

IMPACT OF ATTACHMENT ON THE RELATIONSHIP BETWEEN EMOTION-
REGULATION, BODY DISSATISFACTION, AND COMPULSIVE EXERCISE IN FEMALE
COLLEGE ATHLETES

by

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Guided by attachment theory and social comparison theory, this study examines the impact of attachment on the relationship between emotion regulation, body satisfaction, and compulsive exercise in female college athletes. According to which team the individual was a member of, the 118 participants were grouped into either aesthetic sport participating (e.g. cheerleading, cross country) or non-aesthetic sport participating (e.g. softball, basketball). Analyses revealed that emotion regulation scores moderated the relationship between attachment and body satisfaction scores. Body satisfaction was significantly, negatively correlated with compulsive exercise scores indicating that the higher an individual's body satisfaction, the lower their compulsive exercise score. Despite predictions, there were no significant differences between aesthetic sport participating athletes and non-aesthetic sport participating athletes, which further emphasizes the importance of the role of attachment and emotion regulation on body satisfaction scores in female athletes. This research provides salient implications for college athletes, college coaches, athletic training staff members, and parents of athletes. Suggestions for practice and future research are presented in the discussion.

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TABLE OF CONTENTS

TITLE PAGE.....	i
COPYRIGHT PAGE.....	ii
SIGNATURE PAGE.....	iii
ACKNOWLEDGEMENTS.....	iv
LIST OF TABLES.....	vii
CHAPTER 1: INTRODUCTION.....	1
CHAPTER 2: LITERATURE REVIEW.....	4
Body Dissatisfaction.....	4
College Athletes.....	7
Female Athletes.....	7
Aesthetic and Non-aesthetic sports.....	8
Compulsive Exercise.....	9
Emotion Regulation and Coping.....	10
Theoretical Framework.....	12
Emotion Regulation and Attachment.....	12
Body Dissatisfaction and Compulsive Exercise.....	13
Present Study.....	14
CHAPTER 3: METHODS.....	16
Research Design and Procedure.....	17
Sample.....	18
Measures.....	19
Demographics.....	19
Attachment.....	19
Emotion Regulation.....	20
Body (Dis)Satisfaction.....	20
Compulsive Exercise.....	21

Data Analysis.....	22
CHAPTER 4: RESULTS.....	24
Demographics.....	24
Correlations.....	25
Path Analysis.....	26
Aesthetic Sports Participants.....	26
Non-Aesthetic Sports Participants.....	27
CHAPTER 5: DISCUSSION.....	30
Attachment and Body Satisfaction.....	30
Body Satisfaction and Compulsive Exercise.....	31
Attachment and Compulsive Exercise through Body Satisfaction.....	32
Emotion Regulation on Attachment and Body Satisfaction.....	32
Conclusion.....	33
Implications.....	34
Limitations.....	35
Future Research.....	37
REFERENCES.....	39
APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL.....	47
APPENDIX B: SURVEY QUESTIONS.....	48

LIST OF TABLES

1. Participant Demographics.....	24
2. Correlation Matrix.....	26
3. Standard and Unstandardized Parameter Estimates for Factor Loadings and Paths.....	29

CHAPTER 1: INTRODUCTION

As human beings, it is in our nature to be social. Part of the social aspect of being a human is the innate tendency to constantly compare aspects of ourselves, such as our appearance and our worth, to those around us. When individuals feel as though their appearance and their worth is less than those they are surrounded by, they experience negative feelings such as body dissatisfaction. The feeling of body dissatisfaction has been experienced by most people in some way, shape or form, during their lifetime. Athletes, particularly competitive female athletes, have been identified as a population who are particularly at-risk for the negative impacts of body dissatisfaction (Swami, Steadman, & Tovée, 2009). Not only do these females experience the sport environment pressures about their weight and appearance, but they also experience the intense societal pressure to obtain specific weight and appearance goals (Thompson, Petrie, & Anderson, 2017). Due to this information, female collegiate student-athletes are a particularly at-risk population for the negative impacts body dissatisfaction can have on an individual.

Certain factors have been noted in the research to protect individuals from the negative impacts of body dissatisfaction. Having a secure attachment to a caregiver and developing healthy emotion-regulation skills are two noted protective factors (Muehlenkamp, Bagge, Tull, & Gratz, 2013; Murphy, Laible, Augustine, and Robeson, 2015). Murphy et al.'s (2015) study indicated that adolescents that reported secure attachment relationships with their parents had higher emotional development, as well as higher levels of emotional regulation, than adolescents who reported insecure attachment. Muehlenkamp et al.'s (2013) study emphasized the importance of healthy emotion-regulation intervention strategies with individuals experiencing low body regard or other negative outcomes. This leads to the implication that individuals with secure attachment to a caregiver are more likely to develop healthy emotion-regulation skills,

which acts as a buffer against negative feelings, such as high body dissatisfaction. Having the ability to regulate emotions in healthy ways also protects against an individual taking a healthy emotion-regulation strategy, such as exercise, and having it evolve into an unhealthy coping mechanism, such as compulsive exercising patterns.

The proposed research aims to evaluate the impact of attachment on the relationships between emotion regulation, body dissatisfaction, and compulsive exercising in female collegiate athletes. Since this population is considered particularly at-risk of experiencing these unhealthy phenomena, this research is key to figuring out how to identify those who could benefit from intervention. Rather than allowing these struggling individuals to “slide under the radar” with the excuse of their sports participation, this will help demonstrate to those working closely with the athletes, such as coaches, athletic training staff, and even parents, how to identify when an individual is transitioning from healthy to unhealthy behavioral patterns. By evaluating the role of attachment and emotion-regulation, new insight may be provided on how athletic departments can provide the best help to their female athletes. This information also has the potential to help athletic training staff to implement more detailed and/or frequent screening of their female athletes.

Due to the significance of attachment on emotion-regulation development, research relating to attachment and emotion-regulation is guided by attachment theory. Attachment is critical for the development of several adaptive skills, including resilience and problem-solving skills, which relates to emotion-regulation (Hegde, n.d.). Researchers have found that individuals with high autonomy, or secure attachment, had the best developmental outcomes (Hegde, n.d.). This demonstrates how critical it is for an individual to have the opportunity to develop a secure attachment to a caregiver, ideally at an early age.

The research surrounding body dissatisfaction and compulsive exercising is guided by the social comparison theory. Social comparison theory addresses humans' innate tendency to engage in comparisons. These comparisons may be direct, or conscious, or indirect, or subconscious. One of the key components of social comparison theory is the self-evaluation comparisons. Individuals use these comparisons to gather information about their perceived standing in relation to those around them (Kraye, Ingledeu, & Iphofen, 2007). These comparisons are made by comparing the individual's perceived attributes, such as worth and physical appearance, in comparison to how they perceive other's worth and physical appearance (Kraye et al., 2008). When the individual feels inferior to those they are comparing themselves to, it leads to a negative view, or a dissatisfaction, of their personal attributes. Due to the personal and societal pressures for female athletes to fit a certain body ideal, social comparison theory plays a huge role in explaining this phenomenon.

CHAPTER 2: LITERATURE REVIEW

Body Dissatisfaction

Body Dissatisfaction is one of the most well-established risk factors of eating disorders, which tends to emerge during adolescence (Bucchianeri, Fernandes, Loth, Hannan, Eisenberg, & Neumark-Sztainer, 2016). Kong and Harris (2015) define body dissatisfaction as, “when there is a mismatch between an individual’s image of his or her own body, particularly body shape and weight, and the body perceived as ideal,” (p. 142). Body dissatisfaction is associated with several adverse phenomena such as drive for thinness, dieting, disordered eating patterns, and the development of clinical eating disorders (Kong & Harris, 2015). Emotion regulation dysfunction can be linked to body dissatisfaction in addition to other harmful psychological coping mechanisms, such as non-suicidal self-harm injury (Muehlenkamp et al., 2012). Teaching and promoting healthy emotion regulation strategies is key to early prevention of harmful psychological disorders. Though this can occur in earlier developmental stages, young adulthood is a period where individuals are trying to form their identity (Wortley & Amatea, 1982). Lack of healthy emotion regulation strategies can force young adults to turn to maladaptive coping mechanisms, simply due to lack of knowledge on how to handle difficult emotions. A critical emotion regulation strategy that was mentioned, or alluded to, in relation to interventions for body dissatisfaction was the concept of “metacognitive acceptance” (Atkinson, & Wade, 2012; Svaldi, & Naumann, 2014). Metacognitive acceptance was found to significantly increase appearance satisfaction, even when emotion dysfunction was controlled for (Atkinson & Wade, 2012). With healthy emotion regulation skills, individuals will be able to cope with the stressful transitions and events of emerging adulthood.

