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Exploring Positive Body Image and Motives for Exercise as Predictors of Intuitive Exercise and Exercise Behavior Among Women

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EXPLORING POSITIVE BODY IMAGE AND MOTIVES FOR EXERCISE AS

PREDICTORS OF INTUITIVE EXERCISE AND EXERCISE BEHAVIOR AMONG WOMEN

by

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ABSTRACT

EXPLORING POSITIVE BODY IMAGE AND MOTIVES FOR EXERCISE AS
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by

Natalie Michelle Ramsey

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Under the Supervision of Professor Lori Klos, PhD

Purpose: To explore three facets of positive body image and motives for exercise as predictors

of women's intuitive exercise and exercise behavior.

Scientific significance: Positive body image has been associated with health-promoting

behaviors such as utilizing sun protection techniques and intuitive eating. Despite these findings

and the known benefits of exercise, there are no known published studies exploring if positive

body image and exercise motivation predict intuitive exercise and exercise behavior in women.

Understanding these relationships could facilitate the design of interventions targeting

improvements in both psychological well-being and exercise behavior.

Methodology: This cross-sectional study included 391 women (18-91 years; M_{age}: 49.9 ± 15.7

years; BMI: 28.2 ± 6.9 kg/m^2) who completed the Body Appreciation Scale–2, Broad

Conceptualization of Beauty Scale, Body Image - Acceptance and Action Questionnaire,

Functions of Exercise Scale, and Intuitive Exercise Scale. Participants reported exercise behavior

using a 7-day exercise log which was used to calculate exercise behavior in MET minutes per

week. Pearson correlations were used to determine interrelationships between study variables;

stepwise hierarchical multiple regression was used to determine if facets of positive body image

and motives for exercise, and the interaction between these variables, predict intuitive exercise and exercise behavior.

Results: Body appreciation ($r = .21$), broad conceptualization of beauty ($r = .15$), filtering information in a body protective manner ($r = .17$), and weight/appearance motives for exercise ($r = -.10$) were significantly ($p < .05$) correlated with intuitive exercise. Body appreciation ($r = .11$), broad conceptualization of beauty ($r = .13$), health/enjoyment motives for exercise ($r = .31$), and weight/appearance motives for exercise ($r = .14$) were significantly ($p < .05$) correlated with exercise behavior. Hierarchical multiple regression revealed body appreciation ($\beta = .16$) was the only significant ($p < .05$) predictor of intuitive exercise. Body appreciation ($\beta = -.18$), and the interactions between broad conceptualization of beauty and weight/appearance ($\beta = -.17$) as well as health/enjoyment motives for exercise ($\beta = .15$), and the interaction between filtering information in a body protective manner and weight/appearance motives for exercise ($\beta = -.17$) significantly ($p < .05$) predicted exercise behavior.

Conclusions: Women with a higher body appreciation are more likely to also exercise intuitively. Interventions aiming to increase intuitive exercise should aim to help women appreciate the appearance, function, and health of their body. Women engage in the highest levels of exercise when body appreciation is low, and when they have a narrow conceptualization of beauty and are highly motivated to exercise for weight/appearance-related reasons. However, interventions should be extremely cautious when promoting a narrow conceptualization of beauty and weight/appearance motives for exercise as this may lead to a maladaptive relationship with the body and exercise. To avoid a potentially harmful outcome, researchers should focus on helping women develop a more effective body image filter, perceive beauty in a variety of appearances of body sizes, and increase health/enjoyment motives for

exercise. Future research is needed to gain a better understanding of the interrelationships

between positive body, exercise motives, intuitive exercise and exercise behavior.

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LIST OF ABBREVIATIONS

BA	Body Appreciation
BAS	Body Appreciation Scale
BAS-2	Body Appreciation Scale-2
BCB	Broad Conceptualization of Beauty
BCBS	Broad Conceptualization of Beauty Scale
BI-AAQ	Body Image - Acceptance and Action Questionnaire
BMI	Body Mass Index
FES	Functions of Exercise Scale
FIBPM	Filtering Information in a Body Positive Manner
HE	Health and Enjoyment
MET	Metabolic Equivalent
WA	Weight and Appearance

Chapter I: Introduction

Engaging in regular physical activity can lead to many physical and psychological benefits, such as decreased risk of cardiovascular disease and Type 2 Diabetes, as well as improvements in mental health and mood (Centers for Disease Control and Prevention, 2015). To achieve these health benefits, the Centers for Disease Control and Prevention recommends that adults engage in a minimum of 150 minutes of moderate, 75 minutes of vigorous intensity aerobic activity, or any combination of moderate and vigorous intensity activity equaling 150 minutes of moderate intensity activity, as well as muscle strengthening activities at least two days per week (Physical Activity Guidelines Advisory Committee, 2008). Despite these recommendations to receive health benefits, between 14 and 42% of women are inactive (Carlson, Densmore, Fulton, Yore, & Kohl III, 2009). There are several factors that influence exercise behavior participation including certain psychological factors, such as body image (Bell, Donovan, & Ramme, 2016; Dalle Grave, Calugi, & Marchesini, 2008) and motivation for exercise (Duncan, Hall, Wilson, & Jenny, 2010). A better understanding of how these psychological constructs relate to participation in exercise behavior - including exercise that demonstrates body trust, flexibility and variety, mindful exercise and the management of negative emotions can be useful in programs and interventions aiming to increase the engagement in exercise.

A small, but growing number of researchers have begun exploring potential relationships between positive body image and health-promoting behaviors such as exercise. Positive body image is currently defined as the following:

An overarching love and respect for the body that allows individuals to (a) appreciate the unique beauty of their body and the functions that it performs for them; (b) accept and even admire their body, including those aspects that are inconsistent with idealized images; (c) feel beautiful, comfortable, confident, and happy with their body, which is often reflected as an outer radiance, or a "glow;" (d) emphasize their body's assets rather than dwell on their imperfections; and (f) interpret incoming information in a body protective manner whereby most positive information is internalized and most negative information is rejected or reframed (Wood-Barcalow, Tylka, & Augustus-Horvath, 2010, p. 112).

Evidence from qualitative studies on positive body image indicate adult women (Wood-Barcalow et al., 2010) and adolescents (Frisén & Holmqvist, 2010) with positive body image reported engaging in regular exercise as a way to care for their body. Although these qualitative findings are suggestive of a potential positive relationship between positive body image and exercise behavior, few researchers have explored this relationship quantitatively. In one study, Homan and Tylka (2014) reported that women who had the highest level of positive body image were highly active. Although the preliminary evidence is promising, more quantitative research is needed to understand the relationships between positive body image and physical activity behavior.

In exploring the construct of positive body image, several studies suggest that exercise motivation also impacts exercise behavior. Two categories of exercise motivation have been utilized in previous studies about positive body image and physical activity behavior: health and enjoyment-based motives and weight appearance-based motives. In qualitative studies of adolescents (Frisén & Holmqvist, 2010) and adult women (Wood-Barcalow et al., 2010)

identified as having positive body image by high levels of body esteem, and high appearance evaluation, low overweight preoccupation and self-perceived positive body image, reported participating in exercise for health and enjoyment reasons such as becoming stronger and to improve what their body was capable of doing. Participants did not report engaging in exercise as a means to alter their weight or appearance (Wood-Barcalow et al., 2010). Further, among women with positive body image, those with higher levels of appearance motivation were more likely to be physically active than those with lower levels of appearance motivation (Homan & Tylka, 2014). Although women with high levels of appearance motivation engaged in higher levels of exercise, women with the high levels of exercise and women with high levels of body appreciation had the lowest levels of appearance-based motives for exercise (Homan & Tylka, 2014). While preliminary evidence suggests that health and enjoyment-based motives may be associated with higher levels of exercise in certain populations, more research is needed to elucidate these associations, as well as determine how positive body image and exercise-related motivations may relate to how often people exercise as well as how they approach exercising, such as exercising intuitively.

Individuals who engage in intuitive exercise give themselves the freedom of engaging in a variety of enjoyable activities, and listen to their body to determine the duration of exercise which may help prevent injuries (Calogero & Pedrotty-Stump, 2011). Intuitive exercise is a construct that can be useful to consider when studying positive body image, and exercise motives and behavior. Intuitive exercise is the act of engaging in exercise that aligns with the physical cues of the body rather than feeling obligated to exercise (Reel & Miyairi, 2012). Specifically, individuals who intuitively exercise listen to their body to decide when to start and stop exercising and will discontinue exercising based upon their bodily cues (Reel & Miyairi, 2012).

Although the construct of intuitive exercise parallels the more extensively researched construct intuitive eating (Reel & Miyairi, 2012), currently there is limited available evidence regarding a relationship with positive body image. In a quantitative study of adults, Reel, Galli, Miyairi, Voelker, and Greenleaf (2016) reported that body appreciation - a facet of positive body image - was positively related to Body Trust and negatively related to Exercise Rigidity, factors of intuitive exercise; that is, men and women with higher levels of body appreciation were more likely to also report listening to their body and using a variety of exercises than individuals with lower levels of body appreciation. This relationship was also supported in the aforementioned qualitative studies of adolescents (Frisén & Holmqvist, 2010) and women (Wood-Barcalow et al., 2010). Thus, it is useful to consider exploring how positive body image, as well as motives for exercise, relate to the degree to which adults engage in intuitive exercise during an exercise session.

The present study built upon the research by Homan and Tylka (2014), as well as the qualitative studies by Frisén and Holmqvist (2010) and Wood-Barcalow et al. (2010). Specifically, Homan and Tylka (2014) utilized hierarchical regression modeling to elucidate how frequency of exercise and exercise motivation predicted positive body image in women between the ages of 18 and 51. The accounts from adolescents (Frisén & Holmqvist, 2010) and women (Wood-Barcalow et al., 2010) with positive body image suggested higher levels of this construct may facilitate health and enjoyment (rather than weight and appearance) motives for exercise, and engagement in aspects of intuitive exercise, as well as higher levels of exercise in general. The current study explored how different facets of positive body image, as well as health and enjoyment-related motives and weight and appearance-related motives for exercise, predicted intuitive exercise and exercise behavior among adult women. Although body image concerns

have been observed among both women and men, nearly three quarters of women have been found to be dissatisfied with some aspect of their body. Further, body dissatisfaction is considered a part of the diagnostic criteria for the eating disorder anorexia nervosa (American Psychiatric Association, 2013), and women are up to three times more likely to experience an eating disorder than men during their lifetime (Hudson, Hiripi, Pope, & Kessler, 2007). Further, most of the preliminary research related to positive body image has been limited to adult women (Homan & Tylka, 2014; Tylka & Homan, 2015), therefore to facilitate hypothesis generation between the relevant constructs, the current study only included women. However, it is understood that future studies should include both men and women.

Research Question

Are certain facets of positive body image and motives for exercise predictors of (a) intuitive exercise and (b) exercise behavior among women?

Study Purpose

The purpose of this study was to extend the limited literature exploring positive body image and exercise behavior to determine if multiple facets of positive body image (i.e., body appreciation, broad conceptualization of beauty, and filtering information in a body protective manner) and motives for exercise (i.e., weight and appearance, and health and enjoyment) are predictors of intuitive exercise and exercise behavior among women.

Specific Aims and Hypotheses

Specific Aim 1: To determine if three facets of positive body image (i.e., body appreciation, broad conceptualization of beauty, and filtering information in a body protective manner) are predictors of (a) intuitive exercise as well as (b) exercise behavior among women.

Hypothesis Associated with Specific Aim 1: Based upon additional cross-sectional studies

reporting significant, positive correlations between body appreciation and aspects of intuitive

exercise (Reel et al., 2016), as well as qualitative evidence suggesting a positive relationship

between positive body image and characteristics of intuitive exercise (Wood-Barcalow et al.,

2010), it was further hypothesized that body appreciation would be a positive predictor of

intuitive exercise. Based upon previous cross-sectional findings reporting exercise to be

significantly positively related to body appreciation among women (Homan & Tylka, 2014), and

the qualitative findings suggesting that women (Wood-Barcalow et al., 2010) and adolescents

(Frisén & Holmqvist, 2010) with positive body image are regularly active, it was hypothesized

body appreciation would be a positive predictor of exercise behavior. As no previous research

identified exploring the potential predictive value of other facets of positive body image (i.e.,

broad conceptualization of beauty and filtering information in a body protective manner) in

relation to intuitive exercise and exercise behavior, that portion of the analysis will be

exploratory in nature and hypotheses will not be generated. The hypotheses associated with

specific aim 1 are illustrated in figure 1.

a. Positive Body Image
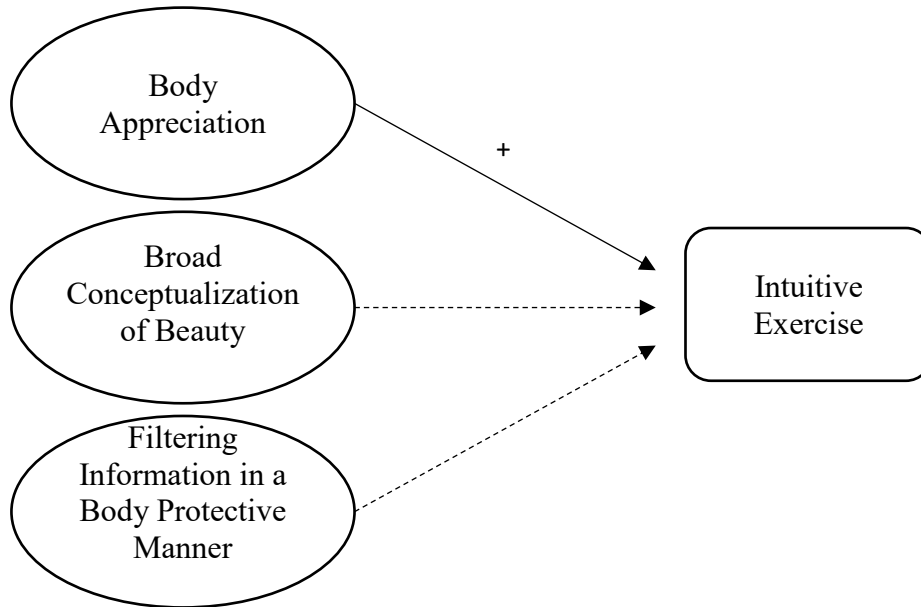
b. Positive Body Image
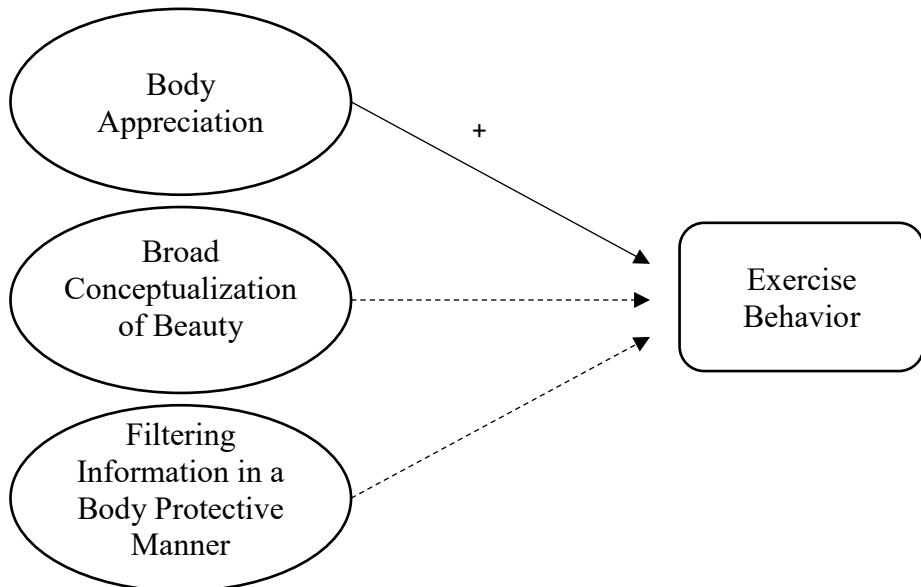
Figure 1. Conceptual framework of the hypothesized relationship between body appreciation, broad conceptualization of beauty, and filtering information in a body protective manner predicting (a) intuitive exercise and (b) exercise behavior. Solid lines indicate hypothesized relationships between study variables. Dashed lines indicate no hypothesis.

Specific Aim 2: To determine how weight and appearance- and health and enjoyment-based motives for exercise (in addition to three facets of positive body image) predict (a) intuitive exercise and (b) exercise behavior among women.

Hypothesis Associated with Specific Aim 2: Based upon qualitative evidence suggesting women and adolescents with positive body image listen to their body as to when to start and stop exercising, and enjoy being physically active, indicating aspects of health and enjoyment-based motives for exercise and intuitive exercise, it was hypothesized that health and enjoyment-based motives for exercise would be a positive predictor of intuitive exercise. Due to the lack of qualitative and quantitative research pertaining to the potential relationship between weight and appearance-based motives for intuitive exercise, the analysis was exploratory and hypotheses was not generated. Further, based upon a cross-sectional study reporting a positive correlation between appearance-based motives for exercise and exercise behavior among women (Homan & Tylka, 2014), and qualitative evidence of characteristics of health and enjoyment-based motives for exercise as reason to take part in being physically active among women with positive body image (Wood-Barcalow et al., 2010), it was hypothesized that both weight and appearance- and health and enjoyment-based motives for exercise would be positive predictors of exercise behavior among women. Hypothesis and exploratory analyses associated with specific aim 2 are illustrated in figure 2.

a. Positive Body Image

Body Appreciation

Broad Conceptualization of Beauty

Filtering Information in a Body Protective Manner

Motives for Exercise

Weight and Appearance

Health and Enjoyment

Intuitive Exercise

+

+

b. Positive Body Image

Body Appreciation

Broad Conceptualization of

Filtering Information in a Body Protective Manner

Motives for Exercise

Weight and Appearance

Health and Enjoyment

Exercise Behavior

+

+

+

Figure 2: Conceptual framework of the hypothesized relationship between facets of positive body image and motives for exercise as predictors of (a) intuitive exercise and (b) exercise behavior. Solid lines indicate hypothesized relationships. Dashed lines indicate no hypothesis.

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Specific Aim 3: To determine if there are significant interactions between three facets of positive body image (i.e., body appreciation, broad conceptualization of beauty, and filtering information in body protective manner) and motives for exercise (i.e., weight and appearance and health and enjoyment) as potential predictors of (a) intuitive exercise and (b) exercise behavior.

Hypotheses Associated with Specific Aim 3: Hypothesis were not generated to determine how the interactions between facets of positive body image and motives for exercise predict intuitive exercise. Previous cross-sectional research reported the interaction between exercise behavior and appearance-based motives for exercise negatively predicted body appreciation among women (Tylka & Homan, 2015) and qualitative evidence indicated women and adolescents with positive body image were physically active to improve the functionality of their body and were regularly active. Based upon theses findings, it was hypothesized that the interaction between body appreciation and weight and appearance-based motives for exercise would negatively predict exercise behavior. Due to the lack of prior research on other interactions between facets of positive body image and motives for exercise, the analysis for these interactions was exploratory and hypotheses were not generated. Hypothesis and exploratory analyses are demonstrated in figure 3.

a. Positive Body Image
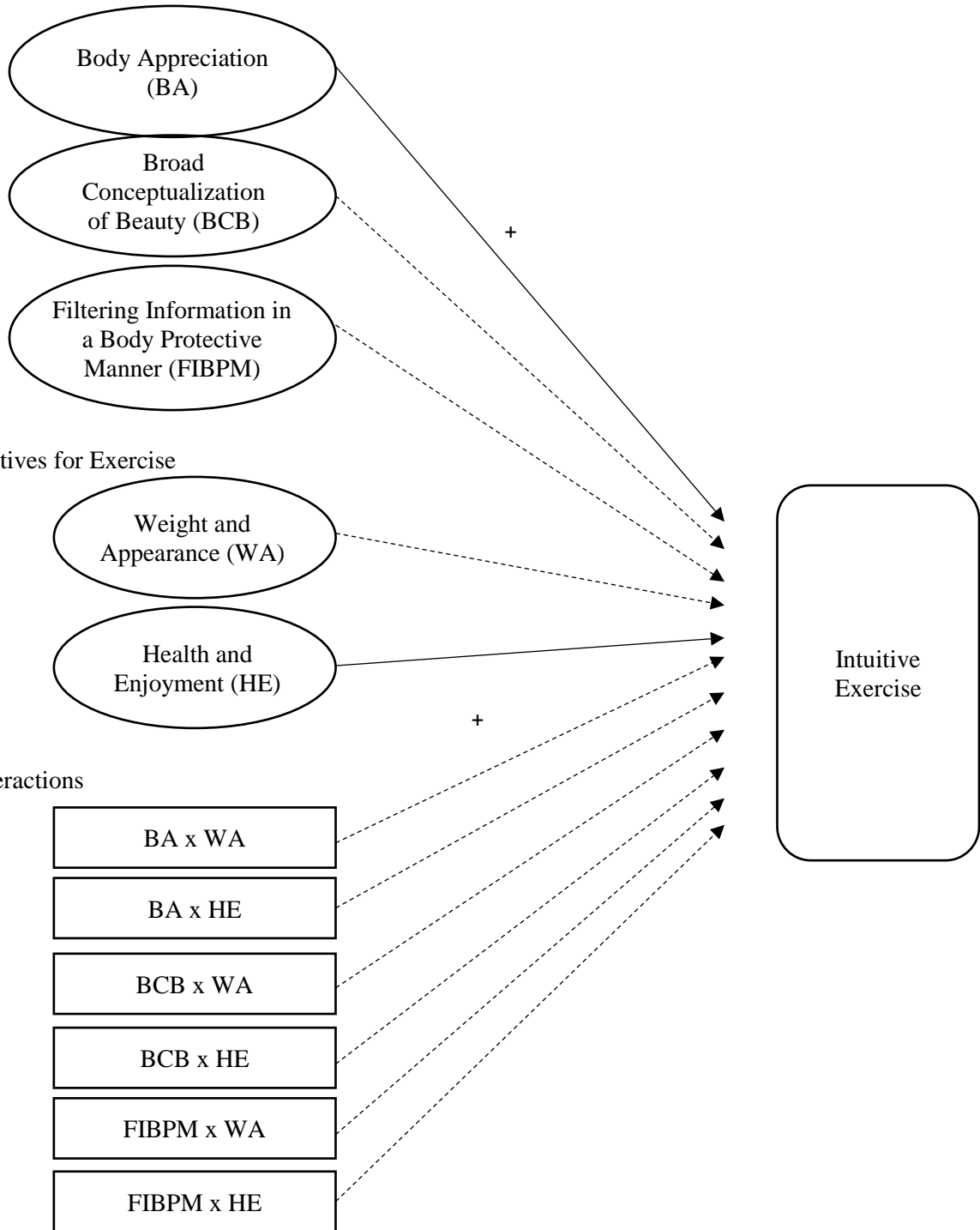
Body Appreciation (BA)

Broad Conceptualization of Beauty (BCB)

Filtering Information in a Body Protective Manner (FIBPM)

Motives for Exercise

Weight and Appearance (WA)

Health and Enjoyment (HE)

