Attachment Anxiety and Avoidance: Relationship to Body Image and Exercise Behavior

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ATTACHMENT ANXIETY AND AVOIDANCE: RELATIONSHIP TO
BODY IMAGE AND EXERCISE BEHAVIORS

by

Kathryn Louise Brown

Abstract of a Dissertation
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ABSTRACT

ATTACHMENT ANXIETY AND AVOIDANCE: RELATIONSHIP TO
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This study was designed to investigate the role of attachment anxiety and avoidance in predicting persons’ body image, body appreciation, and obligatory exercise behavior. Two hundred and twenty eight participants (100 men and 128 women) completed the Relationship Scales Questionnaire (RSQ; Griffin & Bartholomew, 1994), Multidimensional Body-Self Relations Questionnaire (MBSRQ; Cash, 2000), Body Appreciation Scale (BAS; Avalos et al., 2005), and Obligatory Exercise Questionnaire (OEQ; Pasman & Thompson, 1988). Results provided at least partial support for many of the hypotheses. The current study replicated results from previous research pertaining to the relationship between attachment and body image. However, the results suggest that attachment relates to body image differently in men than in women. For men, only attachment anxiety was related to body image, whereas for women body image was associated with both attachment anxiety and avoidance. Obligatory exercise was not strongly related to attachment in either men or women. Health evaluation was a very important factor in body image for men and women in relation to both attachment anxiety and avoidance.
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CHAPTER I

INTRODUCTION

Disordered eating is a serious problem in the mental health field (Chavez & Insel, 2007; Kaplan, 2007; Mann, Tomiyama, Westling, Lew, Samuels, & Chatman, 2007; Park, 2007; Powell, Calvin, & Calvin, 2007; Striegel-Moore & Bulik, 2007; Wilson, Grilo, & Vitousek, 2007; Wonderlich, Joiner, Keel, Williamson, & Crosby, 2007). Not only are eating disorders associated with significant levels of anxiety, depression, and obsessive thoughts about food, but, depending on severity, they may also lead to irreversible damage to the body, and in some cases, death. According to the Diagnostic and Statistical Manual of Mental Disorders, Forth Edition, Text Revised (DSM-IV-TR; American Psychiatric Association, 2000) many women have begun to develop subclinical eating disorders, which may escalate to more serious problems. Eating disorders have the highest rate of mortality among the psychological disorders for health related reasons and also because of the higher rate of suicide among individuals with eating disorders (Chavez & Insel, 2007; Park, 2007). Park notes that the risk for suicide in individuals with eating disorders is 50 times that of the general population.

Distorted body image is a clinical feature of eating disorders (DSM-IV-TR, 2000). Wonderlich et al. (2007) describe a transdiagnostic approach that assumes anorexia nervosa, bulimia nervosa, and eating disorder not otherwise specified share the same core psychopathology, including shape and weight concerns and low self-esteem. According to Thompson (1996), a number of correlational studies have found an association of body image problems and eating disorder disturbance. Body image is a construct that includes all of these concepts as well as overall self-concept, depression, and anxiety (Cash,
Thériault, & Annis, 2004; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). One area of recent attention has been the role of exercise in body image satisfaction and disordered eating (Cox & Orford, 2004; Klein, Bennett, Schebendach, Foltin, Devlin, & Walsh, 2004; Rosa, DeMello, Negrao, & DeSouza-Formigoni, 2004). Contemporary researchers in the field have proposed that both maladaptive eating and maladaptive exercise behaviors and attitudes are developed as a way of coping with these feelings (Guidano & Liotti, 1983; Hausenblas & Fallon, 2002; Sharpe, Killen, Bryson, Shisslak, & Taylor, 1998).

For example, Guidano and Liotti (1983) suggested that one of the most common underlying difficulties in women with eating disorders has to do with emotional expression. These authors report that, in most cases, there is a common antecedent where the individual experiences an unpleasant feeling he or she finds difficult to express, but ultimately, describes as “emptiness.” Controlling one’s weight becomes a means of distraction from these feelings of emptiness. As the emptiness and the problematic eating behavior increase, the family interaction is influenced. Often, family members try to convince the person to normalize his or her eating behavior, which usually has the opposite effect. This individual then feels misunderstood and intruded upon, and reacts by continuing the abnormal eating behavior. This cycle often repeats and repeats, and according to Guidano and Liotti, the individual often withdraws more and more from family and friends. Because of this, others may find it difficult to become close, further fueling the individual’s perception of emptiness and/or loneliness. Guidano and Liotti summarized this cycle:
Possibilities of abstract thinking usually exist, but they are seldom and confusedly applied to the self or to interpersonal relationships. Patients keep on demanding *concrete* and continuous proofs, for example, of their partner's affection; they place much importance on their looks as a means of interpersonal attraction and at the same time say they want to be loved “for what they are” and not because of their looks; and they claim they are not satisfied with themselves, apparently referring to relatively abstract aspects commonly known as “character” or “personality,” and then the only definite reason they can give for their dissatisfaction is the physical aspect—“too fat.” (p. 285)

This excerpt describes how these clients often resist being defined by their looks while simultaneously relying on them to “test” those that might try to form a relationship with them.

Although the current study is focused on the constructs of body image and obligatory exercise behavior rather than individuals that meet diagnostic criteria for an eating disorder, body image difficulties and excessive exercise may be a pathway to more serious problems such as an eating disorder. Thus, it may be assumed that similar emotion regulation and interpersonal patterns are evident (though to a lesser extent) in individuals with body image problems and/or who engage in maladaptive exercise behavior. Consistent with the work of Guidano and Liotti (1983) as well as others, this research posits that this cycle of emotional and interpersonal patterning is best understood through an attachment theory framework.

Attachment theory may provide a useful conceptual framework to understanding how some individuals with distorted body image may interpret the world around them.
Though attachment theory is typically used to describe how an infant and caregiver come to bond and how that affects later development (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1982) it can also be useful in understanding individual differences in adult behavior and emotion regulation. Understanding the possible role of attachment differences in the development of individuals that exhibit symptoms such as maladaptive eating and maladaptive exercise could have implications for how these symptoms developed as well as for treatment. In the literature review that follows, a review of the history and development of attachment theory is first presented followed by a review of contemporary research on body image. Next there will be a proposed rationale for how individual differences in attachment may be related to body image, disordered eating and exercise behaviors. Last, the specific hypotheses and purpose of this study will be provided.
CHAPTER II

REVIEW OF RELATED LITERATURE

Attachment Theory

Attachment theory is a conceptual framework that may also provide the preliminary foundation for the construction of a larger metaperspective for the integration of many theories and models (Lopez, 1995). Attachment theory is principally concerned with the role that enduring bonds (attachments) play in an individual's life course. According to Lyddon (1995) attachment joins biological, cognitive, affective, and social learning theories together to describe the dynamics of the self over the lifespan. In addition to this, attachment research involves testing predictive relationships between an individual's attachment security and adjustment in various domains (e.g. romantic relationships, friendships, work, etc.) (Lyddon, 1995). The discussion of attachment theory will begin with a brief description of the evolution of attachment theory, then a discussion of how the theory of attachment has been extended to explain the nature of adult attachment, and finally, how this theory could be tied to body image and obligatory exercise.

Ainsworth and Bowlby (1991) describe the origins of attachment theory. According to their account, they began their work separately but with very similar areas of interests. Bowlby was originally interested in how children were differentially affected by long periods without maternal care in comparison to those children who had not experienced such absences. He was convinced that there was clinical significance of real-life events in the course of child development. He chose separation as a variable because it was on record, whereas dysfunctional family interaction had no adequate records at the
time. Ainsworth began by working under her advisor, Blatz. He was developing what was called security theory, which was influenced by the psychoanalytic oral tradition.

Bowlby, on the other hand, was influenced by Konrad Lorenz's work on imprinting (Ainsworth & Bowlby, 1991). This led Bowlby to then delve into the ethological literature. Bowlby found the descriptions of the proximity seeking birds that had become imprinted on the mother similar to that of the behavior of young children. He also found the idea of a strong social bond without oral gratification intriguing. Later, Ainsworth and Bowlby began to work together, with Bowlby developing the theory and Ainsworth beginning to generate empirical evidence. Bowlby proposed that a baby's attachment came about through a repertoire of genetically based behaviors that matured at various times from birth to several months of age, and became focused on the principal caregiver, usually the mother. Included in the repertoire of genetically based behaviors were crying, sucking, smiling, clinging, etc. He emphasized the active nature of attachment behavior, contrasting it with the passive conception of dependence. Traditional theory had made such dependent behaviors necessary in infancy but undesirable in later years, but Bowlby's new theory likened it to eating or sexual behavior. Attachment was conceptualized as a component of human behavioral equipment that had the biological function of protection throughout life, not just infancy.

Ainsworth began her empirical work by studying Ganda babies to gain empirical support for the theory (Ainsworth & Bowlby, 1991). Ainsworth found that the babies actively searched for contact with mother. This was in direct contrast with the Freudian theory of the oral phase, which included a passive narcissistic infant. Based on her observations, she divided the babies into three groups: securely attached, insecurely
attached, and nonattached. Insecurely attached babies cried a lot even when the mother was present. Securely attached babies cried little unless mothers were absent or seemed about to leave. She found that the nonattached babies were left alone for long periods of time. It was years after having begun a second longitudinal study and later developments of Bowlby’s attachment theory, that the full findings of the Ganda study were published. Ainsworth then became involved in a study of 15 infant-mother pairs. These pairs were contacted before the baby’s birth and data collection proceeded for a year. Visits were made every 3 weeks from 3 to 54 weeks after the baby’s birth. Each visit lasted about 4 hours, resulting in about 72 hours of observation altogether from each dyad. At the end of the baby’s first year, baby and mother were introduced to a 20-minute laboratory protocol known as the strange situation (Ainsworth & Bowlby, 1991).

The strange situation study became a landmark study in the field of attachment theory. The strange situation was originally designed for research exploration of normative processes, but became a quick method of assessment of infant-mother attachment (Ainsworth & Bowlby, 1991). The longitudinal data and the strange situation together yielded important information regarding the development of attachment in infancy. The data showed that mothers who consistently responded promptly to the crying infant early in development tended to have infants who (by the end of the first year) cried relatively little and were securely attached. As Bowlby implied from the beginning, close bodily contact with the mother terminated attachment behavior that had been activated (Ainsworth & Bowlby, 1991). By the middle of the first year, babies had clearly become attached, and one of the signs of this was that they began to show distress when mother left the room (separation anxiety). Babies with secure attachment seemed to
have a working model of a mother who is available even though out of sight, and thus came to protest little everyday departures at home. In addition to this, they were more likely than insecurely attached infants to greet mother positively upon reunion instead of a negative response, as the insecurely attached infants were prone to do (Ainsworth & Bowlby, 1991).

Bowlby wrote three volumes on attachment, using Ainsworth’s research to help inform his theory (Ainsworth & Bowlby, 1991). He rejected Freudian drive theory and instead conceptualized behavioral systems as control systems designed to achieve a specified end, activated in certain conditions and terminated in others. He described interactions among systems, for example the infant’s attachment system and the caregiving system of the adult. The second volume dealt with separation. He emphasized that children are genetically predisposed to respond with fear to certain stimuli, such as sudden movement. These natural clues of potential danger, of which one is being alone, activate either escape behavior or attachment behavior, and usually both, to promote survival. In this volume he also described anxious attachment, conditions that promote anxious attachment and the intimate relationship of anger to attachment-related anxiety. The third volume described loss. He drew from cognitive psychological concepts and research, pointing out that much sensory input is evaluated quickly and then put into the unconscious as a matter of efficiency. According to Bowlby, this leads to the defense manifested in avoidant children and in the detachment attributable to severe separation experiences. Though the child’s behavior would indicate that the child is unaffected by the separation of his or her mother, measures of the child’s heart rate indicate arousal. Such exclusion may well occur in adults, which could account for the complicated grief
processes. Bowlby intended his contribution to be an updated version of psychoanalytic object-relations theory, compatible with contemporary ethology and evolution theory, supported by research, and helpful for treatment of both children and adults. But developmental psychologists rather than clinicians first adopted attachment theory, having found both traditional psychoanalytic and social learning theory to provide inadequate theoretical and methodological guidelines for research into personality development (Ainsworth and Bowlby, 1991). Ainsworth and Bowlby developed a partnership to create an ethological approach to personality development. The focus of the theory is on intimate interpersonal relations, and does not aspire to address all aspects of personality development. Both authors see attachment theory as open-ended and eclectic (Ainsworth & Bowlby, 1991). Thus, the theory of attachment has three theoretical approaches to the origin and development of the infant-mother relationship, psychoanalytic theories of object relations, social learning theories of dependency (and attachment), and ethologically oriented theory of attachment (Ainsworth, 1969). The important point of overlap between these theories is the origins and development of the infant’s first interpersonal relationship, which is their relationship with the primary caregiver(s) (Ainsworth, 1969).

Attachment Beyond Infancy

In addition to studying how attachment plays a role in infancy, Ainsworth (1989) has also examined how attachment bonds develop beyond the period of infancy. The theory of attachment has been extended from the infant-parent pairs to sexual pair-bonds and their basic components entailing the reproductive attachment and caregiving systems, friendships in childhood and adulthood, and kinship bonds. Ainsworth (1989) asserts that
there is strong evidence that attachment patterns persist over time, and there are cross-
generational influences. The strength of attachment is focused on the basic system of
behaviors that have biological foundations and are species specific. As mentioned
previously, attachment theory is a behavioral system. The behavioral system has the
predictable outcome of keeping an individual in proximity to the principal caregiver, as
well as a few secondary caregivers. The behavioral system includes outward
manifestations and an inner organization rooted in neurophysiological processes. As the
inner organization changes so does the outward behavior. As the infant develops, they
begin to have an attachment towards their parent(s) and a few other familiar faces. This
helps the infant to build expectations of regularities in their life, in other words “working
models” (Bowlby, 1982). These working models include expectations about the physical
environment, attachment figures, and himself or herself (Ainsworth, 1989).

As the child grows to the age of three and four, due to cognitive advances, the
child is able to better communicate and to understand their parents’ plan and/or
motivation (Ainsworth, 1989). The working model in this stage gains stability and the
child is able to tolerate separation from the primary caregiver. In adolescence there is a
hormonal change, which in turn changes attachment. This change leads the person to
begin to search for a peer to form a partnership with to begin the reproductive and
caregiving behavioral systems. The attachment system is also involved in this new
partnership (Ainsworth, 1989). In early adulthood a sense of autonomy is established.
However, this autonomy does not mean there is an end to attachment to the parents, even
after attachment in a sexual-pair has been established this attachment to parents
continues.
Ainsworth (1989) also includes the term affectional bonds that occur throughout the lifespan. These affectional bonds are long lasting, dyadic, and the nature of the relationship between the dyad develops from the total history of the interaction. An affectional bond is defined as “a relatively long enduring tie in which the partner is important as a unique individual and is interchangeable with none other” (Ainsworth, 1989, p. 711). Ainsworth also asserted that an “attachment” is an affectional bond, and as a result is not interchangeable with other people even if there are other people with whom the person is attached.

As an adult engaged in a sexual pair bond, there are three basic behavioral systems involved, reproductive, attachment, and caregiving. Caregiving is activated in two ways, one is giving care to the other partner, and the other is caring for the offspring of the dyad (Ainsworth, 1989). In addition to this, each member of the relationship provides a secure base for the other as well as uses the other as a secure base. In other words, at any given time, each person in the pair acts as the caregiver to the other or seeks care from the other (Crowell & Treboux, 1995). An adult can also be involved in an affectional bond with a friend. The biological underpinning of this is that it is advantageous to have other members of the species around to aid in protection from prey as well as gathering food. These affectional bonds can be more or less enduring as well as context specific whereas others endure despite circumstances that make proximity keeping difficult. Another area of adult attachment may be the bond with siblings and other relatives (Ainsworth, 1989). For example, older siblings on occasion engage in a caregiving role with one or more younger siblings and may be a supplementary attachment figure when separated from the principal attachment figures. The sibling
affectional bond may even result in a very close friendship. The sibling affectional bond may also be characterized by more ambivalent feelings but most are enduring. Bonds with other relatives are also persistent but may be more ambivalent than the bonds established with siblings. The biological explanation for both of these is that one shares more genes with family members so it is advantageous to help them to carry on the genes. In addition to this, there is a shared background and culture that may result in more closeness than would have occurred with friends (Ainsworth, 1989).

Bartholomew (1990) agreed that the basic principle of attachment theory is that early attachment relationships with caregivers provide the prototype for later social relations. Consistent with Bowlby’s notion of working models of self and others, Bartholomew developed a 4-group adult model of attachment based on the intersection of positive and negative working models of self and others. Bartholomew’s initial work involved distinguishing fearful and dismissing styles of attachment. While both groups of individuals avoid intimacy, they do so for different reasons. One group (fearful) avoids intimacy due to a negative view of self that sees themselves as undeserving and another group (dismissing) has a positive view of self that underestimates their level of distress or social needs. The purpose of the study was to conceptualize avoidance of close affectional bonds in adulthood (Bartholomew). Bartholomew asserts that infants are assumed to have an innate tendency to bond with caregivers, however, it is also noted that adults often have control over the degree of attachment to others and differ in both their motivation to become attached and the motivation to remain unattached to others. Bartholomew predicted that avoidance of intimacy could come from either a fear of such intimacy or lack of interest or motivation to become intimate. Thus, adult avoidance can
be conceptualized as “a disturbance in the capacity to form interpersonal attachments,” (Bartholomew, 1990, p. 149) stemming from the internalization of early adverse experiences with caregivers. As such, this internalization becomes the map for later development of affectional bonds. After an examination of the relevant adult attachment literature, Bartholomew concluded that the avoidance characterization may be an inadequate description of what is happening with attachment, because the two groups of people are avoiding attachment for different reasons, one being fear and the other being indifference. In addition to this, it seemed that these differing patterns were seen by different methods of gathering information, interviews were effective in showing the more detached indifference, and self-report methods were effective in showing the fear related to intimacy. To address this, Bartholomew proposed an expansion of the model for children to adults.

Thus, Bartholomew (1990) demonstrated how the working model of the self and other work to create the different attachment styles in adulthood. The four categories created represent prototypes, which no person will absolutely, always fall into each category. Because an individual’s life experience is heterogeneous these prototypes reflect how an individual may react or feel most of the time, not all of the time. Thus, this model is able to reflect the complexity of attachment style. One axis includes the model of the self. This indicates the need for dependence and this need may be high or low. The other axis is the model of other. This characterizes the level of avoidance, which may also be high or low. The first prototype is secure attachment. This prototype is low in both dependence and avoidance. This indicates that individuals in this category are comfortable with intimacy as well as autonomy. They likely received warm and
responsive parenting, which gave rise to a positive model of self and other. The preoccupied attachment style has a high level of dependence and low level of avoidance. This person is likely to have received inconsistent parenting. This is an overly dependent style that constantly seeks approval from other people. Individuals with this attachment style have a negative view of themselves and positive view of others. Thus, they may feel that the caregiver or other person in the relationship may love them, but they feel unworthy of such love. The bottom levels are characterized by high avoidance. These are the two cells proposed by Bartholomew to explain avoidance by adults. A low level of dependence and high level of avoidance characterize the dismissing prototype. This is the case when the attachment system has become deactivated. Individuals in this category have a positive view of selves and negative view of others. In order to maintain a positive self-image, the individual avoids close relationships and comes to value independence. Finally, the fearful attachment prototype is characterized by a negative view of both the self and other. These individuals desire social contact, but experience distrust and fear of rejection. Thus, they avoid social contact as a way to avoid rejection. In this way, these individuals undermine the possibility of forming beneficial relationships that may help to change their internal working models (Bartholomew, 1990).

