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## Eating and Exercise Habits Among College Students

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EATING AND EXERCISE HABITS AMONG COLLEGE STUDENTS

by

Cameron Peirce

A Thesis Submitted in Partial Fulfillment  
of the Requirements for a Degree with Honors  
(Psychology)

The Honors College

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## ABSTRACT

This study examines the eating and exercise habits of undergraduate college students ( $N=204$ ) in order to determine which populations among the sample show the highest rates of disordered eating and disordered exercise behaviors. Participants answered a multipart questionnaire regarding their eating and exercise habits, perfectionistic tendencies, and individual demographic characteristics. Results show Honors and female students had among the highest levels of disordered eating. Student athletes and male students showed the highest levels of disordered exercise. Implications for further research and early intervention for college students with maladaptive eating and exercise habits are discussed.

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## INTRODUCTION

For many college students, attending a higher education institution may be the first time that they live on their own or without their families. With greater academic demands and a new social environment, the social dynamics, expectations, and responsibilities that students experience can change considerably. Heightened levels of stress result in some individuals being more likely to engage in various types of maladaptive behavior, often as a way to try to cope with the challenges that they are facing. For example, during college, rates of disordered eating increase for both men and women (Claydon & Zullig, 2020). This may be related to sociocultural standards of attractiveness and the pervasiveness of those messages (e.g., ideals of thinness, muscularity, fitness), as well as having a perceived sense of lower control under a new set of life circumstances. Along with increases in potentially dangerous eating behaviors, there is also a rise in disordered exercise behaviors in college students (Chalk et al., 2013; Egorov & Szabo, 2018). An increase in this type of behavior may be due to peer pressure from friends or dating partners, as well as increased awareness or internalization of beauty standards. Studying disordered eating and exercise in the context of college students is important because of the harmful physical and mental health consequences, thought patterns, and emotional experiences that these maladaptive behaviors can lead to (National Eating Disorders Association, 2017).

There are many factors that may relate to one's levels of disordered eating and exercise— including, but not limited to: personality type or emotional factors (National Eating Disorders Association, 2017), perfectionism (Bouguettaya, Moulding, King, & Harrold, 2019; Taranis & Meyer, 2010), dissatisfaction with one's body (Laliberte et al.,

2007), weight gain during college or transitional periods (Schaumberg et al., 2014; Tata, Fox, & Cooper, 2001), academic performance and pressure (Claydon & Zullig, 2020; Krafchek & Kronborg, 2018), peer influence and relationships (Zalta & Keel, 2006), and athletic identity or team membership (Scott, Plateau, & Haycraft, 2020). While exact causality has and will not be determined regarding any of these factors individually, it is important to note that these factors may play a significant role in disordered eating and exercise in the lives of college students, as well as in their physical and mental health. The present study focused on the ways in which college students' gender, academic factors, as well as athletic involvement and identity might be related to risk for disordered eating and disordered exercise. The purpose of this study is to examine college students' levels of disordered eating, disordered exercise, perfectionism, and individual demographic information— such as age, year in school, gender identity, race, household income, athletic involvement and identity, status as an Honors College member, and GPA— in order to determine the ways in which these factors correlate with one another. For example, associations among disordered eating, disordered exercise, perfectionism, and an individual factor such as Honors College member status, would indicate that students are more likely to have disordered eating and exercise habits if they are an Honors College member with high levels of perfectionism. Based on the extant research, this study was primarily interested in three types of students. First, students in the Honors College were of interest because of the likelihood that they experience increased rates of perfectionism due to academic pressure (Krafchek & Kronborg, 2018). Second, there was a focus on athletes, as they may be more likely to be pressured by teammates— either overtly or by observing behavior— to engage in disordered eating and/or exercise

for performance or aesthetic reasons (Scott, Plateau, & Haycraft, 2020). Third, there was a focus on students who identify as female, due to the overall higher rates of disordered eating that females experience (Claydon & Zullig, 2020). Identifying the types of students who are potentially most at risk for disordered eating and exercise behaviors will help increase understanding of how these maladaptive habits and lifestyle choices can be better prevented in the future.

### Prevalence of Eating Disorders and Disordered Eating

About 9% of the world's population will suffer from an eating disorder at some point in their life (ANAD, 2021). Disordered eating, however, is much more common than eating disorders, and may affect both women and men at similar rates (Mond, Mitchison, & Hay, 2014). Although the terms disordered eating and eating disorders sound quite similar, they are not interchangeable. Those with eating disorders have reached a point of clinical diagnosis, whereas those who experience patterns of disordered eating have some symptomatology of eating disorders, but do not meet the full criteria in terms of obsessive thoughts or behaviors about food, body image, and exercise. Those with disordered eating behaviors may find themselves eating for emotional reasons instead of ones related to hunger, eating when bored, thinking about food constantly to the point of impaired focus or functioning, cutting out entire food groups, or changing the way that they eat to fit a certain standard or threshold. Disordered eating can take the form of restricting food, bingeing, purging in various forms, or a combination of these habits (National Eating Disorders Association, 2017). Although it may often be thought of in terms of restriction, disordered eating is complex and can take many forms. Disordered eating can turn into an eating disorder under certain conditions, but having

disordered eating does not automatically create a clinical diagnosis for an eating disorder. Here, the difference between the two lies within the degree of the thoughts and behaviors surrounding food that one has.

### Body Satisfaction and Disordered Eating

Research by Laliberte and colleagues (2007) examined the differences in disordered eating and body dissatisfaction in participants with differing views on weight control— these being the idea that one should try to control their weight or that one should accept their weight and live the healthiest lifestyle they can. Researchers found that individuals who did not focus on their weight and instead strived for a healthy lifestyle reported a satisfactory body image (Laliberte et al., 2007). So, one key factor contributing to disordered eating for many may be their desire to control their weight, as this may make them feel constantly dissatisfied with their appearance.

### Disordered Eating in College Students

College students are a particularly vulnerable population in terms of disordered eating. During this time, the percentage of those experiencing disordered eating behavior is about 9 to 13% for college females, and 3-4% among college males (Claydon & Zullig, 2020). However, because we know disordered eating does not reach a clinical threshold and may go undiagnosed, there may be many more individuals in a college population with disordered eating. Schaumberg et al. (2014) suggest one reason for an increase in these maladaptive eating behaviors may be because college students are more apt to gain weight during this transitional time. The same researchers found that college students who engaged in compensatory behaviors (e.g., excessive exercise) were also more likely to have disordered eating habits. In fact, those who engage in compensatory behaviors are

also more likely to have disordered eating behaviors that more closely resemble clinical levels of eating disorders and the psychopathology that coincides with elevated eating disorder symptomatology (Schaumberg et al., 2014). Research has also found that those who engage in disordered exercise are more likely to engage in higher levels of disordered eating than those who suffer with disordered eating alone. This indicates that although these students may not qualify for a clinical diagnosis initially, their pathological exercise behaviors may lead them to eating behaviors that are beyond typical disordered eating, and cause them to become closer to the clinical diagnosis mark. It is important to note, however, that these two factors are not always linked, and symptoms of disordered eating can be prevalent in and of themselves. In a study of 352 college students, researchers found that 72% of women and 46% of men surveyed reported restricting food to lose weight (Wadeson, Gordon, & Donohue, 2011). This statistic does not reflect rates of disordered eating specifically, but does indicate that both women and men are reporting restricting food intake for reasons pertaining to weight loss. Overall, this shows elevated weight or shape concern within a college population. These are very concerning percentages, with almost twice as many women as men who reported engaging in food restriction. It is clear that college students are widely affected by disordered eating for reasons of weight loss or change.

### Gender Differences in Disordered Eating

Overall, it appears women engage in disordered eating at higher rates than men. Tata, Fox, and Cooper (2001) found women were more likely to engage in disordered eating when they had low levels of body satisfaction, coupled with their own self-perception of being overweight. The same researchers found that collegiate-aged men

were less likely than women to engage in disordered eating and did not share the same negative attitudes towards eating and food. In fact, men's body dissatisfaction levels rose when they perceived themselves as *underweight*— the opposite was true in the collegiate-aged women of the same study, with their body dissatisfaction levels increasing when they perceived themselves to be *overweight*. However, other studies have shown that when coupled with the internalization of societal-driven body ideals, men can engage in disordered eating at similar rates to women. And, women who had higher levels of internalization of body ideals also had higher levels of drive for muscularity (Douglas et al., 2019)— something that often goes largely ignored in studies regarding gender differences in disordered eating and exercise. Because this is a more recent study, the researchers may be viewing these maladaptive behaviors through less of a binary lens, and more so as issues that can affect anyone, regardless of gender identity. This research shows that, overall, women are more likely to engage in patterns of disordered eating to lose weight, whereas men generally have a higher drive for muscularity. Nevertheless, that does not mean that both women and men do not feel the societal pressures to look thin, muscular, toned, lean, fit, etc. Just as men can have higher levels of disordered eating when they internalize beauty standards, women can also have a high drive for muscularity when exposed and inundated with expectations of fitness or attractiveness. This area of research has long been driven by antiquated gender binaries and their subsequent body shape and weight expectations, and therefore this area of study needs expansion in order to more holistically understand the dangerous phenomenon that is disordered eating.