Research shows that parents, particularly mothers, talk more with their daughters about positive emotions and emotional states than with their sons (Premo & Kiel, 2014). Based on this finding, children might be placed at higher risk for developing maladaptive emotion regulation coping strategies in emotionally charged situations. This may be attributed to our society's strict definitions of what is considered appropriate behavior for males and females, even though both experience the same, human emotions. Considering occurrence of body dissatisfaction is repeatedly found to have higher prevalence among adolescent girls when compared to boys, the phenomenon is often overlooked in adolescent boys (Bucchianeri et al., 2016). Sepúlveda et al. (2017) conducted a study evaluating the use of a scale specifically created to explore male body attitudes, rather than using 'female-oriented' scales to measure male body attitudes. The researchers found that emotion regulation dysfunction was related to higher body dissatisfaction for both male and females (Sepúlveda et al., 2017).

That being said, in a study of 496 adolescent girls followed from age 8 to age 20, researchers found that 5.2% of the girls met the DSM-5 criteria for anorexia, bulimia, or binge eating disorder, and when non-specific eating disorder symptoms were included, 13.2% of the girls had suffered from an eating disorder meeting DSM-5 criteria by age 20 (Stice Marti, Shaw, & Jaconis 2010). Blair et al. (2017) found that among females the risk for body dissatisfaction was five times higher than males. The researchers also noticed a trend that "college classification" proved to be a high-risk factor for college freshmen when it came to their body dissatisfaction scores (Blair et al., 2017, p. 11). This research demonstrates how females are at a higher-risk for the negative impacts of body dissatisfaction, and the additional "college student" identity heightens the risk. Blair et al. (2017) attribute this heightened risk to other phenomenon associated with the college transition, such as stress and anxiety.

When the stressful college transition is paired with societal pressure to maintain a specific image, female college students may be overwhelmed with negative emotions that are channeled into intense body dissatisfaction. Overall, females consistently report higher body dissatisfaction scores than men, which has been associated with negative psychosocial effects such as depression and eating disorders (Sepúlveda et al., 2017). Women also face objectifying messages about their appearance from society, particularly from the media, and the people in their lives, such as friends and family (Lev-Ari, Baumgarten-Katz, & Zohar, 2014). Due to how women are socialized, they tend to internalize their self-worth largely based on other's perceptions of them; this leads to the tendency for women to both directly and indirectly compare themselves to others (Lev-Ari et al., 2014).

Bucchianeri et al. (2016) evaluated the relationship between disordered eating, (including measures of body dissatisfaction), and psychological well-being, (including healthy emotion regulation), and found that this link significantly differed across adolescent boys and girls of varying ethnicities. The researchers found body dissatisfaction to be significantly related to psychological well-being (emotion regulation) in all adolescents, regardless of gender and ethnicity. On average, girls' ($M=26.8$) and boys' ($M=25.3$) body dissatisfaction scores were very close. In line with Sepúlveda et al.'s (2017) findings, the researchers found that boys' body dissatisfaction and disordered eating has been overgeneralized to fit the mold of what is considered girls' body dissatisfaction and disordered eating (Bucchianeri et al., 2016). These studies shed light on the idea that gender stereotyping human concepts, not gender concepts, are hindering how children are taught healthy emotion regulation skills, how they are diagnosed, and how they are helped once an issue has been flagged. Sepúlveda et al. (2017)'s study explains the need for female-oriented and male-oriented scales because both girls and boys are experiencing

body dissatisfaction, but it can be manifested in diverse ways, just as there are societal body image and emotion expression pressures specific to women and men, respectively.

College Athletes

College athletes are considered to be a particularly at-risk population when it comes to body dissatisfaction. One study found that over the course of a five-month season, 90% (18 out of 20) athletes scored a clinical eating disorder diagnosis, or their status moved from no diagnosis to subclinical diagnosis (Thompson et al., 2017). This demonstrates how simply being “in season” caused several individuals to drastically change their diet, exercise, and eating habits, so much that it led to a clinical or subclinical diagnosis. College athletes not only feel pressure from society, friends, and family to look a certain way, but they have added pressure from their coaches, athletic training staff, and teammates. One study found that 59% of the athletes reported having the influence of “hurtful role models” (Arthur-Cameselle & Quatromoni, 2011, p. 10). For example, witnessing a teammate engage in disordered eating habits was a deciding factor for athletes to engage in the same or similar unhealthy habits themselves. Sport pressures have been discovered to have a major influence on both dietary restraint and body satisfaction (Anderson, Petrie, & Neumann, 2012). Anderson et al. (2012) found that the higher an athlete rated their sport pressure, the more likely the athlete was to report higher instances dietary restriction and lower body satisfaction. Sport pressures also included comments made by coaches to players about “losing weight” or “being thin,” as well as pressure from teammates to be thin (Anderson et al., 2012).

Female Athletes. Female athletes are even more of an at-risk population for body dissatisfaction and disordered eating behaviors. Johnson, Powers, and Dick (1999) found that over one-third of NCAA Division I female athletes reported both attitudes and symptoms placing them at-risk for

anorexia nervosa. Around 25.5% of female college student-athletes met the criteria for subclinical eating disorder symptoms (Greenleaf, Petrie, Carter, & Reel, 2009). Female college athletes are exposed to societal pressures and the unique pressures of the sport environment. Not only are female college athletes under pressure to meet societal expectations to be thin, but they also feel pressure from the sports environment to fit the female ‘athletic ideal’ (Bell, Donovan, & Ramme, 2016). Studies have shown that females as young as 15 years old resort to unhealthy ways of trying to reach the ‘athletic ideal’ body type (Bell et al., 2016). Bell et al. (2016) researched the relationship between athletic ideal internalization, body dissatisfaction scores, and compulsive exercise in female college students, revealing that athletic ideal internalization directly predicted dieting, compulsive exercising, and bulimic symptoms. The message that reducing weight and/or body fat will enhance athletic performance coupled with the intense societal pressure to look a certain way can have a severe, negative impact on female college student-athletes.

Aesthetic and Non- Aesthetic Sports. Female athletes that participate in leanness-promoting, or aesthetic, sports have higher body dissatisfaction scores than females in other sports, nonleanness-promoting, or non-aesthetic sports, and non-athlete females (Swami et al., 2009). This group of female athletes are at an even more elevated risk of high body dissatisfaction, disordered eating habits, and other maladaptive strategies aimed at fulfilling a certain body ideal. Sports that promote leanness, or aesthetic sports, are those, “usually thought of as ‘appearance’ sports in which the sport participant’s appearance, as well as her sport performance, is being judged,” (Francisco, Narciso, & Alarcão, 2012, p. 1083). Examples of aesthetic sports include dance, gymnastics, swimming, and track. With aesthetic sports, female athletes are trained to believe that a certain body type is necessary for achieving success in their sport. Their ‘sporting

body' is a believed necessity alongside additional pressures to conform to societal ideals of body type, or a 'social body' (Kong & Harris, 2015). For this population, there is overwhelming pressure to look a certain way in order to be successful within the athletic society and to be considered attractive within the social society.

Compulsive Exercise

One coping mechanism that is often presented as a healthy emotion regulation strategy is physical exercise. Goodwin, Haycraft, and Meyer (2012) explored the connection between adolescent emotion regulation, compulsive exercise attitudes, and eating attitudes. Goodwin et al. (2012) explains that individuals exhibiting disordered eating symptoms (i.e. high body dissatisfaction) commonly use exercise to regulate their negative emotions. Once this exercising behavior has shifted to a compulsion, and exercise is used to avoid negative affect, it is considered a maladaptive coping strategy. Goodwin et al. (2012) better explained this concept as an unhealthy cycle: the individual finds themselves stuck in a cycle of, "both wanting to exercise again to repeat the positive post-exercise mood improvements," and "feeling they have to exercise to avoid negative emotions associated with the absence of exercise (p. 700)."

From an early age, athletes are bombarded with the idea of being "faster, stronger, better." Competitive athletes take this concept and do whatever it takes to reach the next level. Athletes are expected to be concerned with their physical fitness and diet, which makes it especially difficult to detect disordered eating habits in athletes, given that they have the built-in excuse of using their sport as the reason for their eating and exercise habits. Due to this, identifying compulsive exercise can be difficult. Holland, Brown, and Keel (2014) explain that exercise as a compulsion is, "exercise to prevent or reduce feelings of distress, exercise despite illness or injury, and preoccupation with exercise (p. 116)." This definition of compulsive

exercise helps to support Goodwin et al.'s (2012) explanation of the cycle individuals compulsively exercising find themselves stuck in. The Compulsive Exercise Test has been a helpful tool in identifying unhealthy patterns in female athletes, identifying 92% of female athletes with a confirmed eating disorder diagnosis (Plateau, Arcelus, & Meyer, 2017). Drive, self-control, and dedication to an exercise routine are all essential to being a successful athlete, but when these characteristics start to be more of a compulsion, that is when serious negative physical and psychological impacts can affect the individual.

Researchers found an association between compulsive exercise and emotion regulation in adolescents, demonstrating its use as an emotion regulation strategy (Plateau et al., 2017). Significant correlations between internal dysfunctional emotion regulation strategies and compulsive exercise in adolescents demonstrate the phenomenon that exercise is being taken too far, and now being used in a dysfunctional way (Goodwin et al., 2012). Among young adults, a strong and secure attachment to a caregiver can act as a buffer against taking adaptive mechanisms so far that they become maladaptive; it provides them with the support they need to seek out help when faced with situations where they are not sure how to effectively cope and/or manage.