After proposing this new system of categorizing adult attachment, authors sought to assess the construct further (Bartholomew & Horowitz, 1991; Griffìn & Bartholomew, 1994). Bartholomew and Horowitz developed an interview to yield continuous and categorical ratings of the four attachment styles. The first study recruited same-sex friends. First, each person underwent a 60-minute semi-structured attachment interview. The interview included questions on relationships, loneliness, shyness, trust, etc. and
three independent people rated each subject on four 9-point scales describing the participants' correspondence with each attachment prototype. All participants completed friendship questionnaires, two self-concept measures, a sociability measure, a relationship questionnaire, and an inventory of interpersonal problems (once for themselves and once for their friend). The results of the first study supported the four-category attachment style (Bartholomew & Horowitz, 1991). The second study was designed to replicate the first, as well as extend the proposed models of attachment to the family of origin, and compare the family and peer attachment representations. Participants in the second study were asked about family relationships and peer relationships. Attachment theory is based on the notion that a person’s working models of their caregivers predispose them to particular styles of relating to peers. Thus, the attachment style one has with their caregivers, should also be exhibited in their peer relationships. Bartholomew and Horowitz found moderate correlations between family of origin and peer attachment ratings, suggesting that the four adult attachment styles are meaningfully related. In all, this study suggests that the self- and other- models are separate and important dimensions of an adult’s orientation in close relationships.

Griffin and Bartholomew (1994) further investigated the four prototypes, through the examination of the validity of the self- and other-model dimensions. The authors lament that there is no integrated approach to the measurement of attachment and sought to develop a theory-based measurement of adult attachment. Through confirmatory factor analysis and structural equation modeling the underlying dimensions of the self- and other- models were found to be reliable and valid constructs. Griffin and Bartholomew found strong support for the construct validity of the self- and other- model attachment
dimensions using five different methods of assessment (i.e. self-reports, friend reports, romantic partner reports, trained judges’ ratings of peer attachment, and trained judges’ ratings of family attachment). In addition to this, across studies, the two attachment dimensions demonstrated discriminant, convergent, and predictive validity. The authors conclude that these dimensions seem to underlie many of the attachment measures in use. They assert that these dimensions may be basic “compass points” orienting research in adult attachment and may serve as a unifying framework for organization of the adult attachment literature (Griffin & Bartholomew, 1994).

Scharfe and Bartholomew (1994) subsequently investigated the reliability and stability of the four categories of adult attachment patterns. The purpose of this investigation was to conduct a comprehensive study of the stability and change in adult attachment over a period of eight months. Specifically, the authors sought to clarify whether instability of attachment was due to instability of the construct or of the measurements. Thus, the authors used three methods of measurement (i.e., self-reports, expert ratings, and romantic partner rating) and a sample of established young couples that would be expected to show high levels of stability over an 8-month period. In addition to this, life events were assessed that were expected to influence change. Scharfe and Bartholomew found that adult attachment patterns were moderately stable. Most individuals were classified in the same category at time one and time two, an average of 77% of the time for the interviews, 59% for self-reports, and 70% for the partner reports. When base rates for each category were taken into consideration, the stability of the four attachment patterns was comparable. The interviews were highly reliable and the self- and partner reports were moderately reliable. The lower reliability in the self-report
measurements could have resulted in the underestimation of stability over time. Schrafe and Bartholomew (1994) conclude that the stability and reliability of the adult attachment dimensions are moderately stable.

Pearson, Cowan, Cowan, and Cohn (1993) contend that it is difficult to assess relationships between adult parents and children over time and it is unclear how one may account for both the continuity and/or changes in these relationships. Thus, they investigated the ways that adult attachment theory and the “coherent state of mind” (Pearson et al., p. 606) may further our understanding of the continuity or change in the adult child-parent relationship. In addition to this they examined how the adult child’s depressive symptoms may be connected to his or her current and remembered relationships with parents. Participants were given the Adult Attachment Interview (AAI) and coding system. A coherent state of mind was a score given to the participants after the AAI. A high rating indicated that the narrative had a flow, directly answered questions posed by the interviewer, and included convincing and consistent examples of the parent relationship. A low score consisted of contradictions in the narrative, long pauses, lack of memories as a child, and trouble staying on topic. This interview was the method of measurement for early attachment relationships. A self-report measure was administered to assess both the current adult-child and parent relationships and current depressive symptoms. The participants were rated on their consistency between the reports (Pearson et al., 1993).

Pearson et al. (1993) then created relationship trajectories by using a median split that divided participants into groups that were either high or low on AAI rejection. The trajectories represented memories of participants. From these trajectories came four
categories, consistently positive or negative relations, positive to negative shift, and negative to positive shift. The authors noted that individuals who have shifts (either positive or negative) may be in the process of modifying their working models about relationships. Depressive symptoms were significantly associated with early rejection experiences and current stressful relationships with parents. Overall, there was a significant degree of continuity in relationships (Pearson et al., 1993). This study is important because it showed that the actual attachment style of an individual was not as important as their perception of that relationship. The authors also helped to illustrate the impact of the adult attachment on current feelings, (i.e. depressive symptoms).

In addition to having an early experience and later confirmation of early working models, adulthood attachment patterns are said to contain feedforward mechanisms (Lyddon & Sherry, 2001). According to Lyddon and Sherry, feedforward processes are anticipatory responses to the environment that assimilate into already held beliefs. For example, a person who is paranoid may perceive people whispering in a coffee shop to be confirmation that everyone is talking about them at any given moment in time. This belief is held even if the people whispering do not look at the paranoid individual or even know they are there. These beliefs are inflexible to new information. Attachment theory can be used to view personality disorders as the outcome of faulty working models that have been dominated by maladaptive feedforward processes (Lyddon & Sherry, 2001).

There has been evidence presented by Kraemer (1992) that there is a neurological basis for the attachment of infant and mother that later regulates important features of brain functioning. Furthermore if the attachment process fails or if the caregiver is unreliable, the infant may become socially dysfunctional, which helps to explain the
developmental psychological problems resulting from social attachment disturbance.

Kraemer described the social biology of infant attachment as being the critical behaviors and physiological responses of the caregiver. In other words, the child cries, mother responds. The behaviors of both mother and infant undergo a "generative process; successive changes in interaction depend on those that came before" (Kraemer, 1992, p. 498). If the mother is reliable, the infant forms an image of the regulatory systems and the most basic regulatory mechanisms of the infant are formed in relation to the external object, i.e. principal caregiver. Kraemer (1992) stated that existing theory suggested that the brain's amine systems perform upkeep processes "effected by the norepinephrine system, 'switching' processes effected by the dopamine system and 'gatekeeper' or 'enabling' functions of the serotonin system" (p. 499). Thus, social isolation may produce cell structure changes in the amine systems of the brain and resulting in the dysregulation of these systems. This would support the hypothesis that dysfunctional attachment styles may make a person vulnerable to symptoms that are often linked to specific disorders, such as having a higher rate of depression because of the dysregulation of serotonin.

Kraemer emphasized that there were four principles of brain function that are pertinent to attachment, self-organization, sensorimotor integration, hierarchical processing, and hierarchical control for sensorimotor behavior. If the brain is affected in this way, it would add further support to the theory that adults with particular attachment styles (namely those associated with more isolation or inconsistent parenting styles) may be more vulnerable to psychological problems because of dysregulation of important amine systems such as norepinephrine, dopamine, and serotonin.
Other areas that attachment styles have been investigated include differences in social perception (Collins, 1996). Collins (1996) conducted two studies designed to see how participants reacted to social situations depending on attachment style. In the first study, participants wrote open-ended explanations for hypothetical relationship events and described how they would feel and behave in response to each event. Collins used content-coding to test the hypothesis that adults with different attachment styles perceive and behave differently in relationships. There was strong evidence to support that this was indeed the case. The second study was designed to replicate and extend the first. Study 2 utilized people involved in ongoing dating relationships to test the contributions of attachment style and relationship quality to predicting patterns of explanation (Collins, 1996).

In both studies, individuals rated as having a preoccupied attachment style were most likely to state that they had negative views of their partners and more negative interpretations of the events (Collins, 1996). The explanations also indicated that these individuals had lower self-worth and self-reliance. Secure adults were more likely to provide positive explanations that indicated confidence in their relationship and their partner’s love, were able to interpret situations that limited their importance for the stability of the relationship. Though the preoccupied and secure attachment styles seemed to be consistent with theory, the avoidant groups had an interesting pattern. In the first study, they were likely offering explanations that were similar to the preoccupied group. However, they provided positive explanations that were more similar to the secure participants. Collins offers a number of possibilities for this discrepancy. One possibility is that avoidant adults were only able to draw negative conclusions about a fictional
relationship because to interpret events in their own real-life relationships may jeopardize the relationship itself. In other words, the positive explanation in the second study could be a defensive strategy. Another possible explanation is that the two samples differed in important ways that affected the outcome, especially in light of the fact that the first sample included people both in relationships and single whereas the second study only included people in relationships. The third explanation falls in the possible division of the avoidant group as described by Bartholomew (1990). Collins decided to explore this possibility and reexamined her data. She was able to re-categorize individuals into one of the four attachment styles and found support for the idea that the two avoidant samples differed in their explanations. She found that individuals in the fearful avoidant category were more similar in their answers to adults with the preoccupied attachment style and people in the dismissing avoidant category offered explanations similar to individuals with the secure attachment style. Another aspect of the study was the emotional response of individuals. The emotional response of people depending on attachment style was consistent with the hypotheses. Preoccupied adults consistently responded with negative emotion, whereas secure and avoidant groups responded with lower levels of negative affect. Adults in the avoidant group more often responded that they we unemotional in response to events. In sum, Collins found support for the hypothesis that adults have different working models that affect the way they think, feel, and act in relationships.

Attachment and Other Areas of Psychological Functioning

Adult attachment styles are often used to describe relationships; however, they have also been used to describe other aspects of psychological functioning. Yowell (2006) sought to see if the perceptions of parental bonding behaviors were a mediator
between adult attachment and social support. Yowell asserted that the adult attachment literature has exhibited differences in conceptualizations and assessment. There appears to be two points on which attachment researchers agree on, one is that adult attachment is best conceptualized in terms of dimensions as opposed to categories and the other is that the dimensions of anxiety and avoidance are the most reliable underlying constructs. Due to the inconsistencies mentioned, Yowell decided to investigate the structural relationships among adult attachment (including anxiety and avoidance) perceptions of early parental bonds and perceptions of social support. This study conceptualized adult perceptions of parental care and parental overprotection in childhood, two subcomponents of adult attachment. Overprotection was chosen because it is found to be a significant predictor for anxiety, overall distress, Borderline Personality Disorder, and Antisocial Personality disorder personality traits. Results supported the hypothesis that adult attachment had a significant predictive relationship with perceived social support for both overprotection and anxiety. Thus, this study supports that attachment continues to be an influence in adults as it affects perception of social support (Yowell, 2006).

Aside from its role in social support, adult attachment has also been used to describe maladaptive affect-regulation strategies such as nonintimate sexual behavior, alcohol use, and eating disorders (Brennan & Shaver, 1995). Attachment styles have also been described as a means to combat feelings of anxiety and promote feelings of well-being, in other words, a form of affect regulation. Brennan and Shaver described how nonintimate sexual behavior, alcohol use, and eating disorders help to regulate emotions. These authors contend that nonintimate sexual behavior may be a means to maintain emotional distance from romantic partners, alcohol may help to reduce anxiety as well as
increase positive view of self, and over- or under-eating may also regulate anxiety or
assuage a fear of rejection. These authors add that eating disorders may begin with
attachment insecurity. The results of the study indicate that the avoidant style involved a
denial of attachment needs, distraction through work, failure to recognize feelings,
inability to self-disclose, drinking larger quantities of alcohol and drinking more
frequently to reduce tension, avoiding emotional dependency and commitments in
relationships by engaging in fantasies of other people and affairs, and not seeking
comfort from their partners during an anxiety-producing laboratory situation. The
preoccupied style involved a preoccupation of attachment needs, readily expressing fear
and danger, inappropriate self-disclosure, fearing autonomy, drinking to reduce anxiety,
bingeing under stress, falling in love at first sight, and becoming clingy in relationships.
Secure individuals were characterized as the opposite of all these insecure tendencies,
and being able and willing to trust romantic partners and share ideas and feelings with
them in a flexible and appropriate manner (Brennan & Shaver, 1995).

As mentioned above, attachment theory is derived from three sources,
psychoanalytic object-relations theory, social learning theory, and ethological theory.
From a historical vantage point, Becker, Bell, and Billington (1987) investigated object
relations in college women with bulimia. While this study was largely from a
psychoanalytic perspective, the beginnings of linking attachment style to college women
with bulimia can be seen. Becker et al. concluded from the study that women with
bulimia feel they can perform in social interactions, but may fear rejection in such
interactions. Recently, researchers have been attempting to establish a link between
attachment style and weight-related concerns (Sharpe et al., 1998).
Because body image is of main interest to the current project, there will be further discussion of how various authors have linked body image to attachment style. However, it is important to first examine how other authors have linked similar ideas such as how attachment style may be a risk factor in the development of eating disorders. There had been studies cited by Sharpe et al. (1998) that found insecure attachment to be more prevalent in young girls with eating disorders. Thus, Sharpe et al. wanted to extend on this finding and examine whether this trend was also found in preadolescent and adolescent girls that had not developed eating disorders, but may have exhibited risk factors that put them in danger. Risk factors were assessed through a weight concerns scale, perception of current body shape, and a self-esteem measure. The hypothesis was that insecurely attached girls would have higher weight concerns than their securely attached counterparts. This hypothesis was supported. The young women that were considered insecurely attached were more likely to have weight concerns that placed them at risk for eating disorders. In addition to this, they also reported a lower sense of self-worth and a heightened impression of rejection by others. The authors suggested that “these cognitions may make such individuals reliant on the gaining of acceptance from others and sensitive to society’s standards” (Sharpe et al., p. 42).

The Measurement of Attachment

Now that the history and empirical developments of attachment theory have been reviewed, it is important to examine the ways in which attachment constructs have been operationalized. Lyddon, Bradford, and Nelson (1993) reviewed various measures of adolescent and adult attachment and posited that the most important contribution of attachment measures lie in their ability to reliably and validly assess changes in clients’
working models over time. Crowell and Treboux (1995) also studied adult attachment measures. The authors emphasize the difference in assessing infant and adult attachment. Infant attachment is assessed through behavior that is easy to observe through the infant-parent interaction. However, assessing adult attachment is different. One problem is the difficulty in how to define ways an adult seeks a secure base. Adding to this confusion is the reciprocal nature of adult relationships. That is, it is not always one member serving as the caregiver and the other seeking for care (at least not in a healthy relationship). Crowell and Treboux believe this is the reason researchers have tended to focus on individuals rather than couples and moved towards using language and perception rather than behavioral observations to assess adult attachment. Another reason could be that, as Bartholomew and Horowitz (1991) described previously, the avoidant attachment style may have the same behavioral manifestations but different underlying working models. Crowell and Treboux categorized the measures into three general types, interviews, q-sort assessments, and questionnaires. Crowell and Treboux lament that the attachment perspective has different conceptualizations of attachment, as can be seen in the descriptors of the scales in their review. Each measure is different in focus and correlates, and not all are equally valid. Crowell and Treboux recommend caution when discussing the results of studies using adult attachment measures as there is a shared terminology even if there is not a shared conceptualization. The important message imparted by Crowell and Treboux is that self-report measures typically focus on the feelings and perceptions of the self-in-relationships. These measures are also associated with self-reports symptoms of anxiety and depression as well as many aspects of self-perceived social competence.
Traditionally, the interview method has been thought to be a better indicator of attachment than self-report measures. However, Bartholomew and Moretti (2002) note that self-report questionnaires are moderately related to the interview method and are equally strong indicators of latent attachment dimensions, such as anxiety and avoidance. They posit that self-report measures may be just as accurate as interviews because the questions are diagnostic regarding attachment style, even though they do not assess defensive strategies in the same way as an interviewing method. Thus self-report measures bypass defensive reactions; they assess behaviors and feelings in close relationships that are on the surface of underlying attachment dynamics. For example, a dismissing individual may not be able to report (because of the defensive process) that they downplay the importance of attachment relationships but could report that it is important for them to be self-reliant. In fact, Bartholomew and Moretti state that self-reports of a dismissing orientation are correlated strongly to interview assessments. The authors conclude that empirical evidence shows self-reports are predictive of attachment-related dynamic processes that are of equal use to researchers as the interview methods used in the past.

Edelstein, Alexander, Shaver, Schaaf, and Quas (2004) provide evidence against the tradition of using interview methods for the investigation of parental behavior. They note that researchers have traditionally used interview measures for parental behavior and self-report measures for the study of romantic and marital relationships. Edelstein et al. wanted to see if the self-report measure would accurately predict parental behaviors. It is interesting to note, that they found the self-reported attachment style was related to the quality of parental responsiveness during a stressful event. In addition, they used a
measure of attachment that examined attachment behavior using a two-dimensional model of anxiety and avoidance that will be discussed in more detail later and will be used for this study. The self-report measure of the parent’s adult attachment accurately predicted children’s reactions to an inoculation at a county immunization clinic. Parents scoring high on self-reported attachment avoidance were less responsive to their children and their children were more distressed. The opposite was found among parents scoring low on avoidance. The influence of adult attachment on parental behavior and children’s distress was found to be independent of children’s temperament and parental personality (Edelstein et al.). This finding suggests that the self-report method is not only useful when examining an individual’s sense of self in relation to significant others but also useful in predicting parental behaviors. Thus, Edelstein et al. help to reinforce the predictive validity of the self-report method.

Recent developments. Understanding the underlying theory to the measure for this study is important. Recent research asserts that attachment is best understood conceptually in dimensions rather than distinct categories (Feeney, 2002; Harris, 2002; Lopez, 2003). This allows the researcher to assess the degrees of attachment patterns rather than rigid categories that may not accurately represent the individual. Feeney (2002) adds that dimensions increase sensitivity and reliability of the measure as well as reduce response bias, including socially desirable responding because it is not as “transparent” as categorical methods. According to Fenney, self-report measures have shown to be reasonably internally consistent and stable over time and provide better longitudinal prediction of relationship outcomes than personality measures as well as
reliably predict responses to stressful situations, even after controlling for the effects of such variables as negative affectivity.

Shaver and Mikulincer’s (2002) study sought to provide a model of normative and individual processes related to attachment. According to Shaver and Mikulincer, adult attachment styles are best conceptualized as regions in a two-dimensional space that are conceptually linked to the research on infant-mother attachment. These include attachment-related anxiety and attachment-related avoidance. In this two-dimensional space, there lies what was formerly referred to as the secure type in Ainsworth’s theory and lies in the area that has low levels of both anxiety and avoidance. The former anxious/ambivalent type has high levels of anxiety and low levels of avoidance. As mentioned previously, the avoidant type had been extended in the adult attachment literature to include both dismissing and fearful attachment styles (Bartholomew, 1990; Bartholomew & Horowitz, 1991; Griffin & Bartholomew, 1994). A person’s location in the conceptual space defined by the anxiety and avoidance dimensions indicates different formation and dissolution patterns in relationships (Shaver & Mikulincer). Secure individuals (low on anxiety and avoidance) are able to effectively elicit the support of the attachment figure through adaptive reactions and have the ability to effectively handle distressing events. Individuals that demonstrate high levels of anxiety have an intense need to be close, and those that score highly on the avoidance dimension are uncomfortable with closeness.

These differing patterns of insecure attachment lead to hyperactivation and deactivation strategies (Shaver & Mikulincer, 2002). Hyperactivation is characteristic of those who score high on the anxiety dimension of self-report measures and includes
recurring attempts to minimize distance from attachment figures and elicit their support through clinging and controlling behaviors. It is also indicated by a focus on the attachment figure, intense negative emotions and thoughts, and failure to regulate emotion. Individuals who score high on the attachment-anxiety dimension tend to focus on their own distress and adopt coping strategies that exacerbate rather than diminish distress. Because anxious individuals tend to desire closeness, their perception of others is more positive and they adopt more negative self-views. In contrast, deactivation consists of attempts to maximize the distance from attachment figures and to strive for self-reliance. They may distance themselves cognitively or behaviorally from the source of distress. Avoidant individuals’ perception of others may be guided by their preference for distance and thus view themselves more positively than others (Shaver & Mikulincer, 2002).

