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COMPARING INTUITIVE EATING BEHAVIORS BETWEEN STUDENT  
ATHLETES AND COLLEGE STUDENTS ENROLLED AT THE UNIVERSITY OF  
MISSISSIPPI

By  
Mary McKennon Pierce

A thesis submitted to the faculty of The University of Mississippi in partial fulfillment of  
the requirements of the Sally McDonnell Barksdale Honors College.

Oxford  
May 2022

Approved by

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## ACKNOWLEDGEMENTS

I would like to thank Dr. Melinda Valliant for working with me throughout this process. As I began this project, I did not know exactly how to combine my interest in athletes with intuitive eating, but Dr. Valliant inspired me by giving me countless ideas and pushing me to pursue a topic with minimal existing research. Throughout the process, she met with me often and gave me guidance in every stage. This project would have not been possible without her help. I would also like to thank my readers, Dr. Nadeeja Wijayatunga and Dr. Samantha Kostelnik, for editing my thesis and giving valuable feedback. Furthermore, I would like to thank Samantha Kelly from the data analytics lab for her assistance in my data analysis.

I also would like to thank my family and friends for supporting me along this journey for the past year. I could not have successfully completed this project without your encouragement and support during each step of the way. Lastly, I would like to thank the Sally McDonnell Honors college for giving me the opportunity to complete this thesis and for pushing me to grow throughout the process.

## ABSTRACT

MARY MCKENNON PIERCE: Comparing Intuitive Eating Habits between Students  
and Student Athletes at the University of Mississippi

(Under the direction of Dr. Melinda Valliant)

Intuitive eating strives to consciously listen to the internal hunger and fullness cues our body provides, as humans often practiced long before counting calories and dieting existed. Rational thought, instinct, and emotion influence an intuitive eater's decision-making and allow for full capability in navigating food decisions. While intuitive eating habits can benefit any individual, little research has compared the intuitive eating habits between collegiate students and student-athletes. measures unconditional permission to eat, eating for physical rather than emotional reasons, reliance on hunger and fullness cues, and body-food choice congruence. Student-athletes presented a significantly higher overall intuitive eating score ( $3.53 \pm 0.54$ ,  $p=0.003$ ) than their counterparts. This group possessed significantly higher eating for physical rather than emotional reasons ( $3.49 \pm 0.92$ ,  $p=0.001$ ) and body-food choice congruence scores ( $3.64 \pm 0.85$ ,  $p \leq 0.001$ ), compared to students. It is essential to understand that a difference between these populations exists in order to implement strategies to increase intuitive eating habits in the student population and further investigate why these differences occur.

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## INTRODUCTION

Although once simple and instinctual, intuitive eating can be challenging to practice after years of burying the intuitive eater within. Intuitive eating strives to consciously listen to the internal hunger and fullness cues our bodies provide, as humans often practiced long before counting calories and dieting existed. Modern-day culture is permeated with diet culture and negative body messages, focusing on external factors rather than internal cues. Intuitive eating suggests that humans naturally have the tools necessary to make decisions about eating, and denying those cues by restricting or bingeing food negatively impacts health.

Furthermore, intuitive eating is associated with both physiological and psychological benefits such as lower levels of low-density lipoprotein cholesterol, higher levels of high-density lipoprotein cholesterol, decreased cardiovascular risk, lower disordered eating habits, and weight stability (Hazzard et al., 2020; Tylka, Calogero, Daníelsdottir, 2015; Tylka, Calogero, Daníelsdottir, 2015).

Undergraduate students are often bombarded with messages about diets and negative body image, leading to the possible development of unhealthy eating habits and the lack of engagement in intuitive eating habits. Athletes may also face difficulties participating in intuitive eating as they may feel pressure to reach a certain weight or feel unappreciated at their current body size (Granger, 2019). This study aimed to evaluate the

intuitive eating habits in students and student-athletes in order to examine the prevalence in both populations. Furthermore, this study aimed to evaluate the differences between the populations and related factors. Understanding factors related to intuitive eating will allow for development of behavioral intervention.

## REVIEW OF LITERATURE

### **What is Intuitive Eating?**

Dr. Seigel suggests that the brain is composed of different regions that allow humans to experience rational thought, instinct, and emotion (Tribole & Resch, 2020). Rational thought, instinct, and emotion influence the decisions made as intuitive eaters and give humans the full capability to navigate food decisions through the information their brain and body provide (Tribole & Resch, 2020). These are internal rather than the external constructs often found in rigid and flexible control (Tylka, Calogero, Daniélsdottir, 2015). Rigid and flexible control, although slightly different, are traditional approaches used to control weight (Tylka, Calogero, Daniélsdottir, 2015 ). Rigid control focuses on strict calorie-counting, categorizing foods as “good” or “bad,” and using weight to measure success. Flexible control is seen as a more balanced approach than rigid control, but still implements behaviors such as eating smaller servings of food and using weight as a factor when making food choices (Tylka, Calogero, Daniélsdottir, 2015). Flexible control initially seemed like a healthier alternative to rigid control but has been more closely related to rigid control than intuitive eating (Tylka, Calogero, Daniélsdottir, 2015). These outward forms of restraint and weight-centric approaches are associated with higher rates of disordered eating and increased weight gain, therefore

giving reason to find an approach with more positive outcomes (Anderson et al., 2015; Bacon & Aphramorm, 2011; Tribole & Resch, 2020).