Interactions

BA x WA

BA x HE

BCB x WA

BCB x HE

FIBPM x WA

FIBPM x HE

Intuitive Exercise

+

+

Figure 3: Conceptual framework of the hypothesized interaction effects between three facets of positive body image and motives for exercise predicting (a) intuitive exercise and (b) exercise behavior. Solid lines indicate hypothesized relationships. Dashed lines indicate no hypothesis.
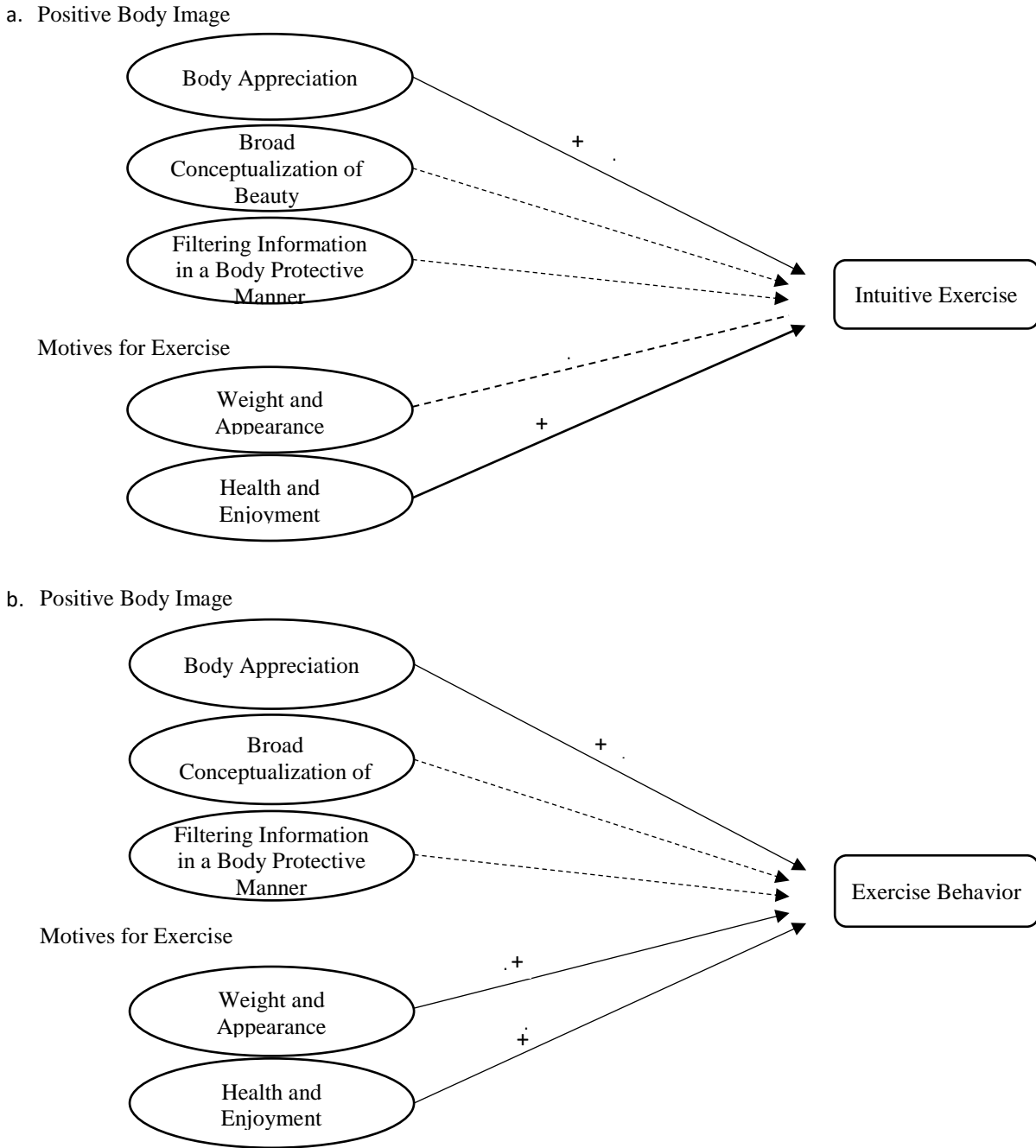
11
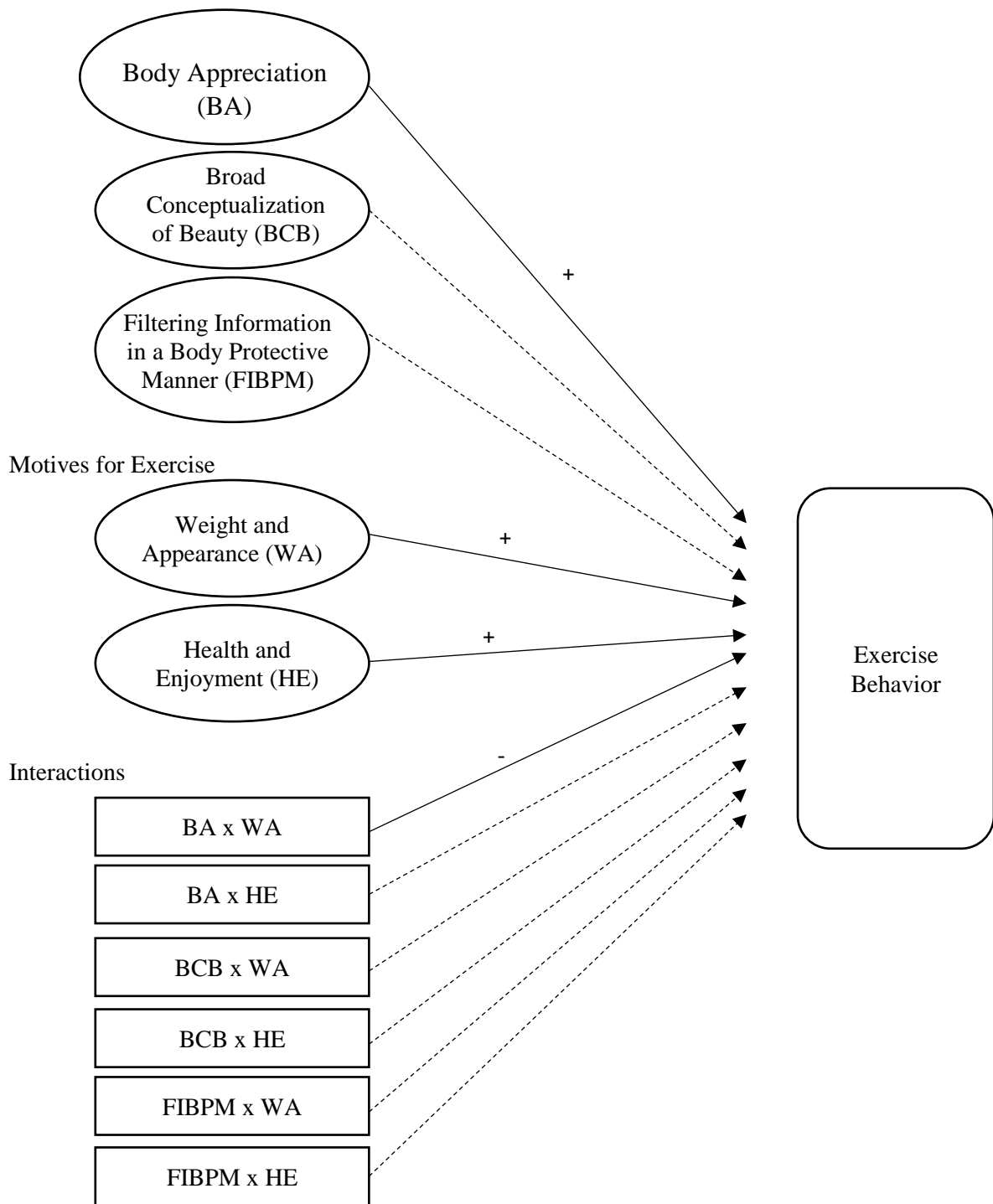
Figure 3: Conceptual framework of the hypothesized interaction effects between three facets of

positive body image and motives for exercise predicting (a) intuitive exercise and (b) exercise

behavior. Solid lines indicate hypothesized relationships. Dashed lines indicate no hypothesis.

Assumptions and Limitations

The present study was conducted using the following assumptions and considering the following limitations. The definitions used to describe positive body image (Wood-Barcalow et al., 2010) and intuitive exercise (Reel & Miyairi, 2012) are the currently accepted definitions despite being derived from populations of somewhat limited generalizability. Further, quantitative scales have been created to directly or indirectly assess three facets of positive body image of interest in this study (i.e., body appreciation, broad conceptualization of beauty and filtering information in a body positive manner) and are considered psychometrically-sound (Sandoz, Wilson, Merwin, & Kellum, 2013; Tylka & Iannantuono, 2016; Tylka & Wood-Barcalow, 2015a). However, a multidimensional scale assessing positive body image holistically has not yet been created, therefore, only three facets of positive body image with published scales were explored in the current study.

It was assumed that study participants responded to the survey in a truthful manner. Participants were informed their information would be kept private and secure to the best of the researcher's ability and in accordance with university institutional review board procedures. It was assumed by using a crowdsourcing platform, the data acquired would be more diverse and representative than a traditional college or online sample (Buhrmester, Kwang, & Gosling, 2011; Peer, Brandimarte, Samat, & Acquisti, 2017), which should improve the generalizability of the study findings. Due to the nature of cross-sectional investigations, causal relationships cannot be determined; while for the purposes of this study, positive body image and motives for exercise were explored as potential predictors of intuitive exercise and exercise behavior, it is possible that the relationship may function in the opposite direction or perhaps even be reciprocal in nature. Finally, while hierarchical multiple regression is considered an appropriate statistical

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method to analyze multiple predictors of exercise behavior and intuitive exercise as it has been used similarly by previous researchers (Homan & Tylka, 2014), other analytical techniques such as structural equation modeling may provide greater insights into the relationships among the variables, yet more research is needed before pursuing such an approach.

Delimitations

This study only explored positive body image and motives for exercise as predictors of intuitive exercise and exercise behavior among adult women. Women were exclusively included in this study due to their increased risk of having a negative body image (Fallon, Harris, & Johnson, 2014) resulting in being up to three times more likely to experience an eating disorder in their lifetime than men (Hudson et al., 2007). Further, women with high levels of negative body image engage in lower levels of exercise behavior (DiBartolo, Lin, Montoya, Neal, & Shaffer, 2007) than those with lower levels of negative body image despite the known health-promoting benefits of exercise (Blair et al., 1996; Blair et al., 1995; Manson et al., 2002). Additionally, most preliminary research on the proposed variables, particularly positive body image, has only included women, limiting the ability to generate hypotheses on populations other than women. The current study opted to explore exercise behavior over other health-promoting behaviors due to the known health benefits of exercise (Blair et al., 1996; Blair et al., 1995; Manson et al., 2002) and the high prevalence of adults not meeting the physical activity recommendations (Centers for Disease Control and Prevention, 2015). Further, the current study explored health and enjoyment-based motives and weight and appearance-based motives for exercise with the understanding that not all motives for being physically active are being considered.

Significance

Although exercise can result in a decreased risk of many diseases (Blair et al., 1996; Blair et al., 1995; Manson et al., 2002), most women are inactive (Carlson et al., 2009). Understanding psychological characteristics and motives of individuals who are active could be instrumental in creating interventions designed to promote exercise behavior. Further, understanding the relationships between positive body image, motives for exercise, and intuitive exercise may help individuals have a healthy enjoyable relationship with exercise resulting in continued life-long participation in exercise. The current study not only expanded upon the limited research of previous scholars to examine associations between positive body image, exercise motives, and exercise behavior, but also provided a new insight on the relationships between positive body image, intuitive exercise, and exercise behavior.

The following chapter will provide insight on the body image construct in general, and the more extensively explored construct negative body image, as it facilitates a better understanding of the positive body image construct. The overview of body image and negative body image will be followed by an overview of the positive body image construct and its facets, and conclude with a review of the limited qualitative and quantitative studies available on positive body image, motives for exercise, and exercise behavior.

Chapter II: Literature Review

Body Image

At the most basic level, body image is defined as the way an individual views their body (Cash & Pruzinsky, 1990b). However, as the field of body image research has evolved, it is evident that body image is a multi-dimensional concept. Body image involves all of the thoughts and feelings an individual has about their body including how it moves, its size and appearance, the amount of time spent thinking about the body, and how they modify their physical appearance (Pruzinsky & Cash, 1990). Thompson, Heinberg, Altabe, and Tantleff-Dunn (1999) offer more than ten different definitions that can be used to explore body image, demonstrating the multidimensional quality of body image and also illustrating its potential to encompass both negative and positive elements.

Some of the more common ways to define body image include weight (dis-)satisfaction, body satisfaction, and size perception accuracy (Thompson et al., 1999). Weight (dis-) satisfaction is the degree to which an individual is either dissatisfied or satisfied with their body weight. Body satisfaction is the degree to which an individual is satisfied with various body areas (e.g., arms, thighs, weight). Size perception accuracy is one's ability to correctly identify the size of one's body or body parts. Body image can also be explored through appearance satisfaction and appearance orientation. Appearance satisfaction is how happy or unhappy an individual is with their overall appearance, as well as various other aspects of physical appearance including hair, body areas (e.g., arms, thighs, weight), weight and facial features. Appearance orientation is the extent to which one is invested in thinking about or trying to modify one's appearance. These terms and definitions are just a few of many that have been used to define and explore the body image construct. These terms help illustrate the complexity of body image and how it is not

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limited to the degree of dissatisfaction or satisfaction with which someone views their body, but extends deeper influencing an individual's thoughts and physique management behaviors. Though the complexity of body image is evident based upon its numerous dimensions and definitions, the complexity is deepened when exploring the trait and state aspects of body image.

In the early days of body image research, it was thought that an individual's body image was trait-like: static and remained relatively unchanged over time (Pruzinsky & Cash, 1990). However, Pruzinsky and Cash (1990) suggested a different way of thinking about body image: a person-by-situation paradigm which postulates that an individual's body image is not entirely fixed, but is influenced by the situation the individual is experiencing. For example, if an individual completes a hard exercise session, they may be more satisfied with their body due to what they were capable of doing (Cash & Pruzinsky, 1990a). Further, in certain situations an individual may feel positively about their body and its functions; however, in a different context (e.g., at the beach or while wearing a swimsuit) the same individual may experience a decline of body satisfaction. The culmination of all of these experiences results in an overall evaluation of one's body image, either positive or negative, with context-specific variance. Understanding the trait and state qualities is important as it illustrates that body image is malleable to some extent. This is particularly important as reductions in negative body image and enhancements in positive body image may lead to an increase in health promoting behaviors, such as exercise (Homan & Tylka, 2014). Due to the cross-sectional nature of the research the relationship may occur in the opposite direction as well (Homan & Tylka, 2014); therefore, it is necessary to explore negative and positive body image in-depth to gain an understanding of the constructs and the impact each can have on health behaviors.

Negative Body Image

In body image research, negative body image has received the most attention. Coupled with the high prevalence of negative body image among women in the U.S. (Fallon et al., 2014), exploring the negative body image construct can help set the stage to better understand the need for additional research into positive body image. Negative body image can be defined as the dissatisfaction with one's body weight, size or overall appearance; the decreased accuracy in which an individual is able to determine their body size; or an extensive amount time an individual spends thinking about, or trying to alter, their appearance (Thompson et al., 1999). The complexity of negative body image makes it difficult, or nearly impossible, for one assessment to capture the entirety of the negative body image construct for every individual.

In the U.S., the prevalence of negative body image among women in the U.S. has fluctuated throughout history (Fallon et al., 2014; Fiske, Fallon, Blissmer, & Redding, 2014). Such fluctuations are the result of a myriad of sociocultural and psychological factors such as sociocultural beauty standards, deficits in psychosocial development, and low self-esteem and self-identity (Rosen, 1990). Despite the fluctuations, negative body image remains prevalent among women in the present day (Fiske et al., 2014), and can have deleterious effects on women's health-related behaviors and ultimately well-being (Rosen, 1990; Willmuth, Fondacaro, Gross, Leitenberg, & Rosen, 1985). The next several sections of this literature review briefly focus on factors that contribute to negative body image among women, including the current ideal physique among women, which can prevent attainment of not only the absence of negative body image but the attainment of positive body image.

When looking at the causes of negative (and lack of positive) body image in the Western culture, the societal standards and expectations for the ideal body play a significant role in how an individual interprets and evaluates their body (Rosen, 1990). Understanding the societal ideal provides insight as to how many women believe their body should be. Accepting and internalizing the societal ideal can result in a negative evaluation of body leading to negative body image, particularly when that ideal is physiologically difficult to attain, and women find themselves discrepant from that ideal (Low et al., 2003). The representation of the ideal body throughout time has ebbed and flowed (Byrd-Bredbenner & Murray, 2003; Roberts & Muta, 2017; Spitzer, Henderson, & Zivian, 1999), and evidence of these ideals are represented throughout society, including in beauty pageants, print magazines, and a variety of other media sources.

Understanding the Current Ideal Body (2012-2017). Though the ideal body shape for women has varied throughout time, in recent years, the ideal body is considered thin, yet curvaceous (Warren, Gleaves, Cepeda-Benito, Fernandez, & Rodriguez-Ruiz, 2005). Evidence for the ideal female physique can be found in print and online media magazines marketed to men and women, as well as on social media platforms such as Pinterest. Women photographed in the magazine *Playboy* - which are thought to "epitomize the male society's concept of health and beauty" (Katzmarzyk & Davis, 2001, p. 591) - were considered mildly underweight to normal weight with a BMIs between 17 kg/m^2 and 19 kg/m^2 (Roberts & Muta, 2017). In female-oriented gossip magazines (e.g., *Us Weekly, Life & Style, Ok!, In Touch, and Star*), 17.2% of women who were normal weight and 36.8% of women who are overweight were criticized by the authors for their weight (McDonnell & Lin, 2016). Such negative commentary further enforces the thin ideal, as a reader would infer that having a smaller body size is better, where as a normal or

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overweight body size deserves criticism. Despite this representation of the thin body ideal, some women do not have a set standard for the ideal body, but rather have a more inclusive ideas of how women's bodies should look (Webb, Warren-Findlow, Chou, & Adams, 2013). Although some women support varying body sizes and shapes, for many women they may feel pressured to conform to the standard most often presented to them (Tiggemann, 2002).

Recently, new mainstream ideas such as "fitspiration" (Tiggemann & Zaccardo, 2016) and the "Yoga Bod" (Webb et al., 2017) are providing alternatives to the "thin ideal" female body. Fitspiration is a social media fad promoting the achievement of a muscular body which encourages individuals aim to attain a muscular body though a healthy diet and exercise (Tiggemann & Zaccardo, 2016). The Yoga Bod is a body that is thin and lean and has been highly represented in the media (Webb et al., 2017). This ideal body representation remains body size and shape focused rather than promoting a healthy lifestyle regardless of body shape and size.

In an investigation of the relationship between positive body image and health-related behaviors, it is useful to better understand the sociocultural context women in the U.S. are surrounded by. Further, a better understanding of the prevalence of negative body image among women in the U.S., and the detrimental impact negative body image can have on women's health behavior and well-being, provides additional rationale to explore the impact of positive body image on health-promoting behaviors such as exercise. Thus, the next few sections of this literature review will briefly explore the prevalence of negative body image and its impact on women's health-related behaviors, before turning to the construct of positive body image.

Prevalence of Negative Body Image. Among women, body dissatisfaction has remained prevalent throughout history despite some fluctuations over time, much like the ideal body has changed with time (Fiske et al., 2014). Fiske et al. (2014) conducted a review reporting that between 1973 and 2009, up to 71% of women experienced body dissatisfaction. In a separate study assessing the prevalence of women's body dissatisfaction in 2010 and 2011, 13.4% of women were dissatisfied or very dissatisfied with their overall appearance and 46.3% of women were dissatisfied or very dissatisfied with their weight (Fallon et al., 2014). Although the prevalence of body dissatisfaction has fluctuated throughout the years, it has remained high making it important to understand the impact of a negative body image on health and well-being in order to further justify the exploration of ways to facilitate the reduction of negative body image as well as reach a state of positive body image.

Negative Body Image and Exercise. The prevalence of negative body image is particularly alarming when considering the detrimental impact it has on women's health-related behaviors, and ultimately their health and well-being. Negative body image may result in disordered eating, eating disorders (Bell et al., 2016; Cash & Pruzinsky, 1990a), decreased physical activity behavior (Bell et al., 2016), and exercise addiction (Bamber, Cockerill, & Carroll, 2000; Dalle Grave et al., 2008; Pasman & Thompson, 1988). The next few sections of this literature review will focus on briefly exploring the associations between negative body image and physical activity as they may provide insight into the potential of a relationship between positive body image and dimensions of exercise.

Although the relationship between body dissatisfaction and eating behaviors has received a great deal of attention (Anton, Perri, & Riley, 2000; Bell et al., 2016; Neumark-Sztainer,

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Paxton, Hannan, Haines, & Story, 2006), recently several researchers have utilized a cross-sectional or longitudinal approach to explore the relationship between body dissatisfaction and exercise participation. In one cross-sectional study, Kruger, Lee, Ainsworth, and Macera (2008) reported that adult women ($n = 5,625$), aged 18 and older, who were only somewhat satisfied with their bodies were 13% less likely to participate in exercise than those who were very satisfied with their bodies. However, women who were not satisfied with their bodies were 44% less likely to participate in physical activity (Kruger et al., 2008). Similarly, Markland (2009), in a cross-sectional study of 112 women between the ages of 18-55, reported a significant negative correlation ($r = -.22, p < .05$) between body dissatisfaction and physical activity participation; women who had greater levels of body dissatisfaction were less physically active compared to women with lower levels of body dissatisfaction. Similarly, in a 6-year longitudinal study of 496 adolescent females, Jerstad, Boutelle, Ness, and Stice (2010) observed a small but significant negative correlation ($r = -.09, p < .01$) between body dissatisfaction and physical activity (Jerstad et al., 2010). Finally, in a 5-year longitudinal study of 2,516 adolescents transitioning into early adulthood, Neumark-Sztainer et al. (2006) reported that women who had lower levels of body satisfaction at baseline had significantly lower levels of physical activity five years later compared to women who had higher levels of body satisfaction at baseline.

Although there is research to support that individuals with higher levels of body dissatisfaction and lower levels of body satisfaction participate in lower levels of physical activity, there is also evidence to support that significant body dissatisfaction can dramatically increase exercise participation to such an extent that it is considered potentially pathological. Dalle Grave et al. (2008), explored the differences in body dissatisfaction between non-compulsive exercisers and compulsive exercisers (that is, using exercise excessively to control

weight and shape). Women who were compulsive exercisers were significantly more likely to be concerned about their weight or shape, than non-compulsive exercisers (Dalle Grave et al., 2008). It is important to note that the women in this study already had an eating disorder; therefore, generalizability of these findings is limited (Dalle Grave et al., 2008). However, it provides some support for the relationship between body image and exercise. Further, in a cross-sectional study of 291 women assessing levels of body dissatisfaction in women with and without exercise dependence, women who were exercise dependent and did not have an eating disorder were significantly more likely to be concerned with their body weight and shape than women who did not have an eating disorder and were not exercise dependent (Bamber et al., 2000).