Taken together, the current research suggests that the self-report method of data collection is of equal utility to the interview method, contrary to historical thought (Bartholomew & Moretti, 2002; Edelstein et al., 2004; Feeney, 2002). In addition to this, self-report measures are useful in assessing one’s perception of themselves and their social competence (Crowell & Treboux, 1995). Finally, assessment of attachment can help the researcher to understand working models (Lyddon, et al., 1993) as well as coping strategies (Shaver & Mikulincer, 2002) and predict behavior of individuals (Edelstein et al., 2004) with different attachment patterns. The focus of the present study is on the way in which one’s level of attachment anxiety and avoidance may predict the likelihood that one has a distorted body image and/or engages in obligatory exercise. For
these reasons, the current study will use a self-report measure that assesses the anxiety and avoidance dimensions of attachment.

Body Image

There are several definitions that are often applied to body image. For example, in their book on the subject Thompson et al. (1999) presented a table with 14 definitions. These authors officially define body image as “the term that has come to be widely accepted as the internal representation of your own outer appearance-your own unique perception of your body (p. 4).” According to Cash, Phillips, Santos, and Hrabosky (2004) there are three constructs important to understanding body image. These include evaluation (e.g., body satisfaction), investment (e.g., importance of appearance ideals), and affect (e.g., emotions about body image in specific situations). These three constructs of body image have an impact on one’s self-concept and other areas of psychological functioning. The constructs interact with one another in positive or negative ways. For example, if one has a positive evaluation of one’s body and places a high importance on this, then they feel good about themselves. However, if one has a negative evaluation, but high investment in their appearance, they may begin to have negative feelings about themselves. In other words, the combination of evaluation, investment, and affect is thought to have a significant impact on one’s self-concept and quality of life (Cash, Phillips, Santos, & Hrabosky, 2004).

As mentioned previously, many patterns of disordered eating and exercising are often symptoms of deeper problems; one of these could be poor body image. This is why body image would be a crucial element in the understanding of people with disordered eating and obligatory exercise. Because body image is so important to one’s
psychological functioning, one might expect that those exhibiting disordered eating might also suffer from poor body image. This section will begin with a discussion of body image and its impact on psychological well-being, continue with its relationship to attachment style, and conclude with a discussion on how the variable of body image is operationalized in the literature.

Relationship of Body Image and Aspects of Psychological Functioning

Tiggemann (1996) found that when controlling weight and thinking one is fat, the feeling of being fat predicted dietary restraint, self-esteem, and depressed affect. Thus, feeling fat represents something apart from being overweight or thinking oneself is overweight. The techniques for measuring body image in this study included presenting participants with silhouette drawings of figures ranging from under- to overweight. Body dissatisfaction was the discrepancy between what one believes one’s actual size is and one’s ideal size. Tiggemann’s hypothesis was that “feeling fat” would be more strongly correlated to the psychological measures of self-esteem and depressed affect. It is important to note that in the study, only 7 of the 178 women were actually considered overweight, however the modal woman rated herself as slightly overweight and slightly dissatisfied with her weight. In addition to this, half of the women reported being on a diet. According to Tiggemann, many studies have demonstrated a negative relationship between body dissatisfaction and self-esteem for young women, as body dissatisfaction increases self-esteem decreases. The feel-ideal discrepancy provided most of the prediction of self-esteem, dietary restraint, and depressed affect with a moderate effect size. Psychological well-being, especially depressed affect, and dietary restraint emerged
as the major predictor of feeling fat. In sum, women feel fatter than they think they are, which impacts their self-esteem, eating behavior, and affect (Tiggemann, 1996).

Durkin and Paxton (2002) demonstrated that body image satisfaction and psychological well-being may be diminished after exposure to female media images. Though the principle concern of the Durkin and Paxton study was the impact of media images on body image, it also revealed how body image is linked to other correlates of psychological well-being such as depression, anxiety, and anger. There was support for the hypothesis that there would be lower body satisfaction and mood following exposure to idealized female images after controlling for initial state body satisfaction. These images also impacted participant’s feelings of depression and anxiety (Durkin & Paxton, 2002). Feelings regarding one’s body dissatisfaction also impact one’s overall mood.

Kostanski and Gullone (1998) investigated the relationship of anxiety, depression, and self-esteem to body image dissatisfaction in adolescent women and men. Kostanski and Gullone’s sample was normally distributed in weight and prevalence of body dissatisfaction was comparative to previous studies. The majority of women rated their dissatisfaction in terms of being too large; however, men reported dissatisfaction that fit more closely to their actual body mass. This gender difference occurred across age groups, which may be an indication that body image is already established by adolescence. Kostanski and Gullone did not find depression to be a significant predictor of body image satisfaction. The authors suggest that, given the overlap between the anxiety and depression constructs, it could be that once anxiety was added to the regression equation, depression no longer contributed significantly to the variance. Body Mass Index (BMI) was not related to any of the psychological well-being variables.
Because this was not what they predicted would happen, they further analyzed the data for only the participants considered in the normal weight range and found that self-esteem was more strongly related to body image than BMI, and anxiety was no longer a significant predictor. Though body mass and psychological well-being were totally independent, Kostanski and Gullone suggest they are both significant correlates to body image in that low levels of self-esteem, anxiety, and depression are negatively correlated with high body dissatisfaction. Thus, it would appear that body image has many different facets that may interact in complex ways.

Abell and Richards (1996) investigated body shape satisfaction and self-esteem in both male and female young adults. The purpose of the investigation was to examine potential gender and class differences. They hypothesized that men would be more satisfied than women regarding their weight and that women would exhibit a stronger relationship between body image and self-esteem. Surprisingly, they found no gender difference in the importance of body image or satisfaction with one’s body. Using Analysis of Variance (ANOVA) Abell and Richards found no significant interaction between gender and body shape satisfaction, but there was a main effect for gender-men which indicated a desire to weigh more. In essence, these researchers found men to be more dissatisfied with their weight than women. The authors speculate that this could lead to problematic weight-related behaviors that are different from women and may include steroid use and a high fat diet. Though women in the study did not have significant dissatisfaction with weight, they did have greater dissatisfaction with the size of their figure, which is in line with previous research. Body image was associated with self-esteem for both genders. Altogether, Abell and Richards provide support to the idea
that body image has an impact on self-esteem regardless of gender and that both genders
appear to be dissatisfied with their bodies, just in different ways (i.e. men wanted to
weigh more and women wanted to look thinner).

Body image in men has not historically been studied as exhaustively as body
image in women. However, Tager, Good, and Morrison (2006) sought to investigate the
possible connection of psychological well-being and body image in men. They report that
in recent years, there has been an increase in men’s preoccupation with their physical
appearance. They hypothesized that body image would be positively associated with
psychological self-acceptance, environmental mastery, norms of dominance and pursuit
of status, and would be negatively associated with significant childhood experiences of
victimization or bullying. Tager et al. found empirical support for the association of body
image and well-being in men. Appearance evaluation accounted for 20% of the explained
variance in self-acceptance. In addition, men’s sense of environmental mastery may be
related to how they feel about their bodies. There was a negative association between
childhood victimization and body image. However, there was not a significant
relationship to the pursuit of status and body image. Though Tager et al. expected to find
differences in psychological well-being in the over- and underweight categories, the only
significant difference was in the overweight group; they reported lower levels of self-
acceptance. In sum, results seem to indicate that body image is a significant predictor for
psychological well-being in men as well as women.

Brown (2006) studied social comparison and how it may be related to testosterone
levels, body satisfaction, and mood. Though this is not directly body image as it has been
constructed in this study, body satisfaction and mood are aspects of body image. The
principal research question in this study was: Does comparing oneself to others affect testosterone levels, body satisfaction, and mood for men? The researcher conducted a pilot study to ensure the measures were psychometrically adequate followed by a larger study. The pilot indeed found the measures to be sound so the main study was conducted. The only variable that was differentially affected by images of either a muscular, skinny, or average man was body satisfaction. Participants that viewed photographs of men with muscular bodies were more dissatisfied with their body attractiveness and muscles. The surprising result from this study was that there was no difference between the level of dissatisfaction with muscularity in men that viewed the muscular photos and the skinny photos. Brown suggested that this may be because the muscular men have two characteristics that participants value, one being low body fat and the other large (or defined) muscles; the skinny men had at least one of these valued characteristics.

Pickett, Lewis, and Cash (2005) investigated body image and psychosocial adjustment in competitive body builders, non-competitive weight trainers, and men that were active athletically, but did not train with weight. These researchers hypothesized that the increased emphasis on muscularity in the media has led to men wanting to gain more muscle. To achieve this, many men have pursued weight lifting/bodybuilding to achieve a muscular physique. The hypothesis was that bodybuilders would have a higher level of disturbed body image. Thus, they chose to use bodybuilders in the study. Another reason is that there has been discussion in the field that many individuals who pursue this sport are body dysmorphic or have muscle dysmorphia characterized by the preoccupation with being lean and muscular along with negative evaluation of one's own appearance. Thus, the study was developed to distinguish differences among three groups
of active men on body image and psychosocial adjustment, 120 total. Competitive bodybuilders were heavier in body mass than were the other two groups but they had greater fat-free body mass, as expected. Despite their size as a group, on average they wished to be about 17 pounds heavier. The three groups differed significantly on overall appearance satisfaction with the competitive body builders and regular weight trainers as having more favorable views. Surprisingly, this study did not support the hypothesis that there was greater muscle dysmorphia in the competitive bodybuilder group. Though they wished to be larger, this wish did not seem to diminish in their minds their actual size. In other words, they did not view themselves as “scrawny.” Competitive bodybuilders scored significantly higher than active controls, but not weight trainers on measures of self-esteem and disordered eating attitudes. Pickett et al. found also that the eating disturbance scale identified few men who met criterion in any of the groups, but these men were all in either one of the weight lifting groups. There were no men that met criteria in the active group. Thus, they concluded that there may be eating disturbance in a minority of men that lift weights.

Relationship of Body Image and Attachment Style

Sira (2003) sought to investigate how body image could be used as an overarching conceptual framework in understanding the relationship to attachment, BMI, and dietary practices among college students. Differences between male and female perceptions of physical appearance (this was the measure for body image in the study) in relationship to BMI were found. Higher BMIs were associated with lower scores on women’s perceptions of physical appearance but men’s perceptions were unaffected by BMI. Attachment to mother was significantly related to satisfaction with physical
appearance for both males and females, but attachment to father was a predictor of satisfaction with physical appearance only among males. In addition to these findings, insecure attachment to mother was associated with higher eating disturbance scores among females but not among males. However, less secure attachment to father and peers was predictive of eating disturbances among males. Though Sira's study used different variables and measures than will be used in the current study, it is interesting to note that a relationship was found between attachment, BMI, and eating practices in a college sample.

Cash, Thériault, et al. (2004) examined the relationship of body image, interpersonal anxiety, and adult attachment processes for men and women. They also included several measures of interpersonal relationships. These authors utilized the self-report Relationship Styles Questionnaire (RSQ) developed by Griffin and Bartholomew (1994) based on the four-category model described by Bartholomew and Horowitz (1991). Cash, Thériault, et al. found significant relationships between interpersonal functioning and multiple facets of body image. Body image dissatisfaction, dysfunctional investment in appearance, and situational body image dysphoria were moderately associated with higher levels of social-evaluative anxiety for both men and women. The unique aspect of this study was that these results were unaffected by individuals' BMI. For both sexes, negative body image meant greater discomfort and concern for approval and acceptance in social interactions. Fear of intimacy in romantic relationships was significantly related to all three components of body image, but only for women. Cash, Thériault, et al. found a more favorable body image among men and women who were more secure in their general adult attachment. Interestingly, preoccupied general
attachment was the only insecure category that was significantly related to body image. Both women and men with preoccupied attachment styles reported more body image dissatisfaction and dysphoria as well as more investment in their physical appearance. This finding makes sense when one considers the meaning of preoccupied attachment, in terms of working models of self and others. That is, a negative view of self and positive view of others may place one at risk for body image problems due to an over investment in others’ views and evaluations. The Cash, Thériault, et al. study more closely resembles the methods and hypotheses that will be used and offers further support for the underlying rationale of this study.

The Measurement of Body Image

In terms of the measurement of body image, Thompson (1996) states a number of assessment strategies that generally fall into two categories, perceptual measures and subjective indices. A third component, consisting of behavioral avoidance (for example, avoiding trying on a bathing suit, not looking in the mirror etc.) has also received attention, but not as much as the other two (Thompson, 1996).

Perceptual measures focus on the accuracy of one’s size perception. Typically this includes showing human figures ranging in size from underweight to overweight, and observing the discrepancy between the perceived actual and ideal figures (Thompson, 1996). This discrepancy provides the amount of body dissatisfaction. Some methodological problems with the perceptual measures are that they do not appear to correlate highly with subjective levels of dissatisfaction and are affected by factors that would be included in subjective indices, such as affect. In addition to this, several factors affect size estimates, including visuospatial abilities, practice, type of clothing worn,
lighting, and food consumption. In addition, the specific instructions and the individual’s actual size are two factors that have received a great deal of research attention because they affect perceptual and subjective measures of body image. Subjects asked to make an affective rating (e.g. “How large do you feel?”) tend to produce larger estimates than when asked to make a cognitive rating (e.g. “How large do you think you look?”). This was the distinction previously made in the Tiggemann (1996) study. This seems to be the case for both normative and disordered populations (Thompson, 1996). Finally, the actual size of the individual has been shown to affect size estimation. Actual body size may also be an important confound for some questionnaire measures that assess size and weight satisfaction by perceptual means (Thompson, 1996).

Subjective indices include measures of attitudinal, affective, or cognitive aspects of body image (Thompson, 1996). Some methodological problems for these measures are that many are limited because of their development and validation on a narrow range of subject samples, most are constructed on Caucasian females making generalizability to males or other ethnicities questionable. The reliabilities for many of the measures are .70, which is the minimally acceptable reliability coefficient for a psychometrically sound measurement instrument (Thompson, 1996).

A few of the better known subjective indices of body image include The Appearance Schemas Inventory, which assesses core beliefs and assumptions about the importance, meaning, and effects of appearance; the Situational Inventory of Body-Image Dysphoria, measures negative feelings about appearance in 48 different contexts; and the Body Image Ideals Questionnaire assesses degree of investment in personal body ideals (Thompson, 1996). These were some of the measures included in Cash’s (1994) factor
analysis of 11 body image measures. Multiple regression analysis indicated that the optimal prediction of negative body-image affect required both evaluative and investment aspects of body image. Two factors emerged that accounted for 53% and 14% of the variance. Loadings on Factor 1 were appearance evaluation, body-area satisfaction, positive and negative body-image thought, situational body-image dysphoria, self-ideal discrepancies, and self-classified weight. Loadings on Factor 2 were appearance orientation, importance of physical ideals, appearance schemas, and overweight preoccupation (ranging from -.92 to .55 correlation coefficients). Cash (1994) confirmed the multidimensionality of body image attitudes and the distinction between evaluative or affective and cognitive-behavioral investment components.

A study conducted by Keeton, Cash, and Brown (1990) offered some evidence that perceptual measures may not be as useful as attitudinal measures for a number of reasons. They compared multiple measurement methods (that were either perceptual or attitudinal) to clinically relevant indices of psychological adjustment and disordered eating for both men and women. According to Keeton et al., the inconsistency in perceptual measures has lead to the discrepant findings in the literature on disordered eating and body image. Their findings supported the notion that the two modalities of measurement are distinct. The perceptual measures possessed adequate reliability and freedom from social desirability but may be constricting the multidimensional nature of body image into a unidimensional construct. Taken together, the perceptual measures did not demonstrate convergent or discriminant validity. It would appear that the perceptual distortions are independent of the emotional aspects of body image. The attitudinal body image measures demonstrated strong convergence across methods for both genders and
showed construct validity. These measures demonstrated moderate associations with psychological adjustment in general and more specifically, symptoms of eating disorders. There was stronger support for the use of attitudinal measures of body image (Keeton et al., 1990).

Recent developments. One of the most widely used questionnaire measures in recent years, with excellent psychometric properties and normative data for both males and females, is the Multidimensional Body-Self Relations Questionnaire (MBSRQ: Cash, 2000). Three of its scales provide a broad assessment of body image, including: (a) site weight and size satisfaction (Body Areas Satisfaction Scale), (b) global appearance concerns (Appearance Evaluation), and (c) cognitions and behaviors that reflect the importance of appearance to the individual (Appearance Orientation). The general movement in the field is toward greater use of subjective and attitudinal measures (Thompson, 1996). This measure was partially utilized by Cash, Phillips, et al. (2004) and Cash, Thériault, et al. (2004). They used evaluations on one’s physical characteristics, such as weight, face, mid-torso, and overall appearance (a measure of the evaluative component of body image). Another subscale indicated one’s investment in their appearance. This included investigating beliefs and assumptions about the importance, meaning and impact of their physical appearance in their lives as well as for their sense of self. The third subscale assessed their negative feelings about their body image and the extent to which they experience dysphoric body image emotions in a number of social and nonsocial situations (the affective component to their theory of body image).
Another important recent development includes the Avalos, Tylka, and Wood-Barcalow (2005) concern that body image has been conceptualized in terms of negative dimensions and instead offer a measure reflecting body appreciation that conceptualizes the positive dimensions of body image. These researchers developed a positive measure of body image, the Body Appreciation Scale (BAS) and collected data from four samples of college women to investigate its psychometric properties. The scale was designed to assess the favorable opinions of their bodies, body acceptance despite weight, body shape, and imperfections, respect for body, and protection of body image through rejection of unrealistic images in the media. The first study investigated the factor structure of the scale as well as the correlations between the BAS and measures body esteem, body surveillance, body shame, and the psychological well-being correlates of self-esteem, optimism, and adaptive coping. Factor analysis revealed only one factor for the BAS. In addition the BAS demonstrated internal consistency reliability and showed positive correlations with body esteem and the psychological correlates (i.e., self-esteem, optimism, and adaptive coping) and negative correlations with body surveillance and body shame. The second study sought to cross-validate their findings with another group of women as well as show that body appreciation is a unitary construct. The third study offered more support for the construct validity with variables of body preoccupation and dissatisfaction (i.e., the negative dimensions of body image). The fourth study demonstrated its reliability over a three-week period. Overall, this new measure was found to be psychometrically sound and account for unique variance above and beyond existing measures of body image. Thus, the BAS offers researchers both a viable alternative to studying the negative aspects of body image, and a way to broaden the
study of body image (Avalos et al.). This scale may also help to differentiate individuals who assign different meaning to their exercise, which will be described in more detail later.

The previous review of the body image literature suggests that body image is not only important in and of itself, but has implications for the broader social lives of both men and women. Although study after study focus on the body image of women and have linked that with their eating and dietary behavior, greater attention in recent years to both male body image and the role of exercise (Cohane & Pope, 2001; Leit, Gray, & Pope, 2002; Olivardia, Pope, & Hudson, 2000) broadens the theory of body image.

The Role of Exercise

Exercise is generally thought to provide individuals with physical benefits (Hall, Kerr, Kozub, & Finnie, 2007), however the research on psychological benefits has produced mixed results (Kirkcaldy & Shephard, 1990; Tiggemann & Williamson, 2000). For example, researchers note that exercise can be pursued to the point of being an addiction. In other words, after participating in vigorous amounts of exercise, moderate amounts of physical activity can lead to adverse emotional-psychological states, including feelings of hostility, headache, frustration and tension, restlessness, irritability, and guilt. In addition, for some, the need to progressively increase the physical activity suggests the development of a psychological dependence on exercise (Kirkcaldy & Shephard, 1990). Ackard, Brehm, and Steffen (2002) also note that there are several terms used to describe excessive exercise, such as obligatory exercise, exercise dependence, compulsive exercise, exercise addiction, overexercising, and overcommitment to exercise. Hall et al. add positive addiction, compulsive jogging,
obligatory running, and negative addiction to the already extensive list. Some authors reject the notion of completely categorizing exercise in terms of an addiction or dependence and others suggest that the terms compulsive and/or obligatory exercise are more appropriate (Ackard et al., 2002; Keski-Rahkonen, 2001).

