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The Effects of Negative Body Image and Self-assessed Health on Health Behaviors in Adults

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THE EFFECTS OF NEGATIVE BODY IMAGE AND SELF-ASSESSED HEALTH ON HEALTH BEHAVIORS IN ADULTS

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Dissertation Approval

This is to certify that the thesis presented to us by Danielle Beach

on the 8th day of May, 2018, in partial fulfillment of the requirements for the degree of Doctor of Psychology, has been examined and is acceptable in both scholarship and literary quality.

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Abstract

Body image (BI) is a complex concept that seems to be related to self-assessed health (SAH), in other words, how an individual perceives his or her health. Negative BI does seem to influence adaptive and maladaptive health behaviors. For example, women with negative BI are more likely to smoke cigarettes and have more difficulty with smoking cessation than their counterparts with less negative BI. Previous studies have explored the relationship between select variables, and the samples have consisted of mostly adolescents and European samples. The current study aimed to determine if a relationship exists between these variables and to examine if negative BI and SAH predict health behaviors. Currently, the literature examining whether BI and SAH predict health behaviors is sparse. One hundred eighty-nine participants (155 female, 33 male) were recruited online and completed the study. Results demonstrated a significant negative relationship between BI and SAH and no significant relationship between BI and health behaviors. Additional findings included gender having a statistically significant effect on BI, but not on SAH and health behaviors. SAH was also found to be a significant predictor of health behaviors, unlike BI, which was not found to be a significant predictor variable. Lastly, BI and SAH were not found to be significant predictors of gender-specific medical nonadherence. Research and clinical implications of the findings and future directions are discussed.

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Chapter 1: Introduction

Statement of the Problem

Body image (BI) is a complex construct loosely defined as a person's mental representation of the body's shape, form, and size (Cash, 2012; Slade, 1994). This construct is influenced by historical, cultural, social, individual, and biological factors (Slade, 1994). Newer definitions of BI take into account how people feel in their bodies, as well as how they feel about their bodies, and do not solely focus on body shape (Cash, 2012). In terms of BI, people can view their bodies negatively, positively, or somewhere in between. BI views and issues transcend the lifespan and can have important health implications.

In addition to age, BI transcends gender. Preadolescent boys and girls can suffer from BI disorders, but presentation tends to differ based on gender (Cohane & Pope, 2001). For example, young girls tend to choose a thinner "ideal" image for themselves, while young boys tend to prefer a heavier "ideal" image (Cohane & Pope, 2001). By adolescence, boys tend to be more concerned with developing a muscular physique, while girls tend to focus on the thinner ideal body shape portrayed on television and magazines (Smolak, 2004). This has important health implications because fixation with BI and shape can lead to unhealthy behaviors in adolescents. These behaviors can include excessive exercise, eating disorders or eating-disordered behavior, and anabolic steroid use, particularly in male individuals (Smolak, 2004).

Through adulthood, BI concerns remain relatively prevalent and stable for women until they reach old age (Tiggeman, 2004). Prior to old age, women tend to report lower body satisfaction, especially if they were obese during childhood or adolescence

(Milkewicz-Annis, Cash, & Hrabosky, 2004). Adult obesity also appears to be a contributing factor to body dissatisfaction. As weight increases, body satisfaction decreases in the general population. This phenomenon is clearer in women than men (Schwartz & Brownell, 2004). This could, in part, result from the social norms that surround obesity and imply that being overweight is bad and shameful. Therefore, the correlation between negative BI and obesity is strong (Smolak, 2004).

BI may also be related to one's self-assessed health (SAH). SAH refers to an individual's subjective rating of his or her own health (Linn & Linn, 2004). Age might moderate the relationship between SAH and body dissatisfaction. In adolescence, perceived negative health is more strongly correlated with body dissatisfaction than later in life (Meland, Haugland, & Breidablik, 2007). Other than Meland et al. (2007), few studies have examined the relationship between BI and SAH. Studies have shown that as people age they are more likely to perceive their health as good or very good. Individuals aged 85 years and older who rated their health as good or very good typically reported lower illness burden and were on fewer medications than their same-aged counterparts who rated their health as fair or poor (Linn & Linn, 2004). Individuals with poor SAH are associated with significantly increased mortality in comparison to individuals who rate their health as good or very good (Galenkamp, Braam, Huisman, & Deeg, 2012; Miilupalo, Vuori, Oja, Pasanen, & Urponen, 1997).

Health behaviors, such as exercise, may be a link to understanding the role BI plays in SAH and other variables. For example, age and gender have been found to moderate the relationship between exercise and BI (Meland et al., 2007). The motivation to exercise depends on gender and body satisfaction. Women are more likely to exercise

to feel better and improve their BI. However, women who engaged in regular exercise still reported negative BI and did not have more positive BI than women who did not engage in regular exercise (Lowery et al., 2005). Thus, women may exercise to improve their BI, but doing so does not appear to be effective. With men, older men are more likely to exercise to lose weight, while younger men are more likely to exercise to gain weight (Davis & Cowles, 1991).

BI also influences the extent to which a person decides to engage in other health-related behaviors, such as decisions to quit smoking, use drugs, partake in cosmetic surgery, and engage in healthy eating habits (Grogan, 2006). BI dissatisfaction can be predictive of depression, eating disorders, low self-esteem, and health-compromising behaviors (Holsen, Jones, &t Birkeland, 2012). Surprisingly, lower body satisfaction does not serve as a motivator for engaging in healthy weight management behaviors. Instead, a study with adolescents showed that lower body satisfaction predicts behaviors that may place adolescents at risk of weight gain and poorer overall health. These behaviors include smoking, unhealthy dieting, unhealthy weight control behaviors, binge eating, drinking alcohol, and lower levels of physical activity (Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006). In summary, BI disturbances have been associated with unhealthy eating, smoking, alcohol abuse, and inactivity.

The impact that BI has on the performance of unhealthy behaviors has important implications within the healthcare system. These behaviors are linked with significant morbidity, mortality, and billions of dollars a year in healthcare costs. Newer research has shown that people who engage in preventative health behaviors (e.g., regular check-ups, screenings, and immunizations) are less likely to use the healthcare system incorrectly

and incur extraneous costs (Hibbard & Greene, 2013). If the causes and correlates of BI were better understood, this information could better inform treatment and prevention programs and cut down on unnecessary health costs and overuse of the healthcare system.

Review of the Literature

Body Image (BI)

BI is an important area of study because of the widespread preoccupation humans have with their bodies in modern Western culture. BI has been defined in several ways in the literature. The construct can be loosely defined as a person's mental representation of the body's shape, form, and size, and it is influenced by historical, cultural, social, individual, and biological factors (Slade, 1994). Simply, BI can also be described as the way a person sees him or herself when looking in the mirror or how that person mentally pictures him or herself (Cash, 2004, 2012). The definition also contains external influences. BI includes a sense of how others view one's body, a person's sense of the body in physical space, and a person's level of connectedness to his or her body (Cash, 2004, 2012). In addition, BI can include one's beliefs about body and appearance, how one feels about one's body, and how one feels in one's body (Cash, 2012).

BI as a construct has changed over time. Approximately a century ago, the recognition of BI or *body schema* began with attempts to understand neurological forms of body experience, including such phenomena as "phantom limb" (Halliwell, 2015). Moving into the first half of the 20th century, the view of BI started to expand outside of the focus on distorted perceptions of the body that were induced by brain damage (Smolak & Cash, 2011). In the 1970s, psychologist Seymour Fisher proposed that BI

could be understood and studied from a psychoanalytic framework, and he wrote books and papers defining and detailing the *body boundary* construct (Halliwell, 2015). At approximately the same time, critics of the psychoanalytic theory began to hypothesize ways to integrate theory and data from various areas of experimental psychology into the construct of BI. From this, body experiences became regarded as multidimensional and more integrated, until it grew into the definition that is prevalent today (Halliwell, 2015).

Positive BI. BI has subconstructs, including positive and negative BI. Positive BI is its own construct and is distinct from negative BI (Tylka, 2011). It is not simply the absence of or low levels of negative BI (Tylka, 2011). Positive BI consists of accepting and loving one's body and appreciating one's body for its appearance and function (Avalos, Tylka, & Wood-Barcalow, 2006). Healthy BI includes a clear and true perception of one's shape and the ability to see the various parts of the body as they really are (Cash, 2012). This can include enjoying and appreciating one's body and understanding that the preferred body shape portrayed in the media is not the only version of a healthy-looking body (Tylka, 2011).

The theoretical conceptualization of positive BI was informed by research of numerous accounts of adolescent girls and boys and young adult women who identified that they were highly satisfied with their bodies and appearance (Frisen & Holmqvist, 2010). Several facets of positive BI emerged from these accounts. They include holding favorable opinions of the body, respecting the body, feeling gratitude toward the body, rejecting societal ideals of attractiveness, holding inner positivity influencing outer feelings, and a broader conceptualization of beauty (Wood-Barcalow, Tylka, & Augustus-Horvath, 2010). Although positive BI includes appreciating the body as it is,

one may still wish to change some aspects of the body (Piran & Teall, 2012). Simply put, an individual can report high levels of body appreciation but also be dissatisfied with the way the body looks. The relationship between positive BI and body dissatisfaction is nuanced. Understanding positive BI as a construct is important because it is mostly correlated with evaluation of one's appearance as favorable and negatively correlated with body dissatisfaction in men and women (Avalos et al., 2015; Tylka & Wood-Barcalow, 2015). In women, BI is also negatively correlated with social physique anxiety, BI avoidance, and body checking (Stice, 2001). Thus, though negative relationships with positive BI exist, one still may wish to change certain aspects of one's appearance, despite endorsing overall positive BI (Stice, 2011).

Negative BI. Negative BI refers to thinking that the body is disgusting, unsightly, or not good enough (Cash, 2012). This can include beliefs about being overweight, even though the body mass index (BMI) is healthy and beliefs that one is not muscular or thin enough. Poor or negative BI can increase the risk for extreme weight/body control behaviors (Cash, 2003). If individuals are concerned enough about their body shape, they may take drastic measures to change their shape, such as excessive exercise and eating-disordered behaviors (Smolak, 2004).