Although the findings of this section may seem contradictory, the degree to which an individual is dissatisfied with their body may indicate the extent to which they participate in exercise. Individuals with the highest levels of body dissatisfaction were more likely to exhibit tendencies of exercise addiction, whereas individuals who had slightly lower levels of body dissatisfaction tended to avoid exercise. Further, the body of evidence supporting a change in exercise behavior as a result of body dissatisfaction has been understudied; therefore, more research should be conducted in an effort to gain a greater understanding of the relationship.

Despite the importance of exploring negative body image and its detrimental impacts on health-related behavior, there is an even greater importance to understand how women with positive body image may be able to reach a state of well-being through health-promoting behaviors and flourish in everyday life.

Positive Body Image

Although negative body image has been extensively researched, positive body image has not yet received the same attention from the research community, therefore, it is not as well understood. Based upon the terminology, it could be assumed that body image lies on a continuum with negative body image on one end and positive body image on the other. If accurate, this would imply the absence of negative body image would indicate the presence of positive body image, which was initially thought to be true (Tylka, 2011). However, with further exploration, it became evident positive body image is not simply the absence of negative body image, much like being happy is not simply the absence of misery. Positive body image goes beyond the absence of body dissatisfaction and instead involves unconditionally loving the body and the functions the body can perform (Wood-Barcalow et al., 2010). Specifically, positive body image is currently defined as:

> "An overarching love and respect for the body that allows individuals to (a) appreciate the unique beauty of their body and the functions that it performs for them; (b) accept and even admire their body, including those aspects that are inconsistent with idealized images; (c) feel beautiful, comfortable, confident, and happy with their body which is often reflected as an outer radiance or a "glow;" (d) emphasize their body's assets rather than dwell on their imperfections; (e) have a mindful connection with their body's needs; and (f) interpret incoming information in a body protective manner whereby most positive information is internalized and most negative information is rejected or reframed" (Wood-Barcalow et al., 2010, p. 112).

Although this is the currently accepted definition of positive body image (Tylka &
Wood-Barcalow, 2015b), it is important to note that it was derived from small a qualitative study
of fifteen women between the ages of 18 and 21 described to have positive body image based
upon self-reported positive body image, high appearance evaluation, and low overweight
preoccupation (Wood-Barcalow et al., 2010). The women in the study represented an ethnically
diverse group but the age range of the women was not representative as it included only college-
aged women. Many of the same as aspects of the definition of positive body image were
mentioned in a qualitative study 30 adolescent boys ($n = 15$) and girls ($n = 15$) with positive
body image from Sweden (Frisén & Holmqvist, 2010). Despite some limitations, the definition
provides a useful starting point to exploring the positive body image as a multidimensional
construct.

Multidimensional Nature of Positive Body Image. Similar to negative body image,
positive body image has initially been described as a complex, multifaceted construct which
includes the facets body appreciation, body acceptance and love, broadly conceptualizing beauty,
adaptive appearance investment, inner positivity, and filtering information in a body-protective
manner (Tylka & Wood-Barcalow, 2015b). To understand and conduct further investigations
involving the positive body image construct, it is important to first unpack and examine each
facet of positive body image in detail, then explore positive body image and its relationship to
health promoting behaviors.

Body appreciation. One of the facets of positive body image is body appreciation. Body
appreciation is "appreciating the features, functionality, and health of the body" (Tylka & Wood-
Barcalow, 2015b). Body appreciation goes beyond simply appreciating the body when it aligns

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with the societal ideals, but also appreciating the unique aspects of the body when it might differ from those ideals (Tylka & Wood-Barcalow, 2015b). In a qualitative study of women between the ages of 18 and 21, one young woman facing chemotherapy expressed previously disliking her hair, but now appreciates it despite the time and effort required to maintain it (Wood-Barcalow et al., 2010). Another woman expressed how she appreciated her body because it allowed her to partake in physical activities such as hiking and biking (Wood-Barcalow et al., 2010). Other women expressed how they appreciated the health of their body and how they felt grateful for a fully-functioning body. These women demonstrated the facet of body appreciation by being grateful for the body's features and the functions the body performs. Similarly, in a qualitative study of adolescent boys and girls, adolescents expressed how they were especially satisfied with what their bodies were able to accomplish demonstrating an appreciation of what the body is capable of doing (Frisén & Holmqvist, 2010). Further, the adolescents expressed continuing to appreciate their body even when they felt pressured to change their appearance (Frisén & Holmqvist, 2010). These examples demonstrate how both women and adolescents with positive body image are able to appreciate their bodies even when experiencing societal pressure to perhaps feel otherwise. Further, the women and adolescents demonstrated how their body appreciation is rooted deeper than the surface of their body, they were grateful and appreciative of all varying aspects of the body.

Among the few published studies exploring positive body image, body appreciation is the most explored facet (Augustus-Horvath & Tylka, 2011; Tylka & Homan, 2015) and has been primarily measured by the Body Appreciation Scale (Avalos, Tylka, & Wood-Barcalow, 2005) and the improved Body Appreciation Scale-2 (Tylka & Wood-Barcalow, 2015a). Both of these scales are unidimensional scales to assess body appreciation (Avalos et al., 2005; Tylka &

Wood-Barcalow, 2015a). The Body Appreciation Scale- 2 includes items such as "I feel good about my body" and " I feel love for my body" (Tylka & Wood-Barcalow, 2015a).

   ***Body acceptance and love*.** Though similar to body appreciation, body acceptance and love is considered a distinct facet of positive body image. Body acceptance and love is defined as "expressing love for and comfort with the body even if not completely satisfied with all aspects of the body" (Tylka & Wood-Barcalow, 2015b). Evidence supporting the existence of this facet can be found in a qualitative study by Frisén and Holmqvist (2010) in which 22 of the 30 participants were dissatisfied with some aspect of their body; however, nine expressed how their flaws did not bother them. These nine participants demonstrated body acceptance and love by recognizing their body has flaws but continuing to love their body anyway. Similar ideas were echoed by adult women ($n = 15$) taking part in a qualitative study investigating the characteristics of women with positive body image (Wood-Barcalow et al., 2010). One woman expressed how she continues to loves her body even when she does not see her body size or shape portrayed in magazines (Wood-Barcalow et al., 2010). Another woman from the same study demonstrated body acceptance and love when she stated, "I've got cellulite and everything and I think 'I'm living. I'm real and that's okay" (Wood-Barcalow et al., 2010, p. 114). Women and adolescents who expressed characteristics of body acceptance and love were able to not only love their body without narcissism, but also recognized aspects of their body they were not completely satisfied with. However, the aspects they did not view favorably did not result in a negative evaluation of the body. Body acceptance and love can easily be recognized as a part of a holistic model, as individuals who express body acceptance and love remain positive internally and do not allow societal ideals to lead them to narcissism or a negative body image.

Currently, there are not any quantitative measures of body acceptance and love. Only qualitative studies have provided evidence of body acceptance and love as a facet of positive body image (Frisén & Holmqvist, 2010; Wood-Barcalow et al., 2010).

Broad conceptualization of beauty. The ability to appreciate the body, recognize "flaws", and love the body anyway may be rooted in the facet of positive body image labeled a broad conceptualization of beauty. When an individual broadly conceptualizes beauty, they are able to recognize that beauty occurs in a range of shapes and physiques, not just those that align with current cultural ideals (Tylka & Wood-Barcalow, 2015b). Individuals with broader conceptualizations of beauty often look beyond physical appearance and instead focus on the personality of an individual (Tylka & Wood-Barcalow, 2015b). Women who were taking part in a qualitative study to identify characteristics of positive body image described how beauty can occur in a variety of body sizes and shapes (Wood-Barcalow et al., 2010). One woman stated specifically "Everybody is beautiful in one way or another. I appreciate different looks even different skin tones." (Wood-Barcalow et al., 2010, p. 115). Another woman also reported that one's size does not determine if one is beautiful or not (Wood-Barcalow et al., 2010). In a study of adolescents with positive body image, one boy explained "If you love someone, you will automatically think that person is beautiful" (Frisén & Holmqvist, 2010, p. 209). These individuals eluded to the fact that everyone has unique and beautiful aspects to them. Further, beauty should not have a single definition due to an individual's appearance but rather drawn from the individual's personality and the love you have for them, which can occur in any physique or body size.

In the published scientific literature to date, the only known quantitative study exploring broad conceptualization of beauty was a study describing the development of the Broad Conceptualization of Beauty Scale (Tylka & Iannantuono, 2016). The Broad Conceptualization of Beauty Scale was recently published as a unidimensional scale measuring how broadly individuals conceptualize beauty and includes items such as "I think that a wide variety of body shapes are beautiful for women" and "Even if a physical feature is not considered attractive by others or by society, I think that it can be beautiful".

Adaptive appearance investment. Although individuals with positive body image are more likely to broadly conceptualize beauty, they may still choose to engage in adaptive appearance investment (Tylka & Wood-Barcalow, 2015b). Adaptive appearance investment can be defined as "enhancing one's natural features via benign methods" (Tylka & Wood-Barcalow, 2015b, p. 123). This includes caring for the body though hygiene and grooming practices, as well as wearing clothes that fit a person's particular style, but does not include efforts to modify the body through more invasive ways such as plastic surgery (Tylka & Wood-Barcalow, 2015b). Swedish adolescents who took part in a qualitative study about their positive body image experience explained how they used superficial ways to improve their appearance such as getting a haircut or purchasing a top they felt comfortable in; they did not focus their attention on various aspects of their body (Frisén & Holmqvist, 2010). Further, in a qualitative study of fifteen women, the women reported taking part in pampering self-care behaviors such as massages, pedicures, or getting their hair done as a means to care for the body, but not necessarily to conform to societal standards (Wood-Barcalow et al., 2010). Individuals with positive body image seem to have a distinct ability to not only love their body as it is, but engage adaptive appearance activities that highlight their uniqueness. Although some individuals

practice adaptive appearance-related activities to match societal ideals, individuals with positive body image tend to utilize these activities to feel good and care for their body, not to feel superior to another individual due to their looks.

To date, adaptive appearance investment has only been explored qualitatively, and a quantitative scale has not yet been published exploring adaptive appearance investment.

Inner positivity. When an individual's body is cared for, it may make them feel better about themselves, allowing them to enhance what is considered to be their inner positivity. Inner positivity, another facet of the positive body image construct, is defined as "the connection between positive body image, positive feelings (e.g., body confidence, optimism, happiness), and adaptive behaviors (e.g., self-care, helping others)" (Tylka & Wood-Barcalow, 2015b, p. 123). This is considered a reciprocal relationship between positive body image, positive feelings, and adaptive behaviors (Tylka & Wood-Barcalow, 2015b). As mentioned earlier when defining body image, one's body image can impact ones thoughts and behaviors (Pruzinsky & Cash, 1990). This is especially evident in individuals with positive body image; women (Wood-Barcalow et al., 2010) and adolescents (Frisén & Holmqvist, 2010) participating in qualitative studies expressed how they took part in physical activity and exercise as a way to stay fit and improve the function of their bodies. Further, adolescents expressed how they genuinely enjoyed taking part in physical activity and exercise, and appreciated that it improved their health and helped them be successful in school (Frisén & Holmqvist, 2010). Young women also expressed enjoyment in being physically active and eating a healthy diet (Wood-Barcalow et al., 2010). Further, they expressed they listened to their body when eating and exercising, ensuring that they did not overeat or injure themselves while exercising (Wood-Barcalow et al., 2010). In addition,

one young woman expressed how when someone feels good about their body it makes them

"'feel good…feel happy…say positive things, and think positive things, and…feel positive'"

(Wood-Barcalow et al., 2010, p. 110). Practicing self-care, being mindful, and having positive

thoughts though inner positivity is the strongest link between positive body image, positive

psychology and positive health. The positivity that occurs due to one's positive body image

allows one to flourish and be happy in one's skin. Further, the self-care improves one's health

allowing them to reach a higher state of well-being.

Currently, inner positivity has only been explored qualitatively; quantitative scales have

not yet been published to assess this facet of positive body image.

Filtering information in a body protective manner. Filtering information in a body

protective manner is defined as "accepting information that is consistent with positive body

image while rejecting messages that could endanger it" (Tylka & Wood-Barcalow, 2015b, p.

123). Individuals with positive body image appear to be more likely to take in and listen to

appearance-related information when it aligns with their positive self-assessment, while also

ignoring or rejecting information that could be detrimental to their body image (Tylka & Wood-

Barcalow, 2015b). In a qualitative study of fifteen 18 to 21-year-old women, the women

highlighted how they did not allow what they saw or read in the media impact how they feel

about their body (Wood-Barcalow et al., 2010). Similarly, adolescent boys and girls mentioned

how they did not allow the negative comments they received from peers, friends and family

members get to them (Frisén & Holmqvist, 2010). Although this is a skill that someone with

positive body image tends to have, occasionally the filter is not effective, resulting in negative

feedback damaging one's positive body image (Tylka & Wood-Barcalow, 2015b). For example,

an individual's positive body image may remain the same despite societal ideals, however, if a family member or close friend made a negative comment about their body, they may temporarily have a negative evaluation of their body. This ability to bring in positive comments while disregarding negative comments, would allow one to maintain positive thoughts and a positive body image thus allowing one to flourish in their well-being.

Currently, filtering information in a body protective manner has only been explored indirectly through a quantitative measure of body image flexibility. The Body Image - Acceptance and Action Questionnaire assesses how an individual is able to accept the emotions they feel about their body and engaging in behaviors that align with their beliefs and values (Sandoz et al., 2013). The Body Image - Acceptance and Action Questionnaire includes items like "Worrying about my weight makes it difficult for me to live a life that I value" and "I shut down when I feel bad about my body shape or weight", all items are reverse scored (Sandoz et al., 2013). Higher scores on the Body Image - Acceptance and Action Questionnaire are thought to be an indirectly indicate filtering information in a body protective manner (Webb, Wood-Barcalow, & Tylka, 2015).

Holistic View of Positive Body Image. Although it is evident in the literature that positive body image is multifaceted, it is important to recognize that each of the facets are intertwined and work together to comprise positive body image. Wood-Barcalow et al. (2010) presented a holistic model of body image (Figure 4) illustrating how the various facets are interrelated. The model further demonstrates the reciprocal nature between the influences on body image such as societal influences, developmental influences, biological influences, cultural values, interpersonal relations, community, and spirituality. All of these influences can impact an

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individual's body image, and also, an individual impact those sources as well (Wood-Barcalow et al., 2010). A filter, at the core of the model, was depicted with the sources of information that may impact body image either being positive or negative. Further, body image investment was included in the model demonstrating the other aspects of the individual were important to determine the evaluation of their body (Wood-Barcalow et al., 2010). The final aspect included in the model was a wavy line signifying a person's evaluation of themselves, which can be positive or negative (Wood-Barcalow et al., 2010). Many of the young women in the qualitative study explained how they not only like to surround themselves with others that have a positive body image, but also like to help others reach a state of positive body image, thus demonstrating the reciprocity aspect of the holistic body image model (Tylka & Wood-Barcalow, 2015b). By conceptualizing positive body image holistically, it becomes easier to understand how facets of positive body image could result in a reciprocal relationship between the individual and society. Based on the multifaceted, holistic nature of the positive body image construct, it has been suggested that future studies in this area attempt to quantify more than one facet of positive body image when exploring potential relationships between positive body image and other variables (Webb et al., 2015).
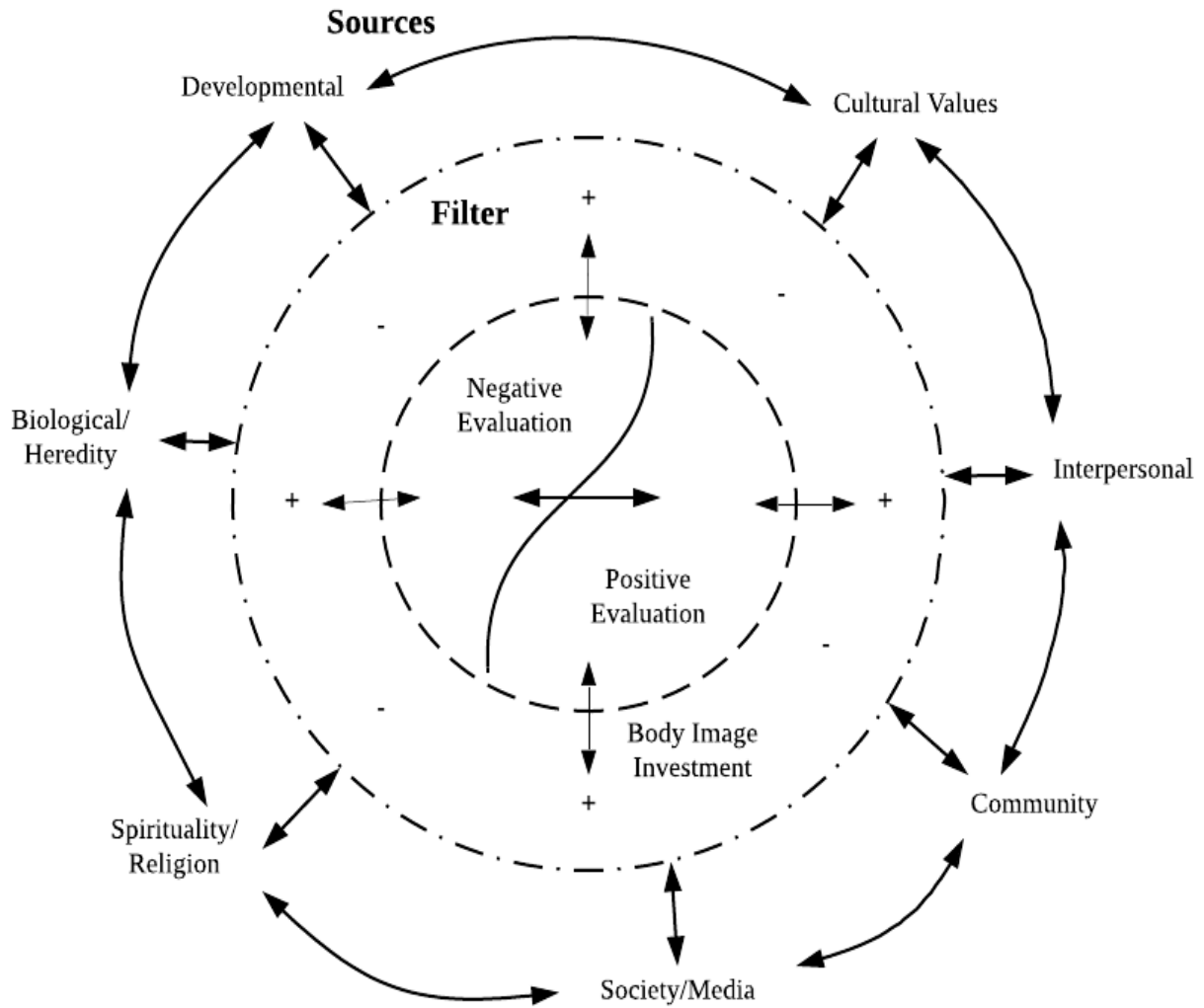
Figure 4. Wood-Barcalow et al.'s (2010) holistic body image model.

Prevalence of Positive Body Image. The prevalence of positive body image is currently unknown as it has not yet been reported in the scientific literature. Although there are studies reporting the prevalence of low negative body image, it would be misleading to report this data as an indicator of the prevalence of positive body image because negative body image and positive body image are not along a continuum (Wood-Barcalow et al., 2010).

However, it is evident that not all women have adopted the thin ideal as there are many counter campaigns and movements challenging the narrow definition of an ideal physique such as the Dove Self-Esteem Project, Operation Beautiful, and Health at Every Size. These campaigns and movements encourage inclusivity of all body shapes and sizes (Association for Size Diversity and Health, 2017; Boyle, 2015; Dove, 2017). The Dove Self-Esteem Project aims to help women love and appreciate their appearance by delivering their message in schools, workshops, and youth groups and provides online resources for parents (Dove, 2017). Although the Dove Self-Esteem Project and Operation Beautiful have similar missions, Operation Beautiful campaigns for a broad definition of beauty though the use of post-it notes with body positive messages written on them (Boyle, 2015). These body positive messages are left in public places for other individuals to find and read (Boyle, 2015). Although these campaigns promote a broader understanding of beauty, they do not address how to be healthy at any shape or size.

The Health at Every Size movement by the Association for Size Diversity and Health promotes the acceptance of all shapes and sizes, and also provides guidance on how to achieve a healthy status at any size (Association for Size Diversity and Health, 2017). Health at Every Size has five guiding principles for achieving health including weight inclusivity, health enhancement, respectful care, eating for well-being, and life-enhancing movement (Association for Size Diversity and Health, 2017). The first three guiding principles focus on encouraging individuals and society to be more inclusive to individuals of varying shapes and sizes. Further, Health at Every Size promotes the availability of resources to individuals to allow individual to reach positive health. The flexible, body accepting and health focused message of the Health at Every Size movement promotes could lead to a positive body image through a broader conceptualization of beauty, but it is not yet well established in society.

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Positive Body Image and Health-Promoting Behaviors. Although this area of scholarship is relatively new, several researchers have explored how positive body image has the potential to protect an individual's health by increasing the likelihood that they engage in health-promoting behaviors. For example, previous studies have found that men and women reporting a higher body appreciation were more likely to practice healthy hygiene behaviors, relax more often and have higher quality sleep, utilize health care more (Cho et al., 2016), eat regular and healthy meals (Cho et al., 2016; Gillen, 2015), complete skin cancer screenings (Andrew, Tiggemann, & Clark, 2016a), and protect themselves from the sun (Andrew et al., 2016a; Gillen, 2015). Given the direction of this research study, the upcoming sections will examine the relationships between positive body image and certain health-promoting behaviors including intuitive eating, intuitive exercise, and exercise behavior.

Intuitive Eating. While the present study explored the potential relationship between positive body image and intuitive exercise, there has been little previous research exploring the relationships between these variables. However, some scholars have begun to describe the relationship between positive body image and a similar construct to intuitive exercise: intuitive eating. Given the similarities between intuitive eating and intuitive exercise, the relationship between positive body image and intuitive eating will be explored first to provide some rationale for potential relationships between positive body image and intuitive exercise.

Intuitive eating is an approach toward food consumption involving three major components: allowing yourself to eat when you are physically hungry and desire food; eating because you are hungry and not as a coping mechanism; and the ability to listen to physical hunger and satiety cues, using them to help determine what, when, and how much to eat (Tribole & Resch, 1995). Further, individuals who eat intuitively tend to have a positive relationship with

food, allowing them to enjoy the foods they crave while not overindulging (Tribole & Resch, 1995). Women who do not intuitively eat are more likely to have a decreased ability to control short term energy intake, an increase in daily energy intake, and a higher body weight (Tribole & Resch, 1995).