## **Principles of Intuitive Eating**

Tribole and Resch (1995) were the first to explore the concept of intuitive eating. The past fifteen years, they have written four editions of their "Intuitive Eating" book and workbook, as research on this topic is constantly evolving. They break down intuitive eating into ten principles to help guide their readers through the process of learning about intuitive eating and becoming intuitive eaters themselves. Principle one discusses the importance of rejecting the diet mentality and realizing that failure stems from the diet industry rather than the individual themselves. This helps them realize some guilt and shame associated with not successfully losing weight. Dieting is often a strong predictor of weight-cycling, which correlates to multiple negative health outcomes and adverse mental health problems such as depression, guilt, and anxiety (Aphramor & Bacon 2011; Tylka, Calogero, Daniélsdottir, 2019). The second principle encourages readers to honor their hunger, allowing them to trust in their bodies to tell them when to eat and, therefore, decrease the likelihood of a restrict and binge cycle. Principle three focuses on the importance of making peace with food, motivating readers to allow themselves unconditional permission to eat rather than fighting their cravings. The fourth principle explains the importance of not assigning morality to food and challenging the food police. Assigning foods as "good" or "bad" gives the food power and often leads to guilt after eating a "bad" food or pride after eating something "good." These assignments of "good" and "bad" can create unattainable goals that can lead to long-term restriction or binge eating foods deemed "unhealthy" after a period of restriction.

Principle five emphasizes the importance of discovering the satisfaction factor with food and keeping pleasure a priority. Humans forget to enjoy and savor food and

often spend their time on the rules created around food. Principle six highlights the idea of honoring hunger and fullness cues. This principle plays into mindful eating, which includes savoring the tastes and textures of food and recognizing when the body becomes comfortably full. Mindful eating decreases the prevalence of both overeating and undereating. Principle seven encourages coping with emotions with kindness rather than using food as a coping mechanism. The eighth principle encourages body respect and diversity, explaining that everyone's body is unique and there should not be an ideal associated with body shape or size. Principle nine urges people to engage in mindful movement and find a form of life-giving and joyful exercise rather than participating in exercise for external reasons, such as weight or appearance. The final principle speaks about honoring one's health and practicing gentle nutrition. Intuitive eating is not only about eating when hungry and stopping when full but also about taking health conditions and preferences into consideration. Not all ten principles apply to every person but can be a resource for those interested in learning more about intuitive eating or wanting to practice it themselves (Tribole & Resch, 2020).

### **Intuitive Eating Scale**

Intuitive eating has a few possible measures, with the Intuitive Eating Scale-2 (IES-2) being the most widely used. The IES-2 was created by Dr. Tracy Tylka, which measures unconditional permission to eat (UPE), eating for physical rather than emotional reasons (EPR), reliance on hunger and satiety cues (RHSC), and body-food choice congruence (B-FCC). Unconditional permission to eat mirrors the principle of honoring hunger and not assigning morality to foods. Eating for physical rather than emotional reasons (EPR) surveys how participants cope with emotions with regard to

food. Reliance on hunger and satiety cues (RHSC) reflects the ideas of mindful eating and acknowledging the physical sensations surrounding hunger and fullness. Finally, body food-choice congruence (B-FCC) assesses the degree to which people fuel their body based on their needs and added in creating the IES-2 to expand upon the principles of gentle nutrition, which is the tenth principle of intuitive eating (Tylka & Kroon Van Diest, 2013; Tribole & Resch, 2020). The IES-2 scale is established as a reliable and valid tool for many populations including college students and athletes, and as a helpful tool to predict “psychological well-being beyond and above eating disorders” (Tylka & Kroon Van Diest, 2013, Oh et al., 2012). The IES-2 expanded upon the original Intuitive Eating Scale (IES), which originally was more negatively scored, and did not address the principle of gentle nutrition, which was added as the B-FCC subscale (Tylka & Kroon Van Diest, 2013)

## **Race and Geographical Location**

Although the IES-2 is helpful to analyze levels of intuitive eating within a variety of populations, there is limited research regarding the possible differences between race and geographical location. Kelly A. Romano and Kristin E. Heron (2003) discuss the variation of the intuitive eating model in college men and women, as well as white and black students. The model did not show a difference between gender but depicted differences between races (Romano & Heron, 2003). Specifically, the associations between restrictive eating behaviors, body dissatisfaction, and eating disorder behavior may not translate to the Black population due to the hypothesis that Black individuals may be more accepting of larger and more varied bodies (Romano & Heron, 2003). The IES-2 was also tested with a Hispanic American college population, and the results indicate the importance of considering how certain cultures may influence some of the responses. For example, on the unconditional permission to eat section, one question asks if the participant tries “to avoid certain food high in fat, carbohydrates, or calories” (Tylka & Kroon Van Diest, 2013). However, this question may not produce indications of intuitive eating, but rather the cultural practices of Hispanic Americans to eat foods high in carbohydrates (Saunders, Nichols-Lopez & Frazier, 2017). These findings need additional research to solidify any claims but bring up significant concerns regarding the validity of the intuitive eating model with different racial populations.

Strodl et al. (2020) conducted research on the variance of the IES-2 across eight different countries. The differences between countries are attributed to cultural preferences, perceptions about weight, interpretations of the questions, food availability and environment, and the perception of food in an emotional context (Strodl et al., 2020).



