47$ whereas Gideo et al. (2016) found a reliability of $\alpha = 0.64$; both alpha levels are fairly low. Reliability was found to be good when comparing the oral format to the written one (Hill et al., 2010).

Overall, the SCOFF questionnaire appears to be a good instrument for screening, not diagnosing, an ED. The fact that it has been tested on both males and females, that the administrator does not need special training, and that it takes a brief amount of time to complete all prove to be advantageous for the SCOFF questionnaire for future identification purposes.

Motivation

Although numerous motivational theories exist, the following sections will highlight Achievement Goal Theory in particular, due to its compatibility with the motivational reasons behind an individual’s desires to engage in an ED as well as its many citations in sport and exercise settings. These sections will be broken up into three parts: describing the goal

orientations of an individual, discussing the three type of psychological climates, and motivation in sport and exercise settings.

The Achievement Goal Theory (AGT) was first postulated by Nicholls in 1984 and focuses on two types of psychologically motivated individuals referred to as ego-oriented and task-oriented (Nicholls, 1984). One assumption of the theory is the need to demonstrate competence in a task, which is the drive behind the motivation. Based on the orientation of the individual or the goal, this drive can look different. The following sections will describe both orientations in detail.

In addition to the orientation of an individual, the psychological climate also influences the motivations of individuals. According to the original AGT framework, two types of psychological climates exist: a task-involving climate and an ego-involving climate (Nicholls, 1984). Recently, literature has also included a third perspective of the psychological climate known as the care-involving climate (Newton et al., 2007). The psychological climates are characterized by the social environments that surround an individual.

Goal Orientations

As mentioned previously, as documented by Nicholls (1984), two types of individuals exist with respect towards achieving goals: the ego-oriented individuals and the task-oriented individuals. The following is a brief discussion of the overall descriptions of the two orientations as well as the individual differences between the two in sport and exercise.

Ego-oriented individuals. According to the AGT, an ego-oriented individual creates an external goal which constantly requires a comparison of himself or herself to others (Nicholls, 1984). This individual may not be satisfied with his or her accomplishments unless he or she is performing better than the surrounding peers. Essentially, ego-oriented individuals assess the

goal at hand and decide if they have the ability to do better than others. They care less about mastering the task at hand and more about extraneous comparisons.

Task-oriented individuals. A task-oriented individual creates an intrinsically motivated goal and focuses on performance or technical development in order for the individual to improve at the desired task and achieve mastery (Nicholls, 1984). For example, an individual with this type of motivation may keep track of his or her exercise schedule and personal improvements, regardless of the results of classmates, teammates, or peers.

Individual differences of goal orientation in sport and exercise. Nicholls (1992) stated that understanding one's goal perspective is paramount because it predicts one's thoughts, feelings, and actions in sport and exercise settings. Individual differences between the two goal orientations and the subsequent outcomes are especially prevalent in an athletic environment. Task-oriented individuals tend to view athletics as a means for making individuals into better overall citizens. For example, these individuals emphasize the importance of cooperation, teamwork, honesty, respectfulness, good work ethic, and promoting high self-esteem (Duda, 1989). Conversely, ego-oriented individuals place a higher emphasis on personal gains from sport, extrinsic benefits, and the belief that playing a sport would allow for a better possibility of getting into a good college, receiving a promotion at work, and earning more money.

Some discrepancies have occurred in the research regarding goal orientation among the males and females. Duda (1989) found in her study that female athletes were significantly more task-oriented than male athletes, whom were significantly more ego-oriented than females. Females viewed mastery of the task in their sport and cooperation with teammates to be most important in their sport whereas males placed a higher emphasis on competitiveness, social status, and potential for high status career opportunities (Duda, 1989). Hanrahan and Biddle

(2002) found that females scored significantly higher on task orientation than males, however no differences were noted between genders on ego orientation for athletes in the community.

Conversely, Li, Harmer, and Acock (1996) found in their study of undergraduate students in a physical education class that males scored significantly higher on ego orientation, with no significant differences found between genders for task orientation.