Extreme negative BI can result in eating disorders and can influence engagement in negative behaviors linked to chronic disease (Fallon, Harris, & Johnson, 2013). For example, adolescent girls who endorse very negative BI are more likely to engage in binge eating and emotional eating; report more stress, lower self-esteem, and depression; use unhealthy weight control behaviors; and have decreased physical activity (Hudson, Hiripi, Pope, & Kessler, 2007). Negative BI in male adolescents is associated with eating

disorders, steroid use, poor psychological adjustment, and exercise dependence (Smolak, 2004). Negative BI also negatively influences behavioral risk factors for chronic disease (Ridolfi & Crowther, 2013). An example of this includes breast cancer and self-exams. Women who endorse negative BI have a lower likelihood of engaging in breast cancer self-exams (Ridolfi & Crowther, 2013). Negative BI is also associated with the lower likelihood of smoking cessation, especially in women (King, Matacin, White, & Marcus, 2005).

The relationship between negative BI and health behaviors is nuanced. Endorsing negative BI does not necessarily lead to unhealthy behaviors and vice versa. For example, women who report negative BI can engage in both healthy and unhealthy behaviors (e.g., exercising regularly and smoking; (Homan & Tylka, 2014;Lantz, 2003; Ling & Glantz, 2002). Studies examining whether any other healthy behaviors other than exercise are associated with negative BI are limited. Unhealthy behaviors linked with negative BI can lead to poorer health outcomes. For example, women who endorse negative BI are less likely to perform breast self-exams, possibly leading to later detection of breast cancer (Ridolfi & Crowther, 2013). Smoking cessation is often more difficult for women who endorse negative BI, and chronic smoking can lead to poorer overall health outcomes as well (King et al. 2005).

Role of BI and BMI. BMI, BI, and SAH seem to be interrelated. BI is a mental representation of what people think they look like, and this may or may not have a close relation to the way others see themselves (Cash & Smolak, 2011). It is also related to perceptions of and attitudes regarding physical appearance (Cash & Pruzinsky, 2002). Others have conceptualized BI as relating to BMI, suggesting that weight and physical

appearance are vital components of BI appraisal (Warren, Castillo, & Gleaves, 2009). BMI is a measure of body fat based on height and weight that applies to adult men and women (National Institute of Health, 2016). Two components are common in BI attitudes that may be related to BMI. One is the appraisal individuals have of their bodies (i.e, body dissatisfaction), and the second is the importance individuals place on their appearances (Cash, 2012). As BMI increases over time, it can influence the perceptions a person has of his or her body and the physical appearance of both men and women (Eisenberg et al., 2006). Simply put, as weight increases (as does BMI, though an individual may not be aware of his or her BMI), individuals will experience physical changes to their bodies and might have changing views of their bodies as a result. BI has also been found to mediate the relationship between BMI and psychological health, including self-esteem and depression (Mond et al., 2011). This is important because negative BI is a strong predictor of depressive symptoms (Stice, 2012).

Body dissatisfaction. Body dissatisfaction is evident in both male and female individuals. Men and women tend to be generally dissatisfied with their bodies, and if given the opportunity, both genders would select a different ideal shape for themselves about 80% of the time (Furnham & Calnan, 1998). BI dissatisfaction is more prevalent among female individuals, and the dissatisfaction remains stable until women become elderly (Tiggeman, 2004). Women are more likely to report higher rates of negative BI than men, particularly college-aged women (Davis & Cowles, 1991). Women also tend to evaluate their bodies and body appearance more negatively than men in most circumstances, while men tend to have more positive BI overall (Holsen et al., 2012). In comparison to men, women had more negative BI evaluations, stronger investments in

their looks, and more frequent BI dysphoria (Cash, 2003). Women also tend to view their current figures as heavier than their ideal figures and also as heavier than men's preferences in female physiques (Demarest & Allen, 2000).

Other factors that can contribute to body dissatisfaction among women include "fat-talk" and self-degrading behaviors (Britton, Martz, Bazzini, Curtin, & LeaShomb, 2006). Fat-talk is defined as speaking negatively about one's body (Smith & Ogle, 2006). The tendency to engage in this behavior and degrade oneself is common in groups of women and is considered a social norm. Women who experience body dissatisfaction not only criticize their bodies when they are in groups, but also discuss strategies and attempts made to improve their bodies (Nichter & Vuckovic, 1994). Mixed messages are received relating to these social norms because fat-talk and body-shaming by women are well documented, but women are viewed as more attractive if they do not engage in these behaviors and instead present as having positive BI (Britton et al., 2006).

In a study of college students, 74.4% of the normal-weight women stated that they thought about their weight or appearance "all the time" or "frequently," while 46% of the normal-weight men responded in the same way (Brown University, 2011). This shows that concerns about BI span across genders. BI is also prevalent regardless of marital/relationship status, education level, occupational status, or age (Stevens & Tiggeman, 1998). Though body dissatisfaction is correlated with negative perceived health, body dissatisfaction alone is not enough to increase healthy behaviors, such as regular exercise (Neumark-Sztainer et al., 2006). Simply put, dissatisfaction with the body alone is not enough to promote positive health behaviors.

Self-Assessed Health (SAH)

SAH refers to an individual's subjective rating of his or her own health (Linn & Linn, 2004). One potential limitation of SAH is that respondents to SAH questionnaires may interpret the construct differently. Some people tend to think about specific health problems, others think more generally in terms of physical functioning, and the rest tend to think of health behaviors as a reference for their overall health (Krause & Jay, 1994).

On the other hand, respondents' interpretations of any item can vary. SAH falls into two categories: (a) those who categorize SAH as good or excellent versus poor for the purposes of predicting survival and (b) those who assume that self-rated health is a continuum and compare it to a range of predictors (Smith, Shelley, & Dennerstein, 1994). SAH can also be used as a predictor of mortality and morbidity. Additionally, SAH is related to such factors as functional ability, medical diagnoses, and physical and mental symptoms (Frayer & Sprangers, 1992). Patients who report poorer health are at a significantly higher risk for mortality than those who report their health as good or excellent. SAH has been found to be effective in predicting mortality in long-term follow-up studies (Miilupalo et al., 1997). SAH can vary according to many factors, such as age, gender, socioeconomic status (SES), and stigma.

Age differences. Age may be related to SAH, but impacted by physical health. Adolescents' perceptions of health are influenced by multiple factors, including personal, socioenvironmental, and behavioral factors (Vingilis, Wade & Seeley, 2002). These predict how likely adolescents are to rate their health as good, fair, or poor. Out of all of these factors, physical health was the strongest predictor of self-rated health. Adolescents also tended to lump several components into their definition of self-rated health,

including personal factors, socioenvironmental factors, lifestyle factors, and psychological distress (Wade & Seeley, 2002). Interestingly, older adults with low illness burden tend to rate their SAH higher than their same-aged counterparts with multiple medical issues (Wen, Hawkley, & Cacioppo, 2006). Both adolescents and adults rate their physical health status as an important component of their overall SAH (Wade & Seeley, 2002; Wen et al., 2006), suggesting that physical health is a better predictor of SAH than age alone.

Gender differences. One study found that female adolescents have lower ratings of SAH than male adolescents (Vingilis, Wade, & Adlaf, 1998). Surprisingly, no substantial difference in SAH exists between genders as age increases. Research has shown that women were just as likely as men to report good self-rated health (Jylha, Guralnik, Ferrucci, Jokela, & Heikkinen, 1998). This is interesting because men tend to engage in more unhealthy behaviors, yet they perceive their health to be on par with that of women. Even as women passed through menopause, there was no significant effect on SAH. The alleviation of symptoms associated with menopause may have positive effects on subjective quality of life and ratings of health (Dennerstein, Dudley, Guthrie, & Barrett-Connor,2000).

Socioeconomic status (SES). SAH depends on age and SES. Adolescents' perceptions of health are influenced by multiple factors. Personal, socioenvironmental, and behavioral factors predict the likelihood of adolescents rating their health as good, fair, or poor. Out of all of these factors, physical health was the strongest predictor of self-rated health. Adolescents also tended to lump several components into their

definition of self-rated health, including personal factors, socioenvironmental factors, lifestyle factors, and psychological distress (Wade & Seeley, 2002).

In a diverse sample of pregnant adult women, most of the traditional measures of SES were associated with self-ratings of physical health (Ostrove, Adler, Kuppemann, & Washington, 2000). At least three of the four objective measures of SES (i.e., education, income, own occupation, partner's occupation) used in the study were significantly related to SAH in Caucasian, Chinese American, African American, and Latina women (Ostrove et al., 2000). In all of the women studied, a significant association was found between subjective SES and SAH (Ostrove et al., 2000, suggesting that a sense of social ordering may be important for an individual's health. Other studies have also found that income inequalities have an effect on SAH (Kennedy, Kawachi, Glass, & Prothrow-Stith, 1998). Lower income is associated with individuals rating their health as fair or poor, while higher income tends to be associated with higher ratings of health (Kennedy e al., 1998).

Weight stigma. SAH can also be impacted by weight stigma and BMI. Weight stigma could be a mediator of the relationship between SAH and BMI. Additionally, studies have indicated that concerns about facing weight stigma in the future mediate the link between perceived past experiences of discrimination and psychological and physical health (Hunger & Major, 2015). Newer research suggests some interesting findings. Body dissatisfaction regarding physical appearance is higher in adults who are overweight or obese, yet the percentage of these adults who are satisfied with their health and fitness was quite high (Fallon et al., 2013). In terms of SAH, more than half of overweight men

and women reported that they were satisfied with their health (Fallon et al., 2013). The literature in this area is sparse, but emerging.

BI and SAH have a nuanced relationship and appear to be influenced by other factors, such as SES, gender, and age. Health behaviors may be a link to understanding how BI plays a role in SAH and other variables. For example, exercise appears to be influenced by both BI and SAH to some extent. Examining the relationship between health behaviors, BI, and SAH could provide information related to health change and promotion.

What Are Health Behaviors?

Health behavior is defined as a person's beliefs and actions regarding health and well-being (Cockerham, 2014). Health promotion is defined by the World Health Organization (WHO) as the process of enabling people to increase control over their health and its determinants, and thereby improve their health. According to the Farlex Partner Medical Dictionary (2012), a health behavior consists of the combination of knowledge, practices, and attitudes that together contribute to motivate the actions one takes regarding health. Health behaviors are actions taken by a person to maintain, attain, or regain good health and to prevent illness (Mosby's Medical Dictionary, 2009). Health behaviors can be broken down into healthy and unhealthy behaviors.