Emotion Regulation and Coping

Emotion regulation, a critical piece of healthy psychological development, is best defined as any strategy aimed at, "initiating, inhibiting, or modifying an individual's positive or negative emotional experience or expression," (López-Pérez, Wilson, Dellaria, & Gummerum, 2016). It is the caregiver's responsibility to help guide children's emotional development early in life to foster a healthy emotional foundation. Development of healthy emotion regulation strategies at an early age predicts more positive outcomes for children once they become adolescents, while

deficits in emotion regulation are known to be a factor in the development of both externalizing and internalizing psychological disorders. Since young adults are in a period of transition in all developmental domains, they still rely heavily on modeling and social referencing to learn emotion regulation strategies from their caregivers (Bariola, Gullone, & Hughes, 2011). It is important to provide children with a variety of healthy emotion regulation strategies at an early age (Bariola et al., 2011). This ensures that once individuals reach young adulthood, they have developed a variety of adaptive emotion regulations skills that will help them healthily cope with the stressors faced during this next stage of life.

Disordered eating habits are often associated with maladaptive emotion regulation skills in individuals (Muehlenkamp, Peat, Claes, & Smits, 2012). Muehlenkamp et al., (2012) found that emotion dysregulation was associated with disordered eating behaviors. Having the ability to recognize emotional states and know how to adaptively deal with them, particularly negative emotions and states, can be a protective factor for individuals, particularly when in stressful periods of development. Svaldi and Baumann's (2014) study, demonstrated that positive emotion regulation interventions (e.g. acceptance) rather than maladaptive emotion regulation interventions (e.g. rumination) produced a significant increase in participants' appearance and weight satisfaction scores. Having healthy emotion-regulation skills can help at-risk populations, such as female college athletes, to combat unhealthy coping skills, including compulsive exercising. The ability to cope with negative emotions or feelings, such as high body dissatisfaction, can be critical. Ensuring female athletes are able to self-regulate their emotions in healthy ways sets them up for a healthy relationship with their sport and themselves.

Theoretical Framework

Emotion Regulation and Attachment. The literature surrounding emotion regulation draws on support from attachment theory. Attachment theory is used as the framework to predict if adaptive emotion regulation strategies are cultivated in children as they develop into adolescents and, eventually, young adults. Bowlby, a leading theorist on attachment, regarded human attachment as similar to that of the attachment behaviors of animals in the sense that as babies, we want to be as close to our caregiver as possible for safety, security, and comfort reasons (Crain, 2016). Humans have an innate sense to want to stay as close as possible to our caregivers, typically our mothers, and without this innate ability, it is likely that our species would not have survived (Crain, 2016). Based on Bowlby's insights, Ainsworth categorized parent-child attachment into four main categories which are secure, insecure-avoidant, insecure-ambivalent, and disorganized/disoriented attachment styles. Secure attachment, the most ideal form of attachment, is developed when the primary caregiver is attentive and sensitive to the signals and needs of the child (Crain, 2016). This kind of attachment developed early in life can act as a protective factor throughout an individual's lifespan.

Kullik and Peterson (2012) found that insecure attachment style and emotion regulation had a negative relationship, such that the more insecure an individual's attachment style, the lower the individual's ability to adaptively regulate their emotions. Lev-Ari et al. (2014) found that adolescent girls with insecure attachment styles had higher body dissatisfaction scores and drive for thinness scores. Another study found that emotion regulation difficulties accounted for the variance in high disordered eating and body dissatisfaction scores versus lower scores (Sepúlveda et al., 2017). Researchers have found that the higher an individual rates family connectedness, the higher their body satisfaction score will be (Francisco, et al., 2012). Not only

does attachment to a parent or caregiver play a role, but attachment to coaches can also have a positive impact on athletes. Kong and Harris (2015) noted that the risk of eating disorders, which can include, but are not limited to, high body dissatisfaction, compulsive exercise habits, and disordered eating patterns, can be reduced in “supportive sporting and coaching environments” (p. 143). These studies demonstrate that attachment style can have a salient effect on an individual’s ability to regulate their emotions in a healthy way, therefore influencing the likelihood for adverse psychological conditions, such as body dissatisfaction.

Body Dissatisfaction and Compulsive Exercising. In explaining the connection between body dissatisfaction and compulsive exercise among young adults, social comparison theory becomes the guiding framework. Social comparison theory explains the human innate need to assess “personal worth and subjective status” to objective standards (Lev-Ari et al., 2014, p. 463). When an individual cannot find said objective standards, the tendency is to then resort to comparing themselves to others that are closest to them (Lev-Ari et al., 2014). Researchers have found that women tend to compare themselves to others they perceive to be more physically desirable than themselves, causing their body satisfaction to plummet (Lev-Ari et al., 2014). Social comparisons can be made directly (i.e. consciously) or indirectly (i.e. subconsciously). These direct and indirect social comparisons can be initiated by the individual herself, such as through direct communication about appearance, or by others surrounding her, such as a societal emphasis on weight and body shape.

The mentioned theories are used to explain the relationship between emotion regulation, body dissatisfaction, and compulsive exercise in young adults. The high demands of the sports world coupled with the societal pressures to conform to society’s standards can lead to the internalization of said standards. Female athletes may reach a point of drastically modifying their

personal behaviors to try and meet these unrealistic expectations (Scoffier-Mériaux, Ferrand, & d'Arripe-Longueville, 2017). The social comparison phenomenon has had a particularly detrimental effect on female athletes in recent years due to the growing impact of social media. Swami et al. (2009) found that female track athletes, who are considered aesthetic athletes, reported the highest body dissatisfaction scores and the highest internalization of athletic media messages when compared to their non-aesthetic and non-athlete counterparts. Social comparisons are a central piece of the development of eating disorders, which are defined by key symptoms like high body dissatisfaction (Fay & Lerner, 2013). Athletic-ideal body shape internalization was also found to directly predict compulsive exercise and other behaviors related to high body dissatisfaction (Bell et al., 2016).

Present Study

The present study aims to evaluate the relationship between emotion regulation skills, body dissatisfaction scores, and compulsive exercise behaviors. Using attachment theory and social comparison theory as a framework to guide the current study will provide insight into the high prevalence of body dissatisfaction and compulsive exercise occurring in female athletes, particularly those of the collegiate level. This research will help both individuals with professional and personal working relationships with female collegiate athletes to identify at-risk individuals and know how to intervene before an individual reaches a level of clinical diagnosis, and if they are at a level of clinical diagnosis, to step in and get them the help they need. This research will be guided by the following questions about female collegiate student-athletes in aesthetic versus non-aesthetic sports: (i) Does attachment have an influence on body dissatisfaction scores? (ii) Does body dissatisfaction have an influence on an individual's tendency towards compulsive exercise? (iii) Does attachment have an indirect effect on

compulsive exercise through body dissatisfaction? (iv) Does emotion-regulation ability buffer against the negative effects of insecure attachment? It is hypothesized that: (i) Athletes with lower attachment scores will have higher body dissatisfaction and higher compulsive exercise test scores, (ii) Higher body dissatisfaction scores will increase the likelihood that an individual engages in compulsive exercise behaviors, (iii) Attachment scores will be indirectly associated with compulsive exercise scores through body dissatisfaction, (iv) Emotion regulation skills will buffer against the negative impact of insecure (poor) attachment on body dissatisfaction and compulsive exercise, and (v) Athletes in aesthetic sports will have generally higher body dissatisfaction and compulsive exercise scores than athletes who participate in non-aesthetic sports.

CHAPTER 3: METHODS

This research study was conducted in order to explain the impact attachment has on female athletes' ability to regulate their emotions, and, in turn, how this has an impact on their body dissatisfaction scores and compulsive exercise test scores. Exploring this association provided insight to the complicated relationship between attachment, emotion regulation, body dissatisfaction, and compulsive exercise. Knowing more about how to detect and intervene to help female college student-athletes, a population considered particularly at-risk, can help to strengthen emotion regulation skills, lower body dissatisfaction scores, and lower compulsive exercising tendencies.

This study was guided by the following questions: (i) Does attachment have an influence on body dissatisfaction scores? (ii) Does body dissatisfaction have an influence on an individual's tendency towards compulsive exercise? (iii) Does attachment have an indirect effect on compulsive exercise through body dissatisfaction? (iv) Does emotion-regulation ability buffer against the negative effects of insecure attachment? The following predictions were made based on the above research questions: (i) Athletes with lower attachment scores will have higher body dissatisfaction and higher compulsive exercise test scores, (ii) Higher body dissatisfaction scores will increase the likelihood that an individual engages in compulsive exercise behaviors, (iii) Attachment scores will be indirectly associated with compulsive exercise scores through body dissatisfaction, (iv) Emotion regulation skills will buffer against the negative impact of insecure (poor) attachment on body dissatisfaction and compulsive exercise, and (v) Athletes in aesthetic sports will have generally higher body dissatisfaction and compulsive exercise scores than athletes who participate in non-aesthetic sports.