Interestingly, Hanrahan and Cerin (2009) found no significant difference between recreational and competitive athletes in their study when comparing within genders. To elaborate, their study also found that females scored significantly higher in task orientation than did males and this significance did not change when comparing recreational athletes to competitive athletes; females still scored higher in task orientation.

Studies have also been done regarding the differences between individual and team sports and their respective goal orientations. One study found track and field athletes to have lower scores for ego orientation compared to squash, football, and basketball players (Hanrahan & Biddle, 2002). They reasoned that this was because track and field athletes can define their successes on a more individual basis when comparing their own personal records. No other differences between individual and team sports were found in their study. However, Hanrahan and Cerin (2009) found individual sport athletes to be higher in ego orientation than team sport athletes. They concluded that this was because in individual sports athletes can clearly compare themselves to other athletes, allowing definitions of success to be evident.

Psychological Climate

As with the two orientations types, the following is a brief discussion of each of the three types of psychological climates as well as the role of the psychological climate in sport and exercise settings.

Ego-involving climate. The ego-involving climate includes a network of individuals who place an emphasis on winning and social comparison to others (Ames, 1992; Duda 1993). Group leaders encourage rivalries between group members and communicate that mistakes are reason for concern (Nicholls, 1984).

Task-involving climate. A task-involving climate would involve peers, parents, and other influential individuals who help the individual focus on self-progress and making mistakes as a process of learning (Ames, 1992; Duda 1993). Leaders place an emphasis on the value of teamwork and that mistakes are part of the learning experience (Nicholls, 1984). Research has concluded that task-involving climates allow individuals to have a greater sense of enjoyment, more motivation to work, and feelings of higher competence (Huddleston, Fry, & Brown, 2012).

Care-involving climate. The third aspect of the environment, the care-involving climate, is fostered by welcoming, non-judgmental leaders or peers who would allow the individual to feel respected and safe (Newton, 2007). When comparing the various climates to each other and the potential outcomes, individuals who feel they are in a high task- and care-involving climate are more likely to reap positive benefits as a result (Brown & Fry, 2014).

Psychological Climate in Sport and Exercise Settings

As previously stated, in the general population a task-involving climate seems to be a more conducive environment for personal growth, enjoyment, and satisfaction of the task at hand. Research has found similar results in regards to the task-involving climate in sport and exercise settings as well. Specifically, in the corporate wellness setting, a task-involving climate was positively related to feelings of enjoyment, competence, and perceived value by employer (Huddleston et al., 2012). These same qualities and feelings were negatively associated with an ego-involving climate. These results are consistent with the collegiate population as well (Brown

& Fry, 2014). A systematic review of fourteen studies completed by Ntoumanis and Biddle (1999) concluded that, in general, a task-involving climate is more conducive to enjoyment and learning in the physical activity setting.

Additionally, in a sport setting, research has shown that athletes who perceive a more ego-involving climate have higher feelings of pressure and tension than those in a task-involving motivational climate (Newton, Duda, & Yin, 2000). It was concluded that in this environment, athletes feel more pressure because they continuously have to prove their worth to their coach and to perform better than other players. Conversely, results have shown that athletes in a task-involving environment perceive greater team satisfaction than they would in an ego-involving climate (Newton et al., 2000). Caring climates also enhance feelings of well being and greater satisfaction with the sport (Stark & Newton, 2014).

Gender differences in perceptions of the psychological climate have also been revealed. In one study, researchers found that males perceived a higher ego-involving climate in their collegiate physical education classes compared to females (Brown & Fry, 2014). These results showed that between genders, males and females have different psychological perceptions of their environments in regards to their physical self-concept. These results are consistent with other studies in the physical activity environment (Marsh, Papaioannou, Martin, & Theodorakis, 2006).

Motivation Assessments in Sport and Exercise

Although a number of motivation assessments exist, the following are most frequently used in the physical activity setting and include psychometric properties consistent of what the current researcher is assessing. The following sections will be broken up into motivation assessments in exercise as well as motivation assessments in sport.