Relationships between positive body image and intuitive eating have been reported in the literature in several cross-sectional studies. Researchers reported a significant correlation between body appreciation and intuitive eating in college-age women (Augustus-Horvath & Tylka, 2011; Avalos & Tylka, 2006), female collegiate athletes (Oh, Wiseman, Hendrickson, Phillips, & Hayden, 2012), and adolescent females (Augustus-Horvath & Tylka, 2011), suggesting that higher positive body image is associated with greater endorsement of intuitive eating behavior. Although these positive relationships between positive body image and intuitive eating behaviors were identified, each of the studies used the Body Appreciation Scale (Avalos et al., 2005), a unidimensional scale measuring body appreciation – one facet of positive body image. Though this evidence does not directly support the current study objective, it provides evidence of a potential relationship between positive body image (particularly body appreciation) and intuitive exercise (a major study variable) which is construct that is similar to intuitive eating.

Intuitive Exercise. Intuitive exercise is a concept recently introduced by Reel and Miyairi (2012) with some parallels to intuitive eating. Intuitive exercise, a method of exercise regulation, is described as an individual's ability to listen and respond to body cues as to when to start and stop exercising (Reel & Miyairi, 2012). Further, intuitive exercisers are more likely to end their exercise session or modify the activity if they experience pain or discomfort (Reel & Miyairi, 2012). To measure these aspects of intuitive exercise, Reel et al. (2016) developed the Intuitive

Exercise Scale which assesses four factors of intuitive exercise: Emotional Exercise (exercising to manage displeasing emotions), Body Trust (trusting the body to indicate the durations, intensity and frequency of exercise), Exercise Rigidity (exercising using multiple modes), and mindful exercise (listening to the body to determine when to end an exercise session based upon the body's response to exercise). Individuals who intuitively exercise would score high on the Body Trust and Mindful Exercise subscales, and low on the Exercise Rigidity and Emotional Exercise subscales. When individuals do not intuitively exercise and have a negative relationship with exercise, it can result in negative consequences such as in overuse injuries, fatigue, and mood disturbances (Reel & Miyairi, 2012).

Although a scale has been developed by to assess intuitive exercise quantitatively, to date, the researchers who developed the scale have been the only research team to explore the relationship between positive body image and intuitive exercise. Reel et al. (2016) reported body appreciation was correlated to Body Trust ($r = .23$; $p < .01$) and Exercise Rigidity ($r = -.21$; $p < .01$). These findings suggest that individuals exhibiting characteristics of positive body image tend to be more likely to trust their body to indicate when to start and stop exercising, and use a variety of modes when exercising. Although there is limited quantitative evidence indicating a relationship between positive body image and intuitive exercise, women (Wood-Barcalow et al., 2010) and adolescents (Frisén & Holmqvist, 2010) with positive body image reported engaging in aspects of intuitive exercise in two qualitative studies. Adolescents with positive body image reported engaging in exercise because they enjoyed it and believed it to be a normal part of their day (Frisén & Holmqvist, 2010). The adolescents demonstrated intuitive exercise by exercising for enjoyment rather than to alter their body. Additionally, women with positive body image reported listening to their body and engaging in exercise (Wood-Barcalow et al., 2010). The

women exhibited Mindful Exercise by being aware of how the body is responding to exercise. Although there is some qualitative and quantitative evidence to support a positive relationship between positive body image and intuitive exercise, more studies are needed to explore potential relationships between multiple facets of positive body image and the intuitive exercise in larger, more diverse samples.

Exercise Behavior. Although there is evidence that individuals with high positive body image are more likely to engage in certain health-promoting behaviors (Andrew et al., 2016a; Cho et al., 2016; Gillen, 2015), few studies have explored potential relationships between positive body image and exercise behavior. Preliminary evidence for these associations can be found in qualitative studies of adults (Wood-Barcalow et al., 2010) and adolescents (Frisén & Holmqvist, 2010) with positive body image. Wood-Barcalow et al. (2010) interviewed fifteen women between the ages of 18 and 21 classified as having positive body image. Seven of the women identified as white, seven black and one biracial. Only one woman identified as bisexual. Frisén and Holmqvist (2010) also conducted qualitative interviews with 30 adolescents (including 15 girls) between the age of 10 and 13 years. These participants were recruited from a separate study and included in the present study if they had the highest levels of body esteem. Although, it was reported the adolescents were from Sweden, no other ethnic data was reported. Women (Wood-Barcalow et al., 2010) and adolescents (Frisén & Holmqvist, 2010) described to have positive body image reported engaging in exercise on a regular basis. Although Wood-Barcalow et al. (2010) reported women expressed engaging in exercise regularly, the frequency of exercise was not reported. Further, at least eight of the adolescents reported engaging in exercise more than four days a week with some of the participants reporting engaging in activity every day (Frisén & Holmqvist, 2010). Although some frequency data was reported, individuals

may have different definitions of exercise. Without the use of a standardized assessment to assess exercise, the frequency of exercise participation among those with positive body image is unclear in these qualitative studies. Therefore, more studies are needed to elucidate the relationship between positive body image and exercise behavior in adult women.

Recently researchers have explored potential relationships between body appreciation and exercise, quantitatively. For example, Homan and Tylka (2014) completed a cross-sectional study with 321 females between the age of 18 and 51 exploring facets of positive body image and exercise. Positive body image was assessed using the Body Appreciation Scale (Avalos et al., 2005) and the Embodied Image Scale (used to assess functional body satisfaction) (Abbott & Barber, 2010). Exercise frequency and intensity was assessed using the Godin Leisure-Time Exercise Questionnaire (Godin & Shephard, 1997). Homan and Tylka (2014) reported a non-significant correlation ($r = .10$, $p > .05$) between exercise behavior and body appreciation assessed using the Body Appreciation Scale, suggesting body appreciation and exercise may not be related. Further, it is misleading that body appreciation is not correlated with exercise behavior as it does not indicate the clear picture of the relationship between body appreciation and exercise behavior. When appearance motives were included in the analysis, individuals who were highly active and had low appearance motives for exercise had significantly higher body appreciation. However, a positive correlation ($r = .36$, $p < .001$) was observed between scores on Embodied Image Scale and exercise, suggesting a relationship is present between functional body satisfaction and exercise (Homan & Tylka, 2014). Although the limited quantitative data reported mixed findings of a relationship between facets of positive body image positive body image and exercise behavior, it is understandable that individuals that are highly active would be more satisfied with their body function. Although the relationship between body appreciation

and exercise behavior has been explored, the relationship between other facets of positive body image and exercise has not yet been explored.

Positive Body Image and Exercise Motivation. Although the relationship between positive body image and exercise behavior has not yet been explored in depth, there is some qualitative and quantitative evidence which supports the notion that exercise motivation may influence exercise behavior among individuals with positive body image. The adolescents and adult women participating in the studies by Frisén and Holmqvist (2010) and Wood-Barcalow et al. (2010), respectively, explained that they engaged in exercise to increase the health of their body, viewed exercise as a normal aspect of living, and enjoyed being active. Adolescent participants further expressed they enjoyed being physically active, enjoyed feeling physically fit, and most participants explained they were active as a means to improve what their bodies were capable of doing, rather than for aesthetic reasons (Frisén & Holmqvist, 2010). Similar to the adolescent participants, women explained they enjoyed exercising as means to become physically stronger and cope with negative emotions (Wood-Barcalow et al., 2010). The women also explained they listened to their body as way to know when to start and stop exercising (Wood-Barcalow et al., 2010), indicative of intuitive exercise. Based on these qualitative studies, it is possible that exercise motivations, as well as facets of positive body image, may be related to exercise including frequency and duration, as well as intuitive exercise.

Two quantitative studies have explored body appreciation, exercise motivation, and exercise behavior. Specifically, Homan and Tylka (2014) and Tylka and Homan (2015) published cross-sectional studies supporting the notion that body appreciation and exercise behavior may be related, though the relationship was moderated by exercise motivation. In a study of 258 college-aged women, Homan and Tylka (2014) reported body appreciation,

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assessed using the Body Appreciation Scale (Avalos et al., 2005), had a non-significant relationship with appearance-based exercise motivation, which was assessed using a single question. However, the researchers found that functional body satisfaction, an aspect of body appreciation, had a significant ($p < .05$) positive relationship with appearance-based exercise motivation. Although, the findings of Homan and Tylka (2014) indicate certain aspects of body appreciation may be related to appearance-based exercise motivation this could be due to a lack of an assessment measuring all facets of positive body image to gain a high validity and appearance-based exercise motivation being assessed with a single question. Further, when assessing appearance-based motivation as a potential moderator between positive body image and exercise frequency, individuals who exhibited high levels of appearance-motivation and scored the highest on the Godin Leisure-Time Exercise Questionnaire had a significantly ($p < .001$) lower body appreciation than individuals who had low appearance-based exercise motivation. Paralleling the results of body appreciation, functional body satisfaction was highest in individuals with the low appearance-based exercise motivation and a high score on the Godin Leisure-Time Exercise Questionnaire. These results suggest that when body appreciation is highest, individuals tend to also be more active and exercise for non-appearance-based, more functional reasons.

Additional evidence aiding in the explanation of the relationship between body appreciation and exercise behavior can be identified in a quantitative investigation by Tylka and Homan (2015) where they assessed the relationship between body appreciation and exercise motivation using path analysis with 258 physically active female participants between the ages of 18 and 47. Building upon their previous study (Homan & Tylka, 2014), Tylka and Homan (2015) assessed body appreciation using the Body Appreciation Scale (Avalos et al., 2005) and

assessed motives for exercise using the Functions of Exercise Scale (DiBartolo et al., 2007) which has two subscales: Health and Enjoyment, and Weight and Appearance. The Health and Enjoyment subscale was utilized to assess health and enjoyment-related motives for exercise and the Weight and Appearance subscale to assess motives for exercise related to changing the body. Tylka and Homan (2015) reported a significant negative relationship (r = -.15, p < .01) between body appreciation and weight and appearance-based motives for exercise, indicating that women with higher body appreciation were less likely to exercise for weight and appearance-related reasons. Further, a significant positive relationship (r = .12, p < .05) was identified between body appreciation and health and enjoyment-related motives for exercise, suggesting that women with higher body appreciation are more likely to exercise for reasons related to health and enjoyment. While these results are promising, despite the multifaceted nature of the construct, Tylka and Homan (2015) assessed only one facet of positive body image - body appreciation - and these results can only be generalized to women who are physically active. To date, no quantitative study has been published exploring the relationship between positive body image as a multifaceted construct, and exercise behavior and intuitive exercise in a diverse sample of adult women.

Although some previous research examined the associations between a few of the variables included in the proposed study, there is room for improvement methodologically, and many areas have not yet been quantitatively explored. While several studies have reported that individuals with positive body image are more likely to participate in health-promoting behaviors, (Andrew, Tiggemann, & Clark, 2015; Andrew et al., 2016a; Augustus-Horvath & Tylka, 2011; Cho et al., 2016) there is minimal evidence about the relationship between positive body image and intuitive exercise, and the relationship between positive body image and

exercise behavior (Homan & Tylka, 2014; Tylka & Homan, 2015). Currently, no known published studies have attempted to explore how three facets of positive body image and exercise motivation are associated with intuitive exercise and exercise behavior. Further, evidence suggests when body appreciation is higher and health and enjoyment motivations for exercise are higher (Homan & Tylka, 2014; Tylka & Homan, 2015) exercise frequency will also be higher (Homan & Tylka, 2014). The present study examined how three facets of positive body image (body appreciation, broad conceptualization, and filtering information in a body protective manner) and motives for exercise (health and enjoyment and weight and appearance) predicted intuitive exercise and exercise behavior among women.

Objective

The objective of this study was to determine if facets of positive body image (body appreciation, broad conceptualization of beauty, and filtering information in a body protective manner), motives for exercise (health and enjoyment, and weight and appearance), and the interaction between facets of positive body image and motives for exercise, are predictors of intuitive exercise as well as exercise behavior.

Chapter III: Methods

Participants

Eligible participants were women over the age of 18 who speak English fluently and are residents of the United States. Women with a history of an eating- or exercise-related disorder, as well as those who were currently pregnant, pregnant in the previous 12 months, or currently breastfeeding, were excluded as a part of the pre-screening process. Participants were also excluded if they had a physical impairment or disease that would impact their ability to participate in exercise. The specific screening questions used in this study are included in Appendix A.

After obtaining approval from the University of Wisconsin-Milwaukee Institutional Review Board, participants were recruited using Qualtrics Research Services – a company specializing in recruiting research participants using online crowdsourcing. Crowdsourcing platforms are increasingly used for participant recruitment in psychological and behavioral science research, and found to produce high-quality data with samples that are more diverse than typical American college samples (Buhrmester et al., 2011).

The survey was initially made available to collect data on 250 participants. After 250 participants completed the survey, the data were analyzed to determine the proportion of respondents answering yes versus no to brief self-assessment question asking if they considered themselves to have a positive body image. The results indicated more participants answered yes to this question. Therefore, to obtain a more balanced sample with regards to this particular variable, the remaining 200 participants were only included if they responded "no" to having a positive body image. After excluding women with any missing data, or women with an

extremely high engagement in exercise behavior (calculated as MET minute per week) based upon Mahalanobis distance ($p < .001$), the final sample included 391 participants. This study had a large effect size ($F^2 = .49$) and the power exceeded .80 at a significance of $\alpha < .05$ with 19 predictors. This was calculated using G*Power with the variance explained by special effect was .091 and the residual variance was .184.

Procedure

For this web-based, cross-sectional survey, participants were recruited using a crowdsourcing platform, Qualtrics Research Services. The researchers payed a fee of $4.33 per participant to Qualtrics Research Services; Qualtrics Research Services uses that fee to recruit and compensate participants. The following description was viewable to potential participants: "The purpose of this study is to gain an understanding of the potential relationships between positive body image and aspects of exercise." Participants were informed that the completion of the survey would take approximately 30 minutes of their time. If interested, participants reviewed the informed consent form. Upon reading and proceeding to the survey link, participants agreed to the potential risks associated with the survey and online data collection methods. Participants first completed a sociodemographic questionnaire, then positive body image measures and intuitive exercise measures were presented in random order, followed by a 7-day self-report exercise log. To ensure participants were reading and responding to the survey questions carefully, four validity check questions were included at various points within the online survey (e.g., 'To make sure you are paying attention, please do not answer this item') (Tylka & Homan, 2015). If a participant did not answer the validity questions correctly, they were directed to the end of the survey and were not included in the study sample. When that occurred, Qualtrics Research Services identified an alternative participant. Participants who

successfully complete the survey measures, including the validity check questions, were

compensated through Qualtrics Research Services. Participants had the opportunity to be

compensated through a variety of methods such as points that can be redeemed for cash or gift

cards, or a sweepstakes entry. Once participants completed the survey, they were thanked for

their participation, informed that their results would be reviewed, and they would be

compensated within one week of completion of the survey.

Measures

      Sociodemographics and Body Mass Index (BMI). Participants were asked to self-

report sociodemographic information including age, race, ethnicity, education level, and income.

Participants also self-reported their height and weight. The questions used to collect

sociodemographic information as well as height and weight were identified from the National

Longitudinal Study of Adolescent to Adult Health codebook (National Longitudinal Study of

Adolescent to Adult Health, 2017). Questions pertaining to age, sex, height, weight, race,

ethnicity, income, education level and eating disorder status were used verbatim from the

codebook (Appendix B). Questions pertaining to past pregnancies, breastfeeding number of

children, and limitations to exercise were modified from the National Longitudinal Study of

Adolescent to Adult Health codebook to assess pregnancy in the past 12 months, if participants

were currently breastfeeding, if participants had any biological children, and if participants had a

disease or physical limitation to exercise participation (National Longitudinal Study of

Adolescent to Adult Health, 2017). Women's BMI was calculated from self-reported height and

weight using the formula: weight (lb)/[height (in)]^2 x 703. Participants with a BMI less than 18.5

kg/m^2 were categorized as underweight, women with a BMI between 18.5 to 29.9 kg/m^2 were

categorized as normal weight, women with a BMI between 25.0 and 29.9 kg/m^2 were categorized as overweight, and those with a BMI above 30.0 were categorized as obese.

Positive Body Image: Body Appreciation. The 10-item Body Appreciation Scale-2 (BAS-2) (Tylka & Wood-Barcalow, 2015a) is a unidimensional scale designed to assess the body appreciation facet of positive body image among adults (Appendix C). Participants rated their level of agreement to statements such as "I appreciate the different and unique characteristics of my body" and "I feel love for my body" on 5-point scale ranging from 1 (*Never*) to 5 (*Always*). Responses to the 10-items were averaged, with higher scores indicating higher body appreciation. Tylka and Wood-Barcalow (2015a) reported evidence supporting the validity of the BAS- 2 in female adult community members. Scores on the BAS-2 have been found to be positively associated with appearance evaluation ($r = .80$), self-esteem ($r = .71$) and proactive coping ($r = .39$). Scores on the BAS-2 have been found to be negatively correlated with body dissatisfaction ($r = -.73$), internalization of media appearance ideals ($r = -.53$), and eating disorder symptoms ($r = -.44$). Cronbach's alpha for the BAS-2 was .97 female adult community members (Tylka & Wood-Barcalow, 2015a). In the present study, the Chonbach's alpha for the BAS-2 was considered excellent ($\alpha = .96$).

Positive Body Image: Broad Conceptualization of Beauty. The 9-item Broad Conceptualization of Beauty Scale (BCBS) (Tylka & Iannantuono, 2016) is a unidimensional scale designed to assess the facet of positive body image known as broad conceptualization of beauty (Appendix D). Participants rated their level of agreement on a 7-point scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*) to statements such as "Even if a physical feature is not considered attractive by others or by society, I think it can be beautiful" or "I think that a wide variety of body shapes are beautiful for women." One item - "I think that thin women are

more beautiful that women who have other body types" - was reversed scored. The responses to the 9-items, including the reverse scored item, were averaged, with higher scores indicating a broader conceptualization of beauty. Higher scores on this measure have been found to be negatively correlated with anti-fat attitudes ($r = -.52$), body appreciation ($r = .23-.25$) and thin-ideal internalization ($r = .26$). The BCBS had high reliability in women between the ages of 18 to 68 recruited through Amazon Mechanical Turk, a crowdsourcing platform, with a Cronbach's alpha between .85 and .91 (Tylka & Iannantuono, 2016). Chronbach's alpha for the BCBS in the present study was considered excellent ($\alpha = .96$).

Positive Body Image: Filtering Information in a Body Protective Manner. The 12-item Body Image-Acceptance and Action Questionnaire (BI-AAQ) is a unidimensional scale that is used to assess body image flexibility. Positive body image scholars have proposed that the BI-AAQ can be used as an indicator of the positive body image facet known as filtering information in a body-protective manner (Webb et al., 2015) (Appendix E); no known psychometrically-valid instruments are available to directly assess this facet. Participants rated their level of agreement on a 7-point scale from 1 (*Never true)* to 7 (*Always true*) with statements such as "Worrying about my weight makes it difficult for me to live a life that I value" or "Feeling fat causes problems in my life." The 12 items were reverse scored and averaged, with higher scores indicating greater body image flexibility, which is considered an indirect assessment of the ability to filter of information in a body protective manner. Sandoz et al. (2013) found that the BI-AAQ demonstrated strong validity as scores on the BI-AAQ have been found to be positively correlated with psychological flexibility ($r = .30$), and negatively correlated with body image dissatisfaction ($r = -.80$), dieting ($r = -.70$), food preoccupation ($r = -.61$), and oral control ($r = -.27$). The BI-AAQ was also identified to have high level of reliability with a Cronbach's alpha

between .92 and .93 in males and females between the age of 18 to 22 (Sandoz et al., 2013). In the present study, the Chonbach's alpha for the BI-AAQ was excellent ($\alpha = .95$).

Exercise Motivation. The Function of Exercise Scale (FES) (DiBartolo et al., 2007) includes 16 items with 2 subscales (Appendix F). The 9-item Weight and Appearance-based Exercise Motivation subscale evaluates the degree to which an individual exercises for weight control or to alter appearance. The 7-item Health and Enjoyment-based Exercise Motivation subscale evaluates to what extent individuals exercise to maintain health, or for enjoyment. Participants rated their level of agreement using a 7-point scale ranging from 1 (*Do not agree)* to 7 (*Strongly agree)* to statements such as "I exercise because I want to be thin" and "I want to be strong and healthy." Scores on the items within each subscale were averaged, with higher scores indicating greater motivation to exercise for weight and appearance-related reasons, or for health and enjoyment-related reasons. DiBartolo et al. (2007) demonstrated strong validity with the Health and Enjoyment-based Exercise Motivation subscale as it has been found to be negatively correlated to eating disorders symptomology ($r = -.14$ to $-.35$), and the Weight and Appearance-based Exercise Motivation subscale has been found to be positively correlated to eating disorder symptomology ($r = .49$ to $.64$). Researchers also reported high internal consistency for the Health and Enjoyment Subscale (Cronbach's alpha: .84 and .89) and the Weight and Appearance subscale (Cronbach's alpha: .87 and .94) in a variety of samples (DiBartolo et al., 2007). In the present study, the FES demonstrated high internal consistency for the Heath and Enjoyment Subscale was ($\alpha = .86$) and for the Weight and Appearance Motives Subscale ($\alpha = .91$).

Intuitive Exercise. The 14-item Intuitive Exercise Scale (IEXS) is a multidimensional scale which includes four subscales (Appendix G) (Reel et al., 2016). The 5-item Emotional Exercise subscale evaluates how an individual uses exercise to decrease negative emotions, and

includes statements such as "I use exercise to distract myself from or to avoid negative emotions." The 3-item Body Trust subscale evaluates to what extent an individual listens to their body about when and how to exercise, and includes statements such as "I trust my body to tell me when to exercise." The 3-item Exercise Rigidity subscale evaluates to what extent individuals vary their exercise routines, and includes statements such as "I engage in a variety of different types of exercise." The 3-item Mindful Exercise subscale evaluates to what extent an individual listens to their body to stop exercise, and includes statements such as "I stop exercising when I feel fatigued." Participants rated their agreement with each statement on a 6-point scale ranging from 1 (*Strongly disagree*) to 6 (*Strongly agree*). For this study, intuitive exercise was examined holistically. To calculate a total score for intuitive exercise, items in the Emotional Exercise subscale were reverse scored, then all items were summed and divided by 14 - the total number of items in the scale. Evidence supports the validity of the Intuitive Exercise Scale. The Body Trust ($r = .23$; $p < .01$) and Exercise Rigidity ($r = -.21$; $p < .01$) subscales were correlated with body appreciation. The Emotional Exercise ($r = -.34$; $p < .01$) and Mindful Exercise ($r = -.25$; $p < .01$) subscales were negatively correlated with social recognition. The composite reliability was between .74 and .88 for each of the subscales in a sample of men and women (Reel et al., 2016). In the present study, each subscale of the IEX demonstrated high reliability (Emotional Exercise: $\alpha = .88$; Body Trust: $\alpha = .83$; Exercise Rigidity: $\alpha = .92$, Mindful Exercise: $\alpha = .80$).