Although minor, these differences should be acknowledged when studying international populations. In addition, minimal research exists surrounding intuitive eating and geographical location, so more research is necessary to examine this topic further.

### **Predictors of Intuitive Eating**

In order to understand the role of intuitive eating, it is important to examine the predictors that can lead to intuitive eating behaviors. Intuitive eating arises from body appreciation, social appearance comparison, body acceptance by others, self-objectification, and body function (Andrew, R, Tiggemann, M, & Clark, L, 2015; Avlos & Tylka, 2006). Some of these factors may be more influential in certain populations. Researchers agree that body appreciation is one of the most important predictors for intuitive eating, specifically in adolescent girls and college-age women. Tiggemann & Clark (2015) investigated the eating habits and thoughts that adolescent girls have about their bodies to determine predictors of intuitive eating. They found that “social appearance comparison” is a significant factor for adolescent girls due to the frequency at which they compare their appearance to their peers (Tiggemann & Clark, 2015). However, the results showed that although social appearance comparison is the “second strongest predictor of intuitive eating, body appreciation was the strongest predictor” (p. 212-213). Tiggeman & Clark (2015) acknowledge that the prior research revealed body appreciation as the number one predictor in adult women, suggesting that women and adolescent girls who appreciate their bodies are more likely to listen and acknowledge their internal hunger cues.

## **Benefits of Intuitive Eating**

Researchers are also investigating the positive long-term effects intuitive eating has on psychological and physical well-being (Hazzard et al., 2020). For example, Tylka, T. L., Calogero, R. M., & Daniélsdóttir, S. (2019) discovered how intuitive eating practices could produce more weight-stable individuals through targeted questionnaires. Weight stable individuals had the highest intuitive eating scores, while participants with weight gain had the lowest score, following those with weight loss. Weight stability connects to fewer adverse health outcomes, so it is vital to understand the association between intuitive eating and weight stability (Bangalore et al., 2017; Montani, Schutz, & Dulloo, 2015). Furthermore, intuitive eating is correlated with lower BMI, lower health consciousness about food, higher levels of pleasure while eating, and slightly correlated with diet diversity (Smith & Hawkes, 2006).

Barad et al. (2019) also noticed that higher IES-2 scores in college women correlated with greater diet diversity. There was no correlation between intuitive eating and junk food consumption. Diet diversity is an essential goal of the U.S Dietary Guidelines, leading to the assumption that intuitive eating may contribute to increasing healthy eating habits (Barad et al., 2019). However, Grinder, Douglass, and Raynar (2020) discovered no dietary quality or energy intake changes when implementing intuitive eating or mindful eating strategies.

Hazzard et al. (2020) evaluated the long-term psychological benefits of intuitive eating by conducting a baseline intuitive eating study in adolescents. They then conducted an eight-year follow-up study. They found that increased intuitive eating scores in the follow-up were associated with lower levels of depression, body

dissatisfaction, and binge eating and higher self-esteem (Hazzard et al., 2020).

Furthermore, higher scores of intuitive eating were “related to lower disordered eating behaviors,” suggesting that intuitive eating may provide these long-term benefits (p.4). Intuitive eating also provides a plethora of other benefits such as being inversely related to body fat, cardiovascular risk, triglyceride levels, food-related anxiety, thin-ideal internalization, body dissatisfaction, body preoccupation, and body shame. It is positively associated with high-density lipoprotein cholesterol, interoceptive sensitivity, enjoyment of food, body appreciation, self-compassion, and self-esteem (Augustus-Horvath & Tylka, 2011; Camilleri et al., 2015; Hawks, Madanat, Hawks, & Harris, 2005; Herbert, Blechert, Hautzinger, Matthias, & Herbert, 2013; Schoenefeld & Webb, 2013; Smith & Hawks, 2006; Tylka, 2006; Tylka & Wilcox, 2006)

### **Predictors of intuitive eating in college students**

The variety of health benefits discussed above also tends to apply to college students engaging in intuitive eating habits, giving reason to study this college population and what may predict their intuitive eating scores (Hawks et al., 2005). Regarding female college students, Kelly and Stephen (2016) discovered self-compassion as a vital predictor of intuitive eating. Self-compassion relates to body appreciation and body respect because it may lead to a more calm and gentle state of mind, allowing one to listen to the body's hunger and fullness cues (Kelly & Stephen, 2016). Self-compassion encourages kindness and care towards oneself, driving away factors such as dietary restraint, and encourages trust in one's body to provide information about what and how much to eat. Self-compassion could be an imperative concept to study further in college-

aged women, specifically regarding the frequency of change in self-compassion and intuitive eating from day-to-day. Body acceptance and body function are also predictors of intuitive eating in college women. Body acceptance is predicted to be especially important in a population of women due to the sexual objectification and pressures of the thin-ideal women face daily (Avalos & Tylka, 2006). Acceptance was the key external factor in this population, with body function and appreciation flowing out from body acceptance (Avalos & Tylka, 2006). When women do not feel accepted by those around them, they feel an increased pressure to lose weight as a result of societal pressures to meet the thin-ideal (Avalos & Tylka, 2006). However, when women have high body acceptance by others, they can focus on the function of their body rather than its appearance. Tuning into body function may be an individual focusing on how their feet feel on the pavement as they run, acknowledging the privilege of having an able body or even simply appreciating all their body's work to keep them alive. Honoring body function translates to both body appreciation and intuitive eating, emphasizing the importance of promoting body acceptance and function in all body shapes and sizes.