Goal Orientation in Exercise Scale (GOES). Kilpatrick, Bartholomew, and Reimer developed the Goal Orientation in Exercise Scale (GOES) in 2003 and modeled it off of the Task and Ego Orientation in Sport Questionnaire (TEOSQ; Duda and Nicholls, 1992). It was designed to assess the motivational orientation of individuals in an exercise setting, such as a more task-oriented individual or a more ego-oriented individual. The instrument was tested on a diverse population, including both males and females and a range of age from 18 to 43. Construct validity was found to be good. Internal consistency has been tested, showing an alpha measurement of 0.79 for the task subscale and 0.90 for the ego subscale (Kilpatrick et al., 2003).

The GOES includes 10 items with two subscales: 5 task-related items and 5 ego-related items. An example of a task-oriented question includes “I can learn something while exercising and it makes me want to participate more”. An example of an ego-oriented question includes “I can do better than my friends”. The GOES uses a 5-point Likert-type scale with responses ranging from 1= strongly disagree to 5 = strongly agree (Kilpatrick, 2013). The averages of each subscale are then obtained to identify the orientation of each individual.

Perceived Motivational Climate in Exercise Questionnaire (PMCEQ). In order to assess motivational climate in an exercise setting, Huddleston, Fry, and Brown (2012) developed the Perceived Motivational Climate in Exercise Questionnaire (PMCEQ), which is an adaption of the Perceived Motivational Climate in Sport Questionnaire (PMCSQ; Seifriz, Duda, & Likang, 1992). The instrument measures the perception that individuals perceive a task-involving or ego-involving climate in exercise settings, such as fitness centers (Brown et al., 2013). Construct and criterion validity for this instrument has been tested and found to be good (Brown et al., 2013). All subscales of the questionnaire proved to have adequate reliability with Cronbach’s alpha ranging from 0.82 to 0.90 for internal consistency (Huddleston et al., 2012).

Huddleston and colleagues (2012) also reported an internal consistency value of 0.88 for the task-involving climate and 0.86 for the ego-involving climate.

The PMCEQ is a 27-item questionnaire that has been tested in the adult population for both males and females and includes two scales: a task-involving climate and an ego-involving climate. An example of a task-involving question includes “At the wellness center, the staff encourages us to try new exercises”. An example of an ego-involving question includes “At the wellness center, the staff has their favorites”. The instrument uses a 5-point Likert-type scale with responses ranging from 1 = strongly disagree to 5 = strongly agree. The items are then summed and an average is calculated for each of the two scales (Brown, Fry, & Little, 2013). The scale in which the individual scored the greatest results in that individual’s perception of the climate of their exercise environment.

Caring Climate Questionnaire (CCS). The Caring Climate Scale (CCS), developed in 2007 by Newton, Fry, Gano-Overway, Watson, Kim, Magyar, and Guivernau, examines the extent to which individuals feel their exercise setting is supportive, safe, and welcoming. It has been studied on hundreds of youth athletes (Newton et al. 2007) and young adults (Brown et al., 2013) and a variety of settings including dance (Stark & Newton, 2014) and fitness centers (Brown et al., 2013). The CCS has excellent internal reliability, with a Cronbach’s alpha $\alpha = 0.92$ (Newton et al. 2007).

The CCS is a 13-item questionnaire that measures the individual’s perception of a supportive environment. The instrument uses a 5-point Likert-type scale with responses ranging from 1 = strongly disagree to 5 = strongly agree. An example of a question on the CCS includes “athletes feel comfortable on this team”. A mean score is then computed (Newton et al., 2007).

Task and Ego Orientation in Sport Questionnaire (TEOSQ). Duda and Nicholls (1992) created the Task and Ego Orientation in Sport Questionnaire (TEOSQ) in order to measure how individuals typically measure success in order to determine if the athlete is more task-oriented or goal-oriented in sport. Numerous studies have used the TEOSQ to analyze the goal orientation of athletes (Duda, 1989; Duda, Chi, Newton, Walling, & Catley, 1995).

Athletes are to answer the 13-item questionnaire with the responses they feel best describes themselves and their attitude toward their respective sport (Duda & Nicholls, 1992). The instrument includes two subscales; six items are ego-oriented and seven items are task-oriented. An example of an ego-oriented item includes, “I can do better than my friends” while an example of a task-oriented item includes, “I learn a new skill and it makes me want to practice harder”. All questions are based on a 5-point Likert-type scale in which 1 = strongly disagree and 5 = strongly agree. Mean scores are then obtained for the ego oriented subscale and for the task oriented subscale, respectively, and the two subscales are then compared (Duda et al., 1995).