In addition to the differences in opinion regarding the terminology of maladaptive exercise, there are also differences in opinion regarding its correlation to eating disorders (Ackard et al., 2002) and body image (Kirkaldy & Shephard, 1990). Mond, Hay, Rodgers, Owen, and Beumont (2004) conducted a study of 169 women who engaged in regular exercise. They found that operational definitions of ‘excessive exercise’ might usefully include reference to guilt experienced when missing an exercise session and desire to influence weight and shape. Mond, Hay, Rodgers, and Owen (2006) sought to replicate their previous finding with a larger sample by examining the relations among exercise behavior, disordered eating behavior, and quality of life. Mond et al. (2006) found that the intent to influence weight or shape and degree of guilt with missed exercise was most strongly associated with elevated levels of eating disorder pathology and reduced quality of life, much as was found in the Mond et al. (2004) study. They concluded that when missed exercise causes feelings of intense guilt or when exercise is primarily influenced by weight or shape, it should be considered excessive because of its overall impact on quality of life (Mond et al., 2004; Mond et al., 2006). In addition they suggest that excessive exercise is not a clinically significant problem in the absence of disordered eating (Mond et al., 2006).
The Relationship of Obligatory Exercise and Psychological Functioning

Recent studies have begun to examine the variable of obligatory exercise and its link to psychological well-being. DiBartolo and Shaffer (2002) compared female college athletes and nonathletes on measures of symptoms of eating disorder and psychological well-being. Their study is important because women's involvement in sports, on one hand, has produced evidence that they are at a lower risk for eating disorders, and on the other, at an elevated risk when involved in specific sports activities. DiBartolo and Shaffer suggest that the female athletes competing at an elite level and/or in weight-dependent sports such as gymnastics, diving, etc. are at an elevated risk for disordered eating. But, athletes in non-elite, non-weight dependent sports (for example individuals playing volleyball, basketball, etc.) have shown to report healthier eating behaviors and attitudes. These researchers administered measures designed to examine eating behavior, body image, a reason for exercise, positive and negative affect, global self-worth, as well as a survey of health habits. DiBartolo and Shaffer found that intercollegiate athletes scored higher on adaptability measures than female nonathletes including fewer maladaptive eating and body image disturbance. The athletes also demonstrated more positive affect than nonathletes and were more likely to engage in exercise for health and enjoyment as opposed to weight and appearance reasons.

Another study by Hall et al. (2007) focused on the relationship between athletes' goal orientations, elements of perfectionism, perceived ability, and obligatory exercise behavior. According to Hall et al., little is known about the underlying mechanisms that lead to a pattern of high exercise investment. These authors proposed that a combination of high ego orientation (meaning an underlying concern with the demonstration of ability
or the avoidance of rejection as opposed to the development of competence in a task),
high perceived ability, high personal standards, elevated concern about mistakes, and
generalized doubts about action would each contribute unique variance to the dependent
variable, obligatory exercise. The results of the multiple regression indicated that these
variables contributed to 31% of the total variance in obligatory exercise behavior. In the
sports psychology literature, many of these variables have led to the conclusion that they
actually help adaptive striving for achievement. However, Hall et al. note that these
factors, when combined with goals of self-validation, a concern about making mistakes,
and heightened self-critical evaluation, may lead to more maladaptive forms of exercise
behavior. They did not find significant differences in males and females regarding
obligatory exercise or the motivational predictors, however, the multiple regression
analyses indicated that there were slightly different combinations of motivational
variables in the explained variance. Ego and task goals, high personal standards, and
concerns about mistakes made up 27% of men’s obligatory exercise. For women, it was
concern about mistakes, perceived ability and the pursuit of high personal standards that
made up 49% variance in obligatory exercise behavior. These findings suggest that both
achievement goals and elements of perfectionism are strongly associated with obligatory
exercise behavior. Neurotic perfectionism appeared to be the most important reason from
women, but men appeared to be most concerned with the pursuit of achievement goals
and standards of perfectionism (Hall et al., 2007).

Relationship of Body Image and Exercise

The relationship of body image and exercise has not been investigated thoroughly.
Tiggemann and Williamson (2000) studied the relationship between the amount of
exercise and psychological well-being and included a measure of body satisfaction. The results indicated that women had lower body satisfaction and self-esteem than men. Their sample reflected a broad age group (16-60-years-old). There was generally a positive relationship between exercise and well-being, with the exception of young women. Women between the ages 16 and 21 actually demonstrated a negative relationship, as exercise increased, body satisfaction and self-esteem decreased. Tiggeman and Williamson suggest that there may be different processes operating on young women, because older women (and men) that engaged in the same amount of exercise for the same reasons did not show the same lower levels of body satisfaction and self-esteem. One reason for this may be that the media does not specifically target older women. Tiggeman and Williamson hypothesize that the sociocultural factors account for the differences in young women for the variables of psychological well-being.

Hausenblas and Fallon (2002) examined the relationship among the variables of body image, BMI, exercise behavior, and symptoms of exercise dependence. They utilized a Drive for Thinness Subscale from the Eating Disorder Inventory, 2nd edition (EDI-2), the Leisure-Time Exercise Questionnaire, computed BMI for each participant, a Social Physique Anxiety Scale (an affective measure of body image), and an Exercise Dependence Scale (based on the DSM-IV criteria for substance dependence). They found that for females, BMI was the strongest predictor of body dissatisfaction and social physique anxiety. Hausenblas and Fallon found that for men, exercise behavior was the strongest negative predictor of body dissatisfaction and social physique anxiety. The interesting twist to their article was that while using hierarchical multiple regression, they controlled for BMI and exercise behavior to see if symptoms of exercise dependence (i.e.
tolerance, withdrawal effects, continuance, lack of control, reductions in other activities, times, and intention) were significant predictors of body image. However, once the BMI and exercise behaviors were no longer adding unique variance, exercise dependence symptoms were no longer significant predictors of body image, especially for women. According to the authors, these differing important subscales could be a result of the different motives men and women have for exercising. Women are more likely to exercise to lose weight and men are more likely to exercise to gain muscle mass. Hausenblas and Fallon's work suggests that exercise behavior is an important element in body image, especially for men.

The Measurement of Obligatory Exercise

Conceptual and methodological issues related to the construct of obligatory exercise are currently under debate (Ackard et al., 2002; Elbourne & Chen, 2007; Thompson & Pasman, 1991). A model of development for obligatory exercise is the Continuum Model of Obligatory Exercise, which is based on the assumption that differences in exercise behavior lie on a continuum with differences in severity as well as qualitative differences in the way obligatory exercise is expressed (Elbourne & Chen, 2007). On one end of the continuum are persons with mildly obsessive thoughts related to exercise and at the other end are those extremely compulsive individuals that engage in activity despite medical problems or impaired social functioning. The authors assert that many in the field are beginning to conceptualize obligatory exercise from the theoretical framework of the addiction model when little is known about the behavior. Thus, they decided to use the term obligatory because it does not imply pathology as the term exercise dependence does. Elbourne and Chen conceptualize obligatory exercise as a
"dynamic process rather than a static entity" (2007, p. 74). They assume that it is closely related to disordered eating with an interaction of obligatory exercise, obsessive-compulsive behavior, and weight/body shape. Using structural equation modeling, they found a positive relationship between obligatory exercise and eating disorder behavior. Although preoccupation with weight and shape and obsessive-compulsiveness were found to be significant predictors of both disordered eating and obligatory exercise, only preoccupation of weight and shape were significant predictors of obligatory exercise. Elbourne and Chen warn that the results did not fit the hypothesis exactly; they predicted the combination of food restriction, physical activity, and obsessive-compulsive behavior to lead to a problematic relationship with exercise. However, Elbourne and Chen acknowledge that certain limitations of their study may have rendered the findings tentative (i.e. small sample size, choice of triathletes) and suggest further investigation of this theoretical model is needed.

Another measure developed by Ackard et al. (2002) sought to form a typology of exercisers. The Obligatory Exercise Questionnaire (OEQ; Thompson & Pasman, 1991) has demonstrated reliability and validity, and is designed to measures attitudes and activities related to exercise. Ackard et al. found that the OEQ had three factors: Exercise Fixation (describes preoccupation with exercise, negative affect when exercise is absent, and exercise as compensation for perceived overeating), Exercise Frequency (addresses frequency and type of exercise), and Exercise Commitment (individual’s sense of routine regarding exercise). Each participant’s scores were compared to scales that measured eating disorders, body image, depression, family environment, and self-esteem. Participants were then placed into groups depending on their subscale score
configurations and correlates with other psychological scales: “Pathological Obligatory Exercisers,” “Well-Adjusted Exercisers,” “Obligatory Nonexercisers,” “Well-Adjusted Avid Exercisers,” “Well-Adjusted Nonexercisers,” and “Exercised-Obsessed Nonexercisers.” Ackard et al. effectively demonstrated the multidimensionality of obligatory exercise. One factor linking eating disorders and obligatory exercise seems to be a strong emotional attachment to exercise. The findings also suggest that it is not enough to obtain data about how often one engages in exercise. Though people that exercise more than the average are different from the norm, it appears that the difference of importance is the rationale and meaning of the exercising. This was evident in that although some individuals score high on the Exercise Frequency subscale, they did not score high on measures related to eating disorders. Thus, there is something different about that group of individuals. This may be an indication that frequent exercisers should be split into two groups to help decipher individuals that are healthy in their exercise and those that are not (Ackard et al., 2002).

Using the OEQ, Adkins and Keel (2005) also found that the total OEQ score was a positive predictor of disordered eating attitudes and behaviors, and exercise time was a negative predictor. Their findings seem to replicate Ackard et al. (2002) in that simply knowing how much an individual exercises is not an adequate indication that the person has disordered eating behavior or attitudes. In addition, they found that the reasons for exercise were good predictors of eating disorder symptomology. Exercise for health and fitness was associated with less disordered eating, but a greater compulsion to exercise. The OEQ has been used in a number of studies and has demonstrated sound reliability and validity.
Purpose

The purpose of this study is to investigate how attachment styles (notably the dimensions of anxiety and avoidance) body image and body appreciation may be related to exercise behavior. The relationship of attachment style and body image has been well-documented in the literature (Becker et al., 1987; Brennan & Shaver, 1995; Cash, Thériault, et al., 2004; Sira, 2003). However, the relationship between body image and exercise behavior has not been studied as much (Hausenblas & Fallon, 2002; Tiggeman & Williamson, 2000). Also, understanding this relationship may have implications in the theory of body image for men (Cohane & Pope, 2001; Leit et al. 2002; Olivardia et al. 2000). If exercise behavior is modified or otherwise affected by body image, then it would be reasonable to conclude that it might also be linked to attachment. Thus, the purpose of this study is to investigate the relationship among these variables in order to broaden the theory of body image through the examination of exercise as well as the inclusion of men in the sample.

Research Questions

1. Is attachment theory a useful framework for studying body image and exercise behavior?
2. Does the relationship between attachment and body image that has been established in women hold true for men?
3. What is the relationship between attachment and body appreciation?
4. Does body appreciation help to distinguish adaptive and maladaptive exercise behavior?
5. What is the relationship between body image and exercise behavior?
6. Is there a relationship between attachment and exercise behavior?

7. Is the addition of exercise as a variable valuable to the understanding of attachment?

8. Is the addition of exercise as a variable valuable to the understanding of body image?

9. Is the measure of body appreciation different from the more traditional method of measuring body image?

Hypotheses

1. Body image and exercise behavior will predict a significant amount of variance for attachment avoidance and anxiety.

2. Body image, body appreciation, and exercise behavior will predict a significant amount of variance for attachment anxiety and avoidance.

3. Body image will explain a significantly greater amount of variance in attachment anxiety and avoidance than exercise behavior in women.

4. Exercise behavior will explain a significantly greater amount of variance in attachment anxiety and avoidance than body image in men.

5. Body image will predict a different amount of variance in exercise behavior for men than for women.

6. Body image will be significantly negatively related to attachment anxiety and avoidance in women.

7. Body image will be significantly negatively related to attachment anxiety and avoidance in men.
8. Body appreciation will be significantly negatively related to attachment anxiety and avoidance.

9. For individuals classified as obligatory exercisers, exercise will be significantly positively related to attachment anxiety and avoidance.

10. For individuals classified as obligatory exercisers, body appreciation will be significantly and negatively related to attachment anxiety and avoidance.
CHAPTER III

METHODS

Participants

This project was approved by the Human Subjects Review at The University of Southern Mississippi (Protocol number 27120601, see Appendix A). A total of 228 participants completed questionnaires, 100 men and 128 women. The age of the overall sample was between 18 and 54 years-old ($M = 22.07, SD = 5.577$). The sample was 59.2% White ($N = 135$), 36.8% Black ($N = 84$), 2.2% identified other ($N = 5$), .9% American Indian/Alaskan Native ($N = 2$), .4% Asian/Pacific Islander ($N = 1$), and .4% Hispanic ($N = 1$). The sample contained 24.7% freshmen ($N = 53$), 20.5% sophomores ($N = 44$), 20.9% juniors ($N = 45$), 14.4% seniors ($N = 31$), 10.7% graduate students ($N = 23$), 8.8% other ($N = 19$), and missing data for 5.7% ($N = 13$). The majority of participants were recruited through the psychology department, 62.5% ($N = 140$) while 37.5% participated at the Payne Center ($N = 84$) and 1.8% ($N = 4$). The information for height and weight was separated by gender. The average male in the sample was mean of 70.445 inches with a standard deviation of 3.494 and weighed a mean of 191.061 pounds with a standard deviation of 42.451. The average female of the sample was 64.578 inches with a standard deviation of 2.632 and weighed 148.875 with a standard deviation of 34.882. Thus it appears that this sample is roughly of average height and weight to slightly overweight.

Participants were recruited from several different areas in Hattiesburg, Mississippi. Some participants were enlisted through the Experimetrix program at The University of Southern Mississippi. This is a system used for registering undergraduate
psychology students who wish to participate in research for extra credit. They were also offered the opportunity to enter a raffle.

To ensure the sample contained individuals that engage in exercise, participants were recruited from the Payne Center, a recreational center on campus. At the Payne Center, individuals were recruited from two sources. First, the Payne Center routinely offers a fitness assessment for individuals who are interested. As a part of the assessment individuals were asked to participate in the study. If interested, they had the opportunity to add the body image assessment as a component to their fitness testing results. After their assessment, they were contacted by the experimenter and informed about their level of body image satisfaction. In addition to this, they were offered the opportunity to be entered into a raffle. When appropriate, they were given referrals to local treatment facilities, including Student Counseling Services.

The second location for recruitment was at the entrance of the Payne Center during peak hours. A flyer was created to announce upcoming times for filling out the questionnaire and entering into the raffle. Participants were approached in the lobby and asked if they were interested in helping with research. If interested, they participated in a room within the Payne Center that was reserved ahead of time. They were also offered the opportunity to enter into the raffle. To ensure that each student only entered the raffle once, they were asked to place a number that matches both their informed consent (see Appendix B) and the raffle form (see Appendix C). The informed consent statements were separated from each person's data after scores were entered. The informed consent statements were checked to ensure that no one participated in the study more than once. If the same name and signature was attached to two sets of data, only one set was included
in the analysis and raffle. This happened with one participant and his duplicate data was eliminated.

The raffle included several prizes. The prizes were as follows:

1. Two tickets to the 13th Annual Eagle Fan Fare
2. Tee-shirts with the school logo on them (4 winners).
3. Hats with the school logo on them (4 winners).
4. $20 gift certificate from the Fresh Food Company (5 winners).
5. $50 gift certificate from the campus bookstore (2 winners).
6. Free fitness assessment at the Payne Center (10 winners).

Measures

*Relationship Scales Questionnaire (RSQ).* The Relationship Scales Questionnaire (RSQ; Griffin & Bartholomew, 1994) is a 30-item self-report questionnaire that is a continuous measure of adult attachment (see Appendixes D and E). For each item, respondents are asked to rate “the extent to which you believe each statement best describes your feelings about close relationships” on a 5-point scale. The 5-point scale ranged from 1 (*Not at all like me*), 3 (*Somewhat like me*), to 5 (*Very much like me*) (Griffin & Bartholomew, 1994).

There are a number of methods for scoring this instrument. The method used in the present study was described in Kurdek (2002). Kurdek examined different psychometric properties of subscores from three measures of adult attachment. One of the primary purposes of Kurdek’s study was to assess the goodness-of-fit of several measurement models derived from the RSQ. Four models of attachment styles were derived from the RSQ. Other authors originally derived each of these models; however,
Kurdek compared these models to see the model of best fit. Based on the results of a confirmatory factor analysis, Simpson, Rholes, and Nelligan (1992) had the model of best fit, which is the model for the current study. This model is characterized by the extent to which one avoids closeness to others (avoidance) and worries about being alone or rejected (anxiety). According to Kurdek, avoidance is measured by items 10, 12, 13, 15, 20, 24, 29, and 30 and anxiety is measured by items 11, 18, 21, 23, and 25. The analysis yielded an acceptable standardized root mean square residual (SRMR) of .05, a marginally significant comparative fit index (CFI) of .93, and a significant chi-square value of 164.52 (Kurdek, 2002). When applying Simpson et al.’s model, Kurdek also calculated Cronbach’s alpha for the avoidance score to be .77 and .83 for the anxiety score. Discriminant validity analysis indicated that only anxiety provided unique information for satisfaction and commitment. When controlling for avoidance, anxiety was linked to positivity of self and other. Both were linked to satisfaction and commitment, supporting the existence of Bowlby’s internalized models of self and other (Kurdek, 2002). Cronbach’s alphas were computed for each scale and subscale used in this study. The avoidance subscale was .81 and the anxiety subscale was .88. Compared to the existing data in the literature pertaining to these measures, the Cronbach’s alphas for the RSQ avoidance and anxiety subscales were slightly higher than those reported by Kurdek (2002).

_Multidimensional Body-Self Relations Questionnaire (MBSRQ)_ The Multidimensional Body-Self Relations Questionnaire (MBSRQ; Cash, 2000) is a 69-item self-report attitudinal questionnaire of body image (see Appendix D and E). This questionnaire assigned values to the first 57-items and the last 9-items of 1(Definitely
Items 58-60 inquire about the frequency of crash diets (never, rarely, sometimes, often, and very often) and the participants’ thoughts on their weight (very underweight, somewhat underweight, normal weight, somewhat overweight, and very overweight) and the perception of others regarding their weight (using the same categories). The scoring for the questionnaire was provided by Cash (2000). This questionnaire started as the Body-Self Relations Questionnaire with 294 items. Items have been replaced and eliminated for many reasons including rational, construct development, and psychometrics. Cash, Winstead, and Janda used the instrument in a nationwide survey of 30,000 people (Cash, 2000). About 2,000 questionnaires were randomly sampled from the database. According to Cash (2000) the questionnaire has also been cross-validated by Brown, Cash, and Mikulka (1990) that supported the conceptual elements of the measure. From these analyses the MBSRQ has found to reflect dispositional and somatic domains of body image. The dispositional domains consist of “Evaluation” and “Orientation” and the somatic domains consist of “Appearance,” “Fitness,” and “Health/Illness.” The MBSRQ is intended for individuals 15 years and older (Cash, 2000).