### **Intuitive eating and eating disorders in college students**

Furthermore, Romano et al. (2018) studied college students and the difference between those who calorie count and weigh themselves versus those who eat intuitively. The results suggested that the students who habitually counted calories and weighed themselves, therefore engaging in more restrictive behaviors, had higher eating disorder scores. In contrast, the students who engaged in intuitive eating, a weight-neutral

practice, had lower rates of eating disorders. Intuitive eating may be helpful in both eating disorder “prevention and intervention” and in health promotion in the college population (Romano et al, 2018). Similarly, Craven and Fekete (2019) studied weight-related shame and guilt, intuitive eating, and binge eating disorder in female college students. Not only was weight-related shame and guilt correlated to binge eating disorder, but intuitive eating was discovered as a possible mediator between weight-related shame and binge eating disorder (Craven & Feteke, 2019). Due to intuitive eating’s inherent weight-neutral approach and encouragement to listen to one’s hunger and fullness cues, it is reasonable that intuitive eating could help decrease binge eating behaviors. This study is imperative in the college population because it is “among the first to suggest that intuitive eating may be a protective skill to help curb unhealthy dietary patterns related to the experience of weight-related shame” (Craven & Feteke, 2019). Rather than promoting weight-centric habits, intuitive eating may be an important habit to promote in the college population to increase psychological and physical health benefits and decrease disordered eating practices.

### **Gender differences in Intuitive Eating**

Smith and Hawks (2006) examined college students to discover the relationship between intuitive eating and diet composition, along with possible gender disparities. Although this study was conducted with the original IES and not the IES-2, it provides interesting information about gender disparities. In all subscales of the IES and other diet-related variables such as the pleasure of eating, men scored significantly higher than women. However, women scored higher on the health consciousness scale, suggesting

lower levels of intuitive eating and pleasure of eating and higher levels of dieting behaviors. Barad et al. (2019) also discuss gender differences in their study regarding intuitive eating behavior and fruit and vegetable consumption in college students. Their results also present higher overall IES-2, unconditional permission to eat (UPE) and eating for physical rather than emotional reasons (EPR) scores among men (Barad et al., 2019). However, when examining results, higher fruit and vegetable consumption was positively correlated with Eating for Physical Rather than Emotional Reasons (EPR) subscale scores in women, but not in men, suggesting that eating fruits and vegetables may be more of an emotional decision for women (Barad et al., 2019). Furthermore, fruit and vegetable intake and reliance on hunger and satiety (RHSC) subscale scores were negatively correlated with fruit and vegetable intake in men (Barad et al., 2019). Barad et al. (2019) suggest that these gender disparities may be attributed to the differences in societal pressures. For instance, women tend to feel the need to diet and choose healthier foods, while men engage in dieting less often and tend to eat foods other than fruits and vegetables when eating for fullness (Barad et al., 2019). In addition, future research could investigate the importance of further research regarding gender disparities.

### **Intuitive eating in physically active college students**

The intuitive eating model also translates to physically active college men and women. Physically active college students were investigated to determine the influence of internal and external exercise motives and their impact on intuitive eating (Tylka & Homan, 2015). External exercise motives focus on appearance and factors (ie., weight control) while internal exercise motives rely on function (ie., feeling and enjoyment) As

both women and men experience body acceptance from others, they are more likely to participate in exercise for internal rather than external reasons. Internal or functional exercise motives, which lead to body appreciation, are predictors of intuitive eating in college women but have yet to be found significant in the college male population (Tylka & Homan, 2015). Encouraging functional exercise over appearance-based exercise may help increase intuitive eating habits in the college population.

### **Athletes and intuitive eating**

Limited research has been conducted regarding athletes and intuitive eating. Overall, the predictors of intuitive eating in the general population seem to transfer over to the student-athlete population. Self-compassion, which includes self-kindness, mindfulness, and common humanity, is suggested to increase body appreciation in female athletes (Killham, 2014). Furthermore, self-kindness is an indicator of intuitive eating in this population as well due to being kind to oneself, which ensures “making sure the body [is] properly fueled for sport” (Killham, 2014). While self-compassion is suggested to increase intuitive eating in the female college population, the two methodologies are slightly different. While non-athletes focus more on intuition, athletes may focus on rational thought. Killham (2014) explains that while intuitive eating may seem to be counterintuitive in athletes, due to their eating schedules not always aligning with hunger and fullness cues, it is important to understand the broader approach of intuitive eating. Eating regarding performance and anticipating energy needs is intuitive. It requires tuning into the facet of rational thought while also honoring instinct and emotion when needed (Tribole & Resch 2020; Killham 2014). Increasing intuitive eating habits in

athletes may provide flexibility in their diet and enhance performance by adequately fueling their bodies.

In student-athletes, a positive correlation between body appreciation and intuitive eating was discovered. In addition, higher intuitive eating and body appreciation scores were seen among males (Granger, 2019). Since this was the first study conducted on male and female NCAA athletes, it may be necessary to investigate the gender differences and the reasons behind them. Although many factors within the general population and athletes are similar, a unique factor to consider for athletes is if the sport is considered a body-focused sport or not. . Body-focused sports include gymnastics, volleyball, and wrestling. As hypothesized, athletes in body-focused sports scored lower relative to their gender on the intuitive eating scale (Granger, 2019). These sports may experience difficulty engaging in eating habits without worrying about how it may affect weight, performance, and perception. Further research may be needed to analyze intuitive eating habits within various sports categories and why those differences may arise.