Healthy behaviors. Healthy behaviors include choosing not to smoke, not to drink in excess, to exercise regularly, to eat well, and to get vaccinations (Mosby's Medical Dictionary, 2009). Engaging in healthy behavior is critical for wellness. Also included in health behaviors is disease prevention, including preventative behaviors that are used to deter disease onset. In the 1970s, the Alameda County Study became

instrumental in defining the constellation of health-related practices that later became defined as the Alameda 7 (Schoenborn, 1986). These behaviors included never smoking, physical activity, moderate or no alcohol consumption, average weight, sleeping 7 or 8 hours per night, eating breakfast, and not snacking between meals (Schoenborn, 1986). Since then, growing research has looked at the combined effects of different sets of healthy lifestyle behaviors on health outcomes. These health outcomes have included mortality, life expectancy, cardiovascular disease, stroke, diabetes, and cancer (Houseman & Dorman, 2005). People who engage in multiple healthy behaviors have a greatly reduced risk for developing chronic disease morbidity or mortality compared to those who engage in limited healthy behaviors. Newer research has shown that the most important healthy behaviors for decreasing mortality from cardiovascular diseases and cancer are not smoking, good dietary practice, and adequate physical activity (Houseman & Dorman, 2005).

Unhealthy behaviors. Unhealthy behaviors are those that can cause adverse health risks and consequences. Some examples of unhealthy behaviors include tobacco use, poor dietary choices, limited or excessive physical activity, alcohol use to excess, drug use or abuse, engaging in unprotected sexual behaviors, and behaviors that can result in violence and unintentional injuries (WHO, 2002). Engaging in unhealthy behaviors increases risk for heart disease, stroke, diabetes, and other chronic diseases, and these risk factors are preventable (Wardle, Haase, Steptoe, Nillapun, & Jonwutiwes, 2004). Despite education efforts and being aware of the risks of engaging in these behaviors, people continue to engage in unhealthy behaviors (WHO, 2002). Literature surrounding behavioral change suggests that people are more likely to engage in

unhealthy behaviors if the consequences occur in the long term, rather than immediately after engaging in the behavior (Lawlor, Ebrahim, & Davey-Smith, 2001). For example, an individual might not refrain from excessive alcohol consumption because of long-term consequences, such as addiction or liver disease, but might refrain to avoid being ill immediately after consumption. Many people believe that they can avoid long-term health consequences by creating a vague plan to change the behavior "later" (WHO, 2002).

Health behaviors across the lifespan. Multiple studies have shown that positive and healthy behaviors (i.e., healthy eating and physical activity) can reduce morbidity and premature mortality. Decreasing risk factors and employing positive health behaviors in childhood can decrease adverse health consequences and are important health considerations. Physical activity appears to promote mental health in adults and promote self-esteem in young people. Physical activity, especially group or team activities, also enhance socialization outlets for persons of all ages (Currie, Hurrelmann, Settertobulte, Smith, & Todd, 2000).

Preventative health behaviors in older adults. Preventative health behaviors have many potential health benefits, including reducing morbidity (Kahanna, Lawrence, & Kahanna, 2003). Nevertheless, many elderly people are not engaging in preventative behaviors, and in comparison to younger people, they tend to receive less preventative care, such as cancer screening, flu vaccines, and fewer exercise and nutrition interventions (Alliance for Aging Research, 2003). Age, gender, and race do not predict preventative health behaviors in the elderly (Levy & Myers, 2004). Two variables that do appear to be correlated with preventative health behaviors in older adults are education

and self-perception of aging. Older adults with higher education and more positive self-perceptions of health were more likely to engage in positive health-related behaviors and preventative behaviors than their counterparts who had negative self-perceptions of health (Levy & Myers, 2004).

Gender differences. Men tend to engage in fewer preventative health behaviors and usually monitor their health status less frequently than women (Nathanson & Lorenz, 1982). Evidence supports that married men are likely to report that their spouses/partners are attempting to control their health, thus leading to increased preventative health behaviors in men (Umberson, 1992). This suggests that married men are more likely to engage in healthy behaviors at the request of their partner, and therefore, their rate of preventative behaviors is higher than the rate for men who are not married.

The gender differences in health behaviors may be linked to significant health implications. For example, men live an average of 7 years fewer than women (WHO, 2002). In the United States, the death rate for heart disease is twice as high for men as it is for women, and men's cancer death rates are 1.5 times higher than women's (Lawlor et al., 2001). These major diseases have significant behavioral implications, as most of these illnesses can be prevented or lessened with the performance of certain healthy behaviors (American Cancer Society, 2001). Many studies of health behaviors have noted that men typically have higher rates than women of risky behavior and lower rates than women of a range of healthy and hygienic practices. These include decisions about wearing seatbelts, smoking, doctor visits, and nutrition (U.S. Department of Health and Human Services [DHHS], 2000). These extensive behavioral differences could make a significant contribution to gender differences in morbidity and mortality.

In terms of healthy eating habits and dietary choices, women tend to make healthier choices than men (Wardle et al., 2004). Men tend to eat fewer fruits and vegetables, choose fewer high-fiber foods, eat fewer low-fat foods, and consume more soft drinks than women (Wardle et al., 2004). Interestingly, men also tend to rate food choice behaviors as being less important than women do and will often report a lack of interest in learning about health, nutrition, cooking, and weight management (DHHS, 2001). This could result from women having greater concern about weight control and their higher frequency of dieting. In most studies surrounding weight or dieting, women tend to report more worries about weight and make more attempts to control their weight than men do (Wardle et al., 2004). Selecting foods that are lower in fat and sugar and increasing the intake of fruits and vegetables are often implicated in most diet and weight control regimens, so this could explain some of the discrepancy in dietary choices between genders (Wardle et al., 2004).

Impact of healthy behavior on SAH. In European countries, high percentages of adolescents exercise at least 2 hours per week or partake in vigorous exercise. In these countries, a significant positive correlation was found between ratings of SAH and physical activity. Regular exercise has been found to be strongly associated with SAH; however, the direction of the relationship is uncertain (Currie et al., 2000). Teens who feel healthy are possibly more likely to exercise or vice versa. Adolescents might become involved in group or team activities to make friends, or they may be drawn to these activities because they have friends who are also physically active. Regardless of the reason for the relationship between SAH and exercise, adolescents who exercise clearly

tend to be more confident and have more friends, when compared to those who do not exercise (Currie et al., 2000).

A relationship between unhealthy behaviors and SAH is also apparent. Adolescents who watch 4 or more hours of television per day are more likely than adolescents who do not watch as much television to engage in unhealthy behaviors, such as consistent junk food intake, decreased physical activity, and alcohol consumption. Many hours of television watching are also associated with increased video and computer game playing. Teenagers who engage in excessive television watching and video game playing are more likely than other teenagers to report feeling bored in school and to report lower SAH (Currie et al., 2000).

BI and Health Behaviors

Body dissatisfaction and negative BI are correlated with health behaviors (either healthy or unhealthy) in an effort to improve body shape and appearance (Bucchianeri & Neumark-Sztainer, 2014). Body dissatisfaction has been linked to weight gain over time, and this seems counterintuitive (Van de Berg & Neumark-Sztainer, 2007). On the contrary, positive BI has been shown to be a protective factor against increased BMI (Van de Berg & Neumark-Sztainer, 2007). This relationship may be explained by the fact that positive BI is related to behaviors aimed at maintaining a healthy weight over time. In adolescent boys and girls, body dissatisfaction is associated with numerous unhealthy behaviors, including extreme weight control behaviors, skipping meals intentionally, self-induced vomiting, and the use of laxatives. Instead of producing weight loss or weight control, these unhealthy behaviors are related to weight gain over time (Neumark-Sztainer et al., 2006). Interestingly, in adolescent girls, body dissatisfaction is also

correlated to a decrease in fruit and vegetable consumption (Bucchianeri & Neumark-Sztainer, 2014). Adolescents who have negative BI also tend to be less likely to engage in physical activity and self-care behaviors (Neumark-Sztainer et al., 2006).

Role of exercise on BI. The role of exercise has significant implications on BI**.** In Western society, many men and women strive to achieve lean physiques, and failure to do so can result in BI disturbances (Bane & McAuley, 1998). Attempts to change body shape and size are often difficult, and failed attempts can result in a variety of health problems, some of the more serious being depression, obesity, body dysmorphic disorder, and eating disorders (Hausenblas & Fallon, 2006).

In women specifically, the role of exercise is correlated with BI and body satisfaction. Women who frequently engaged in moderate to strenuous exercise tended to report higher levels of body appreciation and body satisfaction (Homan & Tylka, 2014). The interesting caveat is that women who exercised for health benefits and enjoyment reported better BI than those who exercised for strictly weight loss purposes (Homan & Tylka, 2014). Women who exercise for weight loss are more likely to focus on number of calories burned, immediate reductions in body weight, or visible changes in appearance. These factors can overshadow the ability to focus on positive BI (Homan & Tylka, 2014). This further supports the point that exercise does not always improve BI.

BI and smoking. A relationship exists between BI and smoking in women. Negative BI can be a potent motivating factor for women to engage in tobacco use (Lantz, 2003; Ling & Glantz, 2002). Men and women tend to differ in their underlying motivations and outcome expectancies related to starting, maintaining, and ending smoking (Lopez-Khoury, Litvin, & Brandon, 2009). Women who smoke are more likely

to endorse greater dissatisfaction with body shape, have less concern with the health effects from smoking, and have lower desire to quit smoking than those who do not suffer from body dissatisfaction (USDHHS, 2001). Women who smoke also have outcome expectancies about the ability of cigarettes to control appetite and weight, and this is subsequently associated with nicotine dependence (Lopez-Khoury et al., 2009).

Adaptive and maladaptive health behaviors appear to be influenced partly by BI and SAH. The engagement in maladaptive health behaviors increases risk for chronic disease and places significant burden on the healthcare system. Literature about health behavior change and the importance of promoting adaptive health behaviors is available, but literature on the influence, or lack thereof, of BI and SAH on behavioral change is sparse.