Research Design and Procedure

Due to the fact that this study is explanatory in nature, online surveys were used to gain initial information about the strengths of the associations being evaluated. This study compared two groups of participants, those participating in aesthetic sports and those who participate in non-aesthetic sports. Convenience sampling was used during this study to recruit a sample that fits the inclusion criteria. Upon IRB approval, the surveys were distributed via email from the East Carolina University Athletic Training Room and the primary researcher. To compensate the participants for their time, they were eligible to be entered into a drawing to receive one of four gift cards to a local restaurant, FreshVibes worth \$15.

The participants were recruited through the East Carolina University Athletic Training Room. The staff provided a list of the students eligible to participate based on the inclusion criteria. The participants had to be female, at least 18 years old, and a member of one of the East Carolina University varsity athletic teams. Participants were invited via email to take part in an online survey, which included an informed consent document to which participants had to consent prior to beginning the survey. In addition to the email invitations, the primary investigator set up group information sessions with the participants to give a brief overview of the research and explain that participation is voluntary and anonymous. The informed consent document included the purpose of the study and the methods that were employed to collect and analyze the data. The document explained the details of the participants' confidentiality, and the principal investigator's contact information if participants need additional information. The online secure software Qualtrics was used to collect participants' survey responses. Qualtrics did not connect the participant's identities and interactions remained confidential. To further maintain confidentiality, data was securely stored based on IRB guidelines and was only

accessible to approved researchers. Data collection began at the start of the January 2019 and ended early March 2019.

The survey first asked brief demographic questions. Once the demographic questions were answered, the participants moved on to respond to questions regarding attachment, body dissatisfaction, coping skills, and compulsive exercise habits. Upon completion of the survey, their responses were automatically saved. The researchers sent periodic email reminders to the group of participants. The athletic training room staff and the researchers also followed up with individuals who had not completed the survey through email as it got closer to the end of the collection period.

Sample

The sample of this study was made up of the current female student-athletes at East Carolina University. To be considered for the study, participants must have identified as female and be at least 18 years old, to consent to participate for themselves. Participants must also have been a current member of one of the East Carolina University National Collegiate Athletic Association (NCAA) regulated varsity sports teams. For the purpose of this study, being a member of the cheerleading or dance team counted as being an athlete, though, the cheerleading and dance teams are not considered NCAA regulated sports. The participants were divided into groups of aesthetic and non-aesthetic sports based on their team involvement. Of the 12 female athletic teams that were sent the assessment, seven of them were considered lean (aesthetic) and five were considered non-lean sports based on the current literature. For this study, the following sports were considered aesthetic sports: cheerleading, dance, cross country, swimming and diving, golf, tennis, and volleyball. The following sports were considered non-aesthetic: basketball, lacrosse, soccer, softball, and track and field.

Measures

As mentioned above, the purpose of the current study was to explain the role of attachment on the relationship between emotion regulation skills, body dissatisfaction scores, and compulsive exercise behaviors. To evaluate this, the following research questions were examined: (i) Does attachment have an influence on body dissatisfaction scores? (ii) Does body dissatisfaction have an influence on an individual's tendency towards compulsive exercise? (iii) Does attachment have an indirect effect on compulsive exercise through body dissatisfaction? and (iv) Does emotion-regulation ability buffer against the negative effects of insecure attachment?

Demographics. To gain demographic information about the sample, the initial section of the survey addressed this information. This section included questions about the following: age, year in school (i.e. freshman, sophomore, etc.), race/ethnicity, sport involved in, education focus (major), and relationship status. Since this study only focuses on female athletes, sex does not need to be included. This section also included questions relating to the participant's relationship with their primary caregiver, such as, "Who is your primary caregiver?" and, "Who in your life do you feel the closest relationship with?" Participant responses to these questions were compared to their score on the attachment survey. Next, the participants responded to measures addressing attachment (Inventory of Parents and Peer Attachment-Revised (IPPA)), body dissatisfaction (Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4). and compulsive exercise (Compulsive Exercise Test (CET)).

Attachment. Attachment was evaluated using the Inventory of Parents and Peer Attachment-Revised (IPPA) survey. The survey consists of 25 self-report questions on a 5-point, Likert-type scale, ranging from 'almost never or never true' to 'almost always or always true.'

This survey has three subscales, mother, father, and peers, but for this study, only the parental subscale will be used. This survey uses the same questions to evaluate maternal and paternal attachment, so ‘mother/father’ will be replaced with ‘caregiver.’ For example, instead of, “My mother/father understands me,” it will be, “My caregiver understands me.” This measure is considered to have high reliability (Cronbach’s alphas ranged from .66 to .86) and convergent validity (Gullone & Robinson, 2005). For this study, the attachment scale had excellent internal reliability ($\alpha = .936$).

Emotion Regulation. Emotion-regulation skills were evaluated using the Emotion Regulation Questionnaire. This measure is a self-report measure used to assess emotion-regulation strategies. It is a 10-item survey on a 7- point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree.’ The items in this measure are divided into categories which address the following aspects of an individual’s emotional life: emotional experience and emotional expression (Gross & John, 2003). Each of these categories falls under one of the two subscales, either cognitive reappraisal emotion-regulation strategies or expressive suppressive emotion-regulation strategies (Gross & John, 2003). Participants will be responding to statements such as, “I control my emotions by not expressing them,” and report on how strongly they agree with the statement. Previous research has reported as having acceptable reliability for both the reappraisal strategies ($\alpha = .79$) and for suppression strategies ($\alpha = .73$) (Gross & John, 2003). In this study, the emotion regulation survey was calculated as an overall score and had acceptable internal reliability ($\alpha = .707$).

Body (Dis)satisfaction. To score body dissatisfaction, this study used the internalization subscales of the Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4). The full 22- item self-report measure is on a 5-point Likert-type scale ranging from ‘definitely

disagree' to 'definitely agree.' The participants respond based on the extent to which they agree with the questions, such as, "I want my body to look very thin," and "I spend a lot of time doing things to look more athletic." The SATAQ-4 subscales measure aspects related to internalization and pressures (Thompson et al., 2015). The subscales are divided up in the following ways: internalization thin/low body fat, internalization muscular/athletic, pressures family, pressures peers, pressures media. The research is guided by social comparison theory, so this measure is particularly helpful to address the participants' perception of social pressures from family, peers, and media. The SATAQ-3 was updated to the SATAQ-4, to specifically account for muscularity versus thinness internalization and domains of sociocultural pressures (Thompson et al., 2015). Thompson et al. (2015) reported that this measure has a high reliability for all scales and subscales, ($\alpha \geq 0.85$). We computed mean scores for the internalization subscales ($\alpha = .855$) with higher scores indicating higher body satisfaction.

Compulsive Exercise. Compulsive exercise was measured by the Compulsive Exercise Test, in which a higher global score, or based on the sum of the means of the five subscales, indicates greater degree of compulsive exercise (Taranis, Touyz, & Meyer, 2011). This measure is a 24-item self-report survey based on a 6-point Likert scale ranging from 'never true' to 'always true.' This survey aims to assess the core features of excessive exercise including compulsivity, affect regulation, weight and shape driven exercise, and exercise rigidity (Taranis et al., 2011). The measure's subscales are as follows: Avoidance and rule driven behavior ("I feel extremely guilty if I miss an exercise session"); Weight control exercise ("I exercise to improve my appearance"); Mood improvement ("I feel happier and/or more positive after I exercise"); Lack of exercise enjoyment ("I enjoy exercising"); and Exercise rigidity ("I follow a set routine for my exercise sessions"). The CET has demonstrated both good internal consistency for the

individual subscales ($\alpha \geq 0.71$) and global scores ($\alpha \geq 0.85$) (Plateau et al., 2014). For this study, the internal consistency for the compulsive exercise measure was good ($\alpha = .849$).

Data Analysis

MPlus (Version 6.11; 2012) was used to test structured equation model that will assess the main variables of this study, which include attachment, emotion-regulation, body dissatisfaction, and compulsive exercise (Mallette, Futris, Brown, & Oshri, 2015; Richardson, Futris, Mallette, & Campbell, 2018). With this analysis, the variables and their relationships were evaluated simultaneously, rather than as separate entities. Descriptive statistics and zero-order correlations were conducted to gain initial information about the sample and their responses using SPSS software. Then, the structured equation model was tested. Guided by Richardson et al. (2018), the independent variable was attachment, the dependent variable was compulsive exercise, and the moderator was body dissatisfaction. It was predicted that the relationship between attachment and compulsive exercise patterns will be mediated by degree of body dissatisfaction. It was predicted that emotion-regulation skills will act as a moderator both in the association between attachment and compulsive exercise pattern and the association between attachment and body dissatisfaction score.

The structured equation model data was then grouped into two subgroups, aesthetic sport participants and non-aesthetic sport participants, and evaluated using a group comparison to see if there are any statistically significant differences based on sport participation. These analyses were used to answer the following research questions addressing the experiences of female collegiate student athletes in aesthetic versus non-aesthetic sports: (i) Does attachment have an influence on body dissatisfaction scores? (ii) Does body dissatisfaction have an influence on an individual's tendency towards compulsive exercise? (iii) Does attachment have an indirect effect

on compulsive exercise through body dissatisfaction? (iv) Does emotion-regulation ability buffer against the negative effects of insecure attachment?