### **Predictors of Intuitive Eating in Athletes**

An interesting array of intuitive eating predictors are presented for the student-athlete population. On one hand, athletes are more inclined to have a higher body appreciation due to the increased focus on body function than non-athletes (Granger, 2019). For example, body function, meaning to value the body's function and performance over appearance, is a crucial indicator of intuitive eating in female college athletes (Oh et al., 2012). On the other hand, athletes may also experience body or weight criticism from teammates, coaches, and societal pressures, leading to lower body



appreciation and, therefore, lower intuitive eating scores. Consequently, it is essential for these figures to “encourage a culture that focuses less on body appearance and more on cultivating positive body image” (Soulliard et al., 2019). Female athletes may also feel an extended sense of dissonance by juggling the desire for an athletic, muscular figure and attempting to meet the standards of femininity (Thompson & Sherman 2014, Oh et al., 2012).

### **Female Athlete Triad and RED-S**

Similarly, female athletes may face a health consequence called the Female Athlete Triad. The female athlete triad is a cyclical relationship between amenorrhea, low energy intake, and low bone density that can lead to physiological and psychological problems (Killam, 2014; Mallinson & De Souza, 2014). Lack of energy to meet total energy expenditure begins this cycle. Researchers have investigated why energy intake is lacking and establishing early intervention is imperative to avoid health consequences and prevent an eating disorder or disordered eating (Mallinson & De Souza, 2014). Males may also feel a dissonance between their body image as an athlete compared to their other roles. Thompson and Sherman (2014) explain that this paradox may be due to athletes having more than one body image, although more research is needed to solidify this claim. Relative energy deficiency in sport (RED-S) expands upon the female athlete triad to encompass males. Mountjoy et al. (2018) explain that the health consequences of RED-S encompass the triad as well as immunological, gastrointestinal, cardiovascular, psychological, growth and development, hematological, metabolic, and endocrine

impairments. Lower energy availability is often more prevalent in female athletes, but it is important to be aware of the consequences that may occur with males.

Furthermore, due to the relationship between RED-S and disordered eating, implementing a prevention program for disordered eating may also help prevent RED-S (Mountjoy et al., 2018). It would be interesting to investigate further if intuitive eating also decreases the prevalence of the Female Athlete Triad and RED-S, since intuitive eating is associated with decreased disordered eating. While the issues facing athletes and intuitive eating may be more nuanced, it's important to decrease the possible risks involved as an athlete rather than determine that competing in sports is the issue.

### **Athletes and Disordered Eating & Eating Disorders**

Research regarding athletic participation and the risk of disordered eating and eating disorders is inconsistent. However, many studies present evidence that athletes have a lower risk of disordered eating and eating disorders than non-athletes (Kirk, Singh & Getz, 2001; Wollenburg, 2015; Hausenblas & McNally, 2004; Blair et al., 2017). According to Thompson and Sherman (2014), participating in sports may provide women an opportunity to experience “healthy competition over competitive thinness,” which is the goal of many women in society (p.729). Furthermore, athletes are also more likely to have lower body dissatisfaction and increased levels of body esteem than non-athletes (Granger, 2019; Blair et al., 2017). These factors are also correlated with intuitive eating, suggesting that athletes may have higher levels of intuitive eating and lower levels of disordered eating. Blair et al. (2017) also investigated body dissatisfaction in college

students and college athletes and discovered a higher body dissatisfaction in females who did not participate in sports. A plausible explanation for this could be the increased self-esteem and body satisfaction that athletes have when engaging in physical activity and belonging to a team, allowing them to experience multiple “physical and psycho-social benefits” (p.11). Athletes also tend to have a larger support system and more resources than the typical college student, possibly explaining why some differences occur within these two populations (Kirk, Singh & Getz, 2001). While it may be reasonable to assume athletes have lower rates of disordered eating, other studies suggest that athletes have a higher risk of developing disordered eating habits or an eating disorder (Holm-Denoma et al., 2008; Sundgot-Borgen & Torstveit, 2004).

### **Retired athletes and disordered eating**

Understanding intuitive eating and disordered eating habits among retired athletes may provide insight into how athletes could receive more support throughout college and during their transition. Though some researchers suggest that disordered eating habits increase among retired athletes, these studies contain a small sample size of exclusively gymnasts, so the application may not translate to other populations (Lavalle & Robinson, 2007; Stirling et al., 2012; Plateau, Petrie, Papatomas, 2017). In a larger sample of swimmers and gymnasts, disordered eating habits appeared to decrease in retirement, with athletes retraining their brains to engage in more intuitive eating habits rather than restrictive and disordered eating habits they engaged in as athletes (Plateau, Petrie, Papatomas, 2017). These athletes suggested a feeling of “liberation” regarding food, finally allowing themselves to honor their hunger and fullness cues (p. 97). Although it is

positive that these retired athletes have decreased disordered eating habits, it suggests an increase of these habits while engaging in sports. Investigating ways to increase intuitive eating habits and decrease disordered eating habits as an athlete may decrease the effort and retraining of retired athletes to engage in intuitive eating. It may also help decrease maladaptive eating behaviors among athletes. However, more research is needed to generalize these findings to the athletic population.