### Personality Traits, Perfectionism, and Risk for Disordered Eating

Another factor worth exploring in relation to disordered eating are the various personality traits, such as perfectionism, that may influence one's disordered eating. Bouguettaya, Moulding, King, and Harrold (2019) found that when women felt social pressure from other women around them to be perfect, they were more likely to engage in disordered eating. For example, this may occur when a woman is part of a group that is female-dominated and faces pressures to appear a certain way because of their membership in that group— such as being a dancer or cheerleader (Bouguettaya et al., 2019). These circumstances may contribute to greater risk for engaging in disordered eating. Those with issues relating to negative urgency— when one acts impulsively when stressed— also are more likely to have disordered eating behaviors, specifically, binge eating. Although disordered eating may be commonly associated with ideas of restricting oneself, counting calories, and dieting, it is in fact more multifaceted than that, and encompasses behaviors relating to lack of control around food as well. According to this study, negative urgency may be the mediator between perfectionism and disordered eating. If one feels they have failed to obtain certain standards of beauty based on bodily appearance, they may feel distressed because of that and then act impulsively (negative urgency) through behaviors such as restrictive dieting or over-eating. Because this research was based on female participant groups, like much of the other findings in this area, further studies are needed to explore the possible existence of the same phenomenon in men.

Academic pressure can also be a large stressor for those who are academically high achieving or gifted, and this stress may contribute to increased risk of engaging in

disordered eating. Research suggests that when people feel incompetent, they may also sense a lack of control (Krafchek & Kronborg, 2018). This could lead to individuals dieting as a form of compensation for that feeling of control they lack. For example, an individual who feels that they have failed academically may start engaging in disordered eating to regain a sense of competence and control (Krafchek & Kronborg, 2018). So, although one may feel pressure to look a certain way based on specific group norms, such as those conveyed by athletic teams, there are other stressors, such as academic pressure and performance, that can cause one to feel as if they have little control in their own life. The common theme here is perfectionism and the ways in which individuals feel they must attain a certain status. If they do not reach these expectations, then they are likely to feel that they have failed. They may try to compensate for their failure by attempting to gain control and success in some other aspect of their life, and for some this means developing maladaptive eating patterns.

#### Disordered Eating in the Context of Peer Relationships

Disordered eating affects more than the individual. Because of their often excessive and pervasive nature, these habits of bingeing and purging, calorie counting, and restricting may feel all-consuming to the individual, but certainly will not go unnoticed by those around them either. Family, friends, and peers may be clued into their loved one's emotional distress and disordered eating patterns. In a study done on the effects of disordered eating on peer relationships in college, researchers found that students were likely to experience emotional distress related to their friend or partner's disordered eating habits. They might stay up with a friend through a late night binge, help to hide the other person's behavior, or try to get the other person clinical help (Paul et al., 2018).

This same study found that these were behaviors similar to parents whose children suffered with disordered eating, aside from two: conforming to disordered eating behavior and confronting the person about their behavior. This may speak to the fact that peers relate to one another more comfortably than parents relate to their children during the later adolescent years (Paul et al., 2018). These findings may also show that peers are more willing to experiment with disordered eating behaviors, particularly if a friend is engaging in such behaviors. On the other hand, peers may be more likely to be aware of the difficulties their friend is facing with eating and also be more willing to directly show disapproval of these behaviors. In contrast, parents are very unlikely to model their child's disordered eating behavior. Moreover, compared to peers, parents may be less apt to discuss eating disordered behavior with their adolescents for a variety of reasons. These may include being less likely to be aware of or recognize the problem (particularly if their children are away at college), feeling guilty, hoping that the problem will just go away, or worrying that if they confront their child, this will strain their relationship (Paul et al., 2018).

Not only are these behaviors noticed by peers, but also individuals may actually select friends who are similar to them with regard to engaging in disordered eating behaviors (Zalta & Keel, 2006). Zalta and Keel (2006) conducted a longitudinal study in which they assessed college students in the spring and fall and measured their bulimic symptoms, self-esteem, perfectionism, and impulsivity. They found that college students often select a friend to live with because they find they are similar to them. When both people happen to be those who have higher levels of perfectionism, impulsivity, and lower levels of self-esteem—making them more likely to have disordered eating—then

the maladaptive behaviors of each individual increase after spending more time together. When the peers spend less time together, however, these behaviors decrease in each individual. So, although individuals with higher perfectionism, lower self-esteem, and higher impulsivity may have a greater likelihood of developing disordered eating on their own, it is their togetherness and the reinforcement of maladaptive thoughts and behaviors that brings out eating disordered behaviors significantly in each of them. The Zalta and Keel (2006) study investigated bulimia specifically. However, Crandall (1988) found similar patterns for those with binge eating, and Gilbert and Meyer (2004) found women who chose to live together shared similar eating attitudes overall compared to those who were given randomly selected roommates. So, although Zalta and Keel's study examined only one kind of disordered eating, several other investigations have revealed similar results with varying types of these maladaptive behaviors.

#### Disordered Eating in Athlete Peer Relationships

With regard to athletes, one study investigating the mediators between disordered eating behaviors and peer relationships in athletes found that the relationship between teammates who engaged in bulimic behaviors and their engagement in athletics due to a drive for thinness was mediated by high anxiety levels (Scott, Plateau, & Haycraft, 2020). These findings are important to note because of the roles that physicality, fitness, and even the appearance of fitness play in the athlete/athlete friendship dyad. Those who are athletes with higher levels of anxiety may make more physically-based social comparisons and therefore engage in more disordered eating *and* obligatory exercise behaviors than those with lower levels of anxiety. This may be due to the notion that athletes with greater anxiety are more at risk for low self-esteem, which does not allow

for protection against negative teammate influences such as pressure to lose weight (Scott, Plateau, & Haycraft, 2020). However, those with higher levels of self-esteem were subsequently less likely to engage in disordered eating behaviors, specifically if they also had a strong social support system (Scott, Plateau, & Haycraft, 2020). This finding is consistent with the aforementioned notion that individuals with poor self-esteem feel they need to change their weight or shape and then engage in disordered eating habits (Laliberte et al., 2007), whereas those who feel better about themselves do not. If these athletes do have lower self-esteem, then they may be at greater risk for engaging in disordered eating. This appears to be *especially* the case if athletes feel that this pressure to lose weight is coming from their teammates (Scott, Plateau, & Haycraft, 2020). Under these circumstances, they are more likely to feel dissatisfied with themselves physically, and then they may resort to maladaptive patterns of eating. However, researchers did find some factors that *protect* against disordered eating. These protective factors include lowered levels of depression, heightened levels of self-esteem, and high quality and supportive friendships between teammates (Scott, Plateau, & Haycraft, 2020). One missing piece of information in this study, however, is whether or not the same results would have been found with a drive for muscularity scale, as opposed to the drive for thinness scale that was used here. Would researchers have found that a drive for muscularity and disordered eating and exercise are also mediated by high levels of anxiety? Would they have found differences in terms of gender and how that impacts one's drive for muscularity versus their drive for thinness? Further exploration on this topic could show how each of these aesthetic desires are mediated and how they may differ by gender.

### Prevalence of Disordered Fitness and Research Expansion

Compared to research concerning disordered eating, the prevalence of disordered fitness is less understood. Estimates of the incidence of disordered fitness range very widely, with findings that it could affect between 0.3% and 77% of people (Egorov & Szabo, 2018). These numbers vary depending on the population under consideration. For those who are regular exercisers, about 3% are in a high-risk category for having an exercise addiction (Egorov & Szabo, 2018). It is important to note, however, that many different measures were used on many different groups to obtain these results. For example, the Exercise Addiction Inventory was used by Griffiths et al. in 2005 on university students, and found that around 3% of the participants had symptomology relating to an exercise addiction. However, Smith, Wright, and Winrow (2010) used the Exercise Dependence Scale and the Running Addiction Scale, which showed that 50% of the runners had symptoms relating to each of these two scales. So, it is not necessarily that the measures used to estimate the prevalence of disordered fitness are invalid or unreliable, but simply that there are many different kinds of questionnaires that can be used when studying disordered exercise, and there are also many different groups that may fall under the focus of a particular group of researchers. Clearly, when people who are competitive athletes are surveyed in a study about one's commitment to exercise, the results will prove to be much more significant in the population than they would in a more general group of participants. Using this biased sampling technique is useful when examining how many of a certain type of athlete may show symptoms of disordered exercise, but it does not allow us to see the full picture of who in a general population is

more likely to show these symptoms. More broad and comprehensive studies are needed to get a better understanding of who disordered fitness affects and to what degree.