CHAPTER 4: RESULTS

Demographics

Demographic information was analyzed prior to hypotheses testing. Relevant descriptive statistics are reported in Table 1. Only female collegiate athletes were eligible to participate in the study, so the results are based on the responses female athletes. The majority of the sample reported their race/ethnicity as White ($n= 85, 72\%$). The mean age of the participants was 19.68 years old ($n=118$). Much of the sample reported their year in school status as being a freshman ($n=38, 32.2\%$) or sophomore ($n= 35, 29.7\%$). Aesthetic sports participants made up 42.4% ($n=50$) of the sample and non-aesthetic sports participants made up 57.6% ($n= 68$) of the sample. Just over one third ($n=46, 39\%$) of the participants reported being in a relationship. Almost the entire sample ($n=115, 97.5\%$) reported that their primary caregiver was their biological parent(s). About half ($n=60, 50.8\%$) of the sample reported the person they had the closest relationship with was their parent/caregiver. The second highest reported figure for closest relationship was significant other ($n=22, 18.6\%$), with sibling as a close third ($n=21, 17.8\%$). Of the 114 participants who reported which individual they answered the attachment questions about, 105 (92.1%) reported answering the questions about a biological parent.

Table 1.

Participant Demographics (n=118)

VARIABLE	N	PERCENTAGE
YEAR IN SCHOOL		
Freshman	38	32.2
Sophomore	35	29.7
Junior	20	16.9
Senior	22	18.6
Graduate Student	3	2.5

RACE/ETHNICITY		
White	85	72.0
Black or African American	28	23.7
Other	5	4.2
SPORTS TEAM MEMBERSHIP		
Aesthetic Sports		
Dance	7	5.9
Cheerleading	13	11.0
Volleyball	6	5.1
Golf	3	2.5
Swimming and Diving	11	9.3
Tennis	3	2.5
Cross Country	7	5.9
Non-aesthetic Sports		
Basketball	9	7.6
Lacrosse	20	16.9
Softball	7	5.9
Track and field	22	18.6
Soccer	10	8.5
PRIMARY CAREGIVER		
Biological Parent(s)	115	97.5
Anyone other than Biological Parent(s)	3	2.5

Correlations

Pearson's correlations were conducted to evaluate the strength of the relationships between the variables under study (see Table 2). There was a statistically significant relationship between attachment score and body satisfaction for non-aesthetic sport participants ($p < .05$), but not for aesthetic athletes. For both aesthetic and non-aesthetic athletes, those with higher attachment scores reported higher body satisfaction scores. Emotion regulation significantly moderated the relationship between attachment and body satisfaction for both aesthetic ($p < .05$) and non-aesthetic ($p < .05$) participants. This means participants that reported very low attachment scores, but high emotion-regulation skills had higher body satisfaction scores than participants who reported low attachment and low emotion regulation skills. The highest body satisfaction scores were from participants who reported both high attachment and high emotion regulation skills (see Figures 1 and 2). Body satisfaction and compulsive exercise had a

statistically significant negative relationship for both aesthetic ($p < .001$) and non-aesthetic ($p < .001$) sport athletes. This means, the lower the individual's body satisfaction score, the higher their compulsive exercise score. Between the two groups, aesthetic and non-aesthetic, there were no statistically significant differences. Regardless of sport participation, emotion-regulation was the key variable among the evaluated relationships.

Table 2. *Correlation Matrix (n = 118)*

Construct	Range	Mean	SD	1	2	3	4
1. Attachment	2.28–5	4.15	0.52	--			
2. Body Satisfaction	1– 4.10	4.10	0.70	-.053	--		
3. Compulsive Exercise	1.83–5.17	5.17	0.66	-.110	-.421***	--	
4. Emotion Regulation	3.10–6.30	4.69	0.70	.352***	.025	.008	--

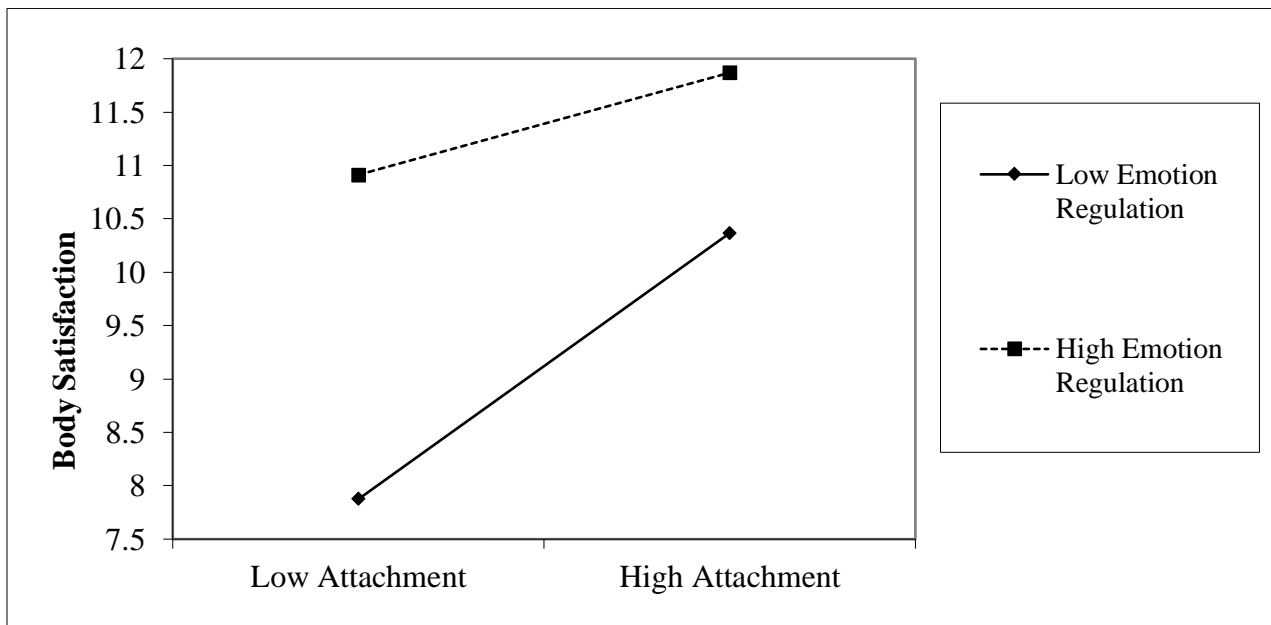
Note. *** $p < .001$; ** $p < .01$; * $p < .05$

Path Analysis

Aesthetic Sports Participants. The path analysis testing the direct associations between attachment, body satisfaction, and compulsive exercise indicated a non-significant, positive association between attachment and body satisfaction ($\beta = 1.43$; $p = .059$). Though this was not significant, it was very close to being significant, and warrants further investigation. There was also a direct effect between body satisfaction and compulsive exercise ($\beta = -.371$; $p = .000$). This suggests that the higher an individual's body satisfaction, the lower their compulsive exercise score. Next, the unstandardized estimate of the indirect effect of body satisfaction on compulsive exercise was $-.648$, (95% CI = .05; -1.35) suggesting that the association between attachment on compulsive exercise was not significantly mediated through emotion regulation.

When emotion regulation was added to the model as a moderator, results indicated that the association between attachment and body satisfaction was moderated by emotion regulation ($\beta = -2.83$; $p = .047$; See Figure 1). In other words, when female athletes report high emotion regulation skills, they are more likely to report lower levels of body dissatisfaction and higher attachment scores. Model fit was adequate ($\chi^2/df = 10$, RMSEA = 0.058 (90% CI = 0.00-0.161, CFI = .922, SRMR = .095).

Figure 1. The moderating effect of emotion regulation on the association between attachment and body satisfaction for aesthetic sport participants. Data are based on unstandardized regression coefficients.



Non-aesthetic Sports Participants. The path analysis testing the direct associations between attachment, body satisfaction, and compulsive exercise indicated a significant, positive association between attachment and body satisfaction ($\beta = 1.13$; $p = .043$). There was also a direct effect between body satisfaction and compulsive exercise ($\beta = -.448$; $p = .000$). This suggests that the higher an individual's body satisfaction, the lower their compulsive exercise score. Next, the unstandardized estimate of the indirect effect of body satisfaction on compulsive exercise was

-.648, (95% CI = .05; -1.35) suggesting that the association between attachment on compulsive exercise was not significantly mediated through emotion regulation.

When emotion regulation was added to the model as a moderator, results indicated that the association between attachment and body satisfaction was moderated by emotion regulation ($\beta = -2.12$; $p = .032$; See Figure 2). In other words, when female athletes report high emotion regulation skills, they are more likely to report lower levels of body dissatisfaction and higher attachment scores. Model fit was adequate ($\chi^2/df = 10$, RMSEA = 0.058 (90% CI = 0.00-0.161, CFI = .922, SRMR = .095).