It is also important to monitor athletes for risk factors and work towards reducing eating disorders and disordered eating prevalence in college athletics. As mentioned previously, athletes tend to struggle with feeling like they have two different body images, one pertaining to their sport and one surrounding the rest of their lives (Oh et al., 2021). This dissonance could provide stress and prompt disordered eating habits; therefore, coaches and other role models need to promote body function over appearance and body acceptance (Oh et al., 2012). Furthermore, it is important to recognize that athletes who fit the stereotype for their sport or have very high performance are less likely to be identified as “at-risk” for disordered eating or an eating disorder (Thompson & Sherman, 2014). Therefore, implementing screening and the IES-2 may be helpful to identify any maladaptive eating behaviors, rather than basing judgments based on appearance or performance.

## **Conclusion**

While many studies have been conducted about intuitive eating, most investigated the benefits of intuitive eating, tested the intuitive eating model in a specific population, or aimed to analyze the predictors of intuitive eating. However, research regarding the

prevalence of intuitive eating in the college population versus the student-athlete population is sparse. Since women have been studied more in the past studies on intuitive eating, it is crucial to include men in future research. Due to the multitude of benefits intuitive eating provides, future research could assess the differences between the two populations. Regardless of possible differences, assessing baseline intuitive eating scores in both populations is essential to expand upon current research.

## METHODS

### **Participants**

Participants in this study included both students and student-athletes at the University of Mississippi over the age of 18. The undergraduate students consisted of students in a human anatomy and physiology course. The student-athletes were from a variety of NCAA sports at the University.

### **Procedure**

The students were provided with the survey at the beginning of their lab section, while student-athletes received it before or after their practice or lift. In addition to the Intuitive Eating Scale-2, a sociodemographic questionnaire collected data about their gender, ethnicity, geographical region, and classification in school. This research was approved as exempt by the Institutional Review Board of Mississippi (protocol number 21x-240).

### **The Intuitive Eating Scale-2**

The Intuitive Eating Scale-2 (Appendix A), which measures unconditional permission to eat, eating for physical rather than emotional reasons, reliance on hunger and satiety cues, and body-food choice congruence was used. When completing the survey, the students were given 23 statements and asked to answer based on a scale from 1 (strongly disagree) to 5 (strongly agree). The survey used specific questions to assess

subscores for unconditional permission to eat, eating for physical rather than emotional reasons, reliance on hunger and fullness cues, and body-food choice congruence. The averages were calculated for all 23 questions, which gave the IES-2 score. Then, each subset was averaged and given a subscore (scoring details are in Appendix A). This survey helps to understand the intuitive eating among students and student-athletes at the University.

### **Statistical analysis**

The data collected from the Intuitive Eating Scale-2 was entered into Google Sheets. The questions regarding IES-2 and all subsets were averaged for each participant. The data was then exported into Excel and then into Statistical Package for Social Sciences (SPSS, version 27). SPSS was used to analyze descriptive statistics and conduct an ANOVA and t-test. An ANOVA test was used to determine a statistical difference in IES-2 scores between race/ethnicity, classification, and geographical location. The t-test compared the difference between scores in males versus females and athletes versus student-athletes. The t-test was based on Larene's test for equality of variances, also known as the homogeneity of variance. The t-test is only conducted when this assumption has been met. ANOVA, a test to determine differences in scores between multiple groups, established no significant difference between race, classification, or geographical region. Statistical significance was set at  $p \leq 0.05$ .

## RESULTS

There were a total of 373 respondents with 258 students (75.2%) and 85 student-athletes (24.8%). The majority of the participants were females (n=258, 75.2%), with 85 male participants (24.8%). The majority of participants were of sophomore academic classification, white, and from the Southeast. Specific information regarding participant characteristics can be seen below in Table 1.



Table 1: Study participant characteristics

Overall (n=373)		frequency	percentage (%)
	Athlete		
	Student-athlete	85	24.8
	Student	258	75.2
	Gender		
	Female	258	75.2
	Male	85	24.8
	Classification		
	Freshman	20	5.8
	Sophomore	168	49
	Junior	101	29.4
	Senior	54	15.7
	Race/Ethnicity		
	White	249	72.6
	Black	69	20.1
	Asian	8	2.3
	Hispanic	2	0.6
	Native Hawaiian or other pacific islander	2	0.6
	Multiracial	11	3.2
	No response	2	0.6
	Region		
	Southeast	206	60.1
	Southwest	47	13.7
	Northeast	58	16.9
	Northwest	20	5.8
	International	9	2.6
	No response	3	0.9

Athletes had significantly higher IES-2 scores ( $p=0.003$ ,  $df=341$ ), EPR scores ( $p=0.001$ ,  $df=341$ ) and their B-FCC scores ( $p=0.000$ ,  $df=341$ ) than students. There was no significant difference between their RHSC ( $p=0.38$ ,  $df=341$ ) and UPE ( $p=0.52$ ,  $df=341$ ).

Males had significantly higher IES-2 scores ( $p=0.001$ ,  $df=341$ ), EPR scores ( $p<0.001$ ,  $df=341$ ), and B-FCC ( $p=0.008$ ,  $df=341$ ). There was no statistical significance between their RHSC ( $p=0.82$ ,  $df=341$ ) and UPE ( $p=0.62$ ,  $df=341$ ). The group statistics, including mean and standard deviation, are presented for the gender and athlete variables. These also include the breakdown of scores within each subscale, along with the overall IES-2 score and the  $t$ - and  $p$ -value. These results are presented below in Tables 2 and 3.