Exercise Behavior. A 7-day self-report exercise log was used to assess exercise behavior. Participants were asked to report the type(s) and the duration of each exercise they participated in for the previous seven days (Appendix H). For each activity, the researcher referred to the 2011 Compendium of Physical Activities (Ainsworth et al., 2011) to identify the designated MET value for the reported activity. The MET value associated with that type of

exercise was then multiplied by the duration (in minutes) of the activity resulting in a MET

minutes per activity value. The MET minutes per activities were summed for all 7 days resulting

in a final MET minutes per week value for each participant (Ainsworth et al., 1993). The MET

values used for the present study are included in Appendix I. Evidence supports the use of self-

report logs to measure exercise as they were positively correlated with data collected from

motion sensor monitors ($r = .24$ to $.35$) (Ainsworth et al., 2000) as well as pedometers ($r = .43$)

(Stel et al., 2004).

Data Analysis

Participants' sociodemographic information, BMI, and scale and subscale scores for

measures of positive body image, exercise motivation, intuitive exercise, and exercise behavior

were summarized using descriptive statistics including frequencies and percentages, and means

and standard deviations. Correlations between sociodemographic variables, positive body image

measures, exercise motivation, intuitive exercise, and exercise behavior scale scores were

assessed using Pearson's correlation coefficients.

Hierarchical multiple regression analysis using IBM SPSS Statistics 22 was used to

assess the predictors of exercise behavior and intuitive exercise using each of the three facets of

positive body image (i.e., body appreciation, broad conceptualization of beauty, and filtering

information in a body protective manner) and motive for exercise (i.e., health and enjoyment and

weight and appearance), as well as interaction terms between the three facets of positive body

image and motives for exercise. Two different hierarchical multiple regressions were performed

(Table 1 and 2). The hierarchical multiple regressions determined how positive body image,

measured multidimensionally, and motives for exercise predicted intuitive exercise (Table 1) and

exercise behavior (Table 2). Age, race, birth country, education, income, marital status, number

of children and BMI were included as covariates from the initial step in the model.

Table 1

Order of Variable Entry for Hierarchical Multiple Regression Predicting Intuitive Exercise

Step	Variable
1	Body appreciation
	Broad conceptualization of beauty
	Filtering information in a body protective manner
2	Body appreciation
	Broad conceptualization of beauty
	Filtering information in a body protective manner
	Health and enjoyment-based motives for exercise
	Weight and appearance-based motives for exercise
3	Body appreciation X Health and enjoyment-based motives for exercise
	Broad conceptualization of beauty X Health and enjoyment-based motives for exercise
	Filtering information in a body protective manner X Health and enjoyment-based motives for exercise
	Body appreciation X Weight and appearance-based motives for exercise
	Broad conceptualization of beauty X Weight and appearance-based motives for exercise
	Filtering information in a body protective manner X Weight and appearance-based motives for exercise

Table 2

Order of Variable Entry for Hierarchical Multiple Regression Predicting Exercise Behavior

Step	Variable
1	Body appreciation
	Broad conceptualization of beauty
	Filtering information in a body protective manner
2	Body appreciation
	Broad conceptualization of beauty
	Filtering information in a body protective manner
	Health and enjoyment-based motives for exercise
	Weight and appearance-based motives for exercise
3	Body appreciation X Health and enjoyment-based motives for exercise
	Broad conceptualization of beauty X Health and enjoyment-based motives for exercise
	Filtering information in a body protective manner X Health and enjoyment-based motives for exercise
	Body appreciation X Weight and appearance-based motives for exercise
	Broad conceptualization of beauty X Weight and appearance-based motives for exercise
	Filtering information in a body protective manner X Weight and appearance-based motives for exercise

Chapter IV: Results

The purpose of this analysis was to explore if specific facets of positive body image (i.e., body appreciation, broad conceptualization of beauty, and filtering information in a body protective manner), motives for exercise (i.e., weight and appearance, and health and enjoyment) and the interaction between facets of positive body image and motives for exercise were associated with intuitive exercise and exercise behavior among women.

The following specific aims and hypothesis were developed to guide the data analysis.

Specific Aim 1: To determine if three facets of positive body image (body appreciation, broad conceptualization of beauty, and filtering information in a body protective manner) were associated with (a) intuitive exercise and (b) exercise behavior.

Specific Hypothesis 1: Based upon previous qualitative and quantitative findings, it was predicted that body appreciation would be a positively associated with both intuitive exercise and exercise behavior. The analysis to determine if broad conceptualization of beauty and filtering information in a body protective manner was associated with intuitive exercise or exercise behavior was exploratory in nature due to the lack of prior research.

Specific Aim 2: To determine if weight and appearance- and health and enjoyment-based motives for exercise (in addition to three facets of positive body image) were associated with (a) intuitive exercise and (b) exercise behavior.

 Specific Hypothesis 2: Based upon previous literature, it was anticipated that weight and appearance-based motives for exercise, and health and enjoyment-based motives for exercise, would be positively associated with exercise behavior. It was also hypothesized that health and

enjoyment-based motives for exercise would be positively associated with intuitive exercise. A hypothesis was not generated for the potential relationships between weight and appearance-based motives for exercise and intuitive exercise due to the lack of prior research in this area.

Specific Aim 3: To determine if the interaction between facets of positive body image and motives for exercise (in addition to facets of positive body image and exercise motives) were associated with (a) intuitive exercise and (b) exercise behavior.

Specific Hypothesis 3: Based upon previous literature, it was hypothesized the interaction between body appreciation and weight and appearance-related motives for exercise would negatively predict exercise behavior. The remainder of the interactions between the other facets of body image and exercise motives as potential predictors of intuitive exercise and exercise behavior were exploratory in nature and no hypotheses were generated.

Preliminary Analysis

Prior to running analyses to test the study hypotheses, the data were reviewed for missing values, and study variables were evaluated for normality and outliers. Of the 450 women recruited using Qualtrics Research Services, 54 participants had at least one or more missing data point and were excluded from the analyses. Participants' scores on the Broad Conceptualization of Beauty Scale, the Body Image - Acceptance and Action Questionnaire, and exercise behavior (operationalized as MET minutes per week), were not normally distributed. To evaluate the potential impact of such deviations from normality, the planned regression analyses were first performed with non-transformed scale scores followed by transformed scale scores for the Broad Conceptualization of Beauty Scale and the Body Image - Acceptance and Action Questionnaire. The regressions yielded the same pattern of significant and non-significant findings. Therefore,

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for ease of interpretation, these variables were not transformed. Exercise behavior was skewed to

the right due to individuals reporting low levels of exercise participation. Similar to Hurst,

Dittmar, Banerjee, and Bond (2017), exercise behavior was not transformed for ease of

interpretation. Further, Mahalanobis distance was used to test for the presence of univariate and

multivariate outliers. Exercise behavior was the only variable with identified outliers; five

participants had MET minutes per week values that were very high and considered outliers ($p <$

.001) and were excluded from the sample. The final dataset included 391 female participants

between the ages of 18 and 91. None of the remaining participants reported any physical or

disease-related limitations to participation in exercise. As more older adults participated in the

study ($n = 85$ over the age of 65) than anticipated, the planned correlation analyses were run with

and without the inclusion of older adults. As the results did not substantially differ with or

without the inclusion of older adults, these participants were retained in the study sample.

Participants. Detailed sociodemographic information for study participants ($n = 391$) is

presented in Table 3. Women ranged in age from 18 to 91 years ($M = 49.91$, $SD = 15.69$). Over

85% of women self-identified as White, about 6% self-identified as Black, the remaining

participants self-identified as a different race or as multiracial. Approximately 5% of women

self-identified their ethnicity as Hispanic. Over 95% of women sampled reported being born in

the United States of America; however, 11 other countries were reported as birth countries (e.g.,

Puerto Rico, Canada, Malaysia, Germany, Afghanistan). Participants had a median personal

income between $40,000 and $49,000 per year, and over half were married or in a domestic

partnership, and completed some college but had not obtained a degree. Women who reported

having biological children ($n = 278$) had an average of 2.26 ($SD = 1.13$) children. Participants

had an average BMI of 28.2 kg/m^2 ($SD = 6.94$) which is considered in the "overweight" range.

About one-third of women had a "normal" BMI, and close to two-thirds were classified as

"overweight" or "obese."

Table 3

Sociodemographic Characteristics of Participants (N = 391)

Characteristic	M ± SD	n	%
Age (years)	49.91 ± 15.69		
18-29		43	11.0
30-39		79	20.2
40-49		69	17.6
50-59		73	18.7
60-69		80	20.5
70-79		42	10.7
80-89		4	1.0
90+		1	0.3
Race			
White		339	86.7
Black		23	5.9
Asian		8	2.0
American Indian		2	0.5
Other		8	2.0
Multiracial		11	2.8
Ethnicity			
Hispanic origin		20	5.1
Non-Hispanic origin		371	94.9
Birth Country			
United States of America		379	96.9
Other		12	3.1
Personal income per year			
Less than $10,000		18	5.5
$10,000 - $14,999		17	4.5
$15,000 - $19,999		22	5.2
$20,000 - $29,999		51	12.6
$30,000 - $39,999		58	14.2
$40,000 - $49,999		39	9.0
$50,000 - $74,999		88	22.9
$75,000 or more		98	26.1

Marital Status		
Not married	80	20.5
Married, or in a domestic partnership	222	56.8
Cohabitating	11	2.8
Separated/Divorced	52	13.3
Widowed	26	6.6
Education		
Less that a high school diploma	8	2.0
High school degree or equivalent (e.g., GED)	8	20.7
Some college, no degree	111	28.4
Associate degree (e.g., AA, AS)	51	13.0
Bachelor's degree (e.g., BA, BS)	101	25.8
Master's degree (e.g., MA, MS, MEd)	32	8.2
Professional degree (e.g., MD, DDS, DVM)	4	1.0
Doctorate (e.g., PhD, EdD)	3	0.8
Number of biological children		
0	113	28.5
1	75	19.2
2	110	28.1
3	56	14.3
4	25	6.4
5	10	2.6
6	0	0
7	2	0.5
Body Mass Index (kg/m^2) 28.2 ± 6.94		
Underweight (< 18.5 kg/m^2)	12	3.1
Normal weight ($18.5 - 24.9$ kg/m^2)	134	34.3
Overweight ($25.0 - 29.9$ kg/m^2)	121	30.9
Obese (≥ 30.0 kg/m^2)	124	31.7

Descriptive Statistics of Study Variables. Women had moderate scores on the Body Appreciation Scale-2 ($M = 3.48 \pm 0.90$; Range: $1 - 5$) indicating that the participants moderately appreciate the health, appearance, and function of their body. Women had moderately high scores on the Broad Conceptualization of Beauty Scale ($M = 5.96 \pm .82$; Range: $1 - 7$) suggesting the participants believe beauty occurs in a variety of people, not just those who conform to the societal ideal. The participants had moderate scores on the Body Image -

Acceptance and Action Questionnaire ($M = 4.85 \pm 1.42$; Range: $1 - 7$) indicating women

generally did not allow their feelings toward the body interfere with their day. Women scored in

the middle of the range on the Intuitive Exercise Scale ($M = 3.32 \pm 0.42$; Range: $1 - 5$) with

higher scores indicating the individual exercised for enjoyment and allowed their bodies

response to exercise dictate the type, intensity and duration of exercise. Based on the self-

reported 7-day exercise log, women reported engaging in an average of 801.14 ± 764.17 MET

minutes per week, which falls within the range to meet, but does not exceed, the physical activity

recommendations of $450 - 900$ MET minutes per week (Nelson et al., 2007).

Intercorrelations

Bivariate intercorrelations between sociodemographic variables, measures of positive

body image, motives for exercise, intuitive exercise, and exercise behavior are presented in Table

4. For clarity, a descriptive summary of the intercorrelations between facets of positive body

image, intuitive exercise, exercise motivation, and exercise behavior are presented in the

upcoming section. A detailed descriptive summary of the intercorrelations between

sociodemographic variables as well as body mass index (BMI) and facets of positive body

image, intuitive exercise, and exercise behavior; as well as between the different facets of

positive body image, and between intuitive exercise and exercise behavior can be found in

Appendix J as it provides a level of detail above and beyond the scope of this study.

Intercorrelations between Measures of Positive Body Image, Intuitive Exercise, and

Exercise Behavior. Women's scores on the Body Appreciation Scale-2, the Broad

Conceptualization of Beauty Scale, and the Body Image - Acceptance and Action Questionnaire

were positively correlated with their scores on the Intuitive Exercise Scale. This indicates women

who appreciate the appearance, function, and health of their body tend to also believe beauty

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occurs in a variety of individuals who may or may not represent the societal ideal, and do not allow their thoughts about the body to interfere with their day, tend to exercise more intuitively. Women's scores on the Body Appreciation Scale–2 and Broad Conceptualization of Beauty Scale were positively correlated with exercise behavior, suggesting that women who appreciate their bodies and have a broader conceptualization of beauty also reported higher levels of exercise behavior.

Intercorrelations between Exercise Motivation and Intuitive Exercise and Exercise Behavior. Weight and appearance-based motives for exercise were negatively correlated with women's scores on the Intuitive Exercise Scale, suggesting women who exercise to modify their weight and appearance engage in lower levels of intuitive exercise. Health and enjoyment-based motives for exercise, as well as weight and appearance-based motives for exercise, were both positively correlated with exercise behavior. These correlations imply women with higher levels of both types of motivation to exercise participate in more exercise.

Table 4

Means, standard deviations, and correlations of study variables.

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Age	49.91	15.69	-														
2. Race	-	-	.12*	-													
3. Birth country	-	-	.01	.19**	-												
4. Education	-	-	.06	-.08	-.13**	-											
5. Income	-	-	.05	.05	.01	.29**	-										
6. Marital status	-	-	.00	.21**	-.01	-.06	.39**	-									
7. Children	-	-	.22**	-.01	-.03	-.19**	.11*	.23**	-								
8. BMI	28.20	6.94	.07	.04	.01	.02	-.04	-.04	.09	-							
9. BAS-2	3.48	.90	.12*	.12*	-.05	.05	.05	-.01	.02	-.31**	-						
10. BCBS	5.96	0.82	-.11*	-.04	.03	-.08	-.02	-.02	-.03	.11*	.27**	-					
11. BI-AAQ	4.86	1.42	.25**	.00	.06	.03	-.02	-.05	-.01	-.34**	.51**	.01	-				
12. HE Motives	4.37	1.28	-.13**	-.13**	.08	.07	.09	-.05	-.10*	.09	.41**	.27**	-.05	-			
13. WA Motives	4.46	1.51	-.12*	-.04	.07	.05	.11*	.01	-.03	.10*	-.09	.04	-.47**	.50**	-		
14. Intuitive Exercise	3.32	0.42	.14**	.11*	.05	.03	.11*	.06	-.01	.03	.21**	.15**	.17**	-.02	-.10*	-	
15. MET minutes	801.14	764.17	-.05	-.01	-.07	.13**	.08	.03	-.08	-.19**	.11*	.13**	.05	.31**	.14**	-.08	-

Note. Children = Number of biological children; BMI = Body mass index; BAS-2 = Body Appreciation Scale-2; BCBS = Broad Conceptualization of Beauty; BI- - AAQ = Body Image - Acceptance and Action Questionnaire; HE = Health and enjoyment-based motives for exercise; WA = Weight and appearance-based motives for exercise; MET minutes = MET minutes per week. Race coded as Caucasian = 1 and all other races as 0. Birth country coded as United States = 1 and all other countries = 0. Marital status coded as married or domestic partnership = 1 and all other marital statuses as 0. * $p < .05.$ ** $p < .01.$

Hierarchical Multiple Regression

Two separate hierarchical multiple regression analyses were used to determine how three

facets of positive body image, motives for exercise, and the interaction between positive body

image facets and motives for exercise, were associated with intuitive exercise (Table 5) as well

as exercise behavior (Table 6). For these regressions, age, education, income, number of

biological children, BMI, race, marital status, and birth country were included in all steps of the

model as covariates. All variables included in the regression were centered, and the interaction

terms were created using the centered variables. The three validated scales for positive body

image (i.e., Body Appreciation Scale – 2, Broad Conceptualization of Beauty Scale, Body Image

- Acceptance and Action Questionnaire) were included in the first step of the regression models,

along with the sociodemographic covariates and BMI. Health and enjoyment-based motives for

exercise, and weight and appearance-based motives for exercise, were added in the second step

of the regression models. The interactions between the positive body image measures and both

motives for exercise were added in the third step of the models.

A third hierarchical multiple regression was used to determine how body appreciation,

motives for exercise, and the interaction between these variables, were associated with exercise

behavior (Table 7) when sociodemographics were entered in the final step of the model. This

regression analysis was included despite not addressing the specific aims to aid in the

comparability to previous literature in this area. As a part of their analyses, Homan and Tylka

(2014) included a hierarchical multiple regression to determine how exercise behavior, weight

and appearance-based motives for exercise, and the interaction between exercise behavior and

weight and appearance-based motives were associated with positive body image. In the first step

of the regression, body appreciation and weight and appearance-based motives for exercise were

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entered into the model. The second step introduced the interaction between these variables. However, Homan and Tylka (2014) did not include any sociodemographic covariates in their regression. Due to the major differences between the analysis conducted by Homan and Tylka (2014) and the analysis included in present study, a simplified regression with covariates introduced in final step of the model was added. This analysis included the Body Appreciation Scale–2 and weight and appearance-based motives for exercise, and health and enjoyment-based motives for exercise, were entered in the first step of the model. Step 2 of the model introduced the interactions between the Body Appreciation Scale–2 and each motive for exercise. In this analysis, the covariates were introduced in the third step of the model to gain an understanding of how sociodemographic variables may influence the association between these variables.

Associations between facets of positive body image, motives for exercise and intuitive exercise. In step 1 of regression analysis, to determine how three facets of positive body image predict intuitive exercise (Specific Aim 1a), women's scores on the Body Appreciation Scale – 2 (β = .16) were found to be significantly associated their scores on the Intuitive Exercise Scale. This suggests when body appreciation is higher, women tend to exercise more intuitively. This relationship remained significant in step 2 of the regression when health and enjoyment- and weight and appearance-based motives for exercise were added to the model (Specific Aim 2a). However, neither health or enjoyment- nor weight and appearance-based motives for exercise were significantly associated with women's scores on the Intuitive Exercise Scale, indicating women's motives for exercise were unrelated to how intuitively they exercise. In step 3 of the regression, the interactions between measures of positive body image and motive for exercise were introduced (Specific Aim 3a). Women's scores on the Body Appreciation Scale – 2 remained a significant predictor in step 3 of the regression; however, none of the interaction

terms were significantly associated with intuitive exercise, indicating the relationship between these facets of positive body image and intuitive exercise are not strengthened or weakened by health and enjoyment- or weight and appearance-based motives for exercise.

Table 5

Hierarchical Multiple Regression Analysis Predicting Intuitive Exercise (N = 391)

Step/variable	B	SE B	β	R^2	ΔR^2
Step 1				.110***	
Age	.00	.00	.10		
Education	.00	.02	.00		
Income	.02	.01	.09		
Children	-.02	.02	-.06		
BMI	.01	.00	.10		
Race	.13	.06	.10*		
Marital status	.03	.05	.04		
Birth country	.06	.12	.02		
BAS-2	.08	.03	.16**		
BCBS	.06	.03	.11		
BI-AAQ	.03	.02	.10		
Step 2				.120***	.010
Age	.00	.00	.09		
Education	.00	.02	.00		
Income	.02	.01	.10		
Children	-.02	.02	-.07		
BMI	.01	.00	.10		
Race	.12	.06	.10		
Marital status	.02	.05	.03		
Birth country	.05	.12	.02		
BAS-2	.10	.03	.23**		
BCBS	.06	.03	.12		
BI-AAQ	.02	.02	.07		
WA motives	.00	.02	.00		
HE motives	-.04	.02	-.12		
Step 3				.135***	.015
Age	.00	.00	.09		
Education	.00	.02	.01		
Income	.02	.01	.10		
Children	-.02	.02	-.05		
BMI	.01	.00	.10		
Race	.13	.06	.10*		
Marital status	.03	.05	.04		
Birth country	.04	.12	.02		
BAS-2	.11	.03	.24**		
BCBS	.05	.03	.11		
BI-AAQ	.02	.02	.08		

WA motives	.00	.02	.00
HE motives	-.04	.02	-.12
BAS-2 x WA motives	-.03	.02	-.10
BAS-2 x HE motives	.03	.03	.08
BCBS x WA motives	.01	.02	.04
BCBS x HE motives	-.01	.03	-.04
BI-AAQ x WA motives	-.01	.01	-.05
BI-AAQ x HE motives	.01	.02	.06

Note. Children = Number of biological children; BMI = Body mass index; BAS-2 = Body Appreciation Scale-2; BCBS = Broad Conceptualization of Beauty; BI-AAQ = Body Image - Acceptance and Action Questionnaire; HE motives = Health and enjoyment-based motives for exercise; WA motives = Weight and appearance-based motives for exercise. Race coded as Caucasian = 1 and all other races as 0. Birth country coded as United States = 1 and all other countries = 0. Marital status coded as married or domestic partnership = 1 and all other marital statuses as 0. * $p <.05$. ** $p < .01$. *** $p < .001$

Associations between facets of positive body image, motives for exercise, and

exercise behavior. In step 1 of the regression (Specific Aim 1b), women's scores on the Broad

Conceptualization of Beauty Scale ($\beta = .16$) was the only variable significantly ($p < .05$)

associated with exercise behavior, suggesting that women who have a broader conceptualization

of beauty tend to engage in more MET minutes per week of exercise. In step 2 of the regression

(Specific Aim 2b), motives for exercise were introduced in the regression model. The Body

Appreciation Scale – 2 ($\beta = -.16$), Broad Conceptualization of Beauty Scale ($\beta = .12$), and health

and enjoyment motives for exercise ($\beta = .32$) were all significantly associated with women's

exercise behavior. More specifically, when women's broad conceptualization of beauty and

weight and appearance-based motives for exercise are higher, exercise behavior tends to be

higher as well. However, when body appreciation is lower, women tend to report lower levels of

exercise behavior. In the third step of the regression (Specific Aim 3b), interactions between

facets of positive body image and motives for exercise were introduced. The Body Appreciation

Scale–2 ($\beta = -.18$) and health and enjoyment-based motives for exercise ($\beta = .32$) remained

significant predictors of women's exercise behavior. The interaction between the Broad Conceptualization of Beauty Scale and weight and appearance-based motives for exercise (β = -.17), the interaction between the Broad Conceptualization of Beauty Scale and health and enjoyment-based motives for exercise (β = .15), as well as the interaction between the Body Image - Acceptance and Action Questionnaire and weight and appearance-based motives for exercise (β = -.17), were significantly associated with exercise behavior.