Figure 2. The moderating effect of emotion regulation on the association between attachment and body satisfaction for non-aesthetic sport participants. Data are based on unstandardized regression coefficients.

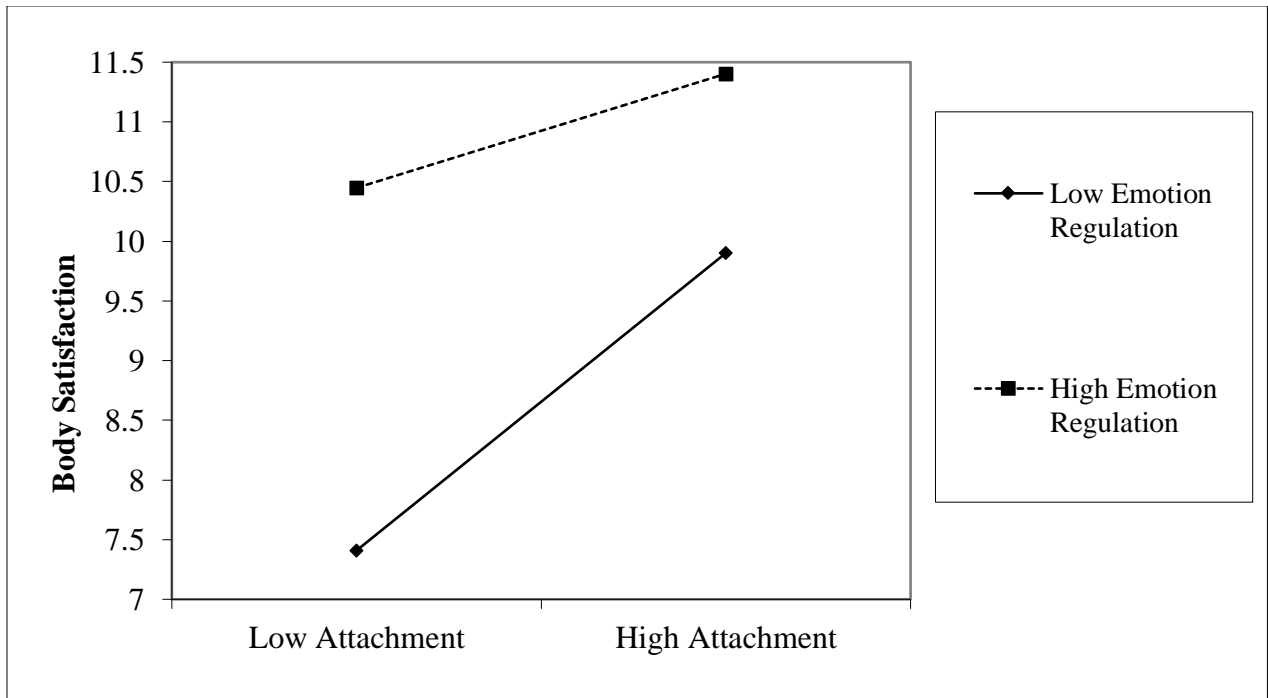


Figure 3. Structural Equation Model of the association between attachment, body satisfaction, and compulsive exercise as moderated by emotion regulation ($n=118$). * $p<0.05$, ** $p<0.00$.



Note. Boxed scores indicate aesthetic sports and non-boxed scores indicate non-aesthetic sports.

Table 3. Standard and Unstandardized Parameter Estimates for Factor Loadings and Paths.

	β	SE	p	B	SE	p
<u>Aesthetic</u>						
Attach→BS	1.43	0.76	0.06	1.67	0.86	0.05
BS→CE	-0.37	0.08	0.00	-0.38	0.08	0.00
ER→BS	1.85	0.92	0.04	1.67	0.79	0.04
Attach x ER→BS	-2.83	1.42	0.05	-0.39	0.19	0.04
<u>Non-Aesthetic</u>						
Attach→BS	1.13	0.56	0.04	1.69	0.86	0.05
BS→CE	-0.45	0.09	0.00	-0.38	0.08	0.00
ER→BS	1.51	0.69	0.03	1.67	0.79	0.04
Attach x ER→BS	-2.12	0.99	0.03	-0.39	0.19	0.04

Note. Attach= attachment; BS= body satisfaction; CE= compulsive exercise ER= emotion regulation.

CHAPTER 5: DISCUSSION

This study evaluated the impact of attachment on the relationship between emotion regulation, body dissatisfaction, and compulsive exercise in female college athletes. Guided by attachment theory, this research sought to evaluate if high emotion regulation skills, typically linked with secure attachment, could be a protective factor against the negative effects of high body dissatisfaction (Kullik & Peterson, 2012). Social comparison theory's concept that humans have an innate need to assess their "personal worth and subjective status" to objective standards helped provide a context for the relationship between body dissatisfaction and compulsive exercise tendencies among female athletes (Lev-Ari et al., 2014, p. 463). The current research support previous research that has found that emotion regulation difficulties accounted for higher body dissatisfaction scores versus lower scores, demonstrating the importance of developing healthy emotion regulation skills (Sepúlveda et al., 2017). Due to the immense pressures caused by the social comparison phenomenon, female athletes are particularly at risk for having high body dissatisfaction leading to drastic behavioral modifications, including compulsive exercise, just to try and meet unrealistic body expectations (Blair et al., 2017; Scoffier-Mériaux et al., 2017). Not only does this population experience pressures from societal expectation, but they also experience athletic ideal expectations from the sports environment pressures increasing the amount of emphasis placed on achieving a particular body type (Thompson et al., 2017).

Attachment and Body Satisfaction

When assessing the impact of attachment on body dissatisfaction scores, the researchers grouped the participants according to their status as either an aesthetic sport participating athlete or a non-aesthetic sport participating athlete. More secure attachment has been found to be correlated with higher emotion regulation skills, which act as a protective factor against negative

feelings, such as high body dissatisfaction (Muehlenkamp et al., 2013; Murphy et al., 2015). The current study found that attachment had a statistically significant positive impact on body satisfaction scores for non-aesthetic athletes, but not for aesthetic athletes. Though attachment did not have a significant impact on body satisfaction for aesthetic athletes, it is still important to recognize healthy attachment promotes higher body satisfaction. The results of this study supported the hypothesis that athletes with lower attachment scores will have higher body dissatisfaction.

Body Satisfaction and Compulsive Exercise

The results of this study support the prediction that higher body dissatisfaction scores will increase the likelihood that an individual engages in compulsive exercise behaviors. For both aesthetic and non-aesthetic female athletes, body satisfaction scores were significantly, negatively correlated with compulsive exercise score, meaning the higher an individual's body satisfaction, the lower their reported compulsive exercise score. Using concepts from social comparison theory, the results align with previous research that high body dissatisfaction scores increase an individual's tendency towards engaging in compulsive exercising patterns (Bell et al., 2016; Scoffier-Mériaux, Ferrand, & d'Arripe-Longueville, 2017). The prediction that athletes participating in aesthetic sports will have generally higher body dissatisfaction and compulsive exercise scores than those participating in non-aesthetic sports was not supported by this study, which is contradictory to previous research (Swami et al., 2009). Swami et al.'s (2009) research found that female athletes in aesthetic sports have higher body dissatisfaction than their non-aesthetic counterparts, yet this research indicates there were not statistically significant differences between the two groups' overall body satisfaction scores. This finding demonstrates the need to further evaluate aesthetic and non-aesthetic athletes' body satisfaction and

compulsive exercising patterns. Research could be used to explore whether aesthetic sports participating athletes' body satisfaction scores are increasing, or non-aesthetic sports participating athletes' body satisfaction scores are decreasing, and in turn, more similar to aesthetic sport athletes.

Attachment and Compulsive Exercise through Body Satisfaction

It was predicted that attachment would have an indirect association with compulsive exercise scores through body satisfaction. Although this hypothesis was not supported by the data, there was a marginally significant indirect effect found in this study. This finding warrants further investigation to evaluate the association between attachment and compulsive exercise through body satisfaction to further tease out how body satisfaction functions within this relationship.

Emotion Regulation on Attachment and Body Satisfaction

The impact of healthy emotion regulation ability was the most salient finding of the current study. Participants that reported low (insecure) attachment, but high emotion regulation, had similar body satisfaction scores than participants that reported high attachment, but low emotion regulation scores. The individuals that reported both high emotion regulation and high attachment had the highest body satisfaction scores for both groups of athletes. These findings support the hypothesis that emotion-regulation ability does buffer against the negative effects of insecure attachment. This supports Bariola et al.'s (2011) emphasis on teaching children healthy emotion regulation strategies at an early age. This finding aligns with research that suggests healthy emotion regulation skills can help foster healthier body satisfaction and exercising relationships (Goodwin et al., 2012; Muehlenkamp et al., 2012; Svaldi & Baumann, 2014).