Duda and Whitehead (1998) have analyzed the instrument and found the internal consistencies to be good. Additionally, in their study, de Bruin, Bakker, & Oudejans (2009) found an internal consistency of $\alpha = .91$ for the ego scale and $\alpha = .83$ for the task scale. Other studies have found similar values of internal consistency (Duda, 1989; Duda et al., 1995). Cross-cultural validation has also been studied (Li, Harmer, Chi, & Vongjaturapat, 1996).

Perceived Motivational Climate in Sport Questionnaire (PMCSQ). The Perceived Motivational Climate in Sport Questionnaire, or PMCSQ, (Seifriz, Duda, & Likang, 1992) is an instrument designed to assess an athlete’s perceptions of the motivational climate on their team. These perceptions are based off of the degree to which the coach uses a mastery (task-involving) or a performance (ego-involving) climate. The PMCSQ has been used on adolescent athletes

(Walling, Duda, & Likang, 1993) and young adult male (Seifriz et al., 1992) and female athletes (de Bruin et al., 2009). More recently, Newton, Duda, & Yin (2000) has expanded the PMCSQ to create the PMCSQ-2, which includes 30 items and is much more extensive in separating the task-involving and ego-involving climates.

The PMCSQ is a 21-item instrument that involves two subscales (Seifriz et al., 1992). 12 items are included on the performance climate scale and include such questions as “On this team, teammates compete against each other for playing time”. 9 items are included on the mastery climate scale and include such questions as “On this team, coach is happy as long as we try hard”. This instrument uses a 5-point Likert-type scale with responses ranging from 1 = strongly disagree to 5 = strongly agree. Mean scores are then determined for each subscale and compared to determine the motivational climate of the team.

Internal consistency has been found to be good, with Cronbach’s α ranging from .80-.82 for the mastery climate and .80-.84 for the performance climate (Seifriz et al., 1992; Walling, Duda, & Likang, 1993). Predictive validity was found acceptable as well (Walling et al., 1993).

Achievement Goal Theory and Eating Disorders

The goal orientation of individuals and the psychological climate surrounding the individual can be applied directly to the possible reasoning behind collegiate students’ desires to engage in ED. Quick and Byrd-Bredbenner (2013) reported that one-third of the individuals in their study of 2,604 college-aged students used inappropriate means of controlling their weight in order to reach their desired body image, including self-induced vomiting, excessive exercise, and the misuse of medicines. They reasoned that many of these unsuitable desires developed from friends, family, and the media. Therefore, the expectations of thinness and a desirable body

weight can be related to the psychological climate and can subsequently lead individuals to engage in ED.

Limited research has been done on the AGT and ED in exercise; however there has been some research conducted on the AGT and disordered eating in the athletics. Correlations have been found between the ego orientation and higher rates of dieting and weight-related peer pressures (de Bruin et al., 2009; Scoffier, Corrion, & d'Arripe-Longueville, 2013). Additionally, athletes' perceptions of a task-oriented or mastery climate has shown fewer accounts of dieting and weight-related coach and peer pressure (de Bruin et al., 2009; Stark & Newton, 2014).

Research on the correlation between ED and excessive exercise in college students has previously been discussed. Furthermore, the correlation between ego orientation as well as ego-involving climate with methods of disordered eating has also been verified in athletic populations. In application with the Achievement Goal Theory, the hope for future research will be to examine the two orientations of individuals (task-oriented and ego-oriented) as well as the influence of the three aspects of the psychological climate (task-involving, ego-involving, and care-involving situations) as they relate to college-aged individuals who may respond to external and internal stressors by altering their eating.