Health Behavior Change Theory

Health behaviors are important in areas of prevention, treatment, and rehabilitation. Behavioral interventions are designed to affect the actions that individuals take in regard to their health (Culter, 2004). During health behavior interventions, the emphasis is on patient behavior and how to change it (Cutler, 2004). These behavioral interventions are key to reducing the high rate of preventable illness and racial disparities in health (Sprangers, & Aaronson, 1992). Behavioral interventions can be implemented at three levels (Syme, 2003). The first is at the individual level. These interventions encourage people who are at high risk for a particular disease to do something about it (Powell, 2001). This can include encouraging smokers to quit smoking and encouraging patients with hypertension to engage in exercise regimens and take medications (Cutler, 2004). These interventions usually involve lifestyle changes (i.e., diet and exercise

changes), as well as medical changes (i.e., regular blood testing, monitoring, and medications).

The second level of intervention occurs at the community level. This intervention is designed to change behaviors by modifying the environment that supports them (Cutler, 2004). Several community level interventions were implemented in the 1980s, primarily focusing on cardiovascular disease (Cutler, 2004). These interventions used such techniques as mass media, population screening, and community organizations with the goal of encouraging healthy behaviors (Cutler, 2004). Public policies are also a form of community intervention. Examples include government taxes on cigarettes and restrictions on where cigarettes can be purchased.

The third level of health intervention occurs at the national level. The federal government or private groups often convey health information to people, with the goal of encouraging behavioral change (McGinness & Foege, 1993). In at least some cases, the national interventions have a higher success rate than community level interventions (Sorenson et al., 1988; Syme, 2003). When the Surgeon General warned people of the harms of tobacco use in 1964, smoking reduced. Similarly, the movement against drunk driving pushed by Mothers Against Drunk Driving (MADD) and the designated-driver campaign helped to reduce traffic fatalities involving drunk drivers. Another example would be the national information campaigns about the danger of high cholesterol and the decrease in consumption of red meats, eggs, and high-fat dairy products (Culter, 2004).

National interventions appear to be the most successful of the three, possibly because individuals do not have an inherent desire to change their behavior (Culter, 2004). Promoting and implementing behavioral change needs to come from large-scale

efforts. Health messages are easy to ignore when the intervention is small and the need to respond is not pressing (Culter, 2004). When information is widely spread and on a larger scale, it is harder to ignore. Another reason that national interventions may be more effective is because people tend to judge appropriate behavior based on what others are doing. Thus, changes in the behaviors of people on a large-scale basis (e.g., quitting smoking) can lead people to make assumptions that smoking is bad (Luepker, Grimm, & Taylor, 1984).

Health Behavior Change and BI

Research examining health behavior change and BI is limited. One study that examined this relationship with adolescents posited that when attempting to change health behaviors, the teen's weight control practices, level of physical activity, BI, eating behaviors, and weight satisfaction must be considered (Strong, Parks, Anderson, Winett, & Davy, 2008). Interventions that are successful at promoting healthier eating habits among adolescents include modeling healthy food choices and not placing sole emphasis on body shape or size (Neumark-Sztainer, 2005). From this, one could assume that implementing interventions that target negative BI could promote positive health behavior change.

Summary

BI is simply defined as a person's mental representation of the body's shape, form, and size. It can be influenced by historical, cultural, social, individual, and biological factors (Cash, 2012; Slade, 1994). BI can be separated into positive and negative BI. Positive BI is a distinct construct that is separate from negative BI. It is defined as accepting and loving one's body and having a clear perception of the body's

true shape (Cash, 2012; Tylka, 2011). Negative BI refers to beliefs that the body is unsightly or disgusting, despite having a healthy BMI (Smolak, 2004).

SAH refers to an individual's subjective rating of his or herr own health (Linn & Linn, 2004). The literature linking BI and SAH is sparse. Some literature links SAH with health behaviors, but most of these studies were done in European samples or with adolescents. Health behaviors are defined as actions taken by a person to maintain, attain, or regain good health and prevent illness (WHO, 2016). These behaviors can be defined in terms of positive or negative health behaviors. Positive health behaviors include preventative care, eating a balanced diet, engaging in regular exercise, consuming alcohol in moderation, and not using tobacco products. Inversely, negative health behaviors can include misuse of the healthcare system, excessive alcohol use, poor eating habits, and little to no exercise.

Studies have shown that in European countries a high percentage of adolescents engage in at least 2 hours of exercise per week. These adolescents are more likely to report higher ratings of SAH than their peer counterparts who get less exercise (WHO, 2016). Adolescents who watch more than 4 hours of television per day are more likely than other teens to engage in unhealthy behaviors, such as eating junk food more consistently, decreasing physical activity, and consuming alcohol. These teens are more likely than other teens to endorse lower ratings of SAH (WHO, 2016).

In terms of BI and health behaviors, positive BI is linked with decreased weight gain and related to behaviors that are aimed at maintaining healthy weight (Van de Berg & Neumark-Sztainer, 2007). These behaviors can include exercise and, specifically in women, more extreme weight management strategies, such as cosmetic surgery and

smoking (Lopez-Khoury et al., 2009). Currently, any relationship between BI, SAH, and health behaviors is unclear. If BI and SAH predict health behaviors, there could be important implications for health behavior change.

Purpose of the Study

BI affects self-concept and potentially the way healthy people perceive themselves. BI can impact health behaviors, such as amount of exercise, drug use, eating habits, and decisions to pursue cosmetic surgery (Grogan, 2006). Studies have suggested that negative SAH is correlated with body dissatisfaction. Of individuals who report body dissatisfaction, negative SAH was reported more frequently (Meland , Haugland, & Breidablik, 2007). Though studies have shown a relationship between BI and SAH and between BI and health behaviors, the studies were primarily conducted with adolescents and/or college students. Given that BI remains stable through adulthood and until the elderly years (Tiggeman, 2004), these variables clearly should be examined in an adult population. Age and gender can impact these variables individually, but the impact on these variables when they are examined together is unknown.

A gap exists in the literature synthesizing BI, SAH, and health behaviors. Researchers rarely examine these constructs in the adult populations; however, some studies have been done with adolescents. Of the few studies that examined some of these variables, most were done in Europe, and the findings may not be applicable to the United States because of cultural differences. Another aspect that makes this study unique is the scarcity of literature that examines these variables in older adult populations. This study hopes to examine BI, SAH, and health behaviors in young adults through older adults. The purpose of this study is to examine if a relationship exists

between the three variables and how age and gender moderate the relationship. If a relationship exists between BI, SAH, and health behaviors, this information could be used to improve treatment interventions and promote increased healthy behaviors and preventative health behaviors. The following variables will be examined to see if they influence the directionality or strength of the relationship: age, gender, BMI, and SES.

Chapter 2: Research Question/Hypotheses

Research Question

Do negative body image (BI) and self-assessed health (SAH) predict health behaviors? Studies examining whether BI and SAH predict health behaviors are missing from research literature. This information could be useful in determining if intervention at the BI level could have implications for improving the performance of healthy behaviors.

Hypothesis 1

Hypothesis 1: Negative body image, as measured by the BSQ-34, is negatively associated with self-assessed health and participation in health behaviors.

This hypothesis postulates that negative BI is associated with lower ratings of SAH and lower participation in healthy behaviors. Positive BI is associated with better ratings of SAH, lower participation in unhealthy behaviors, and greater participation in healthy behaviors (Bucchianeri & Neumark-Sztainer, 2014). The rationale for this hypothesis was informed by research that suggests that BI views are correlated with decisions to participate in certain health behaviors (Bucchianeri & Neumark-Sztainer, 2014).

Hypothesis 2

Hypothesis 2: Women are more likely to report lower body image, have lower ratings of self-assessed health, and engage in fewer health behaviors than men.

This hypothesis is specific to women. Studies show that women who have lower BI are more likely to engage in fewer healthy behaviors, such as smoking as a way to manage weight than their counterparts without low BI (Lantz, 2003; Ling & Glantz,

2002). Though this does not mean that women engage in fewer health behaviors than do men, it suggests that women who have negative BI are more likely to engage in certain unhealthy behaviors. No studies have examined if these variables are related to ratings of SAH.

Hypothesis 3

Hypothesis 3: Gender, negative body image, and self-assessed health predict health behaviors.

This hypothesis postulates that gender, negative BI, and low SAH predict the performance of health behaviors. It is expected that women who have negative BI and low SAH will perform fewer health behaviors than will women who have positive BI and high SAH. Women and men alike perform unhealthy behaviors, but seemingly for different reasons. For example, women are more likely than men to smoke cigarettes as a weight management strategy whereas men are more likely than women to make poor dietary decisions and be nonadherent to medical routines, just as a result of gender differences (Lantz, 2003; Ling & Glantz, 2002; Van de Berg & Neumark-Sztainer, 2007). Gender combined with negative BI and low SAH would appear to lend themselves to maladaptive health behaviors.

Hypothesis 4

Hypothesis 4: Negative body image and low self-assessed health predict gender-specific medical nonadherence in women.

This hypothesis is specific to women. Since prior research has shown that women who have negative BI are more likely to engage in maladaptive health behaviors than their counterparts without negative BI, seeing whether these women are more or less

likely to engage in gender-specific medical adherence (i.e., yearly gynecological exams and breast self-exams) would be of interest. This information could shed light on interventions aimed at improving medical adherence in women.

Chapter 3: Method

Overview

The overarching aim of this study was to investigate whether body image (BI) and self-assessed health (SAH) predict health behaviors. Data were collected from male and female participants aged 18 years and older who were interested in participating in a study related to BI and health. Participants were recruited through Facebook, listservs, the Philadelphia College of Osteopathic Medicine (Philadelphia and Georgia campuses), and other forms of social media.

Design and Justification

This study used a single-group, correlational/regression model. This cross-sectional study design helped to establish associations between variables to be used in the multiple regression analysis.

Participants

Participants were recruited nationwide. The power analysis to calculate sample size was conducted with an a priori sample size calculator for a multivariate analysis of variance (MANOVA) and showed that to achieve a moderate effect size with power = .80 and α =.05, a minimum of 180 participants would be needed.