All subscales of the MBSRQ have acceptable reliability and have demonstrated strong convergent, discriminant, and construct validity (Cash, 2000). The norms are based on 996 men and 1070 women. As described earlier, the components of body image of interest in the present study include evaluation, investment, and affect regarding one’s body (Cash, 2004). The scales that were used in the present study include Appearance
Cash (2000) provides interpretations for each subscale used as well as validity and reliability information. Cash describes the Appearance Evaluation subscale as feelings of physical attractiveness and level of satisfaction or dissatisfaction with one’s look. High scores are indicative of individuals that feel more positively about their appearance and are more satisfied. Low scores are indicative of individuals that are generally unhappy and less satisfied about their physical appearance. The Appearance Evaluation subscale has a Cronbach’s alpha of .88 for both men and women. The test-retest reliability is .81 for men and .91 for women. The Appearance Orientation subscale measures the level of investment an individual has in their appearance (Cash, 2000). Individuals with high scores attach more importance to their physical appearance and expend more energy in grooming behaviors whereas individuals with low scores do not attach importance nor do they expend energy into their appearance. Cronbach’s alpha for women on this subscale is .88 for men and .85 for women. The test-retest reliability for men is .89 and for women is .90. According to Cash, the Fitness Evaluation subscale assesses feelings of being physically fit or unfit. High scores are indicative of a person that values fitness and feels they are “in shape” and athletic and low scores are indicative of a person who does not value fitness and feels they are “out of shape” or physically unskilled. The Cronbach’s alpha for men and women on this subscale is .77. The test-retest reliability for men is .76 and for women is .79. Cash describes the Fitness Orientation subscale as the extent of investment in being physically fit as well as the incorporation of physical activity into their lives. High scores indicate someone who regularly engages in activity to enhance
fitness and low scores indicate someone who does not. Cronbach’s alpha for Fitness Orientation is .91 for men and .90 for women. Test-retest reliability is .73 for men and .94 for women. Health evaluation is a subscale that measures an individual’s feeling about how healthy and free from disease they are, high scores indicate someone who feels they are healthy, low scores indicate the opposite. Cronbach’s alpha for Health Evaluation is .80 for men and .83 for women with test-retest values of .71 for men and .79 for women. Health orientation is the investment an individual has on a healthy lifestyle. Low scores indicate high investment, low scores, low investment. Cronbach’s alpha for both men and women is .78 and test-retest is .76 for men and .85 for women. Illness orientation subscale measures an individual’s reactivity to being ill, high scores indicate someone who may be very aware of symptoms and is very likely to seek medical attention, low scorers may not be as aware and thus may be more reluctant to seek medical advice. The Cronbach’s alpha for men is .78 and for women .75. The test-retest for men on this scale is .79 and for women .78. The Body Areas Satisfaction subscale is similar to the Appearance Evaluation subscale except that it assesses satisfaction with discrete aspects of one’s appearance (Cash, 2000). High scores indicate general contentment with most areas of the body whereas low scores indicate general unhappiness with size or appearance of several body areas. Cronbach’s alpha for men on this scale is .77 and .73 for women. The test-retest reliability for men is .86 and .74 for women. The Overweight Preoccupation scale assesses behavior such as dieting, weight vigilance, and fat anxiety (Cash, 2000). This scale has a Cronbach’s alpha of .73 for men and .76 for women. The test-retest reliability for men on this scale is .79 and for women is .89. Finally, Cash describes the Self-Classified Weight scale as reflecting one’s
perception of their weight ranging from very underweight, to very overweight. The Cronbach’s alpha for men on this scale is .70 and is .89 for women. The test-retest reliability for this scale is .86 for men and .74 for women. The MBSQR subscales are all very comparable to the values provided by Cash (2000). However, a few subscales were slightly lower in value than reported by Cash, including the Fitness Evaluation, Health Evaluation, Illness Orientation, and Overweight Preoccupation subscales (see Table 1).

Table 1

Cronbach’s Alpha and Descriptors for MBSQR Subscales

<table>
<thead>
<tr>
<th>Subscale name</th>
<th>Cronbach’s Alpha</th>
</tr>
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<tbody>
<tr>
<td>Appearance Evaluation</td>
<td>.88</td>
</tr>
<tr>
<td>Appearance Orientation</td>
<td>.84</td>
</tr>
<tr>
<td>Fitness Evaluation</td>
<td>.70</td>
</tr>
<tr>
<td>Fitness Orientation</td>
<td>.90</td>
</tr>
<tr>
<td>Health Evaluation</td>
<td>.73</td>
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<tr>
<td>Health Orientation</td>
<td>.77</td>
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<tr>
<td>Illness Orientation</td>
<td>.72</td>
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<tr>
<td>Body Areas Satisfaction</td>
<td>.78</td>
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<tr>
<td>Overweight Preoccupation</td>
<td>.72</td>
</tr>
<tr>
<td>Self-Classified Weight</td>
<td>.84</td>
</tr>
</tbody>
</table>

*Body Appreciation Scale (BAS).* The Body Appreciation Scale (BAS; Avalos et al., 2005) is a 13-item self-report attitudinal questionnaire of body image (see Appendix D and E). The items are rated along a 5-point scale with values assigned being 1(*never*),
2(seldom), 3(sometimes), 4(often), and 5(always). This is a newly developed instrument that has only been used on women. However, the authors provide an alternative wording to item 12 to be appropriate for men (Avalos et al., 2005).

Avalos et al. (2005) conducted four studies with independent samples to demonstrate the scale’s validity described previously. The scale was found to be psychometrically sound as it was reliable and valid. The BAS had a Cronbach’s alpha of .94. This measure had the highest positive correlations with the body esteem subscales of weight concern and physical condition, .72 (p < .001) and .60 (p < .001) respectively and a strong negative correlation with the body shame scale (-.73, p < .001), which demonstrates convergent validity. Avalos et al. conducted confirmatory factor analysis and found the SRMR was .05 and CFI was .94. Avalos et al. compared the BAS with other measures of body image to ensure it related positively to positive aspects of body image (e.g. appearance evaluation) and negatively related to body image disturbance and disordered eating. These hypotheses were supported as the relationship of the BAS to each of the measures was in the predicted direction, confirming the BAS’s construct and incremental validity. The authors then investigated the temporal reliability of the measure over a 3-week period (r = .90, p < .001). A paired samples t-test revealed that the stability was not due to the whole sample increasing or decreasing. Administration and scoring of this measure is efficient and simple. Scoring consists of calculating a mean, which is an indication of the degree of positivity of one’s overall level of body appreciation (Avalos et al., 2005). The BAS internal consistency value was lower, .90 than the preliminary value given by Avalos et al. (2005). Though it was lower, it was still well within the acceptable range.
The Obligatory Exercise Questionnaire (OEQ). The Obligatory Exercise Questionnaire (OEQ; Pasman & Thompson, 1988) is a 20-item self-report questionnaire on exercise behavior (see Appendix D and E). Thompson and Pasman (1991) describe the development of the OEQ as beginning with the Obligatory Running Questionnaire by Blumenthal, O’Toole, and Chang (1984). The Obligatory Running Questionnaire was the most widely used questionnaire but had not demonstrated psychometric validity. In addition to this problem, it was limited to one exercise group (i.e., runners). The OEQ was a modified version and a more general measure of exercise activity (Thompson & Pasman, 1988). Eight items were deleted or modified, three new items were added, and the answer format was changed from True-False to a 4 point choice format. Thus, the final version is 20-items with answers choices being 1(Never), 2(Sometimes), 3(Uusually), and 4(Always). The internal consistency ratio was .96 and the test-retest reliability (two weeks) was .96 (Thompson & Pasman, 1988). Item 8 and item 10 are reverse scored. Higher endorsement indicates a greater likelihood that the participant is engaging in obligatory exercise behaviors. Pasman and Thompson (1988) established that a total score equal to or greater than 50 is an indication of obligatory exercise. The OEQ internal consistency value of .88 was lower than the value given by Pasman and Thompson (1988) but also within acceptable limits.

Procedure

Questionnaire packets were compiled. For the BAS, there were two forms, one for the women and the other for the men. The men’s form was light blue and women’s form white. This was the only questionnaire that needed to have two different forms. To decrease fatigue effects, the packets were counterbalanced. One half (114) of the packets
contained in the following order: two (2) informed consents (one for their personal records; see Appendix B), a demographic questionnaire (inquiring general information such as age, race, gender, etc.; see Appendix D), RSQ, MBSRQ, BAS, OEQ, and a form to enter in the raffle (see Appendix C). The other half (114) of the packets contained (in this order) two (2) informed consent forms to enter the raffle, OEQ, BAS, MBSRQ, RSQ, and a demographic questionnaire. Depending on the recruitment site, participants either received extra credit or contact information for feedback from the body image assessment.

Students recruited from Experimetrix signed up for the study online. The researcher reserved a classroom for a block of approximately two hours a week. Participants who signed up filled out the questionnaire. In total, the questionnaires took between 15 to 20 minutes to complete. They received informed consent, which included the purpose of the study, freedom to withdraw; possible risks, rewards, and contact information for researchers (see Appendix B). Participants were provided with extra credit for their participation.

Individuals who signed up for fitness assessments through the Payne Center were asked if they would like to include the body image scale in the assessment, and those giving affirmative answers were provided the opportunity to receive feedback regarding body image. Appropriate referrals were made when necessary. These individuals were also permitted to sign-up for the raffle. In addition to this, the experimenter had a room at the Payne Center where participants could fill out questionnaires for the opportunity to be entered into a raffle for a prize.
CHAPTER IV

RESULTS

Table 2 shows the means and standard deviations for both RSQ subscales suggest the sample overall is right in the middle of the possible values (between 1 and 4), with more variability on the anxiety subscale than on the avoidance subscale. In addition, the male and female means and standard deviations are comparable. In regard to the MBSRQ, Cash (2000) provided means and standard deviations for men and women separately without totals. On all of the scales, the means of the current sample were comparable to the means provided by Cash. None were more than one standard deviation different from those provided by Cash. All of the subscales except Fitness Evaluation in men (which was slightly higher than the normative sample) and Overweight Preoccupation for both men and women (the mean for men in the normative sample was 2.47, for women 3.03) were a score of about 3, which is in the middle of the body image distribution. Thus, overall the sample was average on body image. The overall BAS mean provided by Avalos et al. (2005) was 3.44 (SD = 2.35), which is lower than was found for this sample. However, the current sample has less variability. The current sample also included men, with the mean and standard deviation for men comparable to what was found for women. The OEQ’s mean score indicated that the current sample was below average on obligatory exercise. With a possible range between 20 and 80, this sample was around 40, with the average being slightly higher for men than women. Overall, it was determined that the scales used in this study were consistent with the literature and appropriate for use.
Table 2

*Means and Standard Deviations*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Subscale name</th>
<th>Total $M(SD)$</th>
<th>Male $M(SD)$</th>
<th>Female $M(SD)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSQ</td>
<td>Avoidance</td>
<td>2.64 (.64)</td>
<td>2.68 (.67)</td>
<td>2.61 (.62)</td>
</tr>
<tr>
<td></td>
<td>Anxiety</td>
<td>2.25 (.86)</td>
<td>2.23 (.87)</td>
<td>2.26 (.86)</td>
</tr>
<tr>
<td>MBSQR</td>
<td>Appearance Evaluation</td>
<td>3.57 (.84)</td>
<td>3.64 (.78)</td>
<td>3.52 (.88)</td>
</tr>
<tr>
<td></td>
<td>Appearance Orientation</td>
<td>3.65 (.66)</td>
<td>3.52 (.69)</td>
<td>3.75 (.63)</td>
</tr>
<tr>
<td></td>
<td>Fitness Evaluation</td>
<td>3.80 (.84)</td>
<td>4.11 (.72)</td>
<td>3.56 (.86)</td>
</tr>
<tr>
<td></td>
<td>Fitness Orientation</td>
<td>3.41 (.81)</td>
<td>3.67 (.77)</td>
<td>3.21 (.79)</td>
</tr>
<tr>
<td></td>
<td>Health Evaluation</td>
<td>3.73 (.73)</td>
<td>3.87 (.72)</td>
<td>3.62 (.71)</td>
</tr>
<tr>
<td></td>
<td>Health Orientation</td>
<td>3.40 (.69)</td>
<td>3.37 (.74)</td>
<td>3.42 (.65)</td>
</tr>
<tr>
<td></td>
<td>Illness Orientation</td>
<td>3.26 (.84)</td>
<td>3.06 (.80)</td>
<td>3.42 (.84)</td>
</tr>
<tr>
<td></td>
<td>Body Areas Satisfaction</td>
<td>3.44 (.66)</td>
<td>3.51 (.70)</td>
<td>3.39 (.62)</td>
</tr>
<tr>
<td></td>
<td>Overweight Preoccupation</td>
<td>2.53 (.95)</td>
<td>2.24 (.91)</td>
<td>2.76 (.92)</td>
</tr>
<tr>
<td></td>
<td>Self-Classified Weight</td>
<td>3.27 (.70)</td>
<td>3.16 (.69)</td>
<td>3.35 (.68)</td>
</tr>
<tr>
<td>BAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OEQ</td>
<td></td>
<td>43.25 (10.33)</td>
<td>46.05 (10.43)</td>
<td>41.07 (9.76)</td>
</tr>
</tbody>
</table>

Note: RSQ’s scale is between 1 and 5 for both the anxiety and avoidance subscales. The MBSRQ’s scale is between 1 and 5 for all subscales. The BAS’s scale is between 1 and 5 also. Finally, the OEQ is between 1 and 4 each number is added up for a maximum total of 80.
In addition to this, an independent samples t-test for gender differences on each of the attachment measures was used to ensure there were no significant differences in attachment anxiety and avoidance between genders as this may have an impact on the other hypotheses. The t-test revealed that men ($M = 2.675; SD = .666$) did not differ significantly from women ($M = 2.613; SD = .616$) for the avoidance subscale ($t(226) = .730, p = .466$). Also, men ($M = 2.225; SD = .868$) did not differ from women ($M = 2.262; SD = .860$) on the anxiety subscale ($t(226) = -.317, p = .751$). This indicates that there was no significant attachment differences between the men and women and that relevant hypotheses should not be unduly influenced as a function of gender.

Hypothesis 1: Body Image and Exercise Behavior Will Predict a Significant Amount of Variance for Attachment Avoidance and Anxiety

A canonical correlation was used to test Hypothesis 1. The independent variables were body image and obligatory exercise behavior. Body image was measured using the scores from the following MBSQR subscales: Appearance Evaluation, Appearance Orientation, Fitness Evaluation, Fitness Orientation, Health Evaluation, Health Orientation, Illness Orientation, Body Areas Satisfaction, Overweight Preoccupation, and Self-Classified Weight on the MBSQR. Obligatory exercise was measured with the entire OEQ, with higher scores indicating more obligatory exercise behavior. The dependent variables were the attachment anxiety and avoidance dimensions of the RSQ. Low scores on both attachment anxiety and avoidance are indicative of more secure attachment (see Table 3).
Table 3

*Results of Canonical Correlation for Hypothesis 1*

<table>
<thead>
<tr>
<th>Body Image subscales</th>
<th>First Variate</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Appearance Evaluation</td>
<td>.43</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>Appearance Orientation</td>
<td>-.29</td>
<td>-.07</td>
<td></td>
</tr>
<tr>
<td>Fitness Evaluation</td>
<td>.55</td>
<td>.15</td>
<td></td>
</tr>
<tr>
<td>Fitness Orientation</td>
<td>.56</td>
<td>.43</td>
<td></td>
</tr>
<tr>
<td>Health Evaluation</td>
<td>.80</td>
<td>.61</td>
<td></td>
</tr>
<tr>
<td>Health Orientation</td>
<td>.42</td>
<td>.09</td>
<td></td>
</tr>
<tr>
<td>Illness Orientation</td>
<td>.08</td>
<td>.05</td>
<td></td>
</tr>
<tr>
<td>Body Areas Satisfaction</td>
<td>.51</td>
<td>.08</td>
<td></td>
</tr>
<tr>
<td>Overweight Preoccupation</td>
<td>-.45</td>
<td>-.34</td>
<td></td>
</tr>
<tr>
<td>Self-Classified Weight</td>
<td>-.21</td>
<td>.27</td>
<td></td>
</tr>
<tr>
<td>Obligatory Exercise</td>
<td>.03</td>
<td>-.45</td>
<td></td>
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<tr>
<td><strong>Percent Variance for Body Image Scales</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Redundancy for Body Image Scales</strong></td>
<td><strong>4.8</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Attachment subscales**

<table>
<thead>
<tr>
<th></th>
<th>First Variate</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoidance</td>
<td>-.63</td>
<td>-.27</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>-.97</td>
<td>-.85</td>
<td></td>
</tr>
<tr>
<td><strong>Percent Variance for Attachment subscales</strong></td>
<td><strong>66.7</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Redundancy for Attachment subscales</strong></td>
<td><strong>15.8</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Canonical Correlation**  .49

*Note: L = Structure Loadings; S = Standardized Canonical Coefficients*

The canonical correlation for the first variate was the only significant correlation with a Wilk's Lambda = .752, $\chi^2 (N = 227, df = 22) = 62.49, p < .001$. Also, the avoidance and anxiety loadings are about equal, thus one subscale did not contribute much more of the variance than the other.

Attachment avoidance and anxiety are inversely related to Health Evaluation, Fitness Orientation, Fitness Evaluation, Body Areas Satisfaction, Appearance Evaluation,
Health Orientation, and Illness orientation (in order from largest contributor to smallest).

As predicted, this means that as the attachment variables approached more secure attachment, positive body image evaluations increased. It is noteworthy that the largest contributor for the dependent measures was the Health Evaluation scale. This would suggest that individuals with higher physical health and/or freedom from physical illness evaluations tend to be more securely attached.

By way of contrast, attachment anxiety and avoidance were positively related to Overweight Preoccupation, Appearance Orientation, and Self-Classified Weight. Thus, as predicted, Overweight Preoccupation showed that as feelings of preoccupation regarding one’s weight increase, attachment scores rise, meaning more insecure attachment. The Appearance Orientation result indicates that as people become more securely attached (that is lower attachment scores) they report having less investment in their physical appearance. This would suggest that individuals that have insecure attachment would then invest more in their physical appearance. This supports the hypothesis because the literature seems to suggest that individuals with too much investment in their appearance may engage in disordered eating behavior. Finally, Self-Classified Weight suggested that when people classify themselves as being heavy, their attachment scores increase as well, indicating insecure attachment. Although there is no literature indicating that overweight people will likely be more insecurely attached, that was what was seen in this study (albeit, a relatively small correlation).

The obligatory exercise variable, in the larger picture, did not appear to contribute much to the overall picture. It is interesting to note that this variable was inversely related to both attachment avoidance and anxiety. This suggests that as obligatory exercise
behavior increases, attachment scores decrease. This tendency is in the opposite direction that would be expected by theory. However, this interpretation must be made with caution as the actual value of the canonical loading is very low (.033).

The redundancy for set-1 was 15.8%, meaning that 15.8% of avoidance and anxiety are explained by body image and obligatory exercise variables. According to Cohen’s (1992) criteria for effect sizes, this is a medium effect size. Although Hypothesis 1 was partially supported, the obligatory exercise variable was not as big of a contributor as expected and was in the opposite direction as predicted. The surprising finding to note was that the health dimension of body image appeared to be the biggest predictor of secure attachment rather than the attractiveness variable that has more often been linked with body image.

Hypothesis 2: Body Image, Body Appreciation, and Exercise Behavior Will Predict a Significant Amount of Variance for Attachment Anxiety and Avoidance

For hypothesis 2, canonical correlation was used. Independent variables were body image, body appreciation, and obligatory exercise behavior. Body image and obligatory exercise behavior were measured the same as in Hypothesis 1, while body appreciation was measured by the BAS average on all items (with higher scores representing more body appreciation). Attachment anxiety and avoidance were again the dependent variables, using the same subscales from the RSQ described previously (see Table 4).
Table 4

*Results of Canonical Correlation for Hypothesis 2*

| Body Image subscales                        | L  | S   |
|---------------------------------------------|--|--|---|
| Appearance Evaluation                       | .43| -.07|
| Appearance Orientation                      | -.29| -.06|
| Fitness Evaluation                          | .55| .12|
| Fitness Orientation                         | .56| .46|
| Health Evaluation                           | .80| .61|
| Health Orientation                          | .42| .07|
| Illness Orientation                         | .08| .03|
| Body Areas Satisfaction                     | .50| .04|
| Overweight Preoccupation                    | -.45| -.31|
| Self-Classified Weight                      | -.21| .24|
| Body Appreciation                           | .49| .16|
| Obligatory Exercise                         | .03| -.45|

Percent Variance for Body Image Scales 20.3
Redundancy for Body Image Scales 4.9

| Attachment subscales                        |     |     |
|---------------------------------------------|--|--|---|
| Avoidance                                   | -.62| -.27|
| Anxiety                                     | -.97| -.86|

Percent Variance for Attachment subscales 66.5
Redundancy for Attachment subscales 16.1

 Canonical Correlation .49

Note: L = Structure Loadings; S = Standardized Canonical Coefficients

Because the first variate of the canonical correlation was the only one that was significant with a Wilk's Lambda = .747, $\chi^2 (N = 227, df = 24) = 63.530, p < .001$, it is the only one that will be discussed. Also, the avoidance and anxiety loadings were approximately equal, thus one subscale did not explain much more of the variance than the other.
As in the previous findings for Hypothesis 1, most of the body image subscales were inversely related to attachment anxiety and avoidance. Similarly, the variables Appearance Orientation, Overweight Preoccupation, and Self-Classified Weight were once again positively associated with attachment anxiety and avoidance. The largest contributors (in order) were Health Evaluation, Fitness Orientation, Fitness Evaluation, and Body Areas Satisfaction. In fact, the order was exactly the same as found under hypothesis 1. Hypothesis 1 and 2 differed by the addition of the Body Appreciation scale. The Body Appreciation scale's loading was .488, however it was not enough to change the distribution of the other body image variables. Once again, the exercise variable was not significant and was negatively associated with the attachment dimensions.