APPENDIX B

Table 1

Means, Standard Deviations, and Cronbach's Alpha for Predictor Variables

| Measures | <i>M</i> | <i>SD</i> | <i>α</i> |
|-------------|----------|-----------|----------|
| EAT_Total | 8.62 | 8.08 | .79 |
| PMCEQ_Task | 3.62 | .63 | .90 |
| PMCEQ_Ego | 2.43 | .63 | .82 |
| GOES-Task | 3.77 | .70 | .84 |
| GOES_Ego | 2.41 | .84 | .81 |
| CC_Total | 4.20 | .73 | .85 |
| Godin_Total | 51.11 | 28.10 | |

APPENDIX C

Table 2

Correlation Matrix

[illegible]

APPENDIX D

Eating Attitudes Test (EAT-26)

Part A: *Please fill in the blanks to complete the following questions.*

1. Highest Weight (excluding pregnancy) _____ lbs
2. Lowest Adult Weight _____ lbs
3. Ideal Weight _____ lbs

Part B: *Please circle the number that best corresponds with your thoughts towards eating.*

| # | Question | Always | Usually | Often | Sometimes | Rarely | Never |
|----|--|--------|---------|-------|-----------|--------|-------|
| 1 | I am terrified about being overweight. | 1 | 2 | 3 | 4 | 5 | 6 |
| 2 | I avoid eating when I am hungry. | 1 | 2 | 3 | 4 | 5 | 6 |
| 3 | I find myself preoccupied with food. | 1 | 2 | 3 | 4 | 5 | 6 |
| 4 | I have gone on eating binges where I feel that I may not be able to stop. | 1 | 2 | 3 | 4 | 5 | 6 |
| 5 | I cut my food into small pieces. | 1 | 2 | 3 | 4 | 5 | 6 |
| 6 | I am aware of the calorie content of foods that I eat. | 1 | 2 | 3 | 4 | 5 | 6 |
| 7 | I particularly avoid foods with high carbohydrate content (i.e. bread, rice) | 1 | 2 | 3 | 4 | 5 | 6 |
| 8 | I feel that others would prefer that I ate more. | 1 | 2 | 3 | 4 | 5 | 6 |
| 9 | I vomit after I have eaten. | 1 | 2 | 3 | 4 | 5 | 6 |
| 10 | I feel extremely guilty after eating. | 1 | 2 | 3 | 4 | 5 | 6 |
| 11 | I am preoccupied with a desire to be thinner. | 1 | 2 | 3 | 4 | 5 | 6 |
| 12 | I think about burning up calories when I exercise. | 1 | 2 | 3 | 4 | 5 | 6 |
| 13 | Other people think that I am too thin. | 1 | 2 | 3 | 4 | 5 | 6 |

| | | | | | | | |
|-----------|---|---|---|---|---|---|---|
| 14 | I am preoccupied with the thought of having fat on my body. | 1 | 2 | 3 | 4 | 5 | 6 |
| 15 | I take longer than others to eat my meals. | 1 | 2 | 3 | 4 | 5 | 6 |
| 16 | I avoid foods with sugar in them. | 1 | 2 | 3 | 4 | 5 | 6 |
| 17 | I eat diet foods. | 1 | 2 | 3 | 4 | 5 | 6 |
| 18 | I feel that food controls my life. | 1 | 2 | 3 | 4 | 5 | 6 |
| 19 | I display self-control around food. | 1 | 2 | 3 | 4 | 5 | 6 |
| 20 | I feel that others pressure me to eat. | 1 | 2 | 3 | 4 | 5 | 6 |
| 21 | I give too much time and thought to food. | 1 | 2 | 3 | 4 | 5 | 6 |
| 22 | I feel uncomfortable after eating sweets. | 1 | 2 | 3 | 4 | 5 | 6 |
| 23 | I engage in dieting behavior. | 1 | 2 | 3 | 4 | 5 | 6 |
| 24 | I like my stomach to be empty. | 1 | 2 | 3 | 4 | 5 | 6 |
| 25 | I have the impulse to vomit after meals. | 1 | 2 | 3 | 4 | 5 | 6 |
| 26 | I enjoy trying new rich foods. | 1 | 2 | 3 | 4 | 5 | 6 |

Part C: Please check the box that best corresponds to your eating behavior in the past six months.