Demographics

Data were collected from 243 participants via social media and e-mail listservs. Of the 300 potential participants screened for the study, 243 participants were deemed eligible to complete the study. A total of 189 participants completed all of the measures in the study. Of this, 155 women (82%) and 33 men (17.5%) successfully completed the study. One participant (0.5%) identified gender as being “other.” The participants ranged

from age 20 to 74 years, with a mean age of 30.2 years (*SD* = 9.6). Body mass index (BMI) ranges for the participants were 18 to 50, with a mean of 25.9 (*SD* = 3.7), indicating that the mean for the sample fell in the "Overweight" range. A BMI score was not recorded for one participant, as this individual did not provide an answer for weight.

Other demographic information collected from the participants included education level, income, and employment status. Participants ranged in education level from a high-school diploma to a doctorate/professional degree, with most of the participants reporting a bachelor's degree as their highest level of education (*n* = 93, 49.2%). Two participants did not report their education level on the survey. Income was variable in this sample. The mean income was $28,021 per year (*n* = 126, *SD* = 46582.1). Employment status also was variable within the sample, with student status (*n* = 90, 47.6%, *SD* = 1.44) and full-time employment (*n* = 73, 38.6%, SD = 1.44) reported the most frequently. Table 1 illustrates the sample's demographics.

Table 1

Demographic Variables

Characteristics	*n*	%
Gender		
Female	155	82
Male	33	17.5
Other	1	0.5
Age range(years)		
20-30	137	72.5
31-40	28	14.8
41-50	9	4.8
51-60	10	5.3
61-70	4	2.1
71-74	1	0.5
BMI range		
<18.5 (underweight)	4	2.1
18.5-24.9 (normal)	92	49
25-29.9 (overweight)	53	28.2
30+ (obese)	39	20.7
Education level		
High school	12	6.3
Bachelor's	93	49.2
Master's	61	32.3
Professional/Doctorate	21	11.1
Employment status		
Full-time	73	38.6
Part-time	18	9.5
Self-employed	4	2.1
Student	90	47.6
Other	3	1.6
Income		
$0-$32,000	84	66.7
$38,000-$100,000	35	27.7
$105,000-138,000	5	4
Over $200,000	2	1.6

Inclusion Criteria

The study included participants who were aged 18 years and older. The participants needed to have Internet access and to be fluent in English.

Exclusion Criteria

Participants were excluded from the study if they reported having a current, active eating disorder. Participants were asked if they had ever been or are currently diagnosed with an eating disorder or if they had received formal treatment for an eating disorder. This removed the likelihood of participant interpretation of the definition of an eating disorder. Participants who suffered from serious and chronic medical conditions (e.g., diabetes, chronic pain, morbid obesity, fibromyalgia, chronic obstructive pulmonary disease, multiple sclerosis, lupus, heart failure, renal disease, Alzheimer's or other cognitive disorders, Huntington's disease, Crohn's disease, epilepsy or other seizure disorder, glaucoma, sickle cell disease, cardiomyopathy, rheumatoid arthritis or other autoimmune diseases) were also excluded from the study. These would likely skew the results, as the focus of the study was to measure the study variables in the general population.

Recruitment

The study was conducted online, and therefore, participants were recruited through the online community. The study was advertised on social media through listservs and at the Philadelphia College of Osteopathic Medicine (Philadelphia and Georgia campuses) through flyers and e-mails. Individuals who completed the study were eligible to win a $100 Amazon gift card.

Measures

Demographic Questionnaire

The Demographic Questionnaire (see Appendix A) consisted of seven items that allowed for open responses. The form was administered to gather a participant's gender, age, height, and weight information. From the height and weight, BMI was calculated using a BMI calculator. Additionally, the demographic questionnaire asked participants questions about their socioeconomic status (SES), which included education level, income, and employment status. These variables could later be analyzed to see if they impact the directionality of the relationship.

Body Shape Questionnaire-34 (BSQ-34)

The BSQ-34 assesses for BI dissatisfaction over the previous 4 weeks. Owing to a copy-and-paste error, Item 26 ("Have you vomited in order to feel thinner?") was omitted from the study, meaning that participants were asked only 33 out of the 34 items on the BSQ-34. This measure, unlike shorter versions of the measure, has shown to be reliable with men. This 34-item measure is commonly used, and each item is scored on a 5-point scale from 1 (*Never*) to 5 (*Always*). Scores on the BSQ-34 indicate level of BI dissatisfaction. Scores less than 80 indicate no concern with body shape, scores between 80 to 110 indicate mild concern with shape, scores between 111 to140 indicate moderate concern with shape, and scores greater than 140 indicate marked concern with shape. The BSQ-34 (see Appendix B) has demonstrated good test-retest reliability, discriminant validity, concurrent validity, and criterion-related validity (Cooper, Taylor, Cooper, & Fairburn, 1986; Rosen, Jones, Ramirez, & Waxman, 1996; Sandez, et al., 2013). To measure internal consistency, Cronbach's coefficient alpha reliability was calculated. In

this study, Cronbach's alpha for male participants was $\alpha = .96$, and .97 for the entire sample.

Health Adherence Behavior Inventory (HABIT)

The Health Adherence Behavior Inventory (see Appendix C) is a 50-item questionnaire designed by Dr. Robert DiTomasso (1997) to measure the real-life "habits" of people. The measure was primarily developed for use in the primary-care setting (Parke, DiTomasso, Golden, & Markham, 2004). The measure uses a forced-choice, true/false format, and the answers depend on the participant's own lifestyle behaviors. The participants are asked if the behavior described is generally true or not true in terms of their own behavior, and the responses are assigned a numerical value (True = 1, False = 0). Three of the items are reverse scored, and they are framed in a negative manner (e.g., "People tell me that I am a couch potato."). A total score is calculated by adding the values from all completed items.

A study to test the psychometric properties of the HABIT (Parke et al., 2004) determined that the HABIT exhibits good content validity. The measure was presented to a panel of experts (i.e., physicians and psychologists), and they were given an opportunity to make changes to the items. The expert panel agreed that the items on the final measure were representative of content related to health adherence and health risk behaviors. In terms of construct validity, the HABIT exhibited a significant positive correlation between the HABIT and the Health Risk Assessment measure (a well-documented and validated measure). This suggests that the HABIT has sound construct validity and measures what it is intended to measure. To measure internal consistency,

Cronbach's coefficient alpha reliability was calculated for the study sample. Cronbach's alpha for the entire scale was $\alpha = .78$.

Gender-Specific Items

Three gender-specific, medical-adherence items were added to the HABIT to assist with testing Hypothesis 4. The three items were in forced-choice, true/false format like the HABIT. These items were developed based on women's health guidelines from the National Institute for Health Care Management (NIHCM, 2015). The items asked women if they (a) get yearly gynecological exams, (b) get a Pap test every year (unless otherwise directed by their physician), and (c) perform breast self-exams monthly. The guidelines according to the American Cancer Society (Simon, 2015) for breast self-exams changed, and no longer require women to perform breast self-examinations and no longer require clinical breast examinations by a medical professional. However, the National Breast Cancer Foundation, Inc., and the National Comprehensive Cancer Network (NCNN) clinical oncology practice guidelines recommend monthly breast self-examinations and clinical breast examinations (National Breast Cancer Foundation, Inc., 2016; Susan G. Komen, 2017). Additionally, the U.S. Preventative Services Task Force reported that insufficient scientific evidence is available to recommend or advise against breast exams (Susan G Komen, 2017). There is not universal agreement among the guidelines, but there is agreement that women should be sufficiently familiar with how their breasts normally look and feel to be able to report any changes to a healthcare provider. Cronbach's alpha for these items was $\alpha = .60$.

Self-Rated Health Scale

The Self-Rated Health Scale (see Appendix D) is a three-item measure developed by Krause and Hayward (2014). The measure was developed to assess self-rated health in adults aged 65 years and older. The items were scored on 3-, 4-, and 5-point Likert scales. A high score on these items denotes more favorable health ratings. To measure internal consistency, Cronbach's coefficient alpha reliability was calculated for the study sample. Cronbach's alpha for the entire scale was $\alpha = .88$.

Procedure

Internal Review Board (IRB) approval was obtained prior to dissemination. A short description of the study and a web link to access the study survey were distributed to the online community using the recruitment means previously described. The study was administered through Survey Monkey (an online software and questionnaire tool that improves the efficiency of the data collection process). In order to protect participant information, the website was encrypted. The measures were uploaded onto Survey Monkey into one survey. Prior to beginning the survey, participants were provided with more information about study participation, as well as with instructions for completing the survey. The order of the measures in the survey was counterbalanced to account for order effects. Additionally, participants were notified that the study was completely anonymous and voluntary and that they had to the right to withdraw from the study at their discretion.

Before completing any study measures, participants were administered screening questions to ensure that they met eligibility for the study. They were asked their age, if they currently had or had ever been diagnosed with an eating disorder, and if they had

any chronic or life-threatening medical conditions. After they were determined eligible for the study, they were asked to provide current height, weight, age, and gender information along with the additional demographic information. After completing this, participants were administered the BSQ-34, HABIT, and Self-Rated Health Scale.

After completion of the survey, participants had the option to enter a drawing for a chance to win a gift card. In order to maintain anonymity, participants were given the option to decide whether or not they would like to enter the drawing for the e-gift card. If so, they were redirected to another website that was not linked with any identifying information from the study. Participants also had the option to use an anonymous e-mail address to which the e-gift card could be sent. This was done in an effort to maintain anonymity as best as possible and to limit risk to the participants. Following data collection, statistical analyses of the data were conducted, using SPSS. The researcher administered all aspects of the study.

Chapter 4: Results

Descriptive Statistics

Participants in this study were given four measures to complete to assess negative body image (BI; i.e., BSQ-34), health behaviors (i.e., HABIT), self-assessed health (SAH; i.e., Self-Rated Health Scale), and gender-specific medical adherence (i.e., Gender Specific Items). The following details how the participant sample scored overall on the measures. On the BSQ-34, the mean score was 89.3 (n = 189, SD = 32.1), indicating that overall the sample had minimal body dissatisfaction. The scores ranged from 37 to 192. On the HABIT, the mean score was 34.4 (SD = 5.9), indicating that, on average, the participants endorsed performing 34 out of the possible 50 healthy behaviors. The scores ranged from 17 to 50 (n = 189). On the Self-Rated Health Scale, the mean score was 8.7 (SD = 1.95), with higher scores denoting more favorable views of one's health (maximum score = 12). Lastly, the mean score on the gender-specific items was 2.03 (SD = .96), indicating that female participants in the study completed two out of three gender-specific health behaviors on average. A few cases were evaluated for being outliers. These cases were not removed from the sample, as they were not extreme and did not change the results of the study. Table 2 depicts the means, standard deviations, skewness, and kurtosis of the results of the measures in this study. Table 3 illustrates the means and standard deviations of the measures broken down by gender.