One difference between the findings for Hypothesis 1 and 2 is in the variance. The redundancy for Hypothesis 2 correlation was 16.1%, which was a one percent increase from that of Hypothesis 1. Hypothesis 2 was supported, again body image was related to attachment anxiety and avoidance and adding body appreciation as a variable did increase the overall canonical correlation from .487 (Hypothesis 1) to .492 (Hypothesis 2). This was not a statistically significant increase, however.

Hypothesis 3: Body Image Will Explain a Significantly Greater Amount of Variance in Attachment Anxiety and Avoidance than Exercise Behavior in Women

Canonical correlation was used. The independent variables were body image and exercise behavior for women using the subscales from the MBSRQ and the entire OEQ. The dependent variables were attachment anxiety and avoidance subscales on the RSQ in women. The results may be seen in Table 5.
Table 5

*Results of Canonical Correlation for Hypothesis 3*

<table>
<thead>
<tr>
<th>Body Image subscales</th>
<th>First Variate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L</td>
</tr>
<tr>
<td>Appearance Evaluation</td>
<td>.26</td>
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<tr>
<td>Appearance Orientation</td>
<td>-.31</td>
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<tr>
<td>Fitness Evaluation</td>
<td>.50</td>
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<tr>
<td>Fitness Orientation</td>
<td>.49</td>
</tr>
<tr>
<td>Health Evaluation</td>
<td>.82</td>
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<td>Health Orientation</td>
<td>.55</td>
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<tr>
<td>Illness Orientation</td>
<td>.11</td>
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<tr>
<td>Body Areas Satisfaction</td>
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<td>Overweight Preoccupation</td>
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</tr>
<tr>
<td>Self-Classified Weight</td>
<td>-.17</td>
</tr>
<tr>
<td>Obligatory Exercise</td>
<td>.16</td>
</tr>
</tbody>
</table>

| Percent Variance for Body Image Scales      | 18.2          |
| Redundancy for Body Image Scales            | 5.5           |

<table>
<thead>
<tr>
<th>Attachment subscales</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L</td>
</tr>
<tr>
<td>Avoidance</td>
<td>-.77</td>
</tr>
<tr>
<td>Anxiety</td>
<td>-.89</td>
</tr>
</tbody>
</table>

| Percent Variance for Attachment subscales   | 68.8          |
| Redundancy for Attachment subscales         | 20.7          |

| Canonical Correlation                      | .55           |

Note: L = Structure Loadings; S = Standardized Canonical Coefficients

For Hypothesis 3, the first variate of the canonical correlation was the only one that was significant with a Wilk's Lambda = .681, $\chi^2 (N = 127, df = 22) = 45.66, p = .002$. As a result, it is the only one that will be discussed. Because the attachment avoidance and anxiety loadings were approximately equal, one subscale did not contribute much more of the variance than the other.
As predicted, attachment anxiety and avoidance were inversely related to Health Evaluation, Health Orientation, Fitness Evaluation, and Fitness Orientation (in order from largest contributor to smallest). This means that as the attachment variables approach more secure attachment, the feelings of positive body image also increase. Again it appears that Health Evaluation is the variable correlated most highly with the attachment variables. Another interesting difference is that for women, both the evaluation of one’s health and one’s investment in health are the largest contributors, followed by fitness. This is different from when both genders were included. With both genders it was health, followed by fitness variables, and finally body areas satisfaction. Also, Body Areas Satisfaction also does not play as large of a role as the Overweight Preoccupation subscale.

As expected, the Overweight Preoccupation variable was positively related to attachment anxiety and avoidance. Once again, the Obligatory Exercise variable did not appear to contribute much to the overall picture. It was an even smaller loading than it was for the entire sample. The redundancy indicated that 20.7% of attachment avoidance and anxiety are explained by body variables and exercise variables, which is a medium effect size. In sum, Hypothesis 3 was supported, the exercise variable was not as big of a contributor as body image variables for women. It appears that women who perceive themselves as being relatively free of disease and who are invested in their own health have more secure attachment.

Hypothesis 4: Exercise Behavior will Explain a Significantly Greater Amount of Variance in Attachment Anxiety and Avoidance than Body Image in Men
Using canonical correlation, independent variables included body image and exercise behavior for men using the subscales from the MBSQR and the OEQ. The dependent variables were attachment anxiety and avoidance on the RSQ in men (see Table 6).

Table 6

Results of Canonical Correlation for Hypothesis 4

<table>
<thead>
<tr>
<th>Body Image subscales</th>
<th>First Variate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L</td>
<td>S</td>
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<tr>
<td>Appearance Evaluation</td>
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<td>Health Evaluation</td>
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<td>Health Orientation</td>
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<tr>
<td>Illness Orientation</td>
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<td>-.03</td>
</tr>
<tr>
<td>Body Areas Satisfaction</td>
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<td>Overweight Preoccupation</td>
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<td>Self-Classified Weight</td>
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<tr>
<td>Obligatory Exercise</td>
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<td>-.56</td>
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<tr>
<td>Percent Variance for Body Image Scales</td>
<td>20.2</td>
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</tr>
<tr>
<td>Redundancy for Body Image Scales</td>
<td>4.2</td>
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</table>

Attachment subscales

<table>
<thead>
<tr>
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<th>First Variate</th>
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</thead>
<tbody>
<tr>
<td>Avoidance</td>
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<td>-.13</td>
</tr>
<tr>
<td>Anxiety</td>
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<td>-.93</td>
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<td>Percent Variance for Attachment subscales</td>
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<tr>
<td>Canonical Correlation</td>
<td>.52</td>
<td></td>
</tr>
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</table>

Note: L = Structure Loadings; S = Standardized Canonical Coefficient
For Hypothesis 4, the first variate of the canonical correlation was the only one that was significant, Wilk's Lambda = .653, $\chi^2 (N = 100, df = 22) = 39.274, p = .013$, and is the only one that will be discussed. It appears that attachment anxiety and avoidance have significantly different levels of contribution as seen by the loadings. This means that anxiety may play a greater role in body image and obligatory exercise for men than it does for women.

As predicted, attachment anxiety and avoidance were inversely related to Health Evaluation, Fitness Orientation, Fitness Evaluation, and Body Areas Satisfaction (in order from largest contributor to smallest). This means that as the attachment variables approach more secure attachment (in particular the anxiety variable of attachment), the evaluations of positive body image increase. Among men, it appears that Health Evaluation is the variable correlated most highly with the attachment variables, followed by one's investment in fitness (i.e. Fitness Orientation).

As predicted, Overweight Preoccupation, Self-Classified Weight, Appearance Orientation, and Obligatory Exercise (largest contributor to smallest) were positively associated with attachment. Once again, the Obligatory Exercise variable did not appear to contribute much to the overall picture. In fact, it made a smaller contribution to the attachment variables in men than it did for women (men = -.126 and women = .157). However, it is interesting to note that for men the Obligatory Exercise subscale was in the direction expected and for the women it was not. For men, it seems that as Obligatory Exercise increases so does attachment anxiety. For women, it was the opposite, as Obligatory Exercise increases, attachment becomes more secure. Another major difference is that for women, anxiety and avoidance contributed equally to the model,
whereas for men, anxiety played a larger role in their body image and exercise behavior. The redundancy indicated that 17.2% of avoidance and anxiety are explained by body image variables and exercise variables, which is a medium effect size.

Hypothesis 4 was not supported as the exercise variable was not as significant of a contributor as the body image variables. In addition, the exercise variable for men was a smaller contributor to attachment than it was for women. There were also subtle differences in the relationships between attachment and body image variables for men as compared to women. For example, the subscales that played a larger role for women had to do with health, whereas for the men it was fitness. Men assigned evaluation of health as the highest ratings, however the next highest subscale was fitness related. Another interesting difference is that men had Body Areas Satisfaction as a major contributor where women did not. Thus, it may be more important for men to feel good about specific areas of the body.

Hypothesis 5: Body Image Will Predict a Different Amount of Variance in Exercise Behavior for Men than for Women

Using multiple regression, the independent variables were gender and the variable of body image as measured by the subscales from the MBSQR. The dependant variable was exercise behavior as measured by the OEQ. Specifically, it was predicted that body image will explain a greater amount of variance for men than for women when exercise behavior is the dependent variable.

The multiple correlation coefficient \( R \) was significantly different from zero, \( F(11, 215) = 22.24, p < .01 \). \( R^2 \), which indicated that 53.2% of the variance was accounted for by the model. In addition to being significantly different from zero, it is a
large effect size. Table 7 shows the standardized Beta values and the significance level for each variable. When evaluating the independent variables, it is important to compare their standardized Beta values (see Table 7).

Table 7

*Standardized Beta Coefficients for Hypothesis 5 (Men and Women)*

<table>
<thead>
<tr>
<th>Variables</th>
<th>$\beta$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>-.17</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Appearance Evaluation</td>
<td>.03</td>
<td>.76</td>
</tr>
<tr>
<td>Appearance Orientation</td>
<td>.03</td>
<td>.56</td>
</tr>
<tr>
<td>Fitness Evaluation</td>
<td>-.10</td>
<td>.14</td>
</tr>
<tr>
<td>Fitness Orientation</td>
<td>.63</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Health Evaluation</td>
<td>-.04</td>
<td>.49</td>
</tr>
<tr>
<td>Health Orientation</td>
<td>.18</td>
<td>.01</td>
</tr>
<tr>
<td>Illness Orientation</td>
<td>-.04</td>
<td>.47</td>
</tr>
<tr>
<td>Body Areas Satisfaction</td>
<td>-.08</td>
<td>.27</td>
</tr>
<tr>
<td>Overweight Preoccupation</td>
<td>.21</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Self-Classified Weight</td>
<td>.00</td>
<td>.96</td>
</tr>
</tbody>
</table>

The independent variable that contributed the most to the model is Fitness Orientation. There were only four other variables that made a significant contribution, they were gender, Health Orientation, and Overweight Preoccupation.
To further test the hypothesis, the regression model was carried out separately for men and women. The multiple regression for men indicated $R$ was significantly different from zero, $F (10, 89) = 10.54, p < .01$. $R^2$ indicated that 54.2% of the variance was accounted for by the model, which is a large effect size. Table 8 shows the standardized Beta values and the significance level for each variable.

Table 8

*Standardized Beta Coefficients for Men*

<table>
<thead>
<tr>
<th>Variables</th>
<th>$\beta$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance Evaluation</td>
<td>.07</td>
<td>.59</td>
</tr>
<tr>
<td>Appearance Orientation</td>
<td>-.03</td>
<td>.77</td>
</tr>
<tr>
<td>Fitness Evaluation</td>
<td>-.13</td>
<td>.21</td>
</tr>
<tr>
<td>Fitness Orientation</td>
<td>.64</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Health Evaluation</td>
<td>-.13</td>
<td>.16</td>
</tr>
<tr>
<td>Health Orientation</td>
<td>.22</td>
<td>.04</td>
</tr>
<tr>
<td>Illness Orientation</td>
<td>.17</td>
<td>.04</td>
</tr>
<tr>
<td>Body Areas Satisfaction</td>
<td>-.19</td>
<td>.11</td>
</tr>
<tr>
<td>Overweight Preoccupation</td>
<td>.27</td>
<td>.01</td>
</tr>
<tr>
<td>Self-Classified Weight</td>
<td>-.08</td>
<td>.40</td>
</tr>
</tbody>
</table>

The independent variable that contributed the most to the model was Fitness Orientation. The other significant contributors were Overweight Preoccupation, Health Orientation,
and Illness Orientation. For men, it seems that when considering Obligatory Exercise, one’s investment in fitness, level of preoccupation with being overweight, and investment in being healthy and free from disease are large predictors. As obligatory exercise increases, investment in fitness and level of preoccupation of weight increase as well. The Illness Orientation subscale seems to indicate that as Obligatory Exercise increases, men seem to be more alert and reactive to physical signs of sickness.

For women, $R$ was significantly different from zero, $F (10, 116) = 14.04, p < .01$. $R^2$ indicated that 54.7% of the variance was accounted for by the model, another large effect size. Table 9 shows the standardized Beta values and the significance level for each variable.

Table 9

*Standardized Beta Coefficients for Women*

<table>
<thead>
<tr>
<th>Variables</th>
<th>$\beta$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance Evaluation</td>
<td>-.06</td>
<td>.60</td>
</tr>
<tr>
<td>Appearance Orientation</td>
<td>.08</td>
<td>.31</td>
</tr>
<tr>
<td>Fitness Evaluation</td>
<td>-.08</td>
<td>.37</td>
</tr>
<tr>
<td>Fitness Orientation</td>
<td>.65</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Health Evaluation</td>
<td>-.04</td>
<td>.64</td>
</tr>
<tr>
<td>Health Orientation</td>
<td>.11</td>
<td>.25</td>
</tr>
<tr>
<td>Illness Orientation</td>
<td>-.19</td>
<td>.02</td>
</tr>
<tr>
<td>Body Areas Satisfaction</td>
<td>.02</td>
<td>.89</td>
</tr>
<tr>
<td>Overweight Preoccupation</td>
<td>.20</td>
<td>.03</td>
</tr>
<tr>
<td>Self-Classified Weight</td>
<td>.01</td>
<td>.89</td>
</tr>
</tbody>
</table>
The independent variable that contributes the most to the model was again Fitness Orientation. There were only two other variables that made a significant contribution, Overweight Preoccupation and Illness Orientation.

Men and women did not differ in that as their scores of investment in physical fitness increased, their Obligatory Exercise increased as well. One difference between men and women, however, was that for women, Health Orientation did not add significantly to the model. The next highest contributor was Overweight Preoccupation, however it was not as large of a predictor for women as it was for men (.198 and .272 respectively). The other difference was in the direction of the Illness Orientation subscale. For men, as their reactivity to illness increased, their Obligatory Exercise score did as well. For women, it was the opposite. As Obligatory Exercise increased, their level of reactivity to illness decreased, in other words, they were less alert to physical symptoms.

Overall, Hypothesis 5 was partially supported. The first model suggests that there is a significant difference in gender regarding the amount of variance. However, when separating the data by gender, the $R$ for men was slightly lower than it was for women (.542 and .547 respectively). It seems reasonable to conclude that body image has a significant impact on men and women’s Obligatory Exercise and that it is not more or less important for either gender. The differences that were found had more to do with particular aspects of body image that played significant roles, though Fitness Orientation was important in both.
Hypothesis 6: Body Image Will be Significantly Negatively Related to Attachment Anxiety and Avoidance in Women

To ensure this sample is comparable to the literature, Hypothesis 6 was developed to verify that body image was significantly negatively predicted by attachment anxiety and avoidance for women. Canonical correlation was utilized. The independent variables were attachment anxiety and avoidance subscales from the RSQ for women. The dependent variables were the subscales of the MBSQR described previously for women.

Table 10

Results of Canonical Correlation for Hypothesis 6

<table>
<thead>
<tr>
<th>Body Image subscales</th>
<th>First Variate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L</td>
<td>S</td>
</tr>
<tr>
<td>Appearance Evaluation</td>
<td>.26</td>
<td>-.18</td>
</tr>
<tr>
<td>Appearance Orientation</td>
<td>-.31</td>
<td>.04</td>
</tr>
<tr>
<td>Fitness Evaluation</td>
<td>.50</td>
<td>.20</td>
</tr>
<tr>
<td>Fitness Orientation</td>
<td>.49</td>
<td>.15</td>
</tr>
<tr>
<td>Health Evaluation</td>
<td>.82</td>
<td>.76</td>
</tr>
<tr>
<td>Health Orientation</td>
<td>.56</td>
<td>.05</td>
</tr>
<tr>
<td>Illness Orientation</td>
<td>.11</td>
<td>.01</td>
</tr>
<tr>
<td>Body Areas Satisfaction</td>
<td>.38</td>
<td>-.05</td>
</tr>
<tr>
<td>Overweight Preoccupation</td>
<td>-.43</td>
<td>-.62</td>
</tr>
<tr>
<td>Self-Classified Weight</td>
<td>-.17</td>
<td>.17</td>
</tr>
</tbody>
</table>

Percent Variance for Body Image Scales 20.1
Redundancy for Body Image Scales 6.0

Attachment subscales

<table>
<thead>
<tr>
<th></th>
<th>First Variate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoidance</td>
<td>-.76</td>
<td>-.49</td>
</tr>
<tr>
<td>Anxiety</td>
<td>-.89</td>
<td>-.71</td>
</tr>
</tbody>
</table>

Percent Variance for Attachment subscales 68.7
Redundancy for Attachment subscales 20.4

Canonical Correlation .55

Note: L = Structure Loadings; S = Standardized Canonical Coefficients
For Hypothesis 6, the first variate of the canonical correlation was the only one that was significant, Wilk's Lambda = .688, \( \chi^2 (N = 127, df = 20) = 44.63, p = .001 \), and is the only one that will be discussed. Also, because the avoidance and anxiety loadings were approximately equal, neither subscale contributed significantly more of the variance than the other. As predicted, anxiety and avoidance were inversely related to Health Evaluation, Health Orientation, Fitness Evaluation, and Fitness Orientation (in order from largest contributor to smallest). Thus, Health Evaluation is the variable correlated most highly with the attachment variables followed by the level of women's investment in their health.

As predicted, the Overweight Preoccupation, Self-Classified Weight, and Appearance Orientation were positively related to attachment security. The redundancy indicated that 68.7% of avoidance and anxiety are explained by body variables, which is a large effect size. In addition, the overall canonical correlation for these variables was .545. This is consistent with the literature pointing to a strong correlation between body image and attachment styles. Also, with the variable of exercise removed, this analysis replicates the prior finding that women who perceive themselves relatively free of disease and healthy, exhibit more secure attachment. This suggests that exercise did not play a large role in explaining variance in women's attachment anxiety and avoidance.

Hypothesis 7: Body Image will be Significantly Negatively Related to Attachment Anxiety and Avoidance in Men

Because the literature regarding attachment and body image has not historically focused on men, Hypothesis 7 was developed to see if the relationships found with women extend to men. Canonical correlation was used to investigate this relationship. The independent
variables were attachment anxiety and avoidance subscales on the RSQ for men. The dependent variables were specific subscales of the MBSQR for men (see Table 11).