Conclusion

This research aimed to highlight the benefits of developing positive emotion regulation skills to protect against the negative impact of high body dissatisfaction and compulsive exercise in female college athletes. When the participants were compared as separate groups based on their sport involvement, interesting trends arose. Surprisingly, sport involvement did not provide any statistically significant results, which contradicts Swami et al.'s (2009) finding that aesthetic sport athletes have higher body dissatisfaction scores than non-aesthetic athletes. The most important factor when evaluating the impact of attachment on emotion regulation, body dissatisfaction, and compulsive exercise was the emotion regulation component. High emotion regulation skills moderated the relationship between attachment and body satisfaction, which, in turn, had a statistically significant impact on compulsive exercise scores. The current study highlights how though it is important to develop secure attachment, it is critical to develop healthy emotion regulation skills to protect against the negative effects of body dissatisfaction (Buccianeri et al., 2016; Murphy et al., 2015).

The current study directly aligns with Krayer et al.'s (2008) explanation of the social comparison theory; individuals self-evaluate by comparing their physical appearance to those around them. Anderson et al. 2012 reported that sport pressures have a major influence on both dietary restraint and body satisfaction in athletes. Female athletes are influenced by their sport pressures and societal pressures to reach an 'ideal' body type (Bell et al., 2016). Kong and Harris (2015) supported this claim by finding that that pressures to conform to both the 'sporting body' and 'social body' ideals can be overwhelming. The current study supports the claim that developing healthy emotion regulation skills can help female college athletes to cope with societal and sport pressures, as opposed to their behaviors shifting to being compulsive

(Goodwin et al., 2012; Holland et al., 2014). The current study found that body satisfaction scores were significantly, negatively associated with compulsive exercise scores, which directly aligns with Bell et al.'s (2016) findings that internalization of athletic ideals predicted compulsive exercising in female college students.

Implications. This research provides important insights to prevention measures that colleges can take in order to better serve their athletes. Athletic training staff and team doctors can use this information to support the importance of implementing more mental health related assessments into their preparticipation exams. Rather than just testing for preparticipation physical health, staff can implement screenings for body satisfaction, emotional well-being intakes, and compulsive exercising patterns in attempts to give better understanding of the athletes' overall health. Implementing a preparticipation assessment that evaluates athletes' body satisfaction, emotion regulation skills, and compulsive exercise patterns can help athletic trainers to figure out which athletes may be more at risk than others and be more cautious and aware of possible problems before they reach a critical level.

Scheduled check-ins throughout the academic school year would also promote open lines of communication between staff and athletes. Check-ins would also help staff to be able to catch any changes in athletes' scores, so that they are able to intervene in a sufficient amount of time. This would require athletic training staff and team doctors, as well as coaches and other staff who work closely with athletes, to educate themselves on the topics of emotion regulation, body satisfaction, and compulsive exercise. Check-ins and more educated athletic training staff would also help to establish trusting relationships between athletic training staff and athletes, promoting a safe space to ask for help. Since most athletic training staff and coaching staff are not equipped to appropriately intervene in severe situations, such as a possible clinical eating disorder

diagnosis, it is critical these individual also become educated on what resources their university has available to student athletes.

This research also provides important implications for athletes. These findings indicate the importance of developing strong attachments and healthy emotion regulation skills. If strong attachments are not made, it is even more critical for individuals to develop healthy emotion regulation skills in order to protect against negative outcomes, such as high body dissatisfaction and compulsive exercising patterns. This also brings to light the high frequency of athletes struggling with high body dissatisfaction and unhealthy relationships with exercise. It is important for athletes to feel safe with their coaching staff, teammates, and athletic training staff. Establishing trusting relationships with these support systems can help promote a safe space to express that they are struggling and want help.

Finally, this research provides important information to parents. All parents should strive to develop secure attachments with their children and teach them healthy emotion regulation skills. Parents of athletes should be particularly aware of their child's emotion regulation ability, and work with them to practice healthy emotion regulation skills in order to decrease the likelihood that their child will use exercise as a maladaptive coping strategy. Parents of athletes should be educated about body satisfaction, compulsive exercise, and other eating disorder related phenomena because of the high frequency of these within athletics.

Limitations. Participants were only surveyed from East Carolina University, a medium sized state university, so for these results to be more generalizable, participants should be surveyed from not only larger universities, but also more universities. Participants were also all females. In order to get a better idea of collegiate athletes as a whole population, both males and females should be surveyed to provide a more representative sample of both. The participants

were recruited as a cross-sectional convenience sample, so they were not randomly selected to participate in this study. Due to the fluctuation of student-athletes being added and/or taken off the teams' rosters, there was not a set number of female athletes to recruit. Only female athletes who were currently holding a roster spot at the time of data collection were eligible for participation.

The data was collected through self-report surveys. This may influence the honesty of the participants' responses. Though the responses were anonymous, due to the sensitivity of the topic, participants may not have felt comfortable truly reflection on their attachment, emotion-regulation, body dissatisfaction, and compulsive exercise scores. Since the data was collected by relying on the participants' complete honesty, the data may be skewed due to the nature of self-report methods. Participants' attitudes towards the variables may fluctuate over different time periods, so obtaining a solid representation of their perceptions may be difficult. Of the 235 eligible participants, there were 119 participants that actively participated in the survey. Though this was about 50.6% of the targeted population, this is a small sample size in comparison to how many female collegiate athletes currently holding roster spots. The NCAA reported that in the 2017-2018 academic year, there were 216, 378 active female college athletes (Schwarb, 2018). Based on the large number of female collegiate athletes, much more research is necessary to evaluate how to successfully and accurately support this population.

This research only evaluated the role of caregiver attachment on the relationship between emotion regulation, body satisfaction, and compulsive exercise. Previous research has found that teammates and coaches can have a significant impact on athletes' unhealthy relationship with body image and exercising (Anderson et al., 2012; Arthur-Cameselle & Quatromoni, 2011). Athletes' relationship with their coaching staff and their teammates can have significant impact

on an individual's body satisfaction and exercising patterns, whether it be positive or negative. Coach and teammate attachment and influence on athletes should be investigated.

Future Research. Future research in this area should focus on the impact of implementing emotion-regulation education with student-athletes. Not only is this important with female athletes, as the current study reflects, but also with male student athletes. Researchers should also pursue research evaluating the impact of attachment on emotion-regulation, body dissatisfaction, and compulsive exercise patterns in male collegiate athletes. Male athletes often go unnoticed when it comes to body satisfaction and compulsive exercise, but they are just as much at risk for high body dissatisfaction and unhealthy behaviors (Sepúlveda et al., 2017). There is a lack of research looking into these topics regarding male athletes, or males in general, so more research would be beneficial for both males struggling with body dissatisfaction and compulsive exercise and the professionals caring for them.

Researchers should conduct experimental research involving the implementation of emotion-regulation interventions to test whether or not the strategies help in a pre and posttest set up with experimental and control groups. Researchers should also examine implementing more mental health assessments and check-ins with student athletes. College is a stressful time for all young adults, but student athletes feel immense pressures to perform in the classroom as well as in their sport. Typically, mental health takes the back seat to physical health when dealing with athletics, which is ultimately detrimental to both the mental and physical health of the athletes. Research evaluating the benefits of assessing and intervening to care for the mental health of athletes is critical in promoting a safe, healthy environment. Longitudinal research evaluating the transitional period from high school to college sports could help provide insight to how attachment relationships, emotion regulation strategies, and body satisfaction changes during

critical transition periods. This would also help create prevention measures for those working with incoming college athletes, rather than waiting for a major issue to arise before providing interventions to college athletes.

The SATAQ-4 measures both internalizations and pressures. Using the subsections for pressures family, pressures peers, pressures media, and researchers can compare external pressures to internal pressures (internalization thin/low body fat, internalization muscular/athletic) and how those influence an individual's body satisfaction. This should also be used to investigate the unique experiences of aesthetic versus non-aesthetic athletes and their body image. Due to the growth of social media, researchers should investigate the impact of social media on athletes' body satisfaction. Researchers could also compare the impact of social media and the impact of direct social pressures to see which have a stronger impact on individuals.

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APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL

Notification of Exempt Certification

From: Social/Behavioral IRB

To: [Joelle Arrante](#)

CC: [Eboni Baugh](#)

Date: 12/19/2018

[UMCIRB 18-002892](#)

Re: IMPACT OF ATTACHMENT ON THE RELATIONSHIP BETWEEN EMOTION-REGULATION, BODY DISSATISFACTION, AND COMPULSIVE EXERCISE IN FEMALE COLLEGE ATHLETES

I am pleased to inform you that your research submission has been certified as exempt on 12/18/2018. This study is eligible for Exempt Certification under category #2.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418
IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418

APPENDIX B: SURVEY

Body Satisfaction and Compulsive Exercise Survey

Start of Block: Default Question Block

Q1 Hello! You have been contacted about your possible participation in an upcoming research study. You are eligible for this study due to your status as a current member of either one of the East Carolina University Varsity sports teams or as a current member of the cheerleading or dance team. Upon consent to participate, you will answer questions regarding emotion-regulation, body satisfaction, and exercising patterns. If you choose not to participate, you will be taken to the end of the survey. All of your responses will remain completely anonymous. Altogether, this survey should take approximately 30 minutes. Once the survey is completed, you will have the chance to submit your name to be entered into a drawing to win a \$15 FreshVibes gift card. Thank you for your time and consideration!