Table 2

Psychometric Properties of the Major Study Variables

Measure	*n*	*M*	*SD*	Skewness	Kurtosis
BSQ	189	89.3	32.1	.51	-.32
HABIT	189	34.4	5.8	-.40	.08
Gender-Specific Items	155	2.03	.96	-.90	-.02
Self-Rated Health Scale	189	8.7	1.95	-.32	.06

Table 3

Means of the BSQ, HABIT, and SRH by Gender

Measure	Gender	
	Male (*n* = 33)	Female (*n* = 155)
BSQ	71.8	93.0
HABIT	32.9	34.8
SRH	8.2	8.8

Hypothesis 1

To test the first hypothesis, that negative BI (as measured by the BSQ-34) is negatively associated with SAH and participation in health behaviors, a correlational analysis was conducted. Outliers were evaluated and remained in the sample, as the values were not extreme and did not change the statistical results of the study. The independent variable was BI and the dependent variables were SAH and health behaviors. Bivariate correlations were conducted to measure the strength and directionality of the relationship between the variables. A moderate statistically

significant negative correlation was found between ratings on the BSQ-34 and the Self-Rated Health Scale, r = -.30, p < .001. This finding indicates that higher ratings of negative BI were associated with lower ratings of SAH. No significant relationship was found between negative BI and the healthy behaviors, r = -.14, p = .062. Table 4 illustrates the correlational analysis.

Table 4

Summary of Correlations for Scores on the BSQ, HABIT, and SRH

Measure	1.	2.	3.
1. BSQ	----	-.14	-.30**
2. HABIT	-.14	----	.39**
3. SRH	-.30**	.39**	----

** p < .01.

When men were removed from the analysis and only the women were examined (n = 155), a small statistically significant negative correlation was found between ratings on the BSQ-34 and HABIT, r = -.18, p = <.005. Table 5 depicts the correlations among variables of interest with men removed from the sample (n = 155).

Table 5

Summary of Correlations for Scores on the BSQ, HABIT, and SRH for Female Participants Only

Measure	1.	2.	3.
1. BSQ	----	-.18*	-.31**
2. HABIT	-.18*	----	.41**
3. SRH	-.31**	.41**	----

*p <.05 **p <.01

Hypothesis 2

To test the second hypothesis, that women are more likely to report lower BI, have lower ratings of SAH, and engage in fewer health behaviors than men, a multivariate analysis of variance (MANOVA) was conducted. The purpose was to examine the effect of the independent variable, gender, on BI, SAH, and health behaviors. The power analysis indicated that 180 participants were needed for the MANOVA to be statistically significant, and that criterion was satisfied *(n* = 189). The independent variable was gender and the dependent variables were BI, SAH, and health behaviors, as measured by the BSQ-34, HABIT, and Self-Rated Health Scale. Any significant associations were examined using post-hoc analyses. A Bonferroni-corrected $p < .01$ level of significance was used for all analyses in the study to determine if the null hypotheses could be rejected.

A MANOVA assumes homogeneity of variances for dependent variables. Levene's test was conducted to test for homoscedasticity during the analysis. Levene's test was insignificant, so equal variances were assumed. MANOVA also assumes homogeneity of covariance. Box's M analysis was not violated; therefore, the use of the

Wilks' lambda test was appropriate. There was a statistically significant difference in the dependent variables based on one's gender, $F(3, 186) = 7.62$, $p < .005$; Wilks' $\Lambda = 0.890$. Specifically, there was a statistically significant effect on BI, $F(1, 186) = 12.56$; $p = .005$. There were no statistically significant effects on SAH, $F(1, 186) = 2.36$, $p = .127$, or health behaviors, $F(1, 186) = 2.89$, $p = .091$.

Hypothesis 3

A multiple linear regression was conducted to test Hypothesis 3, if gender, negative BI, and SAH predict health behaviors. In order to achieve statistical significance, the power analysis yielded that at least 103 participants were needed. This criterion was satisfied ($n = 189$). The multiple linear regression was calculated to predict health behaviors based on BI and SAH. Gender was not included in the analysis since no relationship was found between gender and the scores on the HABIT. A multiple linear regression assumes that relationships between the predictor and criterion variables are linear. This assumption was met, with a weaker linear relationship between BI and health behaviors. Secondly, the errors between the residuals of the regression were normally distributed, and thus this assumption was acceptable. The Durbin-Watson statistic (1.762) was acceptable, revealing that error variances were uncorrelated. This statistic assumes that residuals are not serially correlated, indicating that the size of the residual for one case does not impact the residual size for the next case. Lastly, a normal P-P plot revealed no evidence that the assumption of random errors, linearity, and homoscedasticity were violated. A significant regression equation was found, $F(2, 186) = 16.85$, $p <. 000$, with an R^2 of .153. Participants' predicted health behaviors was equal to 24.761 - .004 (BI) + 1.155 (SAH). SAH was a significant predictor of health behaviors, whereas BI was not

found to be a significant predictor of health behaviors. This is not surprising since no significant correlational relationship was found between BI and health behaviors for the entire sample. Table 6 depicts the results of the multiple regression.

Table 6

Predictors of Health Behaviors

Variable	*B*	*SE B*	β
Constant	24.761	2.46	
BSQ	-.004	.01	-.02
SRH	1.155	.21	.39

Note. R^2 = .15 (p <.000)

Multiple regression analysis was also used to examine whether any mediator or moderator variables may have influenced the relationship between BI and SAH, as well as between SAH and health behaviors. The variables that were of interest as either mediators or moderators were age, gender, body mass index (BMI), and socioeconomic status (SES). In order for a variable to be examined as a potential mediator or moderator, a statistically significant relationship must exist between the variable and the predictor and outcome variables. None of the variables met these criteria and therefore were not considered to mediate or moderate the relationship between the predictor and outcome variables. See Table 7 for the correlational analyses between these variables

Table 7

Summary of Correlations of Scores on the BSQ, HABIT, and SRH with Potential Mediator/Moderator Variables

Variable	Age	Gender	BMI	SES
Age	----	.03	.20**	.52**
Gender	.03	----	-.05	-.13
BMI	.20**	-.05	----	.21*
SES	.52**	-.13	.21*	----
BSQ	.07	.25**	.28**	.23**
HABIT	.06	.12	-.12	-.07
SRH	.05	.11	-.28**	-.06

*$p < .05$. ** $p < .01$.

Hypothesis 4

To test Hypothesis 4, negative BI and SAH predict gender-specific medical nonadherence in women, a multiple regression would have been conducted. Statistical significance required a minimum of 103 participants based on the power analysis. This criterion was satisfied ($n = 189$). After conducting the initial bivariate correlation, no significant relationship was found between negative BI (as measured by the BSQ-34), SAH (as measured by the Self-Rated Health Scale), and the dependent variable gender-specific medical adherence (as measured by the Gender Specific Items), $r = -.01$, $p = .952$; $r = .03$, $p = .698$, respectively. Therefore, the multiple regression was not conducted. Scatterplots were also examined between each of the predictor variables with the outcome variable and confirmed the lack of significant relationships.

Chapter 5: Discussion

General Findings

The goal of the current study was to examine the relationships between body image (BI), health behaviors, and self-assessed health (SAH). Additionally, the study was intended to examine if gender plays a role in BI, SAH, and health behaviors. Lastly, the study aimed to explore if BI and SAH played a role in gender-specific medical adherence (i.e., yearly gynecological exams in women). The outcomes of the current study are relevant for both clinicians and researchers. Clinically, this type of research can help practitioners conceptualize difficulties related to BI and health behaviors. For researchers, the current study adds to research on this topic and how these variables relate.

To date, research looking at the relationship between these variables separately has been limited, and no studies have examined these variables together. Studies that have examined some of the variables in an adult population also are limited. Most studies found examined select variables in adolescent or European samples (Dennerstein et al., 2000; Meland et al., 2007). The current study examined the relationship between BI, SAH, and health behaviors in an adult sample consisting of men and women in the U.S. The age range of participants was from 20 to 74 years, with a mean age of 25.9 years. The majority of the sample consisted of women, possibly explaining some of the findings in the study.

The results indicated that BI was negatively correlated with SAH; as ratings of negative BI increased, ratings of SAH decreased. Research in the literature examining the relationship between BI and SAH was limited. One study found that adolescents who perceived their health as poor were more likely to endorse negative BI later in life

(Meland et al., 2007). Other than this, little is known about the relationship or directionality of the relationship between the two variables. This study did find a significant relationship between the two variables, suggesting that BI and SAH are moderately correlated with each other. When the correlation between BI and SAH was compared by gender, the findings changed. In women, there was a moderate significant positive relationship, $r = .41$, $p < .001$, whereas in men, there was a moderate significant negative relationship, $r = -.53$, $p < .001$ between the two variables. In men, higher rates of negative BI are associated with lower ratings of SAH. The reason higher ratings of negative BI in women were associated with higher ratings of SAH is unclear.

Body dissatisfaction and body mass index (BMI) could have impacted the strength of the relationship between BI and SAH. A significant weak negative correlation existed between SAH and BMI, $r = -.28$, $p < .001$, as well as a significant weak positive correlation between BI and BMI, $r = .28$, $p < .001$. This means that as ratings of SAH increased, BMI decreased, and as negative BI increased, BMI increased. Overall, the sample endorsed minimal ratings of negative BI, was just in the overweight range (M = 25.9; cutoff for normal BMI is 24.9), and had higher ratings of SAH. If the sample endorsed higher ratings of negative BI and BMI, a stronger correlation between BI and SAH likely would have been observed.

A moderate positive correlation also was noted between health behaviors and SAH, meaning that health behaviors increased with ratings of SAH. Research literature supports this finding; however, most of the studies examining the relationship between these variables were conducted in Europe and with adolescents. Teenagers who engaged in regular exercise or were involved in group/team activities noted more positive views of

SAH than their counterparts who were not engaged in regular physical activity (Currie et al., 2000). A study in Sweden (Vaez & Laflamme, 2003) found that tobacco use in male university students was negatively correlated with SAH, whereas tobacco use in female university students was positively correlated with SAH. The current study found that this relationship is also present in adults in the United States, suggesting that the results hold up across cultures. That individuals who perform more healthy behaviors rate their health favorably does make sense. This finding also makes sense in the context that SAH was found to be a predictor of health behaviors in the present study, a topic discussed later.