Table 11

Results of Canonical Correlation for Hypothesis 7

<table>
<thead>
<tr>
<th>Body Image subscales</th>
<th>First Variate</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appearance Evaluation</td>
<td>.61</td>
<td>.10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appearance Orientation</td>
<td>-.17</td>
<td>-.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fitness Evaluation</td>
<td>.64</td>
<td>.20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fitness Orientation</td>
<td>.68</td>
<td>.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Evaluation</td>
<td>.72</td>
<td>.45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Orientation</td>
<td>.28</td>
<td>-.12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illness Orientation</td>
<td>.04</td>
<td>-.14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Areas Satisfaction</td>
<td>.63</td>
<td>.24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overweight Preoccupation</td>
<td>-.49</td>
<td>-.43</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Classified Weight</td>
<td>-.27</td>
<td>.28</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Percent Variance for Body Image Scales 25.8
Redundancy for Body Image Scales 5.9

Attachment subscales

<table>
<thead>
<tr>
<th></th>
<th>First Variate</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L</td>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidance</td>
<td>-.53</td>
<td>-.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>-.10</td>
<td>-.95</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Percent Variance for Attachment subscales 63.7
Redundancy for Attachment subscales 14.5

Canonical Correlation .55

Note: L = Structure Loadings; S = Standardized Canonical Coefficients

For Hypothesis 7, the first variate of the canonical correlation was the only one that was significant, Wilk's Lambda = .687, \( \chi^2 (N = 100, df = 20) = 44.63, p = .022 \), and thus will be the only one discussed. Results indicate that there was a difference between the anxiety and avoidance variables in that the loading for anxiety was much higher than for avoidance. Thus, it appears that for men, the anxiety subscale of attachment is a
relatively more important variable in relation to body image. The direction of the independent variables was the same that have been seen throughout the results section. The subscales with the most variance, in order of highest to lowest were Health Evaluation, Fitness Orientation, Fitness Evaluation, and Body Areas Satisfaction.

The redundancy indicated that 63.7% of avoidance and anxiety are explained by body variables, which is a large effect size. This result is not completely what was expected. This was due to the difference in the level of contribution between anxiety and avoidance. Once again, it shows that the Health Evaluation subscale was the biggest predictor for men, meaning that men perceiving themselves as relatively free from disease and healthy tend to exhibit less attachment anxiety. Thus, it appears that the relationship between body image and attachment is different in men than it is for women, with more of a role for attachment anxiety than attachment avoidance.

Hypothesis 8: Body Appreciation Will be Significantly Negatively Related to Attachment Anxiety and Avoidance

Hypothesis 8 investigates the role of body appreciation, which is a positive aspect of body image. In particular, it predicts that the body appreciation will be negatively related to attachment anxiety and avoidance. Using Pearson correlation, attachment anxiety and avoidance from the RSQ was the independent variable. Body appreciation was measured using the average of BAS scores (as previously described) and will be the dependent variable (see Table 12).
Table 12

*Correlation Matrix for Hypothesis 8*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Body Appreciation (p)</th>
<th>Avoidance (p)</th>
<th>Anxiety (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Appreciation</td>
<td>1.00</td>
<td>-.15 (.01)</td>
<td>-.24 (&lt;.001)</td>
</tr>
<tr>
<td>Avoidance</td>
<td>- .15 (.01)</td>
<td>1.00</td>
<td>.42 (&lt;.001)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>- .24 (&lt;.001)</td>
<td>.42 (&lt;.001)</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note: N = 227 for all relationships

As predicted, these findings indicate that Body Appreciation is significantly negatively related to both avoidance and anxiety attachment. Body Appreciation seems to have a stronger relationship with anxiety than it does with avoidance, however both correlations had small effect sizes. As a result, Hypothesis 8 was supported as Body Appreciation was found to play a significant role in attachment anxiety and avoidance. Body Appreciation is a new variable that has not been previously examined in relation to attachment anxiety and/or avoidance.

Hypothesis 9: For Individuals Classified as Obligatory Exercisers, Exercise will be Significantly Positively Related to Attachment Anxiety and Avoidance

Hypothesis 9 utilized multiple regression. The independent variables were attachment anxiety and avoidance from the RSQ. As recommended by Pasman and Thompson (1988) persons classified as obligatory exercisers within the current sample, (i.e. scores equal to or greater than 50 on the OEQ) were identified to examine the role of
exercise and attachment. These individuals’ scores composed the dependent variable (see Table 13).

Table 13

Correlation Matrix for Hypothesis 9

<table>
<thead>
<tr>
<th>Variables</th>
<th>Obligatory Exercise (p)</th>
<th>Avoidance (p)</th>
<th>Anxiety (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obligatory Exercise</td>
<td>1.00</td>
<td>.20 (.06)</td>
<td>.12 (.18)</td>
</tr>
<tr>
<td>Avoidance</td>
<td>.20 (.06)</td>
<td>1.00</td>
<td>.52 (&lt;.001)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>.12 (.18)</td>
<td>.52 (&lt;.001)</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note: N = 59 for all relationships

The results indicate that the direction of the relationship was as expected, suggesting that for this subsample, increase in Obligatory Exercise was related to greater attachment insecurity. However, the strength of the relationship was not strong enough to be considered significant. This could be due to the small sample size coupled with a small effect size. It may also be the case that there were a number of individuals in this sample that had relatively low avoidance/anxiety scores (i.e. secure attachment) thus restricting the range of the attachment variable.

Hypothesis 10: For Individuals Classified as Obligatory Exercisers, Body Appreciation Will be Significantly and Negatively Related to Attachment Anxiety and Avoidance

Hypothesis 10 utilized Pearson correlation to investigate individuals classified as obligatory exercisers (using the same criteria as employed in testing Hypothesis 9). The
independent variables were attachment anxiety and avoidance from the RSQ and the BAS was the dependent variable (see Table 14).

Table 14

*Correlation Matrix for Hypothesis 10*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Body Appreciation (p)</th>
<th>Avoidance (p)</th>
<th>Anxiety (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Appreciation</td>
<td>1.00</td>
<td>-.21 (.06)</td>
<td>-.23 (.04)</td>
</tr>
<tr>
<td>Avoidance</td>
<td>-.21 (.06)</td>
<td>1.00</td>
<td>.52 (&lt; .001)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>-.23 (.04)</td>
<td>.52 (&lt; .001)</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note: N = 59 for all relationships

These results indicate that for obligatory exercisers, Body Appreciation was significantly negatively related to anxiety attachment but not avoidance attachment. The relationship between both variables is negative, which is what would be predicted (as Body Appreciation increases, attachment avoidance and anxiety decrease), however Body Appreciation exhibited a stronger relationship with anxiety. Both correlations had small effect sizes. Overall, Hypothesis 10 was partially supported. However, because the sample consisted of only 59 individuals there may not have been enough power to detect stronger associations in this group.
CHAPTER V
DISCUSSION

The purpose of this study was to extend research on body image to include men by investigating how attachment styles for men and women are related to body image, body appreciation, and obligatory exercise behavior. Although the relationship between attachment and body image has been documented in the literature (Becker et al., 1985; Brennan & Shaver, 1995; Cash et al., 2004; Sira, 2003), most of the focus has traditionally been on women. Also, the variable of exercise is not yet well understood (Hall et al., 2007; Hausenblas & Fallon, 2002; Tiggeman & Williamson, 2000). If exercise behavior impacts body image, then it would be reasonable to conclude that it might also be linked to attachment. Exercise behavior may also be pertinent to body image in men as society has different expectations in regards to the ideal male form (Cohane & Pope, 2001; Leit et al. 2002; Olivardia et al. 2000). This study was unique in that it included the variable of obligatory exercise. Finally, it was hoped that this study would further understanding of the new variable of body appreciation by considering its potential contribution to the existing theory and its usefulness for evaluating the adaptability of exercise behavior.

Overall, the results of this study provided at least partial support for many of the hypotheses. However, there were some unexpected results. Attachment appears to be a useful framework for studying body image as a whole; but, its usefulness for understanding exercise behavior is less clear.

There appears to be some relationship between obligatory exercise behavior and attachment, however the strength of the relationship was much smaller than expected. In
this study, the prediction was that obligatory exercise behavior would be a more important factor in attachment for men over and above body image. This does not appear to be the case. While obligatory exercise explained some variance in attachment for both men and women, it did not appear to be a larger factor for men than it was for women. In addition, obligatory exercise did not appear to be a predominant factor in attachment overall, as it was more related to attachment anxiety than it was to attachment avoidance. This is an indicator that engaging in obligatory exercise may be more related to the need to be close to others in interpersonal relationships rather than that of distancing oneself from others. Finally, body image was more important overall in men’s attachment and most notably with regards to health evaluation. Again this was primarily related to attachment anxiety rather than to attachment avoidance. Overall, it does not appear that the relationship between attachment and body image that has been found for women holds true for men. It is important to note that an independent samples t-test indicated that men and women did not significantly differ on measures of attachment. Therefore, differences in the relationship between attachment and body image were not presumed to reflect any pre-existing difference between genders. Body image seemed to be more related to attachment anxiety for men whereas for women, attachment anxiety and avoidance appeared to be important contributors to insecure attachment.

In terms of body image and its relationship to exercise behavior directly, it appears that there are some small differences between men and women. Fitness orientation (level of investment in fitness) was the largest contributor to exercise for both men and women. This result is expected because it means that the more men and women engage in obligatory exercise, the more investment they have in fitness. For women,
fitness orientation was a larger contributor than it was for men. Beyond this variable, there were other subtle differences between men and women. For example, the next highest contributor to obligatory exercise for both men and women was overweight preoccupation. When women are compared to men, overweight preoccupation was a larger contributor to obligatory exercise for men. For men, the third and final significant variable was health orientation. This means that for men, level of investment in overall health was related to exercise behavior. For women, the third and final contributor was illness orientation. In women, as level of reactivity to illness decreased, their obligatory exercise increased. The result for men, while not reaching significance, was in the opposite direction.

Contrary to predictions, results of this study suggest that the relationship between body image and exercise behavior is similar in men and women, with only a few subtle differences. Obligatory exercise as a variable is valuable in understanding body image. When examining men and women’s body image subscales separately and using obligatory exercise as the dependent variable, both demonstrated a large effect size. Surprisingly, the difference between men and women was statistically significant, yet did not appear to be clinically meaningful. In addition, men and women’s body image subscale scores appeared to be similar.

The effect size for obligatory exercise in the overall model of attachment was relatively small. Because the overall relationship was smaller than expected, it would appear that the addition of obligatory exercise as a variable is not particularly valuable in understanding attachment but is useful in understanding body image. In fact, body image seems to be far more significantly related to attachment in both men and women. Thus,
obligatory exercise is not strongly related to attachment, but seems to form an indirect link to obligatory exercise through body image.

Another area explored in this study was body appreciation and how it may differ and/or add to the existing literature on attachment. The general relationship between attachment and body appreciation in the literature is that as attachment anxiety and avoidance decrease, body appreciation increases. Although adding body appreciation increased the explanatory power of the canonical correlation, the increase was not significantly higher than it was with only the body image and obligatory exercise variables. Thus, body appreciation did not significantly add to existing theory, nor did it change the current understandings of the relationship between body appreciation and attachment. It was also predicted that there would be a different relationship between attachment and body appreciation for individuals that engaged in obligatory exercise. There was a difference in attachment for this group; the correlation between attachment anxiety and body appreciation was larger. In other words, attachment anxiety was a larger contributor than attachment avoidance to body appreciation among obligatory exercisers.

The present study also predicted that body appreciation would be integral in differentiating individuals who displayed obligatory exercise behavior from those that exercised frequently but were not “obligatory” in their exercise habits. It was expected that if body appreciation was strongly and significantly related to attachment avoidance and anxiety for individuals engaged in obligatory exercise behavior, it would distinguish adaptive and maladaptive exercise behavior. The prediction was based on the notion that if exercise were maladaptive, a person would likely display insecure attachment and would, in turn, exhibit poor body image. Because body appreciation is a positive aspect
of body image, if it were low in an individual engaging in obligatory exercise, it would suggest that obligatory exercise was maladaptive. On the other hand, if one has a good body image, and in particular high body appreciation, he/she would tend to be more securely attached, suggesting that perhaps the obligatory exercise is not maladaptive but rather adaptive because the individual is not displaying other psychological variables associated with disordered eating (i.e. poor body image and insecure attachment). In other words, high body appreciation may be an indicator that body image is good and would thus indicate secure relationships with others. Unfortunately, results of the present study indicate that this does not appear to be the case. The relationship between body appreciation and attachment anxiety and avoidance was small for obligatory exercisers and only significant with attachment anxiety. Thus, among obligatory exercisers’ body appreciation likely does not predict the quality of their relationships with significant others. Body appreciation would at most distinguish an individual’s level of anxiety in interpersonal relationships, but in a limited way because the correlation was small.

While body appreciation added some explanatory variance, it did not add a significant amount to the overall model. This may be an indication that it did not differ significantly from the more traditional method of measuring body image in explaining attachment anxiety and avoidance. In addition, as mentioned previously it was not particularly useful in differentiating individuals who engage in obligatory exercise in terms of their relationships with significant others. Adding body appreciation as a variable may not be useful in the consideration of attachment or obligatory exercise.

One unique finding of the study is the large amount of variance contributed by the health evaluation scale. This is interesting because it is slightly different than what has
been found in previous studies. Other studies that investigated body image focused on the evaluation of attractiveness (cf. Cash, 1995; Cash, Phillips, Santos, & Hrabosky, 2004; Cash, Thériault, & Annis, 2004; Geller, Srikameswaran, Cockell, & Zaitsoff, 2000; Hausenblas & Fallon, 2002; Sira, 2003). The findings of this study suggest at least in relation to attachment, that one’s perception of health is an important aspect of body image.

Treatment Implications

Attachment anxiety and avoidance are related to body image in both men and women. This relationship, however, appears to be different for men and women. As mentioned previously, for men body image and attachment anxiety were more related than body image and attachment avoidance. Thus, as a clinician, when assessing a man’s body image, it may be useful to ask questions regarding level of anxiety in interpersonal relationships. For women, a high level of attachment anxiety combined with a low level of attachment avoidance has been shown to be indicative of problematic behavior. This study highlights that for men attachment anxiety is the bigger predictor of men’s body image. This may also indicate that men may present either with a high level of attachment anxiety and low level of avoidance (preoccupied attachment, same as women) or they may present with a high level of attachment anxiety and a high level of avoidance (fearful attachment). In other words, level of attachment avoidance would not be the variable of interest. This would also impact the intervention used. Once it is established if the individual exhibits predominantly either preoccupied or fearful attachment, the intervention would differ based on the outcome of the assessment.
In terms of how exercise is related to attachment for men, it does not appear to be a significant factor. Women’s body image appears to have a larger relationship to attachment than obligatory exercise. This would suggest that interventions that have been used in women to bolster body image would likely also be beneficial to men. Such interventions would be particularly beneficial following adjustment to the materials. For example, body image interventions that involve attention to media portrayals (e.g., critiquing women’s thinness in magazines) could be extended to men by having male clients attend to portrayals of men’s muscle mass in magazines and question what images are more/less realistic for the average man to obtain.

It was hypothesized that obligatory exercise behavior would play a role in attachment for men because the ideal male form is muscular. While it was not directly related to attachment, it seems that it is a significant contributor to body image. Helping men to see how exercise impacts the way they feel about their bodies would likely be a successful intervention for improving body image. However, it would be important to monitor the degree to which it may be used as the only means of coping with poor body image. When exercise becomes the only means for coping with poor body image it is more likely that it will become maladaptive in nature.

Exercise is an important variable for body image in men and women. Just as men could benefit from using exercise as a means of improving body image, women could also benefit from such an intervention. However as noted, exercise should not be the only means used for improving body image.

It is important to consider what may be motivating exercise behavior. Obligatory exercise was related to fitness orientation in men and women, as was overweight
preoccupation. This would indicate that individuals that are engaged in obligatory exercise are also preoccupied with their weight. Assessing a client's level of preoccupation with weight in addition to their level of exercise may be a means of distinguishing frequent exercise from obligatory exercise. Further study of this issue is warranted.

Body appreciation seems to be relevant for attachment theory. In this study it was related to attachment anxiety and avoidance. The implication of this is that individuals with secure attachment are more likely to also appreciate their bodies. Clinically, this may be a way to use a strength-based approach in assessment of body image. Asking a client to describe the positive aspects of his or her body would likely reap the same results as assessing negative thoughts regarding body image. However, using the positive lens of body appreciation may provide the client with encouragement that therapy need not be about highlighting weakness and “pathology.” If individuals appear to have little body appreciation together with insecure attachment patterns, it may be an indication of problematic behavior.

Another relevant finding from this study was that health evaluation played a significant role in attachment for men and women. The current conceptualization of an individual with an eating disorder is the notion that the particular aspect of body image that is driving the eating behavior is attractiveness (evaluation, investment, and affect). This becomes puzzling because as the individual becomes thinner, it is not necessarily the case that his or her body image improves. If body image is defined in terms of attractiveness, and an individual with an eating disorder identifies attractiveness with being thin, then it would stand to reason that body image might improve with weight loss.
The health evaluation variable seems more compatible with eating disorder pathology. If health is a major factor in body image, it would make sense that one’s body image does not improve with losing weight. As one engages in unhealthy behavior, one will likely feel less and less healthy physically (i.e. they feel drained, hungry, weak, etc.).

It is also interesting that health evaluation explains so much variance in attachment because it indicates a relationship between perceptions about interpersonal relationships and perceptions about the body. More secure attachment is associated with perceptions of more health and freedom from disease. Thus, this may indicate that if persons perceive themselves to be healthy physically, they may be inclined to perceive themselves as healthier in their relationships with others. It would not be possible from this study to know which came first, the perceptions of good interpersonal relationships or the perception of health, but it appears that the two are related. This would likely be helpful in integrating into treatment with the idea that health is both physical and emotional and as behaviors become increasingly unhealthy, they will impact feelings of health overall. As the feelings of health are impacted not only will physical domains likely be impacted, but so will feelings regarding the security of interpersonal relationships.

Limitations and Future Directions

*Internal validity.* There are a few noteworthy limitations of the study, some of which include possible threats to internal validity and some to external validity. The fitness subscales within the body image assessment were contributing more variance to attachment than the OEQ (Pasman & Thompson, 1988). This may be due to differences between the scales. As noted, the MBSRQ assesses body image via three domains:
evaluation, orientation (or level of investment), and affect (Cash, 2000). Therefore, the fitness scales in this questionnaire asked participants different questions pertaining to how physically fit they believe they are, how important it is to them that they be physically fit, and their feelings about their fitness. The OEQ asked specific questions about exercise frequency and was also developed with the idea that exercise may be obligatory, or compulsive in nature. For example, questions pertain to such behaviors as exercising despite injury or personal obligations and degree of guilt associated with missing a scheduled exercise time. It appears that one’s evaluation, investment, and affect regarding fitness plays a larger role in attachment avoidance and anxiety than the frequency or what they may sacrifice to exercise.

Another potential limitation to the assessment of the exercise variable was the self-report nature of the measurement. The researcher did not document participants’ actual exercise, only what they reported. It could be that some participants were misreporting exercise behavior. However, no research was located that gave insight to the social desirability response in an undergraduate pertaining to questionnaires about exercise. Current studies typically focus on special populations and the difference in exercise intention and behavior, including bariatric patients (Hunt, 2007), cardiac patients (Hong, Franks, Gonzalez, Keteyian, Franklin, & Artinian, 2005), and Native Americans (Macvicar, 2002).

*External validity.* One potential external validity threat involves the sample used in this study. The participants in the study were from a general college population, which is a relatively healthy sample overall. As a result, caution must be taken when attempting to generalize to a more clinical population. It may be that some participants were
engaging in maladaptive eating behavior at a clinically significant level, but this did not represent the majority of participants. This assumption is made because the means and standard deviations for the scales overall were comparable to what the developers of each questionnaire found. When the OEQ was developed, it was assumed that obligatory exercise was detrimental (although in this study the hypothesis was that there may be individuals that engage in obligatory exercise but do not have poor body image). It may be that there were not enough individuals that were considered obligatory exercisers to test this assumption. Also, this study used body appreciation as the distinguishing variable for obligatory exercisers. There may be individuals who engage in obligatory exercise but do not have an unhealthy body image, but body appreciation does not appear to be the distinguishing variable. Body appreciation may also not be significantly different from body image in a more healthy population (as opposed to a clinical population) because overall body image would tend to be more positive. Perhaps the use of a clinical sample would better distinguish a predictive role of body appreciation for obligatory exercise.