The results found in studies of disordered exercise done solely on university students have proven to be much closer in proximity to one another than results spread across populations. This may be because of factors pertaining to the patterns within groups or the various measures used across the board. The percentages of college students with disordered fitness habits range from 3% to 13.4%, and both general and specifically female university students were surveyed to obtain these results (Egorov & Szabo, 2018). But, even within universities, multiple measures were used to obtain this information. Ackard, Brehm and Steffen (2002) surveyed female university students with the Obligatory Exercise Questionnaire and found that 8% of these students had significantly disordered exercise habits. However, when looking at a general university population, Hausenblas and Downs (2002), using the Exercise Dependence Scale, found that between 3.4% and 13.4% of students showed symptoms of exercise dependence. Downs, Hausenblas, and Nigg (2004) used the same measure, yielding results of between 3.6% and 5%. Lastly, the Exercise Addiction inventory was used by Griffiths et al. (2005) and revealed that 3% of university students surveyed reported symptoms of an exercise addiction (Egorov, Alexei, & Attila Szabo, 2004). Notably, results obtained across studies that focused on the general college student population have yielded similar results, despite the fact that different measures were used. Indeed, these results are much more similar than those obtained from athletes or general populations. Therefore, there is still not a clear indication of just how many people— or even specifically university students—may suffer with disordered exercise. Because of the plethora of different

measures that can be used and the focus on people who engage in particular exercise routines, it so far has been very difficult to identify a percentage or even a range of those who may experience symptoms related to disordered exercise. This is why further research such as the current study is so important to building upon the existing body of knowledge surrounding both disordered exercise and eating. Through the exploration of disordered exercise habits within university students, we may get closer to identifying who exactly may suffer or be more susceptible to maladaptive patterns of exercise.

### Gender Differences in Disordered Exercise

Disordered exercise is not the same for all individuals, and can be moderated by factors such as gender. In a study conducted with university students in London, England, Tata, Fox, and Cooper (2001) found that men may be more likely to engage in excessive exercise and report feelings of body dissatisfaction due to perceiving themselves as underweight. In contrast, women may be more likely to engage in disordered eating while feeling overweight and having low levels of body satisfaction. While men felt dissatisfied with their bodies if they perceived themselves to be underweight, women actually had higher levels of body satisfaction if they perceived themselves to be underweight (Tata et al., 2001). This may indicate that collegiate men could be more likely to exercise in ways that would cause them to gain muscle or put on weight as a means to alleviate feelings of body dissatisfaction in relation to perceiving oneself to be underweight. The opposite may be true for collegiate women, in which because they perceive themselves as overweight, they may adopt negative attitudes toward food and eating, and therefore engage in disordered eating habits.

### Disordered Exercise and Perfectionism in Women

In some cases, research shows that disordered exercise may stem from one's self, as opposed to peer or sociocultural influences (Chalk et al., 2013). One personality trait that is of particular concern when examining college students— due to the generally high expectations that can be placed on them academically and socially— is perfectionism. Taranis and Meyer (2010) studied 97 undergraduate women who regularly exercised and found an association between disordered exercise and perfectionism. However, this relationship was mediated by self-criticism, which was also associated with traits, such as rule-driven behavior, weight and shape exercise, and exercise rigidity (Taranis and Meyer, 2010). This shows that those with higher levels of self-criticism, perfectionism, and disordered exercise may not specifically be exercising for health reasons exclusively. These individuals may be, for example, sticking to a strict exercise plan for reasons of weight, shape, or aesthetics, instead of for mental, emotional, or physical health-based reasons.

### Disordered Exercise and Peer Relationships

Sociocultural influences can also be an important determinant of one's level of disordered exercise. Peer influence, for example, can largely influence the way young people see themselves, which may determine the choices they make about their own lifestyles. A systematic review from Reynolds, Plateau, and Haycraft (2022) found young people who received messages from their peers regarding their bodies and those who compared their bodies to their peers were more likely to have greater disordered exercise behaviors. Results varied by gender and showed that a drive for muscularity coupled with “body-related messages from peers” and mediated by peer comparisons may lead males

to have higher levels of disordered exercise (Schaefer & Blodgett Salafia, 2014) whereas comparisons of oneself and body to another was among the highest predictor of disordered exercise in females (McCabe & Ricciardelli, 2004). Because of the limited research in this area, many of these findings have resulted from a focus on adolescent groups; however, because there is such limited information on peer relations and disordered exercise, the information is worth exploring.

Much of the research that does exist on peer influence and disordered exercise among college students is based on teammate or fellow athlete influence, and has shown that teammates can be negative or positive influences on one another in regard to eating and exercise habits, depending on how supportive and healthy the relationships are (Scott, Haycraft, & Plateau, 2019). Although it is important to recognize the exercise habits that can be formed through influence of teammates and other athletes, it is also necessary to understand that not all who suffer from disordered exercise will be a part of a team or sport, and in any aspect of life, one's peers may have an incredibly large influence on their choices, lifestyle, and perspective. Much further investigation is needed to understand the complex network of factors that may be linked to disordered exercise, specifically peer influence.

There are also many studies that have an individualized focus on disordered exercise. Therefore, the information available specifically regarding peer relationships and disordered exercise is very limited. However, one study conducted by Scott and colleagues (Scott, Haycraft, & Plateau, 2019) found that within athlete peer relationships, teammates would be less likely to engage in disordered exercise *and* eating if they had healthy, supportive relationships with their teammates. These types of relationships are

associated with lower levels of maladaptive eating and exercise behaviors, as well as lower levels of body dissatisfaction. So, when teammates engage positively with one another instead of hinting at the idea that their peer should lose weight (similarly to non-teammate peer relationships, Reynolds, Plateau, and Haycraft (2022)) or even modeling the unhealthy eating and exercise habits themselves, teammates will be less likely to fall into these behavior patterns.

However, one noteworthy aspect of this study was that teammates may sometimes encourage one another to eat healthily and over-exercise. Although the athletes may believe they are promoting a healthy lifestyle to their teammates, they may actually be encouraging rigid and maladaptive diet and exercise routines (Scott, Haycraft, & Plateau, 2019). Because of the particular nature of the athlete lifestyle, some teammates may be inadvertently causing others to participate in unhealthy exercise or eating behaviors. Although they may believe that they are only helping themselves and fellow teammates because of their perception of health, it may cause undue maladaptive exercise patterns. Athletes that may hold themselves and their teammates to high standards of physique or performance may begin engaging in these behaviors in order to better themselves and their team, without understanding the harm that can come from exercising too frequently or too intensely, or eating too little.

### The Present Study

There are many factors that may influence college students' levels of disordered eating and exercise. Based on the current research, female students (Claydon & Zullig, 2020), Honors College members (Krafchek & Kronborg, 2018), and athletes (Scott, Plateau, & Haycraft, 2020) may be the students who would be the most likely to suffer from disordered eating and exercise. These groups of students may be even more likely to engage in disordered eating and exercise if they have higher levels of perfectionism (Krafchek & Kronborg, 2018) and if their peers share similar habits (Zalta & Keel, 2006). Due to societal and aesthetic expectations placed upon women, perfectionistic tendencies and self-induced academic pressure of honors students, physique-related comparisons between athletes, and the peer interactions that may influence each of these particular groups, these students will be the most likely to engage in these maladaptive behaviors. It is hypothesized that these students— women, athletes, and honors students— will be those with the highest levels of disordered eating and exercise.

## METHOD

### Participants

Participants were 204 University of Maine students. They were recruited from a variety of sources, including the subject pool of the Departments of Psychology and Communication and Journalism, the Honors College, and the Department of Kinesiology and Physical Education. The researcher also reached out to individuals in her personal network. Participants were between the ages of 18 and 25 years (Mean age: 19.2 years) and included 110 females, 79 males, 3 transgender males, and 8 people who identified as non-binary, gender-queer, or genderfluid. The sample was largely first year students, who comprised 58.5% (117 individuals) of the sample. The rest of the sample was made up of 40 second-year students, 25 third-year, 17 fourth-year, and one fifth-year student. Within this sample, 43.2% of these individuals (86) were Honors College members, and 48% students from the sample (95) were currently or had previously been a member of the Honors College. Finally, in terms of athletic identity and engagement, 36.5% students surveyed (72) identified themselves as athletes, while 49% of students (98) surveyed reported currently playing sports or engaging in athletic activities on or off campus.