| | In the past 6 months have you: | Never | Once a month or less | 2-3 times a month | Once a week | 2-6 times a week | One a day or more |
|----------|--|--------------|-----------------------------|--------------------------|--------------------|-------------------------|--------------------------|
| A | Gone on eating binges where you feel you might not be able to stop? | | | | | | |
| B | Ever made yourself sick (vomited) to control your weight or shape? | | | | | | |
| C | Ever used laxatives, diet pills, or diuretics (water pills) to control your weight or shape? | | | | | | |
| D | Exercised more than 60 minutes a day to lose or to control your weight? | | | | | | |
| E | Lost 20 pounds or more in the past 6 months? | Yes | | | No | | |

APPENDIX E

Goal Orientation in Exercise Scale (GOES)

The questions are on a 5-point Likert scale with responses ranging from 1 (strongly disagree) to 5 (strongly agree). Please circle the number that best fits your feelings when exercising.

| # | Question | Strongly Disagree | | | | Strongly Agree |
|----|--|-------------------|---|---|---|----------------|
| 1 | I learn something while exercising and it makes me want to participate more. | 1 | 2 | 3 | 4 | 5 |
| 2 | I can do better than my friends. | 1 | 2 | 3 | 4 | 5 |
| 3 | Others cannot do as well as me. | 1 | 2 | 3 | 4 | 5 |
| 4 | I learn a new skill by trying hard. | 1 | 2 | 3 | 4 | 5 |
| 5 | Something I learn while exercising makes me want to go and participate more. | 1 | 2 | 3 | 4 | 5 |
| 6 | I am the best. | 1 | 2 | 3 | 4 | 5 |
| 7 | An exercise skill I learn really feels right. | 1 | 2 | 3 | 4 | 5 |
| 8 | I am the only one who can exercise at some high intensity. | 1 | 2 | 3 | 4 | 5 |
| 9 | I am learning and having fun. | 1 | 2 | 3 | 4 | 5 |
| 10 | Others do not perform as well as me. | 1 | 2 | 3 | 4 | 5 |

APPENDIX F

Perceived Motivational Climate in Exercise Questionnaire (PMCEQ)

The questions are on a 5-point Likert scale with responses ranging from 1 (strongly disagree) to 5 (strongly agree). Please circle the number that best fits your experience at the RAC.

| # | Question | Strongly Disagree | | | | Strongly Agree |
|----|---|-------------------|---|---|---|----------------|
| 1 | At the RAC the staff encourages us to try new exercises. | 1 | 2 | 3 | 4 | 5 |
| 2 | At the RAC students are hesitant/embarrassed to ask employees or other students for help. | 1 | 2 | 3 | 4 | 5 |
| 3 | At the RAC the staff gives most of their attention to a few students (high status, most fit, etc) only. | 1 | 2 | 3 | 4 | 5 |
| 4 | At the RAC some students aren't made to feel welcome. | 1 | 2 | 3 | 4 | 5 |
| 5 | At the RAC students of all fitness levels are made to feel valued. | 1 | 2 | 3 | 4 | 5 |
| 6 | At the RAC the staff praises students only when they do better than other students. | 1 | 2 | 3 | 4 | 5 |
| 7 | At the RAC students feel embarrassed if they don't know how to use the equipment. | 1 | 2 | 3 | 4 | 5 |
| 8 | At the RAC students feel good when they try their best. | 1 | 2 | 3 | 4 | 5 |
| 9 | At the RAC students feel comfortable asking for help. | 1 | 2 | 3 | 4 | 5 |
| 10 | At the RAC all students feel welcome. | 1 | 2 | 3 | 4 | 5 |
| 11 | At the RAC students help each other learn. | 1 | 2 | 3 | 4 | 5 |
| 12 | At the RAC students are encouraged to do better than other students. | 1 | 2 | 3 | 4 | 5 |
| 13 | At the RAC staff has their favorite students. | 1 | 2 | 3 | 4 | 5 |
| 14 | At the RAC the staff encourages students to improve on skills they're not good at. | 1 | 2 | 3 | 4 | 5 |
| 15 | At the RAC students feel comfortable asking others how to use the equipment. | 1 | 2 | 3 | 4 | 5 |
| 16 | At the RAC students feel successful when they improve. | 1 | 2 | 3 | 4 | 5 |