Several demographic variables (i.e., age, gender, BMI, and socioeconomic status [SES]) were explored to see whether they impacted the strength or directionality of the relationship between SAH and health behaviors. This study did not find significant relationships between age, gender, or SES with health behaviors and SAH. These demographic relationships may have a nuanced effect on SAH and health behaviors. For example, physical health appears to be an important predictor of SAH, and this is consistent throughout the lifespan (Wade & Seeley, 2002; Wen et al., 2006). The literature also suggests that women are just as likely to report good SAH as men, even though men in general tend to perform more unhealthy behaviors (Jylha et al., 1998). Research has also found that SES is correlated with SAH. Lower income is associated with lower ratings of SAH, whereas higher income is associated with higher ratings of SAH (Kennedy et al., 1998). This association was not observed in the present study, even though the mean income for the sample was $28,021 per year. Social ordering and income inequalities have been suggested to negatively impact SAH (Kennedy et al., 1998; Ostrove et al., 2000) in individuals with lower income. Since the sample in the

present study consisted of students, they may not have been as influenced by social ordering and income inequality.

The literature does indicate relationships between age and gender with health behaviors. For example, older adults tend to receive less preventative care (i.e., cancer screening, flu vaccine, and fewer exercise and nutrition interventions) when compared with younger adults (Alliance for Aging Research, 2003). The mean age of the sample in this study was 30.2 years, possibly explaining why no relationship was found in this study. Lastly, no relationship was observed between gender and health behaviors. The research shows that overall men tend to perform fewer preventative health behaviors, make fewer healthy food choices, and have higher rates of risk behaviors (e.g., not wearing seatbelts) than women, and these behaviors contribute to shorter lifespans and increased morbidity (Lawlor et al., 2001; Nathanson & Lorenz, 1982; Wardle et al., 2004; WHO, 2002). Some evidence suggests that married men have increased rates of preventative health behaviors, possibly related to their spouse managing their health/treatment (Umberson, 1992). Marital status was not explored in this study, so whether it would have impacted the relationship between gender and health behaviors is unclear. An additional finding of the analyses between the demographic variables and SAH yielded a significant negative relationship between BMI and SAH, $r = -.28$, $p = < .001$, meaning that as BMI increases, SAH decreases. This finding is congruent with the significant positive correlation found between BI and BMI. BMI and health behaviors were not related.

Interestingly, with men included in the sample, no significant correlation between BI and health behaviors was found. One possible explanation for this is that negative BI

does not correlate with health behaviors in men as it does in women. Since most of the literature focuses on the relationship between BI and health behaviors in women, men were removed from the sample so that the variables could be examined by gender. In an exploratory analysis, no significant relationship between BI and health behaviors was found in male individuals, $r = -.15$, $p = .409$. Another possible, though unlikely, explanation is that the small number of men in the sample ($n = 33$) was not enough to obtain significant findings between the two variables. Examining these variables in a mostly male or all male sample to see if the number of participants affects the relationship would be interesting.

When only women were examined, a weak negative correlation was found between the two variables, meaning that higher ratings of negative BI are associated to a small degree with engagement in fewer health behaviors. Surprisingly, this relationship was not stronger since literature suggests relationships between BI and certain health behaviors. For example, in adolescents, negative BI is associated with numerous unhealthy behaviors, such as extreme weight control behaviors, skipping meals intentionally, self-induced vomiting, and the use of laxatives (Neumark-Sztainer et al., 2006), and with decreased fruit and vegetable consumption in adolescent girls (Bucchianeri & Neumark-Sztainer, 2014). Another study found that women with negative BI are more likely to engage in regular exercise for weight loss purposes, but that exercise and other health behaviors alone do not improve their BI (Homan & Tylka, 2014). Lastly, women who smoke are more likely to report more negative ratings of BI and use smoking as a way to control their appetite and weight (Lopez-Khoury et al., 2009; USDHHS, 2001). Note that correlational research is useful for predictions but

cannot provide enough evidence to suggest a causal relationship. Additionally, correlations are subject to influence by the range of scores and outliers.

Although the results of the study did not strongly corroborate what is seen in the literature, the weak negative relationship suggests some relationship between those variables. The reasons for not finding a stronger correlation are numerous. A majority of the sample included students from the PCOM community, and the average age of the participants was 30.2 years. As a large portion of the sample consisted of students and medical professionals, the participants possibly engaged in healthy behaviors regardless of BI. Another hypothesis is that participants reported health behaviors in a more favorable way. Finally, because the participants on average reported minimal negative BI, a stronger relationship likely was not observed.

Additional analyses examined if gender had an effect on BI, SAH, and health behaviors. Based on the results, women were more likely to endorse higher ratings of negative BI than were men, and no effect was found on SAH and health behaviors. The BSQ-34 mean score for female participants was 93, whereas the mean score for male participants was 71.8; along with the findings from the MANOVA these scores demonstrated the effect of gender on negative BI. Research literature supports this finding, showing that women tend to be more dissatisfied with BI than men (Davis & Cowles, 1991; Furnham & Calnan, 1998; Holsen et al., 2012; Tiggeman, 2004). The literature also supports a lack of distinction in gender related to ratings of SAH (Jylha et al., 1998). In this study, mean scores on the Health Adherence Behavior Inventory (HABIT) were slightly different by gender, but conclusions cannot be drawn without further analyses. Future studies to determine if mean scores on the measures included in

the study were significantly different by gender would be interesting. In a correlational analysis, a significant weak negative correlation was found between BI and health behaviors, $r = -.18$, $p = < .005$), suggesting that in women, as ratings of negative BI increase, health behaviors decrease. These findings are consistent with the literature regarding negative BI in women and its relationship with health behaviors (Bucchianeri & Neumark-Sztainer, 2014; Lantz, 2003; Ling & Glantz, 2002).

Even though the literature regarding health behaviors and gender is mixed, the consensus seems to be that women perform more healthy behaviors, such as making better food choices, wearing seatbelts, and engaging in preventative care, than do men (Nathanson & Lorenz, 1982; Umberson, 1992; Wardle et al., 2004). These gender differences seem to be impacted by negative BI to some extent. For example, in women, negative BI is correlated with negative health behaviors, such as smoking, poor weight control practices, and fewer preventative care practices (Bucchianeri & Neumark-Sztainer, 20014; Lopez-Khoury et al., 2009; Van de Berg & Neumark-Sztainer, 2007). A possible explanation for these findings may be that the mean score on the BSQ-34 in this study was 89.3, meaning that the participants overall had minimal concern with their shape and BI. When scores on the BSQ-34 were broken down by gender, both genders also endorsed low levels of negative BI. If scores on the BSQ-34 had been higher, gender likely would have had a significant effect on health behaviors. Another hypothesis is that using separate measures of healthy and unhealthy behaviors would have led to findings more consistent with the research literature. In this study, the HABIT examined only the number of healthy behaviors performed and does not provide a qualitative descriptor relating to the meaning of the numbers.

A regression analysis revealed that SAH was a significant predictor of health behaviors, but that BI was not. Note that in the original hypothesis gender was included as a predictive variable. As no relationship between gender and scores on the HABIT was found in the correlational analyses, gender was not included as a predictive variable. The lack of effect of BI on health behaviors can likely be explained by the overall sample having minimal concern with body shape and BI, as measured by scores on the BSQ-34. Perhaps if the overall scores on the BSQ had been higher, BI would have been found to be a predictor of health behaviors. The literature does support this finding in that body dissatisfaction in women is correlated with negative SAH, but negative BI alone is not enough to increase healthy behaviors, such as regular exercise (Neumark-Sztainer et al., 2006). The present study corroborates the research in that a moderately significant negative relationship was found between BI and SAH, $r = -.31$, $p = < .001$, and a weak significant relationship was found between BI and health behaviors, $r = -.18$, $p = <.005$, in the female participants.

The literature examining the relationship between SAH and health behaviors is sparse. In European countries, studies have found significant positive correlations between SAH and physical activity in adolescents (Currie et al., 2000). The findings of this study indicated a predictive relationship between SAH and health behaviors, meaning that higher ratings of SAH were predictive of increased health behaviors. This finding is interesting and could have important implications for future research and clinical intervention.

Lastly, the hypothesis that negative BI and SAH predict gender-specific medical nonadherence in women did not have significant findings in this study, although literature

supports a relationship between gender-specific medical nonadherence and BI. For example, it has been found that women who endorse negative BI have a lower likelihood of engaging in breast self-exams (Ridolfi & Crowther, 2013). Given that the sample in the current study did not endorse high rates of negative BI overall, these findings are not surprising.

Taken together, this study used two constructs (i.e., BI & SAH) that are subject to an individual's perception, which may or may not always be accurate. This helps to place the findings of the present study in context. In addition, a nuanced relationship exists between BI, gender, and health behaviors. As mentioned, BI alone is not enough to influence health behaviors, although positive BI is viewed as associated with more healthy behaviors and protective against weight gain. Gender does seem to affect the ratings of BI and SAH. For example, this study found that negative BI and SAH were positively correlated in women. This finding seems counterintuitive but speaks to the nuanced nature of how women perceive their health. Perhaps women using unhealthy weight management strategies (e.g., smoking) do not view these behaviors as unhealthy since they are used for a healthy gain (i.e., weight management). SAH was also found to be a predictor of health behaviors in this study; however, an unaccounted for variance could likely be explained by other variables, such as self-esteem, weight stigma, depression, and/or BMI.

Limitations

A limitation of this study is that one item was omitted from the BSQ-34 questionnaire unintentionally through copy-and-paste error. Item 26, which asked participants "Have you vomited to feel thinner?" was the missing item. This omission

may have impacted the reliability of the measure in this study. Although this item was omitted, its omission is not thought to significantly have impacted the results and findings of the study. This item asks about a symptom (i.e., vomiting related to BI) that typically accompanies eating disorders (i.e., bulimia nervosa) or disordered eating patterns. Efforts were made to screen out participants who were currently or formerly diagnosed and/or treated for eating disorders, and therefore this item is not believed to have had significantly impacted the study.