### Measures

#### Disordered Eating Symptomatology

The Eating Disorder Examination Questionnaire (Fairburn & Beglin, 1994) is a 28-question measure with four subscales: restraint (e.g., “On how many of the past 28 days have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?”), eating concern (e.g., “On

how many of the past 28 days has thinking about food, eating or calories made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?”), weight concern (e.g., “On how many of the past 28 days has thinking about shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?”) and shape concern (“On how many of the past 28 days have you had a definite desire to have a totally flat stomach?”) . Five additional questions were added to the end of this questionnaire to assess the role of peers in individuals’ eating habits (e.g., “On how many of the past 28 days have you felt pressured (either directly or indirectly) by your peers to lose weight or change shape?”). Items 1-12 are rated on a 0-6 scale indicating how often participants engage in a certain behavior, with 0 being no days, 1: 1-5 days, 2: 6-12 days, 3: 13-15 days, 4: 16-22 days, 5: 23-27 days, 6: every day of the last month. Questions 13-18 ask participants to write how many times they have engaged in particular behaviors. Questions 19 and 20 are answered in the same way as items 1-12. Items 21-28 also use a 1-6 scale, but instead ask to what degree participants agree with the provided statement. Response options range from 0-1 (*not at all*), to 2-3 (*slightly*), to 4-5 (*moderately*), to 6: (*markedly*). The newly added Questions 29 to 33 are rated on a 0-6 scale, on which participants indicate how often they engage in a certain behavior, with 0 being no days, 1: 1-5 days, 2: 6-12 days, 3: 13-15 days, 4: 16-22 days, 5: 23-27 days, 6: every day of the last month.

### Disordered Exercise Symptomatology

The Obligatory Exercise Questionnaire (Pasman & Thompson, 1991) is a 20-question measure that examines the extent to which one engages in exercise as well as

their thoughts, feelings, and motivations surrounding the activity. Items are rated on a 1-4 scale of how often they would agree with the presented statement (1: *never*, 2: *sometimes*, 3: *usually*, 4: *always*).

### Perfectionistic Tendencies

The Frost Multidimensional Perfectionism Scale- Brief (Burgess et al., 2016) is an 8-question shortened version of the Frost MDPS (Frost et al., 1990). This short questionnaire examines a participant's evaluative concerns, or how they feel they will be evaluated by others based on performance (e.g., "If I fail at work/school, I am a failure as a person), as well as their strivings, or their internal standards (e.g., "I have extremely high goals"). Items are ranked on a scale from 1-5 to indicate the degree to which a participant agrees or disagrees with the statement (1: *strongly disagree*, 2: *disagree*, 3: *neutral*, 4: *agree*, 5: *strongly agree*).

### Demographic Questions

The demographic questionnaire (Appendix A) asked about participants' gender, race, age, socioeconomic status, Honors College member status, identity as an athlete, and participation in team sports.

### Procedure

Participants were provided with a link to a Qualtrics survey using a variety of methods. Students who were a part of the subject pool for the Departments of Psychology and Communications and Journalism were made aware of the study through a recruitment posting on Sona. Students who were enrolled in the Honors College were emailed by a college staff member, who sent the invitation on behalf of the researcher. Students in the KPE Department were emailed by Professor Jennifer McNulty who

distributed the listing on behalf of the researcher. Students in the researcher's personal network were also sent an invitation to the survey via email by the researcher themselves.

Potential participants were presented with a link to Qualtrics. This link first brought them to an informed consent page. There were two versions of the consent, one for Sona participants (see Appendix B) and one for non-Sona participants (see Appendix C). This informed students that they had to be between the ages of 18-25 to participate and that they would be asked to answer a series of questions regarding eating and exercise habits, perfectionism, and demographic characteristics. They were informed that these questions were being used to better understand the relationship between eating and exercise habits among college students as well as who the most vulnerable students are within a collegiate population. Participants were also advised that their participation was completely anonymous and voluntary and that they could skip questions or stop the survey at any time. Participants were informed that the survey contained sensitive content and might cause discomfort for some, in which case, they were again free to stop their participation. In addition, a list of available mental health and counseling services was provided. Finally, the compensation to students was also explained. This included academic credit for the Sona participants and a chance to enter a gift card raffle for non-Sona students. Participants then responded to the Eating Disorder Examination Questionnaire (Fairburn & Beglin, 1994), the Obligatory Exercise Questionnaire (Pasman & Thompson, 1991), the Frost Multidimensional Perfectionism Scale- Brief (Burgess et al., 2016), and the demographic questionnaire.

## RESULTS

In these first descriptive analyses, findings from the present study were compared to results from previous research in regard to the participants' scores on the Eating Disorder Examination Questionnaire, the Obligatory Exercise Questionnaire, and the Frost Multidimensional Perfectionism Questionnaire - Brief. Statistical analyses revealed that, compared to normative data (Fairburn & Belgin, 1994), students in the present study overall had significantly higher means on all subscales as well as the Global Score of the Eating Disorder Examination Questionnaire (Restraint:  $M = 1.67, p < 0.001$ ; Eating Concerns:  $M = 1.23, p < 0.001$ ; Shape Concerns:  $M = 2.48, p < 0.05$ ; Weight Concerns:  $M = 2.29, p < 0.001$ ; Global Score:  $M = 1.92, p < 0.001$ ).

Next, the scores of the Obligatory Exercise Questionnaire were compared. The mean of the Obligatory Exercise Questionnaire (Pasman & Thompson, 1991) scores for this particular sample was  $M = 43.7$ , where scores between 40 and 50 suggest a moderate obligatory exercise concern. This score was comparable to other samples drawn from university students ( $M=41.65-43.0$ ) (Chalk et al., 2013; Chu et al., 2008).

Finally, students scored  $M = 12$  for Evaluative Concerns and  $M = 14.3$  for Internal Standards, compared to normative data means of  $M = 13.39$  for Evaluative Concerns and  $M = 13.49$  for Internal Standards (Woodfin, Binder & Molde, 2020). The sample of individuals in the current study had significantly lower levels of Evaluative Concerns ( $p < 0.001$ ) than the normative data, but the Internal Standards scores were not significantly different.

Correlations Among the Disordered Eating, Disordered Exercise, and Perfectionist  
Tendencies Variables

The associations among the Disordered Eating (i.e., Restraint, Eating Concerns, Shape Concerns, Weight Concerns, Global EDE-Q scores, Peer Influence), Disordered Exercise (i.e., Obligatory Exercise), and Perfectionistic Tendencies (i.e., Evaluative Concerns and Internal Standards) variables were examined next (see Table 1). Results indicated that only the correlations between the EDE-Q variables as well as correlations between Evaluative Concerns and Internal Standards were significantly positively correlated. The most notable correlations were found between variables of the EDE-Q. Of these variables (excluding Global Score, as this variable is an average of the four subscales and correlated positively and strongly with each variable individually), Eating Concerns and Shape Concerns ( $r = 0.819, p < 0.001$ ), Eating Concerns and Weight Concerns ( $r = 0.827, p < 0.001$ ), and Shape and Weight Concerns ( $r = 0.937, p < 0.001$ ), correlated strongly and positively with one another. Evaluative concerns also had a moderately strong positive correlation with Internal Standards ( $r = 0.565, p < 0.001$ ). These relationships were more strongly correlated with one another compared to relationships between Restraint and Internal Standards ( $r = 0.187, p = 0.007$ ), Eating Concerns and Internal Standards ( $r = 0.156, p = 0.025$ ), Shape Concerns and Obligatory Exercise ( $r = 0.20, p = 0.004$ ), Weight Concerns and Obligatory Exercise ( $r = 0.166, p = 0.018$ ), and Obligatory Exercise with Evaluative Concerns ( $r = 0.181, p = 0.010$ ).

Peer Influence was significantly correlated with several variables, including Eating Concerns ( $r = 0.40, p < 0.001$ ), Global EDE-Q Score ( $r = 0.398, p < 0.001$ ), Restraint ( $r = 0.380, p < 0.001$ ), and Weight Concerns ( $r = 0.354, p < 0.001$ ). Peer

Influence was also correlated with Internal Standards ( $r = 0.221, p=0.001$ ), Obligatory Exercise ( $r = 0.262, p <0.001$ ), and Evaluative Concerns ( $r = 0.328, p <0.001$ ).