Table 2: Comparison of Mean and Standard Deviation Scores for Students and Student Athletes

	Student mean $\pm$ SD n=258	Student-Athlete mean $\pm$ SD n=85	t	p-value
IES-2 total score	3.53(.54)	3.72(.48)	-2.995	0.003*
UPE	3.37(.77)	3.43(.70)	-0.649	0.517
EPR	3.49(.92)	3.86(.69)	-3.363	0.001*
RHSC	3.68(.78)	3.6(.69)	0.872	0.384
B-FCC	3.64(.85)	4.18(.71)	-5.359	<0.001*

\* indicates significant ( $p<0.05$ )

Abbreviations: UPE=unconditional permission to eat, EPR= eating for emotional rather than physical reasons, RHSC=reliance on hunger and satiety cues, B-FCC=body-food choice congruence

Table 3: Comparison of Mean and Standard Deviation Scores for Males and Females

	Female n=258	Male n=85	t	p-value
IES-2 total score	3.52(.03)	3.75(.05)	-3.499	0.001*
UPE	3.39(.74)	3.35(.77)	0.49	0.624
EPR	3.44(.90)	4.01(.68)	-5.339	<0.001*
RHSC	3.66(.047)	3.68(.08)	-0.223	0.824
B-FCC	3.70(.06)	3.68(.08)	-2.672	0.008*

\* indicates significant ( $p < .05$ )

Abbreviations: UPE=unconditional permission to eat, EPR= eating for emotional rather than physical reasons, RHSC=reliance on hunger and satiety cues, B-FCC=body-food choice congruence

No significant difference in IES-2 and subscale scores between race, classification, or geographical region ( $p=0.481$ ,  $0.319$  and  $0.095$ , respectively).

## DISCUSSION

This study compared the intuitive eating habits of students and student-athletes to determine if a significant difference exists between the two groups. Other sociodemographic variables were also examined as a secondary analysis including gender, race, geographical location, and academic classification.

The main study findings were that the student-athletes had significantly higher overall intuitive eating scores and significantly higher EPR and B-FCC scores than students. Our study findings are aligned with the previous findings that athletes may have higher intuitive eating scores due to the increased body function and appreciation athletes tend to experience (Granger 2019, Hahn Oh, et al.) Past studies have suggested that student-athletes have a better support system than students, which could be associated with the differences in eating disorder prevalence between student-athletes and students (Kirk, Singh & Getz, 2001). This reasoning could correlate to intuitive eating as well, which could also explain athletes' higher intuitive eating scores. Since there was no prior research on this topic to the researcher's knowledge, the significant subscale differences are fascinating and provide a basis for more investigation into the reasoning behind those differences.

Males had significantly higher overall intuitive eating scores, EPR, and B-FCC scores than females. While past studies showed that men displayed significantly higher intuitive eating scores and subscale scores (Hawkes & Smith, 2006; Barad et al., 2019),

while our study only found significant differences in IES-2 overall score, EPR, and B-FCC scores. It is important to note that Hawkes and Smith used the original IES rather than the IES-2, which could explain the differences. In addition, Tylka & Kroon Van Diest (2013) suggest a difference between IES-2, UPE, and EPR scores between college men and women, which slightly differs from the results of our study. However, other researchers found no significant difference between college male and female intuitive eating scores (Heron & Romano, 2003).

Regarding classification, geographical location, and race/ethnicity, no statistical difference was found among each of these groups regarding intuitive eating and subscale scores in our study. However, this contrasts with previous data suggesting that a significant difference does exist between black and white college students (Romano & Heron, 2003). Since most of the participants in our study were white, the population sizes for each race may need to be of equal size and larger quantity to compare intuitive eating scores adequately. Blair et al. (2017) reported that freshman college students have a greater risk of body dissatisfaction, which is inversely related to intuitive eating. In our study, no significance existed between different classifications of students. When examining the breakdown of the populations, the majority of students were either sophomores or juniors, leaving a very small percentage of the population to freshmen, which could explain the lack of significance.

Our study has several strengths, especially being the first study to examine differences in intuitive eating habits among college students and student-athletes. Furthermore, our study investigated other variables such as gender, race/ethnicity, academic classification, and geographical location. The sample size was also relatively large, which is helpful to determine a wide variety of responses.

Although the present study provides valuable information to the realm of intuitive eating, a few limitations need to be addressed. First, conducting this study through a self-report survey could lead to self-report bias. Furthermore, the sample size was restricted to anatomy and physiology students for the student population, making it difficult to generalize to the student population at the University. A more diverse and larger sample size is necessary for future research since the majority of the participants were white, from the southeast, and of sophomore and junior academic classification. When collecting data, student-athletes were not excluded from the anatomy and physiology lab. However, after obtaining an IRB, it was found that only one female athlete completed the survey in the anatomy and physiology lab and as a result is in the student group rather than the student-athlete group.

To further compare intuitive eating behaviors between students and student-athletes, more research is needed to solidify the claim that student-athletes have significantly higher intuitive eating behaviors than students. First, sample sizes should be larger, ensuring diversity in race/ethnicity, geographical location, and classification. In addition, future research could administer an eating disorder screening alongside an IES-2 to examine if there is a difference between these results in the student and student-athlete population, as well as solidify the claim that higher intuitive eating scores also

correlates with lower eating disorder scores. It is also imperative to investigate why significant differences arise in subscale scores between both student-athletes and students as well as males and females. Furthermore, it may be interesting to analyze the intuitive eating habits of student-athletes within each sport to see if any differences arise.