For each significant interaction, a graph was generated to aid in the understanding of the relationship between the positive body image facet and exercise behavior when motives for exercise were low (>1 SD below the mean), moderate (±1 SD from the mean) and high (>1 SD above the mean). The graphs (Figures 5 – 7) illustrate regardless of positive body image, individuals with the greatest exercise motivation (weight and appearance, or health and enjoyment) had the highest levels of exercise behavior. The graphs depicting the association between Broad Conceptualization of Beauty Scale (Figures 5 – 6) and exercise behavior at varying levels of exercise motivation indicate when weight and appearance-based motives for exercise are relatively low (Figure 5) and health and enjoyment motives for exercise are relatively high (Figure 6), a broader conceptualization of beauty is associated with higher levels of exercise participation. Figure 7 illustrates the association between the Body Image - Acceptance and Action Questionnaire demonstrates individuals who do not allow their feelings toward the body interfere with their day have higher levels of exercise engagement, especially at low and high levels of weight and appearance motivation.

Table 6

Hierarchical Multiple Regression Analysis Predicting Exercise Behavior (N = 391)

Step/variable	B	SE B	β	R^2	ΔR^2
Step 1				.088***	
Age	-.99	2.63	-.02		
Education	68.47	29.43	.13*		
Income	13.99	21.38	.04		
Number of children	-19.13	29.38	-.03		
BMI	-23.38	6.12	-.21***		
Race	52.05	117.60	.02		
Marital status	22.85	87.07	.01		
Birth country	-262.69	225.00	-.06		
BAS-2	5.46	52.83	.01		
BCBS	146.03	49.76	.16**		
BI-AAQ	-12.86	32.86	-.02		
Step 2				.161***	.073
Age	.38	2.54	.01		
Education	65.98	28.31	.12*		
Income	2.41	20.69	.01		
Number of children	-4.10	28.38	-.01		
BMI	-22.49	5.89	-.20***		
Race	79.05	113.21	.04		
Marital status	57.05	83.94	.04		
Birth country	-207.98	216.59	-.05		
BAS-2	-137.03	56.85	-.16*		
BCBS	109.64	48.40	.12*		
BI-AAQ	38.65	35.92	.07		
WA motives	-.34	32.90	.00		
HE motives	193.69	39.84	.32***		
Step 3				.186***	.025
Age	.34	2.54	.01		
Education	72.76	28.66	.14*		
Income	-1.24	20.62	.00		
Number of children	-1.82	28.52	.00		
BMI	-21.96	5.88	-.20***		
Race	74.28	113.05	.03		
Marital status	73.20	84.32	.05		
Birth country	-222.84	215.64	-.05		
BAS-2	-155.49	57.45	-.18**		
BCBS	134.81	52.78	.14*		
BI-AAQ	52.47	36.12	.10		

WA motives	12.72	33.44	.03
HE motives	190.64	40.37	.32***
BAS-2 x WA motives	65.59	40.33	.13
BAS-2 x HE motives	-76.63	48.48	-.12
BCBS x WA motives	-92.32	36.81	-.17*
BCBS x HE motives	91.76	44.93	.15*
BI-AAQ x WA motives	-57.21	24.05	-.17*
BI-AAQ x HE motives	44.31	29.29	.11

Note. Children = Number of biological children; BMI = Body mass index; BAS-2 = Body Appreciation Scale-2; BCBS = Broad Conceptualization of Beauty; BI-AAQ = Body Image - Acceptance and Action Questionnaire; HE motives = health and enjoyment-based motives for exercise; WA motives = Weight and appearance-based motives for exercise. Race coded as Caucasian = 1 and all other races as 0. Birth country coded as United States = 1 and all other countries = 0. Marital status coded as married or domestic partnership = 1 and all other marital statuses as 0. * $p < .05$. ** $p < .01$. *** $p < .001$
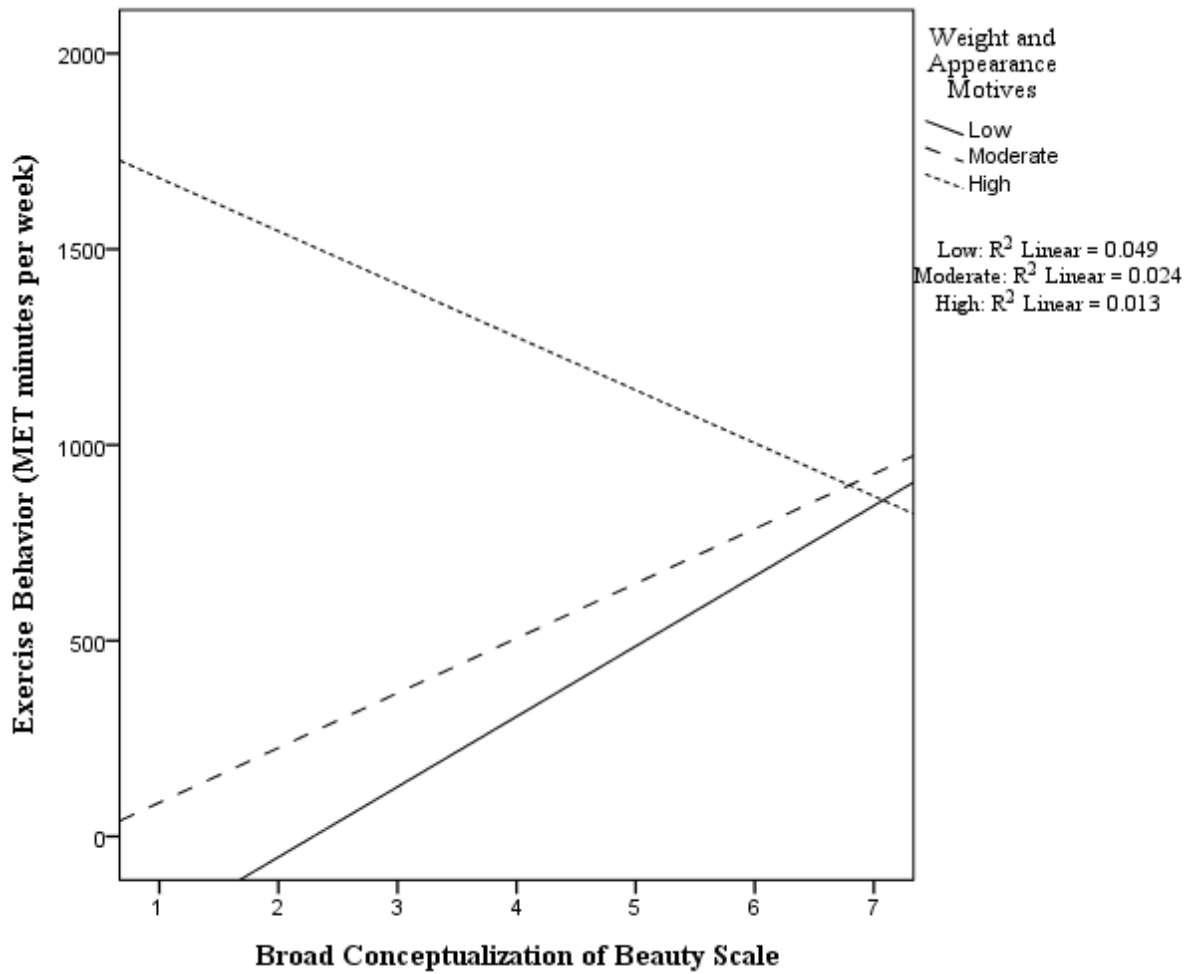
Figure 5. Interaction between the Broad Conceptualization of Beauty Scale, and weight and appearance-based motives for exercise, as predictors of women's exercise behavior.
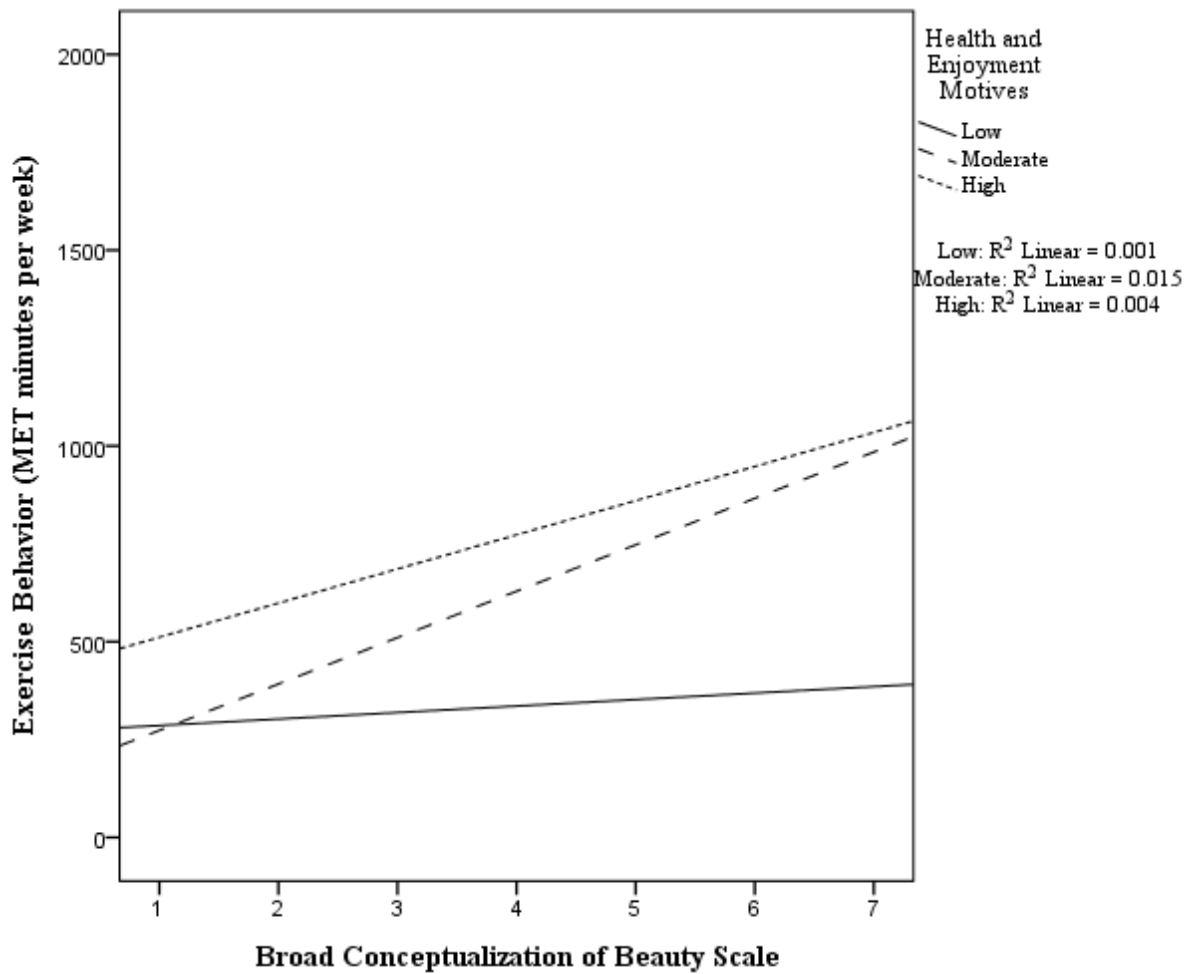
Figure 6. Interaction between the Broad Conceptualization of Beauty Scale, and health and enjoyment-based motives for exercise, as predictors of women's exercise behavior.
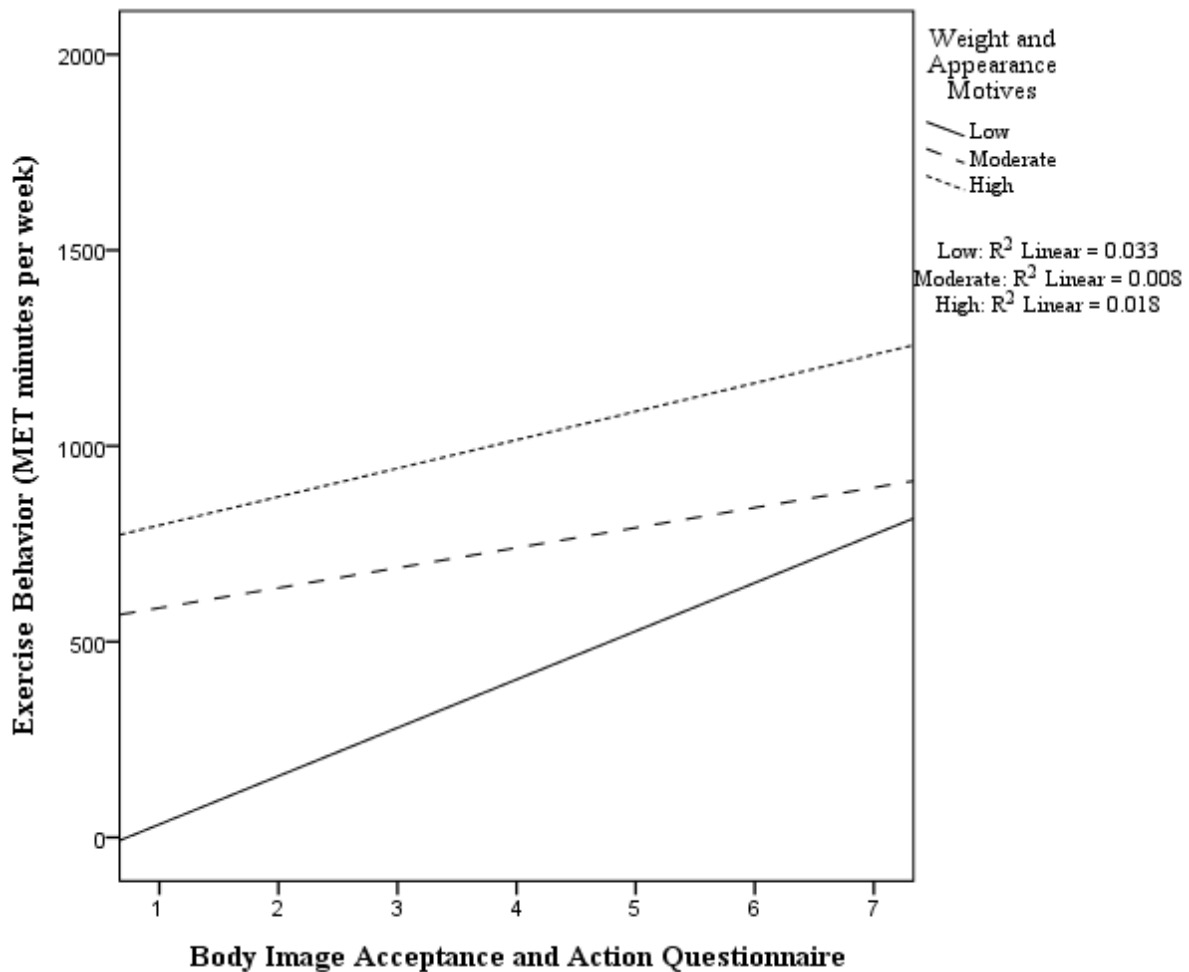
Figure 7. Interaction between the Body Image - Acceptance and Action Questionnaire, and weight and appearance-based motives for exercise, as predictors of women's exercise behavior.

Exploratory Analysis of the association between Body Appreciation, Motives for Exercise, and Exercise Behavior. In the first step of the regression, health and enjoyment motives for exercise ($\beta = .35$) was the only variable significantly ($p < .001$) associated with exercise behavior. This finding suggests that when health and enjoyment-based motives for exercise are higher, exercise behavior is also. In the second step of the regression, when the interaction terms were included in the model, health and enjoyment-based motives for exercise remained the only variable significantly associated with exercise behavior ($\beta = .35$). Once the

covariates were introduced in the third step of the model, health and enjoyment-based motives

for exercise (β = .35) remained the only major study variable in the model significantly

associated with exercise behavior.

Table 7

Hierarchical Multiple Regression Analysis Predicting Exercise Behavior with Sociodemographic Variables in the Final Step (N = 391)

Step/variable	B	SE B	β	R^2	ΔR^2
Step 1				.098***	
BAS-2	-31.80	48.40	-.04		
WA motives	-20.57	30.53	-.04		
HE motives	206.70	39.37	.35***		
Step 2				.100***	.002
BAS-2	-37.34	49.43	-.04		
WA motives	-23.58	30.74	-.05		
HE motives	210.38	39.87	.35***		
BAS-2 x WA motives	-14.00	29.47	-.03		
BAS-2 x HE motives	-19.40	37.80	-.03		
Step 3				.150***	.050
BAS-2	-86.99	51.53	-.10		
WA motives	-20.30	30.43	-.04		
HE motives	208.82	40.04	.35***		
BAS-2 x WA motives	-20.00	29.40	-.04		
BAS-2 x HE motives	-3.54	37.53	-.01		
Age	.37	2.49	.01		
Education	62.00	28.42	.12*		
Income	2.13	20.84	.01		
BMI	-20.97	5.62	-.19***		
Children	-3.96	28.73	-.01		
Race	80.74	114.24	.04		
Birth country	-173.07	217.48	-.04		
Marital status	53.27	84.54	.03		

Note. BAS-2 = Body Appreciation Scale-2; HE motives = Health and enjoyment based motives for exercise; WA motives = Weight and appearance-based motives for exercise; Children = Number of biological children; BMI = Body mass index. Race coded as Caucasian = 1 and all other races as 0. Birth country coded as United States = 1 and all other countries = 0. Marital status coded as married or domestic partnership = 1 and all other marital statuses as 0. * p <.05. ** p < .01. *** p < .001

Chapter V: Discussion

The purpose of the present study was to determine if multiple facets of positive body image, motives for exercise, and interactions between facets of positive body image and motives for exercise, were associated with intuitive exercise and exercise behavior among women. For clarity, the discussion section has been organized to present the study findings in relation to the specific aims, hypotheses, and related literature associated with intuitive exercise, followed by exercise behavior, then limitations and future research directions, implications of the study findings, and overall conclusions.

Intuitive Exercise

The first specific aim was to determine if facets of positive body image were associated with intuitive exercise. The hypothesis that women's level of body appreciation would be positively associated with intuitive exercise was supported in the present study; women who appreciated their bodies also tended to report exercising in a more intuitive manner than women with lower levels of body appreciation. This finding appears to be robust as this association remained significant in the regression models with the inclusion of other facets of positive body image, motives for exercise, and adjusting for covariates. These findings are consistent with qualitative accounts by women and adolescents with positive body image (Frisén & Holmqvist, 2010; Tylka & Wood-Barcalow, 2015b; Wood-Barcalow et al., 2010). In one qualitative study of women with positive body image, women reported that they engage in exercise, they tend to listen to their body and 'don't try to overdo it' (Wood-Barcalow et al., 2010, p. 110), which aligns with aspects of the intuitive exercise construct such as Mindful Exercise. Adolescents with positive body image reported they exercise because they enjoyed it and participated in variety of activities such as volleyball, hockey, and football (Frisén & Holmqvist, 2010), which is

representative of low Exercise Rigidity. Additionally, in a quantitative study of young women, Neumark-Sztainer, Eisenberg, Wall, and Loth (2011) identified that women with a lower body dissatisfaction were more likely to engage in yoga. Those who participate in yoga focus on the connection with the body (Piran, 2015), which may involve trusting the body and being mindful of the body, each aspects of intuitive exercise (Reel et al., 2016). Further, in a quantitative study exploring relationships between positive body image and a parallel construct to intuitive exercise – intuitive eating – researchers found women's body appreciation to be positively associated with intuitive eating (Avalos & Tylka, 2006). Similar to intuitive exercise, women who eat intuitively do not limit themselves on what they can eat, but rather listen to their bodies' hunger and satiety cues, and eat for physical reasons rather than for emotional ones (Avalos & Tylka, 2006). It is understandable that women with higher body appreciation who are grateful for the appearance, health, and function of their body would engage in exercise in a way that is flexible, responsive to their body, and mindful because they may not feel the need to follow a strict exercise regimen to change their body shape or size, or significantly change function of their body. It is important to note that although women in this study with higher levels of body appreciation tend to exercise more intuitively, it does not indicate they will exercise more, as the measure of intuitive exercise is about a person's overall approach to exercise, not a measure of exercise engagement.

No hypotheses were generated for the relationships between the two other facets of positive body image with valid measures (i.e., broad conceptualization of beauty and filtering information in a body protective manner) and potential associations with intuitive exercise due to a lack of previous literature in this area. From this point forward in the discussion, statistically significant study findings related to the indirect assessment of the facet of positive body image

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known as filtering information in a body protective manner using the Body Image - Acceptance and Action Questionnaire (Webb et al., 2015) will be referred to as "body image flexibility" when relevant, as this is a more accurate description of what the assessment measures (Sandoz et al., 2013).

In this sample of women, while the facets of positive body image known as broad conceptualization of beauty and filtering information in a body protective manner were positively correlated with intuitive exercise, after adjusting for motives for exercise and covariates in the regression models, these associations did not retain their significance. Although these two facets of positive body image were not associated with women's overall scores on the Intuitive Exercise Scale, it is possible these facets are associated with certain factors of intuitive exercise such as Emotional Exercise, Body Trust, Exercise Rigidity, or Mindful Exercise. The present study opted to explore intuitive exercise holistically, which is similar to the approach used by other researchers who explored relationships between positive body image and a parallel construct to intuitive exercise: intuitive eating (Avalos & Tylka, 2006; Reel & Miyairi, 2012; Tylka & Homan, 2015). However, some researchers have identified relationships between body appreciation and intuitive exercise at the factor level. Specifically, body appreciation has previously been found to be positively correlated with Body Trust and negatively correlated with Exercise Rigidity (Reel et al., 2016). This may be true for broad conceptualization of beauty, as well as filtering information in a body protective manner. For example, women who believe that beauty occurs in a range of body shapes and sizes may be less likely to engage in only one type of exercise (reflective of low Exercise Rigidity), or to continue exercising even when feeling fatigued or experiencing pain (reflective of more Mindful Exercise). Further, women who are able to filter out negative information that may damage their body image, may be more inclined

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to listen to their body during an exercise session for internal cues of exhaustion (reflective of more Mindful Exercise). Women with a broad conceptualization of beauty and a strong filter to protect their body image may be more likely to engage in intuitive exercise as they may not be seeking to change their body shape or appearance to attain a socioculturally-specific ideal physique (Wood-Barcalow et al., 2010). In other words, they would not engage in any one exercise that has a high caloric expenditure, or feel obligated to continue exercising to achieve a particular energy output despite feeling pain or discomfort to attain a thin or lean body. Although the present study found one facet of positive body image - body appreciation - was associated with intuitive exercise when measured holistically, it may be useful to gain a better understanding of the relationships between body appreciation as well as other facets of positive body image and intuitive exercise at the factor level.

The second specific aim was to determine if women's specific motives for exercise – specifically, health and enjoyment, or weight and appearance, were associated with intuitive exercise. The hypothesis that health and enjoyment-related motives for exercise would be positively associated with intuitive exercise was not supported. In this sample, women's health and enjoyment-related motives for exercise were unrelated to their intuitive exercise scores. Analyses to determine the association between weight and appearance motivation, and intuitive exercise were considered exploratory and no hypothesis was generated. Preliminary correlation analyses indicated that women who had higher weight and appearance motives for exercise tended to have lower intuitive exercise scores. However, subsequent regression analyses revealed that women's weight and appearance motives for exercise were unrelated to their intuitive exercise scores.