Table 1: Correlation Matrix

	Restraint	Eating Concerns	Shape Concerns	Weight Concerns	Peer Influence	Global EDE-Q	Obligatory Exercise	Evaluative Concerns
Restraint								
Eating Concerns	$r=0.706$ ***							
Shape Concerns	$r=0.701$ ***	$r=0.819^*$ **						
Weight Concerns	$r=0.712$ ***	$r=0.827^*$ **	$r=0.937^*$ **					
Peer Influence	$r=0.380$ ***	$r=0.400^*$ **	$r=0.336^*$ **	$r=0.354^*$ **				
Global EDE-Q	$r=0.847$ ***	$r=0.907^*$ **	$r=0.951^*$ **	$r=0.955^*$ **	$r=0.398^*$ **			
Obligatory Exercise	$r=0.380$ ***	$r=0.268^*$ **	$r=0.200^*$ *	$r=0.166^*$	$r=0.262^*$ **	$r=0.271$ ***		
Evaluative Concerns	$r=0.313$ ***	$r=0.439^*$ **	$r=0.509^*$ **	$r=0.473^*$ **	$r=0.328^*$ **	$r=0.477$ ***	$r=0.181^*$	
Internal Standards	$r=0.187$ **	$r=0.156^*$ *	$r=0.229^*$ **	$r=0.209^*$ *	$r=0.221^*$ *	$r=0.216$ **	$r=0.406$ **	$r=0.565$ **

Note: \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

Honors and Non-Honors Student Comparisons

To examine the hypothesis that, compared to non-Honors students, Honors students would report higher levels of disordered eating and disordered exercise, a series of independent t-tests was conducted (see Table 2). In the first set of analyses, Honors students were compared to non-Honors students on each of the disordered eating and disordered exercise variables. These analyses found that, compared to non-Honors students, Honors students scored significantly higher on measures of Shape Concerns

(Honors  $M = 2.79$ , non-Honors  $M = 2.28$ ,  $p < 0.05$ ), Weight Concerns (Honors  $M = 2.61$ , non-Honors  $M = 2.09$ ,  $p < 0.05$ ), and Evaluative Concerns (Honors  $M = 13.48$ , non-Honors  $M = 11.27$ ,  $p < 0.001$ ). However, these same students scored significantly lower (Honors  $M = 42.43$ , non-Honors  $M = 45.92$ ,  $p = 0.049$ ) on the Obligatory Exercise measure. Their internal standards ( $M = 14.94$ ) were slightly higher than non-Honors students ( $M = 14.30$ ), however, this mean difference was not statistically significant, meaning, it cannot be assumed that Honors students hold themselves to a higher standard than other college students do.

Table 2: Honors vs. Non-Honors Students Mean Comparisons

	Honors Mean	Non-Honors Mean
Restraint	1.79	1.61
Eating Concerns	1.40	1.12
Shape Concerns	2.79*	2.28
Weight Concerns	2.61*	2.09
Peer Influence	1.26	1.14
Global EDE-Q	2.15	1.77
Obligatory Exercise	42.43*	45.92
Evaluative Concerns	13.48***	11.27
Internal Standards	14.94	14.30

Note: \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

Athlete and Non-Athlete Comparisons

To test the hypothesis that athletes would have greater levels of disordered eating and exercise than non-athletes, an independent sample t-test was used (see Table 3). In this case, questions regarding athletic identity (i.e., “Do you identify as an athlete?”) (See Appendix A) were asked to determine which individuals incorporate athleticism into their

self-concept. Students surveyed who identified as athletes— compared to non-athletes— scored significantly lower on measures of Shape Concerns (Athletes  $M = 2.13$ , non-Athletes  $M = 2.72$ ,  $p < 0.05$ ), Weight Concerns (Athletes  $M = 1.88$ , non-Athletes  $M = 2.60$ ,  $p < 0.05$ ), Global EDE-Q score (Athletes  $M = 1.61$ , non-Athletes  $M = 2.13$ ,  $p < 0.05$ ), and Evaluative Concerns (Athletes  $M = 11.32$ , non-Athletes  $M = 12.74$ ,  $p < 0.05$ ). However, these athletes, as predicted, scored higher on measures of Obligatory Exercise ( $M = 50.07$ ,  $p < 0.001$ ), when compared to non-athletes ( $M = 40.86$ ,  $p < 0.001$ ).

Analyses of students who indicated that they currently play a sport or engage in athletic activities on or off campus (see Appendix A) showed very similar results in a second independent samples t-test. Students who indicated that they currently engaged in athletic activities scored lower in each of the same categories Shape Concerns (Current Athletic Engagement  $M = 2.22$ , No Current Athletic Engagement  $M = 2.77$ ,  $p < 0.05$ ), Weight Concerns (Current Athletic Engagement  $M = 1.95$ , No Current Athletic Engagement  $M = 2.66$ ,  $p < 0.05$ ), Global EDE-Q score (Current Athletic Engagement  $M = 1.71$ , No Current Athletic Engagement  $M = 2.15$ ,  $p < 0.05$ ), and Evaluative Concerns (Current Athletic Engagement  $M = 11.52$ , No Current Athletic Engagement  $M = 12.89$ ,  $p < 0.05$ ). They also reported significantly higher levels of Obligatory Exercise (Current Athletic Engagement  $M = 49.31$ , No Current Athletic Engagement  $M = 39.69$ ,  $p < 0.001$ ).

Table 3: Athlete vs. Non-Student Athlete Mean Comparisons

	Athlete Mean	Non-Athlete Mean
Restraint	1.43	1.82
Eating Concerns	1.01	1.37
Shape Concerns	2.13*	2.72
Weight Concerns	1.88**	2.60
Peer Influence	1.10	1.23
Global EDE-Q	1.61*	2.13
Obligatory Exercise	50.07***	40.86
Evaluative Concerns	11.32*	12.74
Internal Standards	14.97	14.30

Note: \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

Female and Male Identifying Student Comparisons

To test the hypothesis that female students are more likely to engage in disordered eating and disordered exercise behaviors than male identifying students, a third independent samples t-test was conducted (see Table 4). Overall, female students scored significantly higher on almost every measure of the survey. Eating Concerns (Female  $M = 1.20$ , Male  $M = 0.646$ ,  $p < 0.001$ ), Shape Concerns (Female  $M = 3.25$ , Male  $M = 1.451$ ,  $p < 0.001$ ), Weight Concerns (Female  $M = 2.90$ , Male  $M = 1.225$ ,  $p < 0.001$ ), Global EDE-Q Score (Female  $M = 2.20$ , Male  $M = 1.184$ ,  $p < 0.001$ ), and Evaluative Concerns (Female  $M = 12.93$ , Male  $M = 10.722$ ,  $p < 0.001$ ) were all measures that female-identifying students scored significantly higher on than male students. These findings align with the hypothesis that female students are more likely to have greater levels of disordered eating. Here, findings also point to the idea that the female students in this study have a greater concern about others' perception of their success and strivings, as seen by their

levels of Evaluative Concerns when compared to male students. The only measure male students scored significantly higher on in this survey was that of Obligatory Exercise, in which the mean of the scores was 49.051. Compared to the mean of female students ( $M = 41.45, p < 0.001$ ), this was significantly higher, which contradicts the hypothesis that female students would have higher levels of disordered exercise.

These findings are only representative of those whose gender identities lie within the gender binary (i.e., male and female). However, there were a few students surveyed who indicated that their gender identity lied beyond this binary. Specifically, three students identified as transgender males, and eight students identified as non-binary, gender-queer, or gender-fluid. Unfortunately, this sample is not large enough to draw conclusions from in and of itself as it would not be representative of a large number of individuals.

Table 4: Female vs. Male Mean Comparisons

	Female Mean	Male Mean
Restraint	1.80	1.415
Eating Concerns	1.55***	0.646
Shape Concerns	3.09***	1.451
Weight Concerns	2.92***	1.225
Peer Influence	1.23	1.030
Global EDE-Q	2.34***	1.184
Obligatory Exercise	41.45***	49.051
Evaluative Concerns	12.93***	10.72
Internal Standards	14.35	14.620

Note: \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

## DISCUSSION

The purpose of the present study was to examine college students' levels of disordered eating and disordered exercise, and furthermore to examine which groups—including Honors students, student athletes, and female-identifying students—may have the highest levels of these maladaptive and potentially dangerous behaviors (National Eating Disorders Association, 2017). Overall, students surveyed scored significantly higher on all aspects of the EDE-Q compared to the normative sample. However, it also must be taken into consideration that the normative data from Fairburn and Beglin (1994) were obtained several decades ago, and this may be a factor impacting the difference in the results from 1994 and the present study. Most notably, the rise in internet and social media usage in the 21st century has increased adolescents' exposure to society's standards of beauty/attractiveness. In addition, individuals are inundated with content that promotes fitness and health. Overall, the results of the current study indicate that particular college students may be at an elevated risk for disordered eating and disordered exercise. The results regarding Honors students will be considered first, followed by a discussion regarding the results for student athletes, and finally, female-identifying students' results will be analyzed. Limitations of the present investigation will be considered, and directions for future research will be suggested.

### Honors Students

Honors students in particular may feel significantly less pressure to exercise excessively, but do feel elevated levels of concern in regard to their shape, weight, and how others perceive their success (e.g., Evaluative Concerns). In congruence with the present study's hypothesis, Honors students scored higher on subscales of the EDE-Q,

specifically, Shape Concerns and Weight Concerns. The finding of higher levels of disordered eating symptomatology in Honors students is consistent with previous results from Krafchek and Kronborg (2018), who found that high academic achievers were more likely to have higher levels of disordered eating due to reasons related to control and competence. If a student feels they have little control or feelings of competence in their life, they may turn to dieting or fixating on food consumption as a way to mitigate these feelings of a lack of control. Honors students also had somewhat higher Global EDE-Q scores than non-Honors students, but the difference was only marginally significant ( $p=0.088$ ).