## CLINICAL SIGNIFICANCE

Registered Dietitians Nutritionists (RDNs) in the collegiate athletic community can use this information to recognize that athletes may have higher intuitive eating scores than students. Plausible reasons for this difference include the support that athletes receive as well as an emphasis on body function and appreciation over body appearance. Given this, coaches, peers, and the registered dietitian need to continue to provide that support to athletes. For RDNs working in the student health clinic or those who have college students as clients, it is helpful for them to consider that their intuitive eating scores may be lower than student-athletes. These practitioners can work on intuitive eating initiatives and resources in the classroom to increase support of healthy eating behaviors in the student population. It may also be important to promote body function over body appearance when discussing exercise with college students. Once more research is provided to understand why these differences occur in these two populations, it will be easier to implement effective strategies to increase intuitive eating scores, specifically in college students.



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## APPENDIX A

### General Information Questionnaire

**General Information:** Please answer these questions to the best of your ability.

1. What gender do you identify with?  
 Male  
 Female  
 Other  
 Prefer not to answer
  
2. What is your classification in college?  
 Freshman  
 Sophomore  
 Junior  
 Senior
  
3. What region of the United States were you born in?  
 Southeast  
 Northeast  
 Southwest  
 Northwest  
 Not applicable, international student
  
4. Race/Ethnicity: (select all that apply)  
 American Indian or Alaska Native  
 Asian  
 Black or African American  
 Native Hawaiian or Other Pacific Islander  
 White  
 Other (please specify)  
 Prefer not to answer



## APPENDIX B

### **Intuitive Eating Scale-2 (IES-2)**

For each item, please circle the answer that best describes your attitudes or behaviors.

The following scale should be used:

*1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree*

1. I try to avoid certain foods high in fat, carbohydrates, or calories.

1      2      3      4      5

2. I find myself eating when I'm feeling emotional (e.g., anxious, depressed, sad), even when I'm not physically hungry.

1      2      3      4      5

3. If I am craving a certain food, I allow myself to have it.

1      2      3      4      5

4. I get mad at myself for eating something unhealthy.

1      2      3      4      5

5. I find myself eating when I am lonely, even when I'm not physically hungry.

1      2      3      4      5

6. I trust my body to tell me when to eat.

1      2      3      4      5

7. I trust my body to tell me what to eat.

1      2      3      4      5

8. I trust my body to tell me how much to eat.

1      2      3      4      5

9. I have forbidden foods that I don't allow myself to eat.

1      2      3      4      5

10. I use food to help me soothe my negative emotions.

1      2      3      4      5

11. I find myself eating when I am stressed out, even when I'm not physically hungry.

1      2      3      4      5

12. I am able to cope with my negative emotions (e.g., anxiety, sadness) without turning to food for comfort.

1      2      3      4      5

13. When I am bored, I do NOT eat just for something to do.

1      2      3      4      5

14. When I am lonely, I do NOT turn to food for comfort.

1      2      3      4      5

15. I find other ways to cope with stress and anxiety than by eating.

1      2      3      4      5

16. I allow myself to eat what food I desire at the moment.

1      2      3      4      5

17. I do NOT follow eating rules or dieting plans that dictate what, when, and/or how much to eat.

1      2      3      4      5

18. Most of the time, I desire to eat nutritious foods.

1      2      3      4      5

19. I mostly eat foods that make my body perform efficiently (well).

1      2      3      4      5

20. I mostly eat foods that give my body energy and stamina.

1      2      3      4      5

21. I rely on my hunger signals to tell me when to eat.

1      2      3      4      5

22. I rely on my fullness (satiety) signals to tell me when to stop eating.

1      2      3      4      5

23. I trust my body to tell me when to stop eating.

1      2      3      4      5

Scoring Procedure:

1. Reverse score items 1,2,4,5,9,10, and 11.
2. Total IES-2 score: Add all items together and divide by 23
3. Unconditional Permission to Eat subscale: Add together items 1,3,4,9,16, and 17 and then divide by 6.
4. Eating for Physical Rather than Emotional Reasons subscale: Add together items 2,5, 10, 11, 12, 13, 14, and 15 and then divide by 8.
5. Reliance on Hunger and Satiety Cues subscale: Add together items 6, 7, 8, 21, 22, and 23 and then divide by 6
6. Body-Food Choice Congruence subscale: Add together items 18, 19, and 20 and divide by 3.

## APPENDIX C

### Consent Script

Dear UM students,

Hello! My name is Mary McKennon Pierce and I am conducting research for my senior thesis with the Sally McDonnell Barksdale Honors College. Dr. Valliant from the Department of Nutrition and Hospitality is assisting me with my research to compare intuitive eating habits in student-athletes and students at the University of Mississippi.

The survey below will ask you to answer questions about your attitudes and behavior regarding food and eating habits. By answering these questions, you will contribute to the recent research about intuitive eating habits.

There are no incentives or benefits to participating in this survey other than providing important information that could help better understand intuitive eating habits in college students, both in the athletic population and student population. Your participation will help further research, since intuitive eating, specifically in athletes, is a new topic of research and needs to be expanded upon.

All answers in the survey will be anonymous and confidential, so there will be no way to determine your identity through the survey.

Best,

Mary McKennon Pierce

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