Several other limitations are evident in the current study. First, the measures were cumbersome. The BSQ has 34 items, and the HABIT has 50 items. Labor-intensive surveys are more prone to participant fatigue, resulting in inaccurate or inconsistent responses. This may explain why several participants did not complete all of the surveys. Unfortunately, the only available valid and reliable measure of BI for men and women was the BSQ-34. Additionally, the BSQ-34 assesses negative BI, which made measuring and/or controlling for positive BI difficult in the study. This means that participants who had positive BI would not have been captured in this study since endorsing low scores on the BSQ-34 is not indicative of positive BI. An additional limitation related to the measures was the reliability of the gender-specific items used in the study. Cronbach's alpha for these items was $\alpha = .60$, meaning that the reliability was quite low. The reliability of this measure was likely impacted by Item 3, which asked participants whether they engage in monthly breast self-exams. A lack of uniformity was evident in the literature regarding women's healthcare guidelines in this area. This may explain the lack of a significant linear relationship between BI, SAH, and gender-specific medical adherence.

Another limitation of the study consisted of qualitative data that were not collected. For example, participants were not asked their race or ethnicity in the demographic questionnaire. Access to this information could have led to analyses to determine if race or ethnicity were mediator or moderator variables in the study. Participants were not given measures to assess self-esteem and depression. BI has been found to mediate the relationship between BMI and psychological health, including depression and self-esteem (Mond et al., 2011). As these variables were not assessed in this study, they were not used to further explore the relationship between BI and SAH.

The recruitment method of this study was another limitation. The sample consisted of mostly women and people in the PCOM community. Efforts were made to recruit participants outside of the PCOM community via social media and flyers. The sample overall did not endorse negative BI. This likely explains why several of the findings were not significant in the study. The study was done with a nonclinical population, and efforts were made to screen participants for chronic medical conditions and current/history of eating disorders. If the sample had endorsed higher ratings of negative BI, the results likely would have had more significance. Also, a sample consisting of only female participants may have shown that BI is a significant predictor of health behaviors.

All of the information regarding health behaviors and demographics was measured by self-report. Self-reporting enhances accuracy of the data to the extent that participants willingly provide the information. However, health behaviors that may be considered undesirable could have been underreported. Estimates of behaviors generally thought to be harmful to health (i.e., heavier alcohol use, current cigarette smoking,

physical inactivity, and overweight body weight status) may be conservative estimates of the actual prevalence of such behaviors given that underreporting may occur. Body weight relative to height is particularly sensitive to underreporting. The BMI measure also has limitations in terms of its potential for overestimating body mass for persons who are very muscular or underestimating it for persons who have lost muscle mass, such as the elderly.

Future Directions

Future research could further examine the link between these variables and could lead to experimental studies that could prove causation. Future studies could explore if BI causes participation in health behaviors and ratings of SAH. This study could also foster a case for future research examining other demographic variables and their possible influence on the relationship between these variables. This could provide valuable information about how to promote increased participation in healthy behaviors. If a causal relationship exists between these variables, important implications for treatment interventions and reducing healthcare costs could result. If intervention at the level of BI can promote increased performance of healthy behaviors, treatment can be directed to support this. As these variables are not studied in male participants as frequently as in female participants, the findings could advocate for further research with male participants.

Additionally, this study's findings support further examination of other variables that might be related to BI. For example, social behaviors and other behavioral variables not examined in this study, such as grooming and appearance-modifying behaviors (i.e., plastic surgery, wearing Spanx or other shapewear, and altering hair and/or skin), are all

examples of adaptive or maladaptive behaviors that could impact the relationship. Future studies could also examine the effectiveness of intervention programs aimed at promoting positive BI and preventing negative BI (i.e., outcome studies of BI therapies and primary/secondary prevention programs).

For example, a study conducted with adolescent female gymnasts in Canada found a modest but positive influence on pressures related to thinness after an intervention aimed to change the attitudes of coaches and parents of the participants (Buchholz, Mack, McVey, Feder, & Barrowman, 2008). The primary intervention in the study targeted improved positive BI, but this effect was not observed. A longitudinal study with male and female adolescents found that interventions aimed at improving BI improved body satisfaction and changed aspects of their self-esteem (i.e., social acceptance, physical appearance, and athletic abilities became less important related to self-esteem). In female participants, BI views were more positive, weight control behaviors decreased, and gaining weight that was deemed developmentally appropriate was allowed. These effects were still observed 1 year after the intervention program (O'Dea & Abraham, 1999). The research examining interventions to promote positive BI in nonclinical adult samples is sparse.

Further research could also help to better guide practitioners in understanding the importance that BI could play in overall health and well-being. Several studies have shown that cognitive-behavioral therapy (CBT) is an effective intervention for negative BI in women (Rosen, Orosan, & Reiter, 1995; Rosen, Saltzberg, & Srebnik, 1989; Strachan & Cash, 2002). Extensive review did not yield any research literature focusing on treatment interventions for negative BI in men. In samples of female participants

without eating disorders, negative BI was greatly decreased after 6 weeks of CBT treatment (Rosen et al., 1989). Effective treatment consists of providing psychoeducation, setting goals for BI change, identifying the impact of BI on functioning and quality of life, monitoring and challenging dysfunctional distortions related to BI, and correcting cognitive distortions (Strachan & Cash, 2002). Patient-administered CBT interventions (i.e., bibliotherapy, self-monitoring, goal setting, and cognitive restructuring) were found to be as effective as therapist-administered treatment (Strachan & Cash, 2002). In a study examining the effects of CBT on obese women with negative BI, CBT was found to be an effective treatment option. Instead of eliminating negative BI, participants were better able to overcome some of the negative symptoms of negative BI, rather than reduce their body dissatisfaction (Rosen et al., 1995). These women endorsed feeling increased self-esteem, being more in control of their eating, feeling less guilt and preoccupation with eating, and engaging in less binge eating after completing eight sessions of CBT (Rosen et al., 1995). With this information, future research could examine the effectiveness of CBT with male individuals who have negative BI and incorporate interventions to promote increased health behaviors into the CBT treatment protocol.

Diversity and Advocacy

In this study, cultural diversity was not examined. Participants were asked about their income, but were not asked about their race/ethnicity. SES seems to play a role in an individual's perception of his or her health in that individuals with lower SES tend to rate their health more poorly than those with higher SES (Kennedy et al., 1998). Future studies could determine whether a correlation exists between SES, SAH, and race/ethnicity. This information would be important, as this study found that SAH is a

predictor of health behaviors. Advocacy efforts could be dedicated toward developing intervention programs with underserved individuals with low ratings of SAH to promote healthy behaviors.

Examining these variables across cultures and their relationship to race and ethnicity may have important implications when considering these findings. In part, the literature suggests that perception of weight and body satisfaction is influenced by race and ethnicity. For example, Caucasian and African American women are both prone to inaccurate perceptions of their weight. The difference is that Caucasian women tend to overestimate their weight and depict their shapes as being much heavier, whereas African American women tend to underestimate their weight and view their weight as normal, even if they are overweight (Paeratakul, White, Williamson, Ryan, & Bray, 2002). Additionally, African American women are thought to have more protective factors in place in terms of self-esteem and distorted BI. The primary protective factor is that African American women tend to view that men are more attracted to larger women than to smaller women, but Caucasian women view that men are more attracted to thinner body shapes. Caucasian women do not have these same protective factors and are therefore subject to lower self-esteem and distorted BI (Molloy & Herzberger, 1998). There are some exceptions to this, however. African American women who have higher SES tend to be more concerned and dissatisfied with their bodies than are their lower SES counterparts (Holmqvist & Frisen, 2009). Body dissatisfaction is more prevalent in female than male individuals, despite race and ethnicity (Cachelin, Rebeck, Chung, & Pelayo, 2002).

Despite racial and ethnic differences regarding BI and body perception, demographic factors, such as SES, age, and BMI, are possibly more powerful determinants to body size perceptions (Cachelin et al., 2002). BMI is a strong predictor of body dissatisfaction, and SES is a key factor in weight. An inverse relationship exists between SES and obesity (Cachelin et al., 2002). Lower SES is correlated with higher rates of obesity, and newer research has shown that higher SES has become more associated with increased rates of obesity over the last 3 decades (Zhang & Wang, 2012). Studies have shown that lower income is associated with lower ratings of SAH. African Americans with low SES are especially prone to this and experience significantly higher mortality rates than their Caucasian counterparts (Franks, Gold, & Fiscella, 2003).

Since SAH and BI are subjective constructs and appear to be relatively fluid, examining the impact of these variables in a diverse sample would be interesting. Based on the research regarding race/ethnicity and its relationship to BI, SAH, and SES, racial/ethnic minorities in low-income brackets would be expected to be at an increased risk of decreased health behaviors. The literature shows that members of this group are prone to increased morbidity/mortality and tend to rate their health lower than ratings of their higher SES counterparts. Since the findings of this study suggested that SAH is predictive to some extent of engagement in health behaviors, intervention would likely be beneficial. BI could also be targeted for intervention in helping to develop a more realistic view of the body based on BMI.

An additional area of advocacy related to this study could be the promotion of uniformity among women's healthcare guidelines, specifically regarding sexual health and well-being. A lack of uniformity was evident in the literature related to breast self-

exams and clinical breast exams performed by a medical professional. Anecdotally, there also tend to be differences among OB/GYN practices and even among providers in the same practice. Creating consistent guidelines could help to more accurately reflect medical adherence specific to women and better target those women requiring intervention for nonadherence.

Conclusion

Overall, BI, SAH, and health behaviors have not been examined together to determine whether a relationship exists between the variables and whether age and gender impact the strength and/or directionality of the relationship. The current study adds to the body of literature on BI and specifically addresses the relationship of negative BI with other variables. Future studies should examine how SES and race/ethnicity affect the strength/directionality of the relationship, and the results could be used to improve treatment interventions and promote increased healthy behaviors and preventative health behaviors. Further research studies should also focus on targeting underserved individuals who endorse low ratings of SAH and on creating programs to improve health behaviors. The nuanced relationship between BI, SAH, and health behaviors deserves more examination in the future and could be a source of new treatment strategies and interventions.

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