In contrast, Honors students were found to have lower levels of disordered exercise than non-Honors students. This finding contradicts the study's hypothesis, in which it was assumed that Honors students would have higher levels of disordered exercise than non-Honors students. It was hypothesized that Honors students would have higher levels of disordered exercise because of their predicted higher levels of perfectionism due to academic pressure. However, this sample of students did not show a significant difference in scores of Internal Standards (the standards that one holds themselves to) when compared to non-Honors students. Taranis and Meyer (2010) found an association between perfectionism and disordered exercise, however, this relationship was mediated by self-criticism, which was also associated with traits such as rule-driven behavior, exercise for reasons of weight and shape change, and exercise rigidity (Taranis & Meyer, 2010). By definition, self-criticism can be more attributed to the pressure one puts on oneself (Internal Standards), as opposed to one's worry about what others think of them (Evaluative Concerns). Therefore, it can be inferred a possible reason Honors

students have lower levels of disordered exercise than predicted may be because they scored higher than non-Honors students on only one subscale of the Frost Multidimensional Perfectionism Questionnaire (Burgess et al., 2016), Evaluative Concerns. It is possible that one's Internal Standards are more related to disordered exercise because of the rigid habits and high expectations of the self that are commonly associated with disordered exercise (Taranis & Meyer, 2010).

Additionally, dedication to academic achievement could play a factor in Honors students reporting lower levels of disordered exercise, such that they put less of a focus on working out to look a certain way or perform at a certain level, physically. Instead, these students may place higher priority on their academic performance. Their rigorous course loads may also play a role, and may inhibit students from engaging in many other activities, including exercising, in their limited free time. Although Honors students showed significant Shape and Weight Concerns, they are not necessarily using disordered exercise to mitigate these concerns, as assignments and studying may be among their highest priorities, and other activities such as exercise may be of lesser importance.

Honors students also had significant Evaluative Concerns scores ( $M=13.48$ ), yet their Internal Standards scores were not significantly different from non-Honors students, which shows they may highly value how others view them and their success compared to non-Honors students, but are not more concerned with their own personal internal standards than non-Honors students. In other words, Honors students are worried about how others view them, not how they view their own academic or otherwise personal success. Based on the academic pressure and rigorous course loads students in the Honors College face, it could be inferred that their higher levels of Evaluative Concerns may be

based on evaluation of their academic success and performance specifically. The lack of a significant difference between Honors and non-Honors students' scores points to the idea that as a whole, this sample of college students shows similar rates of concern regarding their Internal Standards, or, how they view their personal success.

### Student Athletes

As reported in the results, student athletes scored significantly lower on measures of Shape Concerns, Weight Concerns, Global EDE-Q score, and Evaluative Concerns than students who did not identify as athletes. However, as predicted, athletes scored higher on measures of Obligatory Exercise. This shows students who identify as athletes are less concerned with their physical appearance, weight, or how others perceive their success, than their general level of physical activity. These findings, particularly the Global EDE-Q score, contradicts the hypothesis that athletes would be more likely to have higher levels of disordered eating as well as exercise. In fact, this shows athletes in this sample had lower levels of disordered eating behaviors, specifically their shape and weight, when compared to students who do not identify themselves as athletes.

Student athletes scoring lower on measures of disordered eating, yet scoring higher on measures of disordered exercise is a very interesting finding that could be associated with several underlying factors. Scott and colleagues (Scott, Plateau, & Haycraft, 2020) found that peer pressure from teammates, if mediated by an athlete's high levels of anxiety, could be associated with higher levels of both disordered eating and exercise. If teammates have supportive relationships, however, and do not pressure one another to lose weight, they may be less likely to engage in disordered eating and exercise habits. So, this may point to the idea that athletes surveyed in the present study

did not feel pressure to change their weight or shape through disordered eating patterns, but may feel a bit compulsive when it comes to exercise. The athletes' high scores on the Obligatory Exercise Questionnaire may point to the notion that teammates had positive relationships with one another as well as a strong support system, but may be influenced by peers to exercise very frequently or at high levels of intensity. Although sometimes athletes feel they have a positive influence on their teammates, they could possibly be inadvertently encouraging teammates to engage in disordered exercise behaviors, even if they mean no mal-intent, and otherwise feel they have a healthy and strong connection with their teammates (Scott, Haycraft, & Plateau, 2019). It is also important to note that in this same study (Scott, et al., 2019), however, the Compulsive Exercise Test with Athletes (Plateau et al., 2014) was used, as opposed to the Obligatory Exercise Questionnaire (Pasman & Thompson, 1991), which was administered in the present study. Because there is so much variability in the testing measures used when assessing disordered exercise, as well as the populations that are studied, it can be difficult to compare studies. Again, further research as well as standardization of testing measures are needed in order to more fully understand the factors that are connected to disordered exercise.

Furthermore, another possible reason for the contradiction between the hypothesis and the findings may be that athletes simply may be more likely to engage in higher levels of exercise and activity than other students. They may have to exercise by going to practice, having team workouts, or conditioning for their sport as opposed to non-athlete identifying students, who may only work out when they so choose. This idea in and of itself may be a factor that underlies the association between athletes and high levels of

obligatory exercise. Similarly, the low levels of disordered eating in this student population may be related to the fact that because athletes must exercise more than the average student, they also may be less concerned about eating too much, and may be focused more on properly fueling their bodies in order to perform physically. Student athletes also showed lower levels of Evaluative Concerns, which suggests that they may hold less concern about how they are viewed by others. Given that athletes are often evaluated on their physical performance, their lower Evaluative Concerns scores do not make intuitive sense. One might expect student athletes to be concerned about how others view them in their sport, physically as an individual, socially, or academically. However, these results reveal that the athlete-identifying students sampled showed significantly lower levels of Evaluative Concern than students who did not identify as athletes. The association between athletes and lower Evaluative Concerns could be due to factors such as a strong social support system of teammates, which could lead them to have higher levels of self-esteem and in turn, they worry less about what others think of them (Scott et al., 2020). In addition, student athletes could feel more desensitized to others' evaluations and perceptions of them, especially if they are on a team that has many frequent spectators or judges, as they may feel very used to being assessed by others.

Students who indicated they played a sport or engaged in physical activity on or off campus showed almost identical results to those who identified as athletes, most likely because many of the individuals who reported they currently engaged in a physical activity also reported identifying as an athlete. Forty-nine percent of people reported currently participating in a sport, while 36.5% of individuals sampled reported

identifying as an athlete. Although the two groups certainly overlapped, and many people reported both engaging in physical activities and identifying as an athlete, some only reported engaging in physical activity and did not identify as an athlete. This may simply show a difference in the ways people conceptualize their identity. Because the results were so similar when looking at those who engaged in physical activities on or off campus compared to those who identify as athletes, it is reasonable to infer that those who play sports or engage in physical activity, much like those who identify as student athletes, are less concerned about their shape, weight, and how others view them, relative to their overall level of physical activity.

#### Female-Identifying Students

Female-identifying students scored significantly higher in Eating Concerns, Shape Concerns, Weight Concerns, Global EDE-Q Score, and Evaluative Concerns. These findings support the hypothesis that women would have higher levels of disordered eating. However, female-identifying students scored significantly lower on the Obligatory Exercise Questionnaire, which contradicts the present study's hypothesis that women would also have higher levels of disordered exercise.

When examining the existing literature, it is apparent that women are more likely to have higher rates of disordered eating than men due to reasons of body dissatisfaction and feelings of being overweight (Tata, Fox, & Cooper, 2001). Higher levels of disordered eating in women may also be indicative of the power of sociocultural standards regarding aesthetics and beauty, as well as pressure from others to be "perfect" or be successful. In Western society, women with small and/or thin bodies are generally favored, which may lead women to feeling inadequate or poorly about themselves.

Generally, women feel more satisfied with their bodies when they see themselves as thin or underweight (Tata et al., 2001).

Men, on the other hand, are often expected to be large in size and/or strong, and report feeling more satisfied with their bodies when they perceive themselves to be very muscular. Men have been found to engage in disordered eating at lesser rates than women (Tata et al., 2001), most likely due to the fact that in order to put on mass, one should not significantly reduce food or caloric intake. Differing beauty standards for men (muscularity) and women (thinness) may explain why women in the present study scored higher on measures of Eating Concerns, Shape Concerns, Weight Concerns, and the Global EDE-Q score. If women are feeling dissatisfied with their bodies due to feeling overweight or not liking the shape of their body, they may begin to develop disordered eating symptoms in order to combat this dissatisfaction.

Because researchers have found many men feel more satisfied with themselves when they are larger in size, they also often have a higher drive for muscularity (Douglas et al., 2019), which explains why here, male-identifying students showed significantly higher levels of disordered exercise than female-identifying students. Tata, Fox, and Cooper (2001) also found that men were more likely to engage in disordered exercise than women. Although women, too, can have a drive for muscularity, it seems to be more present and common in men, as societal ideals for men include generally being very big, strong, and muscular. Along with this, many women may not engage in disordered exercise behaviors at the same rates as men because exercise requires more eating in order to fuel one's body properly, and if an individual has concerns about what or how much they are eating, this may not align with that concern. For men, however, the

standards of attractiveness correlate more strongly to the results one can generally expect to see from physical activities such as sports and/or weightlifting. In order to achieve muscularity, men may engage in activities that will allow them to gain muscle and/or strength, such as excessive weightlifting. Some men may find this drive for muscularity or fitness is so high that their exercise habits become disordered, and more than an activity to stay in good health or socialize with others.