Unfortunately, there is no way of knowing for sure how many individuals in this sample would meet the criteria for an eating disorder or disordered eating because the scales relating to body image in and of themselves were not designed to assess disordered eating but rather normal functioning. The RSQ assesses interpersonal relationships and have been found to be related to disordered eating and poor body image, but were not specifically designed to identify individuals with eating disorders. Similarly the overall contribution of the OEQ to attachment might have looked very different with a clinical sample. It is difficult to know how relationships between variables would change with a
clinical sample. This sample did not show that the OEQ contributed a lot of variance because there were likely few (if any) individuals with eating disorders. Had the present study employed a clinical sample and the OEQ contributed more variance, it may be an indication that the OEQ is in fact measuring maladaptive exercise patterns. This would be concluded because of the difference in contribution between the two samples.

Another limitation of the current study may have been the use of the OEQ. While the scores were reliable and it was certainly useful in understanding individuals that exercise excessively, it may have been a better measure of extreme exercise rather than a broader range of problematic exercise practices. It is important to note that the role of exercise in the body image of both genders and in particular men, might have been more apparent if a measure that assessed less extreme exercise behavior had been used. The OEQ has been the instrument used in many studies using comparable undergraduate student samples (Ackard et al., 2002; Adkins & Keel, 2005; Smith, Wolfe, & Laframboise, 2001; Steffen & Brehm, 1999) and in a few studies targeting exercisers specifically (e.g. runners as in Coen & Ogles, 1993; Elbourne & Chen, 2007; Pasman & Thompson, 1988). In addition to being used with comparable samples, the OEQ was also the most reliable instrument in regards to this particular variable. Future researchers who that use a comparable sample as the one in the present study may consider either adding another questionnaire related to exercise use, or to replace the OEQ with another exercise questionnaire. Other suggested instruments may be: the Leisure-Time Exercise Questionnaire (Godin, Jobin, & Bouillon, 1986) which measures self-reported frequency of exercise undertaken during a typical week; Reasons for Exercise Scale (DiBartolo, Lin, & Shaffer, 2001) which measures motivations for exercise using two subscales;
Commitment to Exercise Scale (Davis, Brewer, & Ratusny, 1993) which measures obligatory aspects of exercise behavior; and Reasons for Exercise Inventory (Silberstein, Striegel-Moore, Timko, & Rodin, 1988) which measures reasons for exercise on seven domains.

Related to the previous limitation may have been the small number of participants categorized as obligatory exercisers. There were 59 participants who met criteria as obligatory exercisers (a score of 50 or greater on the OEQ). The effect sizes for both relationships (i.e. attachment and obligatory exercise and the relationship between body appreciation and attachment) were small. Perhaps if there had been a greater number of participants that met criteria for being obligatory exercisers, different results may have emerged.

While this study included participants ranging in age and from diverse backgrounds, the inclusion of more persons within different age groups could allow for studying the potential effect of age on the variables of interest. The majority of the sample was college age, which may have had an impact on the results. Also, although the majority of participants were recruited through the undergraduate psychology participant pool, part of the sample was recruited from the campus recreational center in order to ensure that individuals actually engaged in some exercise. This may have influenced the results, especially if students participating in this research through the participant pool were less physically active than those recruited from the recreational center. Future researchers may want to either control for exercise behavior or allow for comparisons between groups based level of exercise. It also is unknown in the present study how many men and women were from each site. For example, it may have been that a
disproportionate number of men were recruited from the recreational center rather than from the participant pool. Finally, the weight of the sample may have had an impact on results. Overall, the sample was of average to above average weight. A sample with a more average weight may have shown different relationships.

For future directions, it may also be of benefit to investigate these variables (in particular the OEQ) in a clinical population. As mentioned previously, body appreciation and the OEQ may have added more variance in a clinical population. In addition to this, other variables of body image may have related differently. For example, the health evaluation variable was important in the normal population, it would be interesting to see if it would have same salience with a clinical population. It may help to understand why body image does not improve as individuals lose more and more weight as a function of their eating disorder.

In conclusion, this study has unique implications for the theories of attachment, body image, body appreciation, and obligatory exercise. The current study was able to replicate the relationship between attachment and body image that has been well documented in the literature. More importantly, it seems that the theory of attachment relates to body image slightly differently in men than in women. For men, the dimension of attachment anxiety is more strongly related to body image, whereas for women both dimensions of attachment avoidance and anxiety are related to body image. It appears that body image is a useful framework and that adding body appreciation as a variable has limited use in explaining the relationships between attachment anxiety and avoidance, body image, and obligatory exercise. However, it does appear to be significantly related to attachment anxiety and avoidance on its own. Finally, contrary to predictions,
obligatory exercise was not strongly related to attachment in either men or women. Another surprising finding was that health evaluation was a very important factor in body image for men and women in relation to attachment anxiety and avoidance. Future researchers should either attempt to replicate the present study using a different method of exercise assessment or use the same exercise assessment with a clinical sample in order to potentially broaden the range of exercise, eating, and attachment difficulties of the sample.
The project has been reviewed by The University of Southern Mississippi Human Subjects Protection Review Committee in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the “Adverse Effect Report Form”.
- If approved, the maximum period of approval is limited to twelve months.

Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 27120601
PROJECT TITLE: Attachment Anxiety and Avoidance: Relationship to Body Image and Exercise Behaviors
PROPOSED PROJECT DATES: 12/03/07 to 12/31/08
PROJECT TYPE: Dissertation or Thesis
PRINCIPAL INVESTIGATORS: Kathryn L. Brown
COLLEGE/DIVISION: College of Education & Psychology
DEPARTMENT: Psychology
FUNDING AGENCY: N/A
HSPRC COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 12/13/07 to 12/12/08

Lawrence A. Hosman, Ph.D.
HSPRC Chair

12 - 17 - 07
Date
I. Project Goals

The purpose of this study is to investigate how attachment styles and body image may be related to exercise behavior. The relationship of attachment style and body image has been well documented in the literature. Since poor body image is considered an important aspect of individuals who have eating disorders, it is important to also assess its relationship with attachment and obligatory exercising behavior. However, the relationship between body image and exercise behavior has not been studied as frequently. Understanding this relationship may have implications in the theory of body image for men. If exercise behavior is modified or otherwise affected by body image, then it would be reasonable to conclude that it might also be linked to attachment. Thus, the purpose of this study is to investigate the relationship among these variables in order to broaden the theory of body image through the examination of exercise as well as the inclusion of men in the sample.

II. Protocol

Participants. At least 200 men and women over 18 years of age will be recruited from several different areas in Hattiesburg, Mississippi. Some of the participants will be enlisted through the Experimetrix program. To ensure the sample contains individuals that engage in exercise, participants will also be recruited from the Payne Center.

Procedure. Questionnaire packets will be compiled. The instrumentation for the study includes:

- Demographic questionnaire (inquiring general information such as age, race, gender, etc.)
- Relationship Scales Questionnaire (RSQ)
- Multidimensional Body-Self Relations Questionnaire (MBSRQ)
- Body Appreciation Scale (BAS)
- Obligatory Exercise Questionnaire (OEQ)

For the BAS, there will need to be two forms, one for the women and the other for the men. The men’s form will be light blue and women’s form white. This is the only questionnaire that will need to have two different forms. To decrease fatigue effects, the packets will be counterbalanced. Half (100) of the packets will contain (in this order) two (2) informed consents (one for their personal records) (see Appendix B), a demographic questionnaire (inquiring general information such as age, race, gender, etc.) (see Appendix D), RSQ, MBSRQ, BAS, OEQ, and all participants will receive a form to enter in the raffle (see Appendix C). The other half (100) of the packets will contain (in this order) two (2) informed consents, a form to enter the raffle, OEQ, BAS, MBSRQ, RSQ, and a demographic questionnaire. Depending on the recruitment site, participants will receive extra credit or contact information for feedback from the body image assessment.
Students recruited from Experimetrix will sign up for the study. The researcher will reserve a classroom for a block of time for a couple hours a week. The students that sign up will be able to come and fill out the questionnaire. In total, the questionnaire will take between 30 to 45 minutes to complete. Participants will be provided with extra credit for their participation.

At the Payne Center, individuals will be recruited from two sources. First, the Payne Center routinely offers a fitness assessment for individuals that are interested. As a part of the assessment these participants will be asked to participate in the study, if interested they will be asked if they would like to take a survey and this component will be added to their fitness testing results. After their assessment they will be contacted by the experimenter and informed about their level of body image satisfaction. In addition to this, they will be offered the opportunity to be entered into a raffle. When appropriate, they will be given referrals to local treatment facilities, including Student Counseling Services.

The second place for recruitment at the Payne Center will be at the entrance during peak hours. A flyer will be created to announce upcoming times for filling out the questionnaire and entering into the raffle. This will be a way to promote the Payne Center as well as prepare individuals that are coming to the Payne Center to schedule time to participate in the study. A table will be set up and potential participants will be approached. If interested, they will participate in the study in a reserved room in the Payne Center and offered the opportunity to enter into a raffle. To ensure that each student only enters the raffle once, they will be asked to place a number on both their informed consent and on the raffle postcard that match. The informed consents will be separated from each person’s data after data has been entered. The informed consents will be double checked to ensure that no one participated in the study more than once. If the same name and signature is attached to two sets of data, only one set will be included in the data and raffle.

The raffle will include several prizes. The prizes will be as follows:
1. Tickets to different school sporting events.
2. Tee-shirts with the school logo on them (4 winners).
3. Hats with the school logo on them (4 winners).
4. $20 gift certificate from the Fresh Food company in the Payne Center (5 winners).
5. $50 gift certificate for campus bookstore (2 winners).
6. Free fitness assessment at the Payne Center (10 winners)

III. Benefits

Participants recruited from Experimetrix will be provided the opportunity to gain extra credit for the psychology class of their choice. Participants recruited through the fitness assessment will have the chance to be assessed on their body image as well as the other components already included in the assessment. In addition to this, if it is an area of concern, they may be provided with the appropriate mental health resources to help them
gain a healthier body image. If they decide to follow through on the resources provided, there is a tremendous opportunity for benefit. In addition to these benefits, all of the participants will have the chance to win a prize from the raffle.

IV. Potential Risks and Safeguards

There are no foreseeable risks to participation in the present study. Of course, it is always possible that participants may be adversely affected in some way by the questionnaires. The protection of participants will be addressed in the following ways:

1. Participation is voluntary. They are free not to participate in the study. They may also stop the questionnaire at anytime, without penalty.
2. Self-disclosure on the questionnaires is completely voluntary. Each person will voluntarily answer the questionnaires, only providing the information he/she is willing to disclose.
3. All instruments are self-report and non-invasive.
4. Participants will be given a copy of the consent form for their own records.
5. The personal identity of participants will remain anonymous. As soon as it is verified that each participant was entered only once, the consent form and data will be separated from each other.
6. Participants that are given results of the body image assessment will also be provided referrals to local treatment centers (including Student Counseling Services) when appropriate.

V. Informed Consent

Each participant will view the informed consent form describing the procedure, rationale, and state that participation is voluntary. In addition, participants will be informed that their identities will remain anonymous and that they may keep a copy of the form if they agree to participate (see attached). This form will enable them to keep relevant information, such as the name and email address of the principal investigator and contact information for the Human Subjects Protection Review Committee for their records.
APPENDIX B

INFORMED CONSENT FORMS
(EXPERIMETRIX)

The purpose of the present study is to investigate the relationship between attachment style, body image, and exercise behavior. Participation will involve completion of questionnaires. It is anticipated that all of the questionnaires should take approximately 30-45 minutes to complete. If you choose to participate in this study, your identity will remain anonymous. None of your personal information will be linked to your name once verification you have only participated in the study once has been made.

While there are no foreseeable risks to participating, your participation in this research is completely voluntary and you may choose to withdraw your participation at any time with no penalty. Your self-disclosure on the questionnaires is completely voluntary. All of the questionnaires involve self-report and are non-invasive.

There are several benefits to participating in this research, including the opportunity for extra credit. In addition to this you will be able to enter into a raffle with the possibility of winning several prizes. Each participant may only enter the raffle once. Possible prizes include:

1. Tickets to different school sporting events.
2. Tee-shirts with the school logo on them (4 winners).
3. Hats with the school logo on them (4 winners).
4. $20 gift certificate from the Fresh Food company in the Payne Center (5 winners).
5. $50 gift certificate for campus bookstore (2 winners).
6. Free fitness assessment at the Payne Center (10 winners).

This research has been submitted for approval by the Institutional Review Board of The University of Southern Mississippi. You may ask questions regarding this research and any of the questionnaires at any time. Should you have any questions, please contact Kathryn L. Brown, M.A. by email: Kathryn.Brown@usm.edu or by phone: 785-341-8626. Additionally you may contact the primary investigator’s faculty advisor, William Lyddon, Ph.D. by email: William.Lyddon@usm.edu or by phone: 601-266-4602. Any questions or concerns about your rights as a participant should be directed to the Chair of the Institutional Review Board at The University of Southern Mississippi, Box 5147, or by phone: 601-266-6820.

Please keep one copy of this form for your personal records.

_________________________________________  ____________________________
Name (printed)                              Signature/Date

_________________________________________  ____________________________
Person explaining the study (Experimenter)   Signature/Date
Informed Consent Form
(Payne Center: Fitness Assessment)

The purpose of the present study is to investigate the relationship between attachment style, body image, and exercise behavior. Participation will involve completion of questionnaires. It is anticipated that all of the questionnaires should take approximately 30-45 minutes to complete. If you choose to participate in this study, your identity will remain anonymous. None of your personal information will be linked to your name once verification you have only participated in the study once has been made.

While there are no foreseeable risks to participating, your participation in this research is completely voluntary and you may choose to withdraw your participation at any time with no penalty. Your self-disclosure on the questionnaires is completely voluntary. All of the questionnaires involve self-report and are non-invasive.

There are several benefits to participating in this research, including the opportunity for a body image assessment. This will help to inform you of how the way you view your body affects you. This is an important psychological variable. Body image can help you understand your relationship with your body. It is a unique and exciting opportunity to learn more about yourself! You will be able to enter into a raffle with the possibility of winning several prizes. Each participant may only enter the raffle once. Possible prizes include:

1. Tickets to different school sporting events.
2. Tee-shirts with the school logo on them (4 winners).
3. Hats with the school logo on them (4 winners).
4. $20 gift certificate from the Fresh Food company in the Payne Center (5 winners).
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Please keep one copy of this form for your personal records.

________________________________________  ____________________________
Name (printed)                           Signature/Date

________________________________________  ____________________________
Person explaining the study (Experimenter)  Signature/Date
☐ Please check this box if you are interested in the results of your body image assessment.

If checked, please include:

Phone: ________________
Email: ________________

*Please mark your preferred method of communication.
Informed Consent Form
(Payne Center Entrance)

The purpose of the present study is to investigate the relationship between attachment style, body image, and exercise behavior. Participation will involve completion of questionnaires. It is anticipated that all of the questionnaires should take approximately 30-45 minutes to complete. If you choose to participate in this study, your identity will remain anonymous. None of your personal information will be linked to your name once verification you have only participated in the study once has been made.

While there are no foreseeable risks to participating, your participation in this research is completely voluntary and you may choose to withdraw your participation at any time with no penalty. Your self-disclosure on the questionnaires is completely voluntary. All of the questionnaires involve self-report and are non-invasive.

There are benefits to participating in this research. You will be able to enter into a raffle with the possibility of winning several prizes. Each participant may only enter the raffle once. Possible prizes include:

1. Tickets to different school sporting events.
2. Tee-shirts with the school logo on them (4 winners).
3. Hats with the school logo on them (4 winners).
4. $20 gift certificate from the Fresh Food company in the Payne Center (5 winners).
5. $50 gift certificate for campus bookstore (2 winners).
6. Free fitness assessment at the Payne Center (10 winners).

This research has been submitted for approval by the Institutional Review Board of The University of Southern Mississippi. You may ask questions regarding this research and any of the questionnaires at any time. Should you have any questions, please contact Kathryn L. Brown, M.A. by email: Kathryn.Brown@usm.edu or by phone: 785-341-8626. Additionally you may contact the primary investigator’s faculty advisor, William Lyddon, Ph.D. by email: William.Lyddon@usm.edu of by phone: 601-266-4602. Any questions or concerns about your rights as a participant should be directed to the Chair of the Institutional Review Board at The University of Southern Mississippi, Box 5147, or by phone: 601-266-6820.

Please keep one copy of this form for your personal records.

Name (printed) ___________________________ Signature/Date ___________________________

Person explaining the study (Experimenter) ___________________________ Signature/Date ___________________________
APPENDIX C

RAFFLE FORM

In order to enter the raffle, please write the number that appears on your informed consent in the space provided _________.

Entering into this raffle gives you the opportunity to win one of the prizes listed below:

1. Tickets to different school sporting events.
2. Tee-shirts with the school logo on them (4 winners).
3. Hats with the school logo on them (4 winners).
4. $20 gift certificate from the Fresh Food company in the Payne Center (5 winners).
5. $50 gift certificate for campus bookstore (2 winners).
6. Free fitness assessment to workout at the Payne Center (10 winners).

Below, please clearly print information to contact you. This form will be separated from testing data to ensure confidentiality.

Name: ______________________

Phone #: ____________________

Email address: __________________

*Please indicate which mode of communication you prefer.

Thank you for completing the study and GOOD LUCK!!!!!
Demographics Questionnaire

Directions: Please fill in the blank or check the response that best applies to you.

Age: ______ (if you are under 18, please discontinue)

Gender: _____ Male          _____ Female

If student, year in school: _____

If you are not a student, job title: ____________________________

Location of questionnaire completion: _____ Psychology Department     _____ Payne Center

Racial/Ethnic Background:

_____ American Indian/Alaskan Native
_____ Asian/Pacific Islander
_____ Black (Non-Hispanic)
_____ Hispanic
_____ White (Non-Hispanic)
_____ Other ________________ (please specify)

Height: _____ feet _____ inches           Weight: _____ pounds
APPENDIX E

PERMISSION TO USE AND REPRODUCE INSTRUMENTS

RSQ Permission

http://www.sfu.ca/psyc/faculty/bartholomew/faq.htm

Do I need permission to use the RQ and/or the RSQ for my research?

You are welcome to use the RQ and/or the RSQ in your research examining adult attachment relationships. If you require more formal than this brief web statement, please prepare a letter, ready for signature, containing the information you need and either mail or fax it to:

Dr. Kim Bartholomew
Department of Psychology
8888 University Drive
Simon Fraser University
Burnaby, BC
V5A 1S6 CANADA

Fax: 604.291.3427
MBSRQ Permission


The MBSRQ (both forms) and its manual are available for a nominal fee. Purchasers are permitted limited duplication of the questionnaires for research or clinical purposes. Conditions of use are as follows:

- Period of use cannot exceed two years.
- Duplicated copies exceeding 500 require the author’s written permission.
- Distribution for use by others is prohibited.
- Re-typing or modification of the MBSRQ items is prohibited.
- Any commercial use of the materials, other than use in research or clinical practice, is prohibited.
- Any document (i.e., technical report, thesis, dissertation, or published article) resulting from the use of the MBSRQ will include its proper citation.
BAS Permission

Hi Kathryn,

Of course you have my permission to use the BAS. Here is the scale, in case you need it. Note that one item is different for women and men. Good luck with your research and thanks for your interest in mine.

Take care,

Tracy

"Celebrate most those aspects of your body and soul that are different, for diversity enriches the world."

Tracy L. Tylka, Ph.D.
Associate Professor of Psychology
The Ohio State University
1465 Mt. Vernon Avenue
Marion, OH 43302

phone: 740-725-6384
fax: 614-292-5817

----- Original Message ----- 
From: Kathryn Brown <kathryn.brown@usm.edu>
Date: Monday, August 27, 2007 12:47 pm
Subject: Body Appreciation Scale

> Dr. Tylka-
> My name is Kathryn Brown and I am a doctoral candidate at The University of Southern Mississippi. I am interested in using the Body Appreciation scale for my dissertation. Could you grant me permission? Let me know if there is any additional information you need. Thank you.
> 
> Sincerely,
> Kathryn Brown
The Obligatory Exercise Questionnaire has been published in:


REFERENCES