While researchers have explored the relationship between motives for exercise and psychological well-being (Maltby & Day, 2001), exercise participation (Ingledew & Markland, 2008), and weight loss (Vartanian, Wharton, & Green, 2012), few studies have explored the relationship between motives for exercise and intuitive exercise. Researchers who have explored the relationship between exercise motivation and intuitive exercise, explored specific aspects of intuitive exercise rather than holistically. Despite these differences, such findings are useful to consider when interpreting the results of this study. In the development of the Intuitive Exercise Scale, Reel et al. (2016) found that health-related reasons for exercise were negatively correlated with the factors of intuitive exercise known as Emotional Exercise and Exercise Rigidity, and positively correlated with Body Trust. Due to the fact that health-related reasons for exercise was both positively as well as negatively correlated with three of the four factors of intuitive exercise, it may partially explain the non-significant correlation when intuitive exercise was assessed holistically in the present study. The research conducted by Mahlo and Tiggemann (2016) provides further support that motives for exercise may be associated with participating in certain types of exercise considered to be more mindful in nature. Mahlo and Tiggemann (2016) found that women who engaged in yoga tended to be highly motivated to participate in order to improve their health and fitness, as well as because they enjoyed it. Women who are engaging in exercise for health and enjoyment-related reasons, may not engage in exercise when they do not feel like exercising because they would no longer be considered pleasurable (reflective of low Mindful Exercise). However, women exercising for health and enjoyment-based reasons may engage in exercise in a way that allows the body to dictate the type of exercise, and how much exercise to do, as well as engage in a large variety of exercises. This would likely incorporate fun

and enjoyable activities in to the exercise session, rather than only exercises that would ensure a toned body (reflective of low Exercise Rigidity).

Similar to the findings with health-related motives for exercise, Reel et al. (2016) also observed that weight management motives as well as appearance-related motives for exercise were negatively correlated with the factors of intuitive exercise known as Emotional Exercise and Mindful Exercise. Appearance motives for exercise was also negatively correlated with Exercise Rigidity. Based upon the fact that weight as well as appearance motives for exercise were negatively correlated with factors of intuitive exercise, it is understandable that weight and appearance motives would be negatively correlated with intuitive exercise when assessed holistically, which was indeed the case in the present study. Zajac and Schier (2011) reported women who engaged in exercise for weight and appearance-related reasons were less likely to engage in yoga, an exercise that women tend to exercise intuitively (Piran, 2015), and more likely to engage in aerobic exercise, which women may not engage in as intuitively (Zajac & Schier, 2011). These findings provide some support for the claim that women engaging in exercise for weight and appearance reasons would engage in lower levels of intuitive exercise. However, in this sample of women, regression analyses indicated that women's weight and appearance-related motives for exercise were unrelated to intuitive exercise. Women who are motivated to change the weight and appearance of their body may not stop exercising when they are feeling tired; rather, they may continue with their exercise regimen to try to achieve a desired aesthetic goal such as improved muscle tone. Based upon these differences in findings it may be most appropriate to assess relationships between motives for exercise and intuitive exercise at the factor level to gain an in-depth understanding of what the relationships are between these variables.

The third specific aim to determine if the interactions between facets of positive body image and motives for exercise were associated with intuitive exercise did not have hypotheses generated due to the lack of prior research in the area. The lack of significant interaction terms suggest that the relationship between certain facets of positive body image and intuitive exercise was not strengthened or weakened by either health and enjoyment-related motives for exercise, nor by weight and appearance-related motives for exercise.

The lack of a significant interaction between the facets of positive body image and exercise motives predicting intuitive exercise somewhat conflicts with the qualitative accounts of women with positive body image. Wood-Barcalow et al. (2010) reported women with positive body image indicated they exercised as a way to improve the health and function of their body, as well as a way to listen to their body (reflective of high Body Trust). Although this might be suggestive of a potential interaction between facets of positive body image and health and enjoyment motives for exercise may lead to higher intuitive exercise scores, that was not the case in this study. It is possible this relationship may occur at the factor level rather than when intuitive exercise is assessed holistically. For example, the interaction between body appreciation, and health and enjoyment motives for exercise, may be positively associated with Body Trust. This interaction reflects the accounts of women with positive body image (Wood-Barcalow et al., 2010), thus indicating women with positive body image engage in exercise as a way to care for the health and function of their body, as well as a way to listen to the body. However, women with positive body image have indicated they did not use exercise to change the appearance of the body (Wood-Barcalow et al., 2010), leading to the assumption that the interactions between positive body image and weight and appearance motives would to lead to a less intuitive exerciser. For example, women with low body appreciation and exercising to

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modify their appearance may continue an exercise session until their exercise regimen was complete, despite feeling tired in order to achieve their desired appearance. As there are no other known qualitative or quantitative papers exploring these relationships, more research is needed in this area to elucidate these potential associations.

Exercise Behavior

The first specific aim associated with exercise behavior was to determine if three facets of positive body image were associated with women's exercise behavior (measured in this study as MET minutes per week). Specifically, it was hypothesized that body appreciation would be positively associated with exercise behavior. Hypotheses between other facets of positive body image (i.e., broad conceptualization of beauty and filtering information in a body protective manner) and exercise behavior were not generated due to lack of previous research in this area; therefore, these analyses were considered exploratory.

Preliminary correlation analyses revealed that women who had higher levels body appreciation also engaged in greater amounts of exercise. However, subsequent regression analyses revealed that once adjusting for the two other facets of positive body image, motives for exercise, and covariates, the association reversed: women with higher levels of body appreciation engaged in lower levels of exercise. Thus, the hypothesized positive association between body appreciation and exercise behavior was not supported in this study, which is somewhat inconsistent with previous work in this area.

In a cross-sectional study examining the relationship between body appreciation and exercise behavior (albeit the proposed directionality was reversed compared to this study), Homan and Tylka (2014) found that women's exercise behavior was positively correlated with

body appreciation, and was a positive predictor of body appreciation using hierarchical multiple regression analyses. The contradictory findings between this study and that of Homan and Tylka (2014) could be because of differences in variables included in the regression models, as well as differences in the instruments used to measure key study constructs. Previous body image research has found that sociodemographic factors and BMI can influence aspects of body image (Akan & Grilo, 1995), as well as the engagement in physical activity and exercise (King et al., 2000). However, Homan and Tylka (2014) did not adjust for any sociodemographic variables or BMI in their analyses. To gain clearer picture of how facets of positive body image might be predictors of exercise behavior, sociodemographic variables and BMI were included in regression analyses as covariates. Indeed, in the present study, certain sociodemographic variables (e.g., age) and BMI were significantly associated with certain facets of positive body image and exercise behavior. It is uncertain if the positive associations between body appreciation and exercise behavior identified by Homan and Tylka (2014) would have remained significant and positive had they controlled for such variables in their analyses. A brief discussion of how, sociodemographic variables and BMI influenced the associations between body appreciation and exercise behavior using a simplified regression model is available in Appendix K.

The measures used in this study to assess body appreciation and exercise behavior may also help explain the differences in findings in relation to previous researchers. The Body Appreciation Scale–2 (BAS-2) (Tylka & Wood-Barcalow, 2015a) was used in the present study, whereas Homan and Tylka (2014) used the original Body Appreciation Scale (Avalos et al., 2005) because the BAS-2 had not yet been published. The BAS–2 was developed with a deeper understanding of the construct and has improved item factor loading (Tylka & Wood-Barcalow,

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2015a). The BAS-2 assesses not only the love for the body, but also the ability to feel beautiful despite the thin ideal, and feeling comfortable in one's body; it no longer assesses aspects of negative body image (Tylka & Wood-Barcalow, 2015a).

To quantify exercise behavior in this study, women completed a self-report log of the type, and duration of all exercise activities performed in the past seven days. Then, the Compendium of Physical Activities (Ainsworth et al., 2011) was used to calculate MET minutes per week of exercise. Homan and Tylka (2014) utilized the Godin Leisure-Time Exercise Questionnaire (Godin & Shephard, 1997) to calculate an exercise score based upon the frequency in which participants engaged in either moderate or strenuous activities for more than 15 minutes. Although this is a validated measure to assess exercise behavior (Godin & Shephard, 1997), it is limited to assessing frequency and intensity of exercise of a minimum duration. Homan and Tylka (2014) also utilized a three-item assessment to determine how often participants engaged in exercise on a daily basis, exercised more than three days a week, and how often participants exercised long enough to "work up a sweat". Further, Prichard and Tiggemann (2008) reported women with a higher evaluation of their body were less likely to engage in cardio-based exercise which is often associated with a higher MET value in the Compendium of Physical Activities (Ainsworth et al., 2011). Based upon the contradicting findings between the present study and the research by Homan and Tylka (2014), it is plausible that participants with positive body image may not exercise for long periods of time to achieve a particular caloric expenditure, but rather exercise on a regular basis to maintain their health. This idea is further supported by women (Wood-Barcalow et al., 2010) and adolescents (Frisén & Holmqvist, 2010) with positive body image discussed how they engaged in exercise on a regular basis at a moderate intensity. Although women (Wood-Barcalow et al., 2010) and adolescents

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(Frisén & Holmqvist, 2010), reported exercising on a regular basis, they did not report that they engaged in exercise for extended durations or at high intensities. A combination of the frequency, duration and intensity of exercise is what would result in a high MET minute per week value in the present study; therefore, a cumulative score may not be the most appropriate way to determine the relationship between positive body image and exercise behavior. Women with lower body appreciation may be exercising more often, for a longer duration, and at a higher intensity than women with a higher body appreciation as a means to burn off extra calories to achieve their ideal body or to improve the health of their body resulting in a higher exercise behavior score. However, women who are satisfied with the health, appearance, and function of the body may be engaging exercise at a similar frequency however not for as long of a duration or high of an intensity, comparatively, because they may not trying change these aspects of their body but rather maintain them.

Pertaining to the exploratory analyses to elucidate how other facets of positive body image related to exercise behavior revealed some interesting findings. Among women in this study, a broader conceptualization of beauty was positively associated with exercise behavior, while filtering information was not associated with exercise behavior. However, both of these facets were part of significant interaction terms and will be discussed in conjunction with specific aim three.

The second specific aim was to determine if women's motives for exercise were associated with exercise behavior. It was hypothesized that exercise motives related to health and enjoyment, as well as weight and appearance, would be positively associated with women's exercise behavior. This hypothesis was supported for health and enjoyment-related motives for exercise, but not weight and appearance-related motives. In this study, women who exhibited

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greater endorsement of being motivated to exercise for health and enjoyment-related reasons tended to engage in more exercise. This relationship was robust as it was statistically significant in both correlation and regression analyses. This suggests that women who view exercise as a way to enhance their health and improve what their bodies are capable of doing, engage in higher levels of exercise than women who are not as motivated to exercise for these reasons. Although there was a significant main effect of health and enjoyment motives on women's exercise behavior in the regression analyses, it was also a part of a significant interaction with the facet of positive body image broad conceptualization of beauty; therefore, it will be discussed in conjunction with specific aim three.

Although preliminary correlation analyses revealed that women who were more motivated to exercise for weight and appearance-related reasons tended to engage in more exercise behavior, this source of motivation was not a main predictor of exercise behavior in the regression analyses. It is important to note that while weight and appearance-related motives for exercise did not operate as a main effect, there were two significant interactions between this source of exercise motivation and facets of positive body image which will be discussed in conjunction with specific aim three.

The third specific aim was to determine if the interactions between facets of positive body image and motives for exercise were predictors of women's exercise behavior. It was hypothesized that the interaction between body appreciation, and weight and appearance motives for exercise, would be a negative predictor of exercise behavior; meaning exercise behavior was anticipated to be highest when body appreciation was high, and weight and appearance-related motives were low. No other hypotheses were generated due to the lack of prior research in this area and analyses were considered exploratory.

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The hypothesis associated with specific aim three was not supported; body appreciation, and weight and appearance motives for exercise, did not significantly interact to predict women's exercise behavior. This finding is inconsistent with the cross-sectional study by Homan and Tylka (2014) who reported a significant interaction between these variables, albeit they looked at the relationship between the study variables in the opposite direction. Specifically, they found body appreciation was highest when exercise frequency was high and appearance motives for exercise were low. Differences in these study findings may be related to the differences in how motives for exercise and exercise behavior were quantified. As previously discussed, Homan and Tylka (2014) used a single item to assess appearance motives, while this study utilized the Weight and Appearance Subscale of the Functions of Exercise Scale (DiBartolo et al., 2007). Further, exercise behavior was calculated based upon the reported exercise type, which was then used to determine the intensity of exercise, and reported duration of exercise which may not be the best method to understanding the relationship between positive body image and exercise behavior. The relationship between the interaction with body appreciation and weight and appearance motives for exercise may be better understood though an assessment of exercise frequency. The findings by Homan and Tylka (2014) indicated that women who exercise the most frequently with low appearance motivation for exercise had the highest body appreciation. It is possible that when women appreciate the appearance, function and health of the body and have low appearance motivation, they engage in exercise more frequently because it is enjoyable to them rather than for longer durations because they likely do not want to achieve a particular body shape or size. However, women who are highly motivated by weight and appearance may exercise often and for long durations as a way to achieve a particular body weight or shape, or to "work off unwanted calories" from unhealthy foods. Although the interaction between body

appreciation, and weight and appearance motives for exercise, was not significant in this study, there were three significant interactions between two other facets of positive body image (i.e., broad conceptualization of beauty and filtering information in a body protective manner) and women's exercise motives that warrant discussion. The following paragraphs will explore the interactions between (1) broad conceptualization of beauty, and weight and appearance motives for exercise, (2) broad conceptualization of beauty, and health and enjoyment motives for exercise, and (3) filtering information in a body protective manner, and weight and appearance motives for exercise.

The interaction between broad conceptualization of beauty, and weight and appearance-related motives for exercise, indicated the relationship between broad conceptualization of beauty and exercise behavior varied based on the degree to which they were motivated to exercise for weight and appearance-related reasons (high, versus low to moderate). For clarity, the following two paragraphs will first discuss the relationship between broad conceptualization of beauty and exercise behavior when weight and appearance motives were high, followed by when weight and appearance motives were considered low to moderate.

Women who were highly motivated to exercise for weight and appearance-related reasons engaged in the highest levels of exercise regardless of their conceptualization of beauty. This aligns with the findings of previous researchers who reported that women who internalized the thin ideal, and likely have a narrower conceptualization of beauty, were most likely to become compulsive exercisers (Homan, 2010). Further, engaging in exercise with extremely high weight and appearance motives for exercise may indicate compulsive exercise (Meyer & Taranis, 2011), which can lead to overuse injuries (Reel & Miyairi, 2012), and is often associated eating disorders (Meyer & Taranis, 2011). However, it is important to note that the

present study did not assess compulsive exercise but rather total exercise behavior. Although exercise was highest among women with high weight and appearance motives for exercise and a narrow conceptualization of beauty, when women's conceptualization of beauty was broader, exercise behavior was lower. This is encouraging as it may be suggestive of a protective effect of having a broader conceptualization of beauty among women highly motivated to exercise to modify their weight and appearance. Although a protective effect of positive body image from engaging in maladaptive behaviors has been observed with other facets of positive body image (Gillen, 2015), it has not yet been directly observed in association with broad conceptualization of beauty. However, the literature indicated women who did not idealize a thin or muscular body – thus potentially having a broader conceptualization of beauty – were less likely to be compulsive exercisers (Holland & Tiggemann, 2017). It is possible that women highly motivated to exercise for weight and appearance reasons yet have a broader conceptualization of beauty, may engage in lower levels of exercise because they are not trying achieve the socioculturally-defined "ideal" physique by engaging in extremely high levels of exercise. Though these women may see beauty in a variety of body shapes and sizes, they may still engage in exercise for other reasons such as maintaining their current body shape, size, and/or functionality.

The interaction between broad conceptualization of beauty, and weight and appearance motives for exercise, also suggests that women with moderate weight and appearance-based motives for exercise exercised slightly more than those with low weight and appearance-based motives for exercise, irrespective of how broadly they conceptualized beauty. This finding aligns with the work of previous researchers (Steptoe et al., 1997; Wood-Barcalow et al., 2010). For example, Steptoe et al. (1997) found that women who had a higher level of appearance motivation engaged in higher levels of exercise. However, among both of these groups of women

in this study (low to moderate levels of weight and appearance motives for exercise), exercise behavior was higher when women had a broader conceptualization of beauty. This is somewhat supported by the qualitative accounts of women with a positive body image who explained they perceived beauty in a wide variety of women, not just those who represented the societal ideal, and reported they engaged in exercise regularly (Wood-Barcalow et al., 2010). It is possible that women with a broader conceptualization of beauty were motivated for weight and appearance related reasons as well as health and enjoyment reasons, as they are not mutually exclusive. For example, women may not be engaging in exercise to lose weight in an effort to achieve a particular body size, but rather might be engaging in exercise for weight loss to achieve the health benefits associated with minor weight reduction (Blackburn, 1995). This may explain why women with a broad conceptualization of beauty engaged in higher levels of exercise when they were motivated to change the weight or appearance of the body.

The second interaction that was significant was the positive interaction between broad conceptualization of beauty, and health and enjoyment motives for exercise. This interaction indicated that women who were moderately to highly motivated to exercise for health and enjoyment-related reasons engaged in increasingly greater levels of exercise as their conceptualization of beauty expanded. However, women who were minimally motivated to exercise for health and enjoyment reasons, regardless of how narrowly or broadly they conceptualized beauty made little difference in how much they exercised, and this group of women tended to exercise the least. Based upon the experiences of adolescents (Frisén & Holmqvist, 2010) and women (Wood-Barcalow et al., 2010) with positive body image, it is plausible that women who believe individuals can be beautiful in all body shapes and sizes would be motivated to engage in exercise particularly if they enjoy it and think it would likely

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improve their health. Previous researchers reported that engaging in exercise for health and enjoyment reasons was associated with higher levels of exercise behavior in women (Duncan et al., 2010; Ingledew & Markland, 2008). Women who participated in an exercise class focusing on the improvement of health and function of the body tended to have a higher level of enjoyment and intended to return to another class. It is possible that women who see beauty in all body shapes and sizes and exercise as a means for enjoyment and to improve their health may not be exercising to change the appearance of their body. Further, these women may engage in more exercise because they enjoy exercising and would want to participate in exercise again (Raedeke, Focht, & Scales, 2007). Based on the findings from this study, it appears that women need at least a moderate level of health and enjoyment motives, for a broader conceptualization of beauty to be associated with higher exercise engagement.

The third interaction between filtering information in a body protective manner (or more accurately, body image flexibility), and weight and appearance motives for exercise, was also negative. Specifically, women who indicated they allowed their negative emotions toward their body to interfere with their day (low body image flexibility), and were less motivated to exercise for weight and appearance reasons, tended to engage in lower levels of exercise. This aligns with findings from the weight stigma literature. For example, women with obesity who report having internalized weight stigma tended to avoid exercise more than women who did not internalize the stigma (Vartanian & Novak, 2011). It is possible that these women allowed their negative emotions to be a limiting factor in their day (low body image flexibility), leading them to engage in less exercise than women who did not internalize weight stigma. Further, as previously mentioned, weight and appearance-based motives for exercise have been positively associated with the engagement in exercise (Steptoe et al., 1997). When considering findings of previous

researchers (Steptoe et al., 1997; Vartanian & Novak, 2011) along with the results of the present study, it plausible that some women engage in lower levels of exercise because they are allowing negative feelings and emotions toward their body limit their ability fully engage in the day – perhaps the ramification not being able to effectively filter out negative information about the body and/or not allowing in positive information. However, women who had a more flexible body image, and did not allow negative emotions to impact their day to the same extent, may engage in greater amounts of exercise. Women with greater body image flexibility may be engaging in higher levels of exercise when they are no longer limited by negative emotions towards their body. This may explain why women who have a more flexible body image engage in higher levels of exercise when they are more motivated for weight and appearance reasons.

Limitations and Future Directions

As with any study, there are limitations that should be considered when interpreting the findings. This section presents limitations associated with the conceptualization of major study variables, study design, measures, recruitment and sampling, and statistical analyses.

Positive body image, as a distinct, unique construct from negative body image, has only recently been described in the body image literature (Tylka & Wood-Barcalow, 2015b). The definitions and facets utilized in the present study are primarily derived from qualitative investigations of the comments and experiences of adolescents (Frisén & Holmqvist, 2010) and young women (Wood-Barcalow et al., 2010). Due to the lack of research with a variety of sociodemographic groups, it is unclear if positive body image is experienced differently in different populations such as older adults. It is possible that middle-aged and older women, like those that are in this study, experience positive body image differently than young women. In a review, Peat, Peyerl, and Muehlenkamp (2008) explained that older women experience lower

levels of body dissatisfaction, are more accepting of a variety of body shapes and sizes, and are able to distance themselves from potentially harmful external influences on their body image, all of which relate to distinct facets of positive body image as it is currently conceptualized. Although this evidence suggests some similarities between the current conceptualization of positive body image and accounts of older women, these accounts do not describe the full positive body image construct as it is currently conceptualized, and it is possible that other facets may emerge with further investigation. Thus, caution is warranted when contemplating the conceptual validity of the facets of positive body image explored in this study. Future researchers should continue to use qualitative research methods to gain an understanding of the positive body image construct in middle-aged women and older women, as well as men, as these populations' experiences of positive body image have not yet been described in the literature.

The present study used a cross-sectional design to explore how positive body image and motives for exercise were associated with exercise behavior and intuitive exercise. However, directionality and causality cannot be determined using this study design. The hypothesized directionality of this study was based partially upon a path analysis conducted by Tylka and Homan (2015) who explored how body appreciation influenced intuitive eating. Due to the parallels between the intuitive eating and intuitive exercise constructs (Reel & Miyairi, 2012), intuitive exercise was used as an outcome variable in the present study. Further, Andrew, Tiggemann, and Clark (2016b) conducted a longitudinal study which found that higher body appreciation resulted in an increase in the participation in sports and physical activity one year later in adolescents. However, it is possible that the relationships between these variables could function in the opposite direction. For example, in a cross-sectional study, Homan and Tylka (2014) explored how the interaction between exercise behavior and appearance motives for

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exercise predicted body appreciation. The researchers found that body appreciation was higher among women who exercised more frequently and had lower appearance motives for exercise (Homan & Tylka, 2014). Although, there is both cross-sectional and longitudinal support for the suggested directions used in this study, future research should include longitudinal research exploring the directionality or potential upward spiraling relationship (Homan & Tylka, 2014) between positive body image and intuitive exercise, as well as exercise behavior.