As stated previously, however, these findings lie only within the male-female gender binary. Unfortunately, the sample of students who identified outside of this binary was simply not large enough to draw conclusions from. Along with this, even though women in this study were found to have higher rates of disordered eating than men, and men were found to have higher levels of disordered exercise than women, this does not mean that each of these maladaptive behaviors are limited by gender. Men who internalize standards of attractiveness to a large degree show similar rates of disordered eating to women, and women who internalize their standards of attractiveness are also more likely to have a higher drive for muscularity (Douglas et al., 2019). Both men and women can suffer from disordered eating and exercise. Regardless of gender, people are constantly being told they should be thinner, more muscular, or more fit by standards set by the media or content on social media. So, although the present study has found women may be more likely to engage in disordered eating and men may be more likely to engage in disordered exercise habits, it is also important to note that disordered eating and exercise do not discriminate based on gender or other individual factors.

## CONCLUSION

Findings overall show female-identifying and Honors students displayed the highest levels of Shape Concerns, Weight Concerns, and Evaluative Concerns when compared to non-female identifying students, non-Honors students, and student athletes. Shape, Weight, and Evaluative Concerns were frequently correlated with one another within the present findings. This may indicate that those who have higher Shape and Weight Concerns may also have a greater likelihood of having higher levels of Evaluative Concerns. This could also indicate that the concerns one has about their own shape and weight may not be tied so much to how they view themselves, but how they feel others will view them. This powerful notion asserts the idea that beauty and societal standards can have a great impact on not only the ways in which we view ourselves and others, but also our lifestyles and personal choices. Female-identifying students also displayed the highest levels of Eating Concerns and the Global EDE-Q score, which shows female-identifying college students may be a group that has high levels of concern regarding their eating, and may overall show greater levels of disordered eating compared to non-female identifying students. This, again, aligns with both the study's hypothesis and previous research showing that women are more likely to engage in disordered eating (Tata et al., 2001).

Athletes and male-identifying students, on the other hand, were those that showed the highest levels of disordered exercise compared to non-athletes and non-male identifying students. This may indicate a strong drive for muscularity and fitness in these groups, but, in athletes specifically, this could also simply indicate that these individuals are quite literally obligated to exercise for the sports that they participate in. Both of these

groups of participants also showed significantly lower levels of Shape, Weight, and Evaluative Concerns than non-athletes and non-male identifying students. Once again, these three factors are tied together, yet, here, both of these groups showed significantly lower levels than their counterparts. This finding may show they feel less pressure to eat in a disordered fashion in order to achieve aesthetic or weight goals, and may be significantly less worried about what others think of them or how they are perceived. It is interesting to note that no group of students identified in this survey (Honors students, student athletes, or female-identifying students) showed high levels of both disordered eating and exercise. Although some individual students may face high levels of both, overall, when looking at the groups in and of themselves, they showed higher levels of disordered eating symptomatology *or* disordered exercise symptomatology, but not both simultaneously. However, this does raise the question of group interactions, and what the eating and exercise habits are of a student who is both an Honors student and an athlete, for example.

Additionally, there were some factors that, although they were expected to strongly correlate with disordered eating and exercise, did not seem to carry much weight within the findings when compared to other variables. Peer Influence, for example, showed a significant positive correlation with all other variables, but the correlations were only relatively weak to moderately strong. The strongest correlation for Peer Influence was with Eating Concerns ( $r=0.400$ ,  $p<0.001$ ), which may indicate that there is a connection between one's eating habits and one's peer interactions.

Internal Standards also showed relatively weak correlations with other variables. It was most strongly correlated with Evaluative Concerns—which intuitively makes sense

as these variables were part of the same questionnaire— as well as Obligatory Exercise ( $r=0.406, p<0.001$ ). This moderate correlation between Internal Standards and Obligatory Exercise could show that there may be an association between the standards one holds themselves to and their levels of disordered exercise. Again, however, the correlations between Internal Standards and most other variables (disordered eating symptomatology and peer influence) were statistically significant, but not strong, which shows there are only weak associations between Internal Standards and one's disordered eating and peer interactions. Overall, the lower correlations of Internal Standards with other variables, combined with the finding that Shape, Weight, and Evaluative Concerns were frequently tied together in this study, may show that one's disordered eating may be more strongly influenced by the way one feels they are perceived by others, and not the goals or values one holds for themselves.

### Limitations

The present study faced a few noteworthy limitations. First, a relatively small sample size was used due to difficulties in recruiting participants. On a college campus, it can be challenging to recruit students that represent all academic disciplines and extracurricular activities. This study surveyed students from Kinesiology, Physical Education, Psychology, Communication and Journalism majors, as well as Honors students, and those from the Principal Investigator's personal network. Having an even broader range and larger number of students surveyed may provide a better understanding of the eating and exercise habits of college students.

Secondly, the sample was conducted from one university in the Northeast of the U.S., where there was little diversity in terms of race, ethnicity, and gender identity.

Unfortunately, then, the data were not representative of all American college students, nor can conclusions be drawn about college students from around the world.

Thirdly, there is little standardization of measures used when examining disordered eating and exercise. The Eating Disorder Examination Questionnaire (Fairburn & Beglin, 1994) and the Obligatory Exercise Questionnaire (Pasman & Thompson, 1991) were used here, but because there are many different questionnaires that are used to study disordered eating and exercise, this may not allow for straightforward comparison between the results of the present study and other studies which have used a similar sample but different measures to examine the eating and exercise habits.

Finally, limitations of time have also not allowed for student variables (identity as an athlete, Honors student, female-identifying student) to be analyzed in the context of one another, which could provide a deeper understanding of exactly which students suffer most from disordered eating and exercise.

### Future Research

This research has provided further information for a limited area of research. Disordered eating and exercise are not often studied simultaneously, nor is a general population of college students frequently used to examine these behaviors. Future research in this area should examine how aspects of one's identity as a student interact with one another, such as examining a female-identifying Honors student's levels of disordered eating and exercise. It is interesting to note that 72.09% of Honors students were female, 20.93% were male, 1.16% were transgender male, and 5.81% identified as non-binary, gender-queer, or gender fluid. The athletes surveyed were 50% female,

48.61% male, and 1.38% non-binary, gender-queer, or gender fluid. Of the students who were both Honors students and athletes, 7.35% were female students and 3.92% were male students. These findings suggest that interactions between aspects of student life would be an important area to explore, specifically with a larger group of participants so that the subgroups of students examined would be of sufficient size, statistically. Future research could also examine the prevalence of disordered exercise in individual athletic activities (e.g., weightlifting, bodybuilding, long distance running) compared to team sports and activities in order to examine which types of athletes are most at risk for developing disordered exercise habits.

Findings implicate a need for early intervention for disordered eating habits in college students, especially Honors and female college students. For example, if students attend counseling sessions at their university, counselors could screen for disordered eating symptoms during the intake. Results also show high levels of disordered exercise in collegiate athletes, which may indicate a possible need for screening in athletic programs for disordered exercise in order to detect symptoms early on. Because disordered eating and exercise behaviors are subclinical, educating students in the classroom about these behaviors, their implications on mental and physical health, and providing resources for help could allow for students to be better educated on disordered eating and exercise. Overall, the research in this area must also be expanded in terms of the diversity in populations sampled and must be more standardized in the measures that are used so that the impacts of these maladaptive behaviors can be more deeply understood.

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## APPENDICES

## APPENDIX A: DEMOGRAPHIC QUESTIONS FOR STUDENTS

1. What is your age? (Drop down menu included)

18

19

20

21

22

23

24

25

Prefer not to reply

2. What year are you in college? (Drop down menu included)

First year

Sophomore

Junior

Senior

Other: (fill in) \_\_\_\_\_

3. What race or ethnicity do you consider yourself? (Drop down menu included)

(Allow multiple responses)

Hispanic, Mexican-American, or Latino

White, Caucasian, or European

Black or African American

American Indian or Alaska Native

Asian

Native Hawaiian or other Pacific Islander

Other: (fill in) \_\_\_\_\_

Prefer not to answer

4. How do you identify? (Drop down menu included)

Woman

Man

Transgender/Trans woman

Transgender/Trans man

Non-Binary, gender-queer, or genderfluid

Not Listed: \_\_\_\_\_

Prefer not to reply

5. What is your overall GPA?

6. Below is a 1-10 scale representing where people in the U.S. stand financially. 1 (at the bottom of the scale) represents having very little to virtually no money, and 10 (at

the top of the scale) represents having the most money. Where would you place your household as you were growing up on this scale?