I consent to participate in the following survey

- Yes, I consent to participate (1)
- No, I do not consent to participate (2)

Skip To: End of Survey If Hello! You have been contacted about your possible participation in an upcoming research study. Y... = No, I do not consent to participate

Q2 Please indicate your current age.

- 18 (1)
 - 19 (2)
 - 20 (3)
 - 21 (4)
 - 22 (5)
 - 23 (6)
 - 24 or older (7)
-

Q3 Please indicate which year in school best describes your status.

- Freshman (1)
 - Sophomore (2)
 - Junior (3)
 - Senior (4)
 - Graduate Student (5)
-

Q4 Please indicate which race and/or ethnicity you most closely identify with.

- White (1)
 - Black or African American (2)
 - American Indian or Alaska Native (3)
 - Asian (4)
 - Native Hawaiian or Pacific Islander (5)
 - Hispanic (6)
 - Other (7) _____
-

Q5 Please indicate which sports team you are currently a member of.

- Softball (1)
 - Basketball (2)
 - Golf (3)
 - Lacrosse (4)
 - Swimming and Diving (5)
 - Track and Field (6)
 - Cross Country (7)
 - Tennis (8)
 - Dance (9)
 - Cheerleading (10)
 - Volleyball (11)
 - Soccer (12)
-

Q6 Please indicate which department or college you are currently studying under.

- Thomas Harriot College of Arts and Sciences (1)
 - College of Allied Health Sciences (2)
 - College of Business (3)
 - College of Education (4)
 - College of Engineering and Tachnology (5)
 - College of Fine Arts and Communication (6)
 - College of Health and Human Performance (7)
 - College of Nursing (8)
 - Undecided (9)
-

Q7 Please indicate which best describes your relationship status.

- Single (1)
 - Married (2)
 - In a relationship (3)
 - Cohabiting (4)
 - Divorced (5)
 - Widowed (6)
-

Q8 Please indicate which best describes your primary caregiver (who is the person responsible for MOST of the care).

- Biological Mother (1)
 - Biological Father (2)
 - Adoptive Mother (3)
 - Adoptive Father (4)
 - Foster Mother (5)
 - Foster Father (6)
 - Grandmother (7)
 - Grandfather (8)
 - Other family member (ex. aunt, uncle, etc.) (9)

 - Other (10) _____
-

Q9 Please indicate who in your life you feel you have the closest relationship with.

- Parent/Caregiver (1)
 - Friend (2)
 - Significant Other (3)
 - Mentor Figure (4)
 - Sibling (5)
 - Other (6) _____
-

Q12 We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neutral (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
1. When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I keep my emotions to myself. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. When I am feeling positive emotions, I am careful not to express them. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I control my emotions by not expressing them. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. When I want to feel more positive emotion, I change the way I'm thinking about the situation. (7)

8. I control my emotions by changing the way I think about the situation I'm in. (8)

9. When I am feeling negative emotions, I make sure not to express them. (9)

10. When I want to feel less negative emotion, I change the way I'm thinking about the situation. (10)

Q13 Now we should like to ask you some question about exercise. Listed below are a series of statements regarding exercise. Please read each statement carefully and circle the number that best indicates how true each statement is of you. Please answer all the questions as honestly as you can.

	Never True (1)	Rarely True (2)	Sometimes True (3)	Often True (4)	Usually True (5)	Always True (6)
1. I feel happier and/or more positive after I exercise. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I exercise to improve my appearance. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I like my days to be organised and structured of which exercise is just one part. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I feel less anxious after I exercise. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I find exercise a chore. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. If I feel I have eaten too much, I will do more exercise. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. My weekly pattern of exercise is repetitive. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I do not exercise to be slim. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. If I cannot exercise I feel low or depressed. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. I feel extremely guilty if I miss an exercise session. (10)

11. I usually continue to exercise despite injury or illness, unless I am very ill or too injured. (11)

12. I enjoy exercising. (12)

13. I exercise to burn calories and lose weight. (13)

14. I feel less stressed and/or tense after I exercise. (14)

15. If I miss an exercise session, I will try and make up for it when I next exercise. (15)

16. If I cannot exercise I feel agitated and/or irritable. (16)

17. Exercise improves my mood. (17)

18. If I cannot exercise, I worry that I will gain weight. (18)

19. I follow a set routine for my exercise sessions e.g. walk or run the same route, particular exercises, same amount of time, and so on. (19)

20. If I cannot exercise I feel angry and/or frustrated. (20)

21. I do not enjoy exercising. (21)

22. I feel like I've let myself down if I miss an exercise session. (22)

23. If I cannot exercise I feel anxious. (23)

24. I feel less depressed or low after I exercise. (24)



Q14 Next, we would like you to ask you about your feelings towards your appearance. The following questions reflect an your attitude towards your appearance and body satisfaction. Please read each of the following items carefully and indicate the number that best reflects your agreement with the statement.

	Definitely Disagree (1)	Mostly Disagree (2)	Neither Agree Nor Disagree (3)	Mostly Agree (4)	Definitely Agree (5)
1. It is important for me to look athletic. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I think a lot about looking muscular. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I want my body to look very thin. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I want my body to look like it has little fat. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I think a lot about looking thin. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I spend a lot of time doing things to look more athletic. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I think a lot about looking athletic. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I want my body to look very lean. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I think a lot about having very little body fat. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I spend a lot of time doing things to look more muscular. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q15 Answer the following questions with relevance to your Family (include: parents, brothers, sisters, relatives):

	Definitely Disagree (1)	Mostly Disagree (2)	Neither Agree Nor Disagree (3)	Mostly Agree (4)	Definitely Agree (5)
11. I feel pressure from family members to look thinner. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I feel pressure from family members to improve my appearance. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Family members encourage me to decrease my level of body fat. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Family members encourage me to get in better shape. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q16 Answer the following questions with relevance to your Peers (include: close friends, classmates, other social contacts):

	Definitely Disagree (1)	Mostly Disagree (2)	Neither Agree Nor Disagree (3)	Mostly Agree (4)	Definitely Agree (5)
15. My peers encourage me to get thinner. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. I feel pressure from my peers to improve my appearance. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. I feel pressure from my peers to look in better shape. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I get pressure from my peers to decrease my level of body fat. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q17 Answer the following questions with relevance to the Media (include: television, magazines, the Internet, movies, billboards, and advertisements):

	Definitely Disagree (1)	Mostly Disagree (2)	Neither Agree Nor Disagree (3)	Mostly Agree (4)	Definitely Agree (5)
19. I feel pressure from the media to look in better shape. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. I feel pressure from the media to look thinner. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I feel pressure from the media to improve my appearance. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. I feel pressure from the media to decrease my level of body fat. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q18 Lastly, this section of the survey questionnaire asks about your relationships with important people in your life; your mother, your father, and your close friends. Some of the following statements ask about your feelings about your primary caregiver or the person who has acted as your primary caregiver. If you have more than one person acting as your caregiver (e.g. a biological mother and a step-mother) answer the questions for the one you feel has most influenced you. Please read each

statement and choose the one response that tells how true the statement is for you now.

	Almost Never or Never True (1)	Not Very Often True (2)	Sometimes True (3)	Often True (4)	Almost Always or Always True (5)
1. My caregiver respects my feeling. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I feel my caregiver does a good job as my caregiver. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I wish I had a different caregiver. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. My caregiver accepts me as I am. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I like to get my caregiver's point of view on things I'm concerned about. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I feel it's no use letting my feelings show around my caregiver. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. My caregiver can tell when I am upset about something. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Talking over my problems with my caregiver makes me feel ashamed or foolish. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. My caregiver expects too much from me. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<p>10. I get upset easily around my caregiver. (10)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>11. I get upset a lot more than my caregiver knows about. (11)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>12. When we discuss things, my caregiver cares about my point of view. (12)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>13. My caregiver trusts my judgment. (13)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>14. My caregiver has her own problems, so I don't bother her with mine. (14)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>15. My caregiver helps me to understand myself better. (15)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>16. I tell my caregiver about my problems and troubles. (16)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>17. I feel angry with my caregiver. (17)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>18. I don't get much attention from my caregiver. (18)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. My caregiver helps me to talk about my difficulties. (19)

20. My caregiver understands me. (20)

21. When I am angry about something, my caregiver tries to be understanding. (21)

22. I trust my caregiver. (22)

23. My caregiver doesn't understand what I'm going through these days (23)

24. I can count on my caregiver when I need to get something off my chest. (24)

25. If my caregiver knows something is bothering me, he/she asks me about it. (25)

Q19 In the previous section, you were asked to answer questions about your most influential caregiver. Please indicate which of the following best describes who you chose to answer the caregiver questions about.

- Biological Mother (1)
- Biological Father (2)
- Adoptive Mother (3)
- Adoptive Father (4)
- Foster Mother (5)
- Foster Father (6)
- Grandmother (7)
- Grandfather (8)
- Other family member (ex. aunt, uncle, etc.) (9)

- Other (10) _____

End of Block: Default Question Block