| # | Question | Strongly Disagree | | | | Strongly Agree |
|----|--|-------------------|---|---|---|----------------|
| 17 | At the RAC only a few students (high status, most fit, etc.) receive praise. | 1 | 2 | 3 | 4 | 5 |
| 18 | At the RAC students feel they must be the best in order to feel valued by the staff. | 1 | 2 | 3 | 4 | 5 |
| 19 | At the RAC trying hard is rewarded. | 1 | 2 | 3 | 4 | 5 |
| 20 | At the RAC the staff encourages students to help each other. | 1 | 2 | 3 | 4 | 5 |
| 21 | At the RAC the staff makes it clear who they think are the most fit employees. | 1 | 2 | 3 | 4 | 5 |
| 22 | At the RAC students are excited when they do better than their fellow students. | 1 | 2 | 3 | 4 | 5 |
| 23 | At the RAC if you want to use the facilities you must be one of the most fit students. | 1 | 2 | 3 | 4 | 5 |
| 24 | At the RAC the staff emphasizes always trying your best. | 1 | 2 | 3 | 4 | 5 |
| 25 | At the RAC only a few students (high status, most fit, etc.) get noticed by the staff. | 1 | 2 | 3 | 4 | 5 |
| 26 | At the RAC students are afraid to make mistakes. | 1 | 2 | 3 | 4 | 5 |
| 27 | At the RAC students are encouraged to work on their weaknesses. | 1 | 2 | 3 | 4 | 5 |
| 28 | At the RAC the staff favors some students over others. | 1 | 2 | 3 | 4 | 5 |
| 29 | At the RAC the focus is to improve each session. | 1 | 2 | 3 | 4 | 5 |
| 30 | At the RAC students really “work together” as a team. | 1 | 2 | 3 | 4 | 5 |
| 31 | At the RAC students help each other to get better and excel. | 1 | 2 | 3 | 4 | 5 |

APPENDIX G

Caring Climate Scale (CCS)

The questions are on a 5-point Likert scale with responses ranging from 1 (strongly disagree) to 5 (strongly agree).

| # | Question | Strongly Disagree | | | | Strongly Agree |
|----|---|-------------------|---|---|---|----------------|
| 1 | The students are treated with respect. | 1 | 2 | 3 | 4 | 5 |
| 2 | The leaders respect the students. | 1 | 2 | 3 | 4 | 5 |
| 3 | The leaders are kind to the students. | 1 | 2 | 3 | 4 | 5 |
| 4 | The leaders care about the students. | 1 | 2 | 3 | 4 | 5 |
| 5 | The students feel that they are treated fairly. | 1 | 2 | 3 | 4 | 5 |
| 6 | The leaders try to help the students. | 1 | 2 | 3 | 4 | 5 |
| 7 | The leaders want to get to know all the students. | 1 | 2 | 3 | 4 | 5 |
| 8 | Everyone likes the students for who they are. | 1 | 2 | 3 | 4 | 5 |
| 9 | The leaders listen to the students. | 1 | 2 | 3 | 4 | 5 |
| 10 | The leaders accept students for who they are. | 1 | 2 | 3 | 4 | 5 |
| 11 | The students feel safe. | 1 | 2 | 3 | 4 | 5 |
| 12 | The students feel comfortable. | 1 | 2 | 3 | 4 | 5 |
| 13 | The students feel welcomed every day. | 1 | 2 | 3 | 4 | 5 |

APPENDIX H

Godin Leisure-Time Exercise Questionnaire (GLTEQ)

1. During a typical 7-Day period (a week), how many times on the average do you do the following kinds of exercise for more than 15 minutes during your free time (write on each line the appropriate number).

a) STRENUOUS EXERCISE (HEART BEATS RAPIDLY) _____ (e.g., running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling)

b) MODERATE EXERCISE (NOT EXHAUSTING) _____ (e.g., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing)

c) MILD EXERCISE (MINIMAL EFFORT) _____ (e.g., yoga, archery, fishing from river bank, bowling, horseshoes, golf, snowmobiling, easy walking)

2. During a typical 7-Day period (a week), in your leisure time, how often do you engage in any regular activity long enough to work up a sweat (heart beats rapidly)? (Please circle).

OFTEN

SOMETIMES

NEVER/RARELY