10

9

8

7

6

5

4

3

2

1

7. Are you currently a member of the Honors College?
8. Have you ever been a member of the Honors College, and for how long?
9. Do you identify as an athlete?
10. Do you currently play sports either on or off campus?
11. If yes, which sports, where, and at what level (D1, Intramural, Club, etc.)?

## APPENDIX B: INFORMED CONSENT FOR SONA PARTICIPANTS

You are invited to participate in a research project being conducted by Cammie Peirce, an undergraduate student in the Department of Psychology and the Honors College at the University of Maine, and Dr. Cynthia Erdley, a Professor in the Department of Psychology. The purpose of the research is to learn about the relationship between eating and exercise habits among college students. You must be at least 18 and no more than 25 years of age to participate.

### **What Will You Be Asked to Do?**

If you decide to participate, you will be asked to take an anonymous survey. It should take you about 15 minutes to complete. The survey is made up of four questionnaires.

- You will first select or write answers in response to questions about your eating habits and feelings about weight and shape.
- The second questionnaire asks you to answer questions about your exercise habits and your thoughts and feelings surrounding these habits.
- The third questionnaire asks you to answer questions about your specific personality traits and standards.
- The fourth set of questions asks about demographic and background information such as age, race, gender, and status or identity as an athlete or Honors College member.

### **Risks:**

There is the possibility that you may become uncomfortable answering the questions. You may skip any questions that make you uncomfortable. If you are experiencing distress and want to seek support, please contact the UMaine Counseling Center, Phone 207-581-1393, Website: <https://umaine.edu/counseling>. Additional resources for mental health services and counseling will also be provided at the end of the survey.

### **Benefits:**

While this study may have no direct benefit to you, this research may help us learn more about the correlation between eating and exercise behaviors in college students, and who within this population is more at risk for these behaviors. This information can be useful for creating more effective prevention and intervention programs.

### **Compensation:**

You will receive *1 hour* of Sona credit for participating in this study.

**Confidentiality:**

This study is anonymous. Please do not write your name on the survey. There will be no records linking you to the data. Data will be kept on a password-protected computer indefinitely.

**Voluntary:**

Participation is voluntary. If you choose to take part in this study, you may stop at any time. You may skip any questions you do not wish to answer.

Submission of the survey implies consent to participate.

**Contact Information:**

If you have any questions about this study, please contact me, Cammie Peirce, at [cameron.peirce@maine.edu](mailto:cameron.peirce@maine.edu). You may also reach the faculty advisor, Cynthia Erdley, Ph.D. at [erdley@maine.edu](mailto:erdley@maine.edu). If you have any questions about your rights as a research participant, please contact the Office of Research Compliance, University of Maine, 207-581-2657 (or e-mail [umric@maine.edu](mailto:umric@maine.edu)).

## APPENDIX C: INFORMED CONSENT FOR NON-SONA PARTICIPANTS

You are invited to participate in a research project being conducted by Cammie Peirce, an undergraduate student in the Department of Psychology at the University of Maine, and Dr. Cynthia Erdley, a Professor in the Department of Psychology. The purpose of the research is to learn about the relationship between eating and exercise habits among college students. You must be at least 18 and no more than 25 years of age to participate. *If you have already completed this survey for Sona credit, please do not submit another response.*

### **What Will You Be Asked to Do?**

If you decide to participate, you will be asked to take an anonymous survey. It should take you about 15 minutes to complete. The survey is made up of four questionnaires.

- You will first select or write answers in response to questions about your eating habits and feelings about weight and shape.
- The second questionnaire asks you to answer questions about your exercise habits and your thoughts and feelings surrounding these habits.
- The third questionnaire asks you to answer questions about your specific personality traits and standards.
- The fourth set of questions asks about demographic and background information such as age, race, gender, and status or identity as an athlete or Honors College member.

### **Risks:**

There is the possibility that you may become uncomfortable answering the questions. You may skip any questions that make you uncomfortable. If you are experiencing distress and would like to seek support, please contact the UMaine Counseling Center, Phone 207-581-1393, Website: <https://umaine.edu/counseling>. Additional resources for mental health services and counseling will also be provided at the end of the survey.

### **Benefits:**

While this study may have no direct benefit to you, this research may help us learn more about the correlation between eating and exercise behaviors in college students, and who within this population these habits occur in. This information can be useful for creating more effective prevention and intervention programs.

### **Compensation:**

After submitting your survey responses, you may enter into a raffle to win 1 of 5 \$20 Amazon gift cards for participating in this study. If you would like to participate in the raffle, you will be sent to a separate page where you will be asked to enter your name and email address. The raffle winners will be drawn at the end of the data collection (by April, 2022), and the odds of winning are approximately 1 in 50.

**Confidentiality:**

This study is anonymous. Please do not write your name on the survey. There will be no records linking you to the data. Data will be kept on a password-protected computer indefinitely. The contact information you provide to enter the raffle will not be connected to your responses to the survey.

**Voluntary:**

Participation is voluntary. If you choose to take part in this study, you may stop at any time. You may skip any questions you do not wish to answer.

Submission of the survey implies consent to participate.

**Contact Information:**

If you have any questions about this study, please contact me, Cammie Peirce, at [cameron.peirce@maine.edu](mailto:cameron.peirce@maine.edu). You may also reach the faculty advisor, Cynthia Erdley, Ph. D. at [erdley@maine.edu](mailto:erdley@maine.edu). If you have any questions about your rights as a research participant, please contact the Office of Research Compliance, University of Maine, 207-581-2657 (or e-mail [umric@maine.edu](mailto:umric@maine.edu)).

APPENDIX D: INTERNATIONAL REVIEW BOARD LETTER OF APPROVAL

APPLICATION COVER PAGE

*KEEP THIS PAGE AS ONE PAGE – DO NOT CHANGE MARGINS/FONTS!!!!!!!!!!*

APPLICATION COVER PAGE

• **KEEP THIS PAGE AS ONE PAGE – DO NOT CHANGE**

**MARGINS/FONTS!!!!!!!!!!** •

*PLEASE SUBMIT THIS PAGE AS WORD DOCUMENT*

**PLEASE**

**SUBMIT THIS PAGE AS WORD DOCUMENT**

APPLICATION FOR APPROVAL OF RESEARCH WITH HUMAN  
SUBJECTS

Protection of Human Subjects Review Board, 311 Alumni Hall

**(Type inside gray areas)**

**PRINCIPAL INVESTIGATOR:** Cammie Peirce EMAIL: [cameron.peirce@maine.edu](mailto:cameron.peirce@maine.edu)

**CO-INVESTIGATOR:**

**CO-INVESTIGATOR: EMAIL:**

**FACULTY SPONSOR:** Cynthia Erdley EMAIL: [erdley@maine.edu](mailto:erdley@maine.edu) (Required if PI is a student):

**TITLE OF PROJECT:** Disordered Eating and Exercise Among College Students  
**START DATE:** January, 2022 **PI DEPARTMENT:** Psychology

**STATUS OF PI:**

**FACULTY/STAFF/GRADUATE/UNDERGRADUATE U**

**(F,S,G,U) If PI is a student, is this research to be**

**performed:**

**Y for an honors thesis/senior thesis/capstone? for a master's thesis?  
for a doctoral dissertation? for a course project?  
other (specify)**

Submitting the application indicates the principal investigator's agreement to abide by the responsibilities outlined in [Section I.E. of the Policies and Procedures for the Protection of Human Subjects](#).

Faculty Sponsors are responsible for oversight of research conducted by their students. The Faculty Sponsor ensures that he/she has read the application and that the conduct of such research will be in accordance with the University of Maine's Policies and Procedures for the Protection of Human Subjects of Research. **REMINDER:** if the

principal investigator is an undergraduate student, the Faculty Sponsor MUST submit the application to the IRB.

Email this cover page and complete application to [umric@maine.edu](mailto:umric@maine.edu).

\*\*\*\*\*  
\*\*\*\*\* **FOR IRB USE ONLY** Application # 2021-12-14 Review (F/E):  
E Expedited Category: ACTION TAKEN:

Judged Exempt; category 2 Modifications required? Yes Accepted (date)  
12/29/2021  
Approved as submitted. Date of next review: by Degree of Risk:  
Approved pending modifications. Date of next review: by Degree of Risk:  
Modifications accepted (date):  
Not approved (see attached statement)  
Judged not research with human subjects

FINAL APPROVAL TO BEGIN 12/29/2021  
Date

10/2018

## AUTHOR'S BIOGRAPHY

Cameron Peirce was born March 22, 2000 in Hermon, Maine. She was raised here and graduated from Hermon High School in 2018. As a Psychology major, she also holds minors in English and Mental Health and Rehabilitation. During her undergraduate years she was a member of the Cheerleading team at the University of Maine, and won a National Championship in 2021 with her team. She received the James S. Stevens Outstanding Junior award in 2021 for her academic achievements and dedication. Following graduation, Cameron will begin her two-year Master's of Social Work program at the University of Maine, Orono.