Although psychometrically-valid instruments were used to measure major study constructs, direct comparability of the findings from this study to previous literature in the area is somewhat limited due to differences in the instruments used to measure positive body image and motives for exercise. The current study utilized the Body Appreciation Scale–2 (BAS-2) (Tylka & Wood-Barcalow, 2015a) which is an updated version of the Body Appreciation Scale (BAS) (Avalos et al., 2005). The BAS-2 (Tylka & Wood-Barcalow, 2015a) has improved item factor loading and was created with the understanding that positive body image is a distinct construct from negative body image (Tylka & Wood-Barcalow, 2015a). Homan and Tylka (2014) utilized the BAS (Avalos et al., 2005) to assess body appreciation as the BAS-2 (Tylka & Wood-Barcalow, 2015a) was not published at the time of their research. Although utilizing the BAS-2 (Tylka & Wood-Barcalow, 2015a) was necessary to measure body appreciation as it is currently understood, it limits the direct comparability to the work by Homan and Tylka (2014), the only known publication to explore the associations between body appreciation, appearance motives for exercise and exercise behavior. Future researchers should continue to use the BAS-2 (Tylka & Wood-Barcalow, 2015a) to ensure positive body image is being accurately assessed.

Although research on positive body image literature has been expanding, not all facets of positive body image are quantifiable with psychometrically-valid instruments. The limited

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number of instruments in this area limits the ability for researchers to quantitatively capture the entirety of the positive body image construct as it is presently conceptualized. For example, to measure the facet known as filtering information in a body protective manner, the present study utilized the Body Image - Acceptance and Action Questionnaire (BI-AAQ) (Sandoz et al., 2013) – an instrument not specifically designed to assess the filtering-related facet of positive body image. Leading researchers in the area recommended the use of the BI-AAQ to assess filtering information in a body protective manner, but acknowledge that it was designed to assess body image flexibility (Webb et al., 2015). The items on the measure assess the ability of an individual to not allow their negative feelings toward the body to interfere with their day, rather than the ability of an individual to filter out information in a body protective manner as it is currently defined (i.e., filtering out information that may diminish an individual's positive body image while internalizing body positive information) (Tylka & Wood-Barcalow, 2015b). Therefore, it is considered an indirect assessment of the facet filtering information in a body protective manner (Webb et al., 2015) at best. Future scholars should use extreme caution in utilizing this measure to assess the facet filtering information in a body protective manner. Additionally, researchers should develop psychometrically-valid, reliable instruments to directly assess all facets of positive body image including filtering information in a body protective manner as well as body acceptance and love, inner positivity and adaptive appearance investment.

Differences in the instruments used to assess exercise motives also present challenges when comparing study findings to previous work in this area. The present study utilized the Functions of Exercise Scale (DiBartolo et al., 2007) to assess weight and appearance-based and health and enjoyment-based motives for exercise which is considered a valid and reliable measure to assess these motives for exercise. Despite the availability of the Weight and

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Appearance Subscale and the Health and Enjoyment Subscale of the Functions of Exercise Scale (DiBartolo et al., 2007), previous researchers (Homan & Tylka, 2014) utilized a single item to assess appearance-based exercise motivation, and did not include an assessment of health and enjoyment based motives for exercise. Although using a single item is considered appropriate in some instances (Bergkvist & Rossiter, 2007), the single item was not psychometrically tested; therefore, it is possible that it is not a valid or reliable measure of appearance motives for exercise. Homan and Tylka (2014) also did not include an assessment of health and enjoyment motives for exercise which limits the understanding of motives for exercise. This further limits the direct comparability of the findings of the present study to the findings of (Homan & Tylka, 2014). Future researchers should continue to utilize psychometrically-valid and reliable measures to ensure the constructs they are reportedly measuring are accurately being assessed, as well as include a both weight and appearance motives for exercise and health and enjoyment motives for exercise to gain a clearer understanding of what drives women to exercise.

For this study, women's engagement in exercise behavior was conceptualized as MET minutes per week which was calculated from women's self-report exercise logs where they documented the type and duration of exercise they participated in over the previous seven days. Although this approach is considered an appropriate assessment of exercise behavior (Ainsworth et al., 2000; Stel et al., 2004), this approach may lead to problems with social desirability bias (particularly the over reporting of desirable behaviors, in this case, exercise) (Brenner & DeLamater, 2014), as well as the process of determining what MET value to use for each reported exercise. When utilizing a 7-day self-report exercise log it is assumed participants are able to accurately recall and document their previous exercise sessions. However, previous literature has stated that participants frequently over report their engagement in exercise in terms

of both frequency and duration (Brenner & DeLamater, 2014). Additionally, when calculating MET minutes per week for each study participant, the author had to pick the best fitting MET value associated with the activity given the description participants provided (e.g., running, walking, weight lifting) (Appendix I), as the Compendium of Physical Activities (Ainsworth et al., 2011) often offers several MET values for an activity based upon the intensity of exercise. Therefore, it is possible that error was introduced when calculating MET minutes per week. Thus, it is possible the high level of exercise engagement reported in the present study is due to social desirability bias and/or possible incorrect selection of MET values. Future researchers may benefit from utilizing an exercise diary in which participants report the exercise immediately following the exercise session, as this has been shown to reduce social desirability bias (Brenner & DeLamater, 2014). Further, researchers utilizing an exercise log may opt to ask participants to describe the intensity in which they engaged in exercise so the researcher can better identify a MET value to assign to each exercise.

The recruitment methods used in the present study resulted in a sample that was primarily comprised of non-Hispanic Caucasian women with a high personal income who were also highly active. Given these characteristics, the study sample has limited generalizability to the U.S. population. (Carlson et al., 2009; United States Census Bureau, 2017). Participants were recruited in two waves to allow for a preliminary data analysis midway through the data collection to ensure women with low, moderate and high positive body image were represented in the sample. By utilizing this technique, it allowed the researcher to gain a better understanding of how positive body image, at all levels, influenced intuitive exercise and exercise behavior, but limits the generalizability to any particular group of women. By utilizing this method, this sample of women had approximately 10% more Caucasians and roughly 12% fewer women of

Hispanic-origin than what has been observed in the United States (United States Census Bureau, 2017). Further, women in the present study earned over $10,000 more than the average income (United States Census Bureau, 2017), and at least 20% more women met the physical activity recommendations (> 450 MET minutes per week) than what has been typically observed in the United States (Carlson et al., 2009). Therefore, the findings of the present study are limited to groups of women that are similar to the participants rather than all women. Future researchers may benefit from utilizing a sampling technique that recruits a sample more representative of the population, to gain an understanding of the relationship between positive body image and exercise behavior in the general population.

The statistical approaches used in this study also present limitations that should be considered when interpreting the findings. The current study utilized correlations and hierarchical multiple regression analyses to determine the relationship between positive body image and motives for exercise, and the outcome variables intuitive exercise and exercise behavior. While previous researchers have used structural equation modeling to explore the interrelationships including several similar variables such as body appreciation, motives for exercise and intuitive eating (Tylka & Homan, 2015), this approach was not used due to the lack of prior research to support the use of structural equation modeling. Although the use of regression in the present study was appropriate, it limits the ability to gain an understanding of the interrelationships between study variables which structural equation modeling can help determine. Future researchers should continue to explore positive body image, motives for exercise, intuitive exercise, and exercise behavior to provide a base for future researchers to utilize more complex statistical methods such as structural equation modeling, thus allowing

researchers to gain a deeper understanding of the interrelationships between each of the variables.

Implications

Building upon the study findings related to positive body image and motives for exercise, several implications can be proposed to facilitate women's engagement in intuitive exercise and exercise behavior. The present study identified that body appreciation was positively associated with intuitive exercise. A direct implication of this finding is to encourage women to appreciate the health, function, and appearance of the body as a way to promote intuitive exercise - exercising in a manner that is enjoyable and responsive to bodily cues. To help women improve their body appreciation, interventions could be designed to encourage women to engage in positive body talk (Tylka & Augustus-Horvath, 2011). To do so, women should reframe negative appearance-related thoughts into positive thoughts that, for example, focus on the function of the body (Tylka & Augustus-Horvath, 2011), and that there is not a singular standard for physical beauty, but rather a wide variety of beautiful appearances and bodies (Cash, 2008). Further, women should be instructed in engage in exercise as a way to respect and appreciate the body, as well as include an explanation of what intuitive exercise is, and how to exercise intuitively. These recommendations were modified from the suggestions of Tylka and Augustus-Horvath (2011) to improve intuitive eating. Successful interventions have the potential to result in an increase in exercise engagement that is mindful and listens to physical cues to designate when to start and stop exercising, as well as determine the type of exercise to engage in. Engaging in intuitive exercise may pose fewer risks of injury than compulsive exercise, however this has not yet been explored in the literature.

The present study identified that women engaged in the highest levels of exercise when weight and appearance motives for exercise were high, and when women had a narrow conceptualization of beauty. Based upon these findings, if researchers would like women to engage in the highest amounts of exercise they should encourage women to adopt the thin-ideal and to exercise as a way to change the appearance of their body. However, extreme caution should be used if adopting this technique, as this can lead to women having an unhealthy relationship with exercise (Freimuth, Moniz, & Kim, 2011; Meyer & Taranis, 2011). The present study also identified that women who had low to moderate levels of weight and appearance motives, or were highly motivated for health and enjoyment reasons, engaged in more exercise with a broader conceptualization of beauty. Women also engaged in higher levels of exercise when they were moderately to highly motivated for weight and appearance motives and had a more flexible body image. This indicates if women have lower levels of weight and appearance-based motives for exercise, helping women gain the skills to filter out negative information that may damage their body image may also be beneficial in helping women engage in more exercise. Further, encouraging women to see that beauty occurs in a variety of shapes and sizes, and to engage in enjoyable exercise to promote the health and function of the body rather than exercising for weight and appearance related reasons, may also result in higher levels of exercise, although overall quantity may be lessened. To broaden women's conceptualization of beauty, women may benefit from an activity in which women first identify all of the important and well respected women in their life then identify the many positive, non-appearance based, attributes of that individual (Tylka & Augustus-Horvath, 2011). This may help women begin to see the beauty of non-appearance based attributes related to their personality. To further limit the chance of women developing an unhealthy relationship with exercise (Meyer & Taranis, 2011) but still

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increase the engagement in exercise, when women engage in exercise they should focus on improving the health and function of the body, as well as engage in exercises that are enjoyable. Although, two facets of positive body image resulted in higher levels of exercise for some groups of women, body appreciation negatively predicted exercise behavior irrespective of their exercise motives. Thus, interventions aimed at strictly increasing women's exercise behavior in terms of MET minutes per week may not benefit from having women learn to appreciate the health, function, and appearance of the body despite the other potential benefits of having a higher body appreciation. However, it is unclear if the negative relationship between body appreciation is driven by intensity or duration of exercise. Therefore, based upon the present findings, effective interventions should focus on improving women's ability to filter out negative information about the body while retaining positive information, encouraging women to broaden their conceptualization of beauty to see that beauty can occur in all shapes and sizes, and to engage in enjoyable exercise to improve their health.

Conclusions

The current study adds to the growing body of literature exploring the potentially beneficial role positive body image has on the engagement in health-promoting behaviors, including intuitive exercise and exercise. The present study is the first known study to quantitatively explore the associations between multiple facets of positive body image and motives for exercise as possible predictors of intuitive exercise and exercise behavior in a large sample of adult women. This study provides evidence that women who appreciate the function, health, and appearance of their body engage in exercise more intuitively - which allows the individual the flexibility to listen to the body leading to a potentially more enjoyable experience. The evidence also suggests regardless of positive body image, women who are highly motivated

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to exercise – for reasons related to weight and appearance, or health and enjoyment – tend to engage in the highest levels of exercise. However, some aspects of positive body image (broad conceptualization of beauty and filtering information in a body protective manner) may result in higher levels of exercise, but this relationship appears to vary depending on women's exercise-related motivations. Although the present study suggests that some facets of positive body image may be beneficial in increasing the engagement in exercise behavior, body appreciation tended to correspond with lower levels of exercise. Given these findings, more qualitative and quantitative research is needed to gain a deeper understanding of positive body image within a variety of populations, including women and men. This greater understanding of positive body image will likely provide insight as to how to best leverage aspects of positive body image and motives for exercise to stimulate the engagement in life-long, health-promoting and enjoyable engagement in exercise.

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APPENDIX A:

Screening Questions

1. What is your gender?
   a. Male
   b. Female
   c. Other
   d. I prefer not to answer
2. Are you over the age of 18?
   a. Yes
   b. No
   c. I prefer not to answer
3. Have you ever been told by a health care professional (e.g., doctor, registered dietitian, mental health professional) that you have an eating disorder, such as anorexia nervosa, bulimia nervosa, or binge eating disorder?
   a. Yes
   b. No
   c. I don't know
   d. I prefer not to answer
4. Have you ever been told by a health care professional (e.g., doctor, exercise specialist, mental health professional) that you have an exercise-related disorder such as obligatory exercise disorder or exercise addiction?
   a. Yes
   b. No
   c. I don't know
   d. I prefer not to answer
5. Are you currently pregnant or breastfeeding?
   a. Yes
   b. No
   c. I don't know
   d. I prefer not to answer
6. Have you been pregnant in the past 12 months?
   a. Yes
   b. No
   c. I don't know
   d. I prefer not to answer
7. Do you currently have a physical disability or injury that impacts your ability to engage in exercise?
   a. Yes
   b. No
   c. I don't know
   d. I prefer not to answer
8. Do you currently have a chronic disease (e.g., heart disease, cancer, diabetes) or other health condition that impacts your ability to engage in exercise?
   a. Yes
   b. No

      c. I don't know

      d. I prefer not to answer

9. Are you a U.S. citizen?

      a. Yes

      b. No

      c. I prefer not to answer

10. Are you able to communicate fluently in English?

      a. Yes

      b. No

      c. I prefer not to answer

11. Do you engage in exercise at least 3 days per week?

      a. Yes

      b. No

      c. I don't know

      d. I prefer not to answer

12. Do you consider yourself to have a positive body image?

      a. Yes

      b. No

      c. I don't know

      d. I prefer not to answer

Appendix B:

Sociodemographic Questionnaire

1. How old are you?
    a. _____
2. What is your height in feet and inches? (example: 5' 11")
    a. _____
3. What is your current body weight in pounds?
    a. _____
4. What is your race? Check all that apply.
    a. White
    b. Black or African American
    c. Asian or Pacific Islander
    d. American Indian
    e. Other
    f. I don't know
    g. I prefer not to answer
5. Are you of Hispanic or Latino origin?
    a. Yes
    b. No
    c. I don't know
    d. I prefer not to answer
6. What is the highest degree or level of school you have completed? (If you are currently enrolled in school, please indicate the highest degree you have *received.*)
    a. Less than a high school diploma
    b. High school degree or equivalent (e.g., GED)
    c. Some college, no degree
    d. Associate degree (e.g., AA, AS)
    e. Bachelor's degree (e.g., BA, BS)
    f. Master's degree (e.g., MA, MS, MEd)
    g. Professional degree (e.g., MD, DDS, DVM)
    h. Doctorate (e.g., PhD, EdD)
    i. I don't know
    j. I prefer not to answer
7. What is your approximate average household income?
    a. Less than $10,000
    b. $10,000-$14,999
    c. $15,000-$19,999
    d. $20,000- $29,999
    e. $30,000-$39,999
    f. $40,000-$49,999
    g. $50,000-$74,999
    h. $75,000 or more
    i. I don't know
    j. I prefer not to answer
8. What is your marital status?

     a. Not married
     b. Married, or in a domestic partnership
     c. Cohabitating
     d. Separated/Divorced
     e. Widowed
     f. I prefer not to answer

9. Do you have any biological children?
     a. Yes
     b. No
     c. I prefer not to answer

10. How many biological children do you have? *(only displayed to participants who answer "yes" to question #9)*
     a. _____

11. In what country were you born?
     a. _____

APPENDIX C:

Body Appreciation Scale-2

Tylka, T. L., & Wood-Barcalow, N. L. (2015). The Body Appreciation Scale-2: item refinement and psychometric evaluation. *Body Image, 12*, 53-67.

Directions for participants: Please indicate whether the question is true about you never, seldom, sometimes, often, or always.

1. I respect my body.
2. I feel good about my body.
3. I feel that my body has at least some good qualities.
4. I take a positive attitude towards my body.
5. I am attentive to my body's needs.
6. I feel love for my body.
7. I appreciate the different and unique characteristics of my body.
8. My behavior reveals my positive attitude toward my body; for example, I hold my head high and smile.
9. I am comfortable in my body.
10. I feel like I am beautiful even if I am different from media images of attractive people (e.g., models, actresses/actors).

Scoring Procedure: Average participants' responses to items 1–10.

APPENDIX D:

Broad Conceptualization of Beauty Scale

Tylka, T. L., & Iannantuono, A. C. (2016). Perceiving beauty in all women: Psychometric evaluation of the Broad Conceptualization of Beauty Scale. *Body Image*, 17(Supplement C), 67-81.

For each item, the following response scale should be used: Strongly Disagree (scored as 1), Moderately Disagree (2), Slightly Disagree (3), Neither Agree Nor Disagree (4), Slightly Agree (5), Moderately Agree (6), Strongly Agree (7).

Directions for participants: How do YOU define women's beauty? Please indicate the extent to which you agree with each statement. We are only interested in YOUR beliefs, which may or may not be reflected by others or society.

1. Even if a physical feature is not considered attractive by others or by society, I think that it can be beautiful.
2. A woman's confidence level can change my perception of her physical beauty.
3. I think that a wide variety of body shapes are beautiful for women.
4. I think that thin women are more beautiful than women who have other body types.*
5. A woman's soul or inner spirit can change my perception of her physical beauty.
6. I define a woman's beauty differently than how it is portrayed in the media.
7. A woman's acceptance of herself can change my perception of her physical beauty.
8. I appreciate a wide range of different looks as beautiful.
9. I think that women of all body sizes can be beautiful.

*Reverse score. Scoring Procedure: Reverse score Item 4, and then average participants' responses to Items 1–9.

APPENDIX E:

Body Image-Acceptance and Action Questionnaire

Sandoz, E. K., Wilson, K. G., Merwin, R. M., & Kellum, K. K. (2013). Assessment of body image flexibility: the body image-acceptance and action questionnaire. *Journal of Contextual Behavioral Science*, 2(1), 39-48.

Directions: Below you will find a list of statements. Please rate the truth of each statement as it applies to you. Use the following rating scale to make your choices. For instance, if you believe a statement is 'Always True,' you would write a 7 next to that statement.

Never True	Very Seldom True	Seldom True	Sometimes True	Frequently true	Almost always true	Always true
1	2	3	4	5	6	7

1. Worrying about my weight makes it difficult for me to live a life that I value.
2. I care too much about my weight and body shape.
3. I shut down when I feel bad about my body shape or weight.
4. My thoughts and feelings about my body weight and shape must change before I can take important steps in my life.
5. Worrying about my body takes up too much of my time.
6. If I start to feel fat, I try to think about something else.
7. Before I can make any serious plans, I have to feel better about my body.
8. I will have better control over my life if I can control my negative thoughts about my body.
9. To control my life, I need to control my weight.
10. Feeling fat causes problems in my life.
11. When I start thinking about the size and shape of my body, it's hard to do anything else.
12. My relationships would be better if my body weight and/or shape did not bother me.

Scoring: Items worded in the direction of inflexibility are reverse scored such that higher summed scores are indicative of greater body image flexibility. (All items are reverse scored).

APPENDIX F:

Functions of Exercise Scale

DiBartolo, P. M., Lin, L., Montoya, S., Neal, H., & Shaffer, C. (2007). Are there "healthy" and "unhealthy" reasons for exercise? Examining individual differences in exercise motivations using the function of exercise scale. *Journal of Clinical Sport Psychology*, 1(2), 93-120.

Directions for participants: Please indicate the degree to which each reason motivates you to exercise from 1 (*do not agree*) to 7 (*strongly agree*).

Weight and Appearance Subscale:

1. I exercise to work off unwanted calories.
2. I exercise because I want to be thin.
3. Exercise helps me control my weight.
4. It makes my clothes fit better.
5. I'm worried I'll gain weight if I stop exercising.
6. I feel like I need to exercise after I eat unhealthy foods.
7. I exercise because I want to look good.
8. I will look better in a bathing suit if I exercise.
9. I feel bad about myself if I don't exercise.

Health and Enjoyment Subscale:

1. I like the challenge.
2. I really have fun when I am exercising.
3. I exercise to gain a competitive edge in sports.
4. I want to be strong and healthy.
5. I exercise to improve my physical stamina.
6. I want to learn new skill.
7. Exercise releases tension.

Scoring: For each subscale average the responses. Higher scores indicate a higher motivation for the respective exercise motivation.

APPENDIX G:

Intuitive Exercise Scale

Reel, J. J., Galli, N., Miyairi, M., Voelker, D., & Greenleaf, C. (2016). Development and validation of the intuitive exercise scale. *Eating Behaviors*, 22, 129-13

For each item, please select the answer that best characterizes your attitude.

Response Scale: Strongly disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly agree (5)

1. I stop exercising when I feel pain.
2. I find myself exercising when I'm feeling negative emotions (for example, anxious, depressed, or sad) even when I don't feel like exercising.
3. I find myself exercising when I am lonely, even when I do not feel like exercising.
4. I trust my body to tell me when to exercising.
5. I trust my body to tell me what type of exercise to do.
6. I stop exercising when I am fatigued.
7. I trust my body to tell me how much exercise to do.
8. I use exercise to help soothe my negative emotions.
9. I find myself exercising when I'm stressed out, even when I've already exercised.
10. I incorporate a variety of physical activities into my exercise plan.
11. When my body feels tired, I stop exercising.
12. I enjoy different types of physical activities when I exercise.
13. I engage in a variety of different types of exercise.
14. I use exercise to distract myself from or avoid negative emotions.

Scoring: Reverse score items on the Emotional Exercise subscale (items 2,3,8,9,14). Then average the scores to determine how intuitively individuals engage in exercise behavior.

APPENDIX H:

Exercise Behavior Log

Directions for participants: For the previous 7 days, for each day please list the day of the week, the type of exercise you participated in, and how long (duration) you performed that exercise in the table below. If you did not complete any exercise for a particular day please write "none".

	Day of the Week	**Type(s) of Exercise**	**Duration of Exercise**
Example:	Thursday	Running Walking	25 minutes 10 minutes
Yesterday:			
Day before yesterday:			
3 days ago:			
4 days ago:			
5 days ago:			
6 days ago:			
7 days ago:			

Scoring of this log would be based upon the Compendium of Physical Activities (Ainsworth et al., 2011) to determine MET minutes per week.

APPENDIX I:

MET Values Used to Calculate MET Minutes per Week

Code	METs	Major Heading	Specific Activities
01030	8.0	bicycling	bicycling, 12-13.9 mph, leisure, moderate effort
02022	3.8	conditioning exercise	calisthenics (e.g., push ups, sit ups, pull-ups, lunges), moderate effort
02040	8.0	conditioning exercise	circuit training, including kettlebells, some aerobic movement with minimal rest, general, vigorous intensity
02045	3.5	conditioning exercise	Curves ™ exercise routines in women
02048	5.0	conditioning exercise	Elliptical trainer, moderate effort
02054	3.5	conditioning exercise	resistance (weight) training, multiple exercises, 8-15 repetitions at varied resistance
02060	5.5	conditioning exercise	health club exercise, general (Taylor Code 160)
02065	9.0	conditioning exercise	stair-treadmill ergometer, general
02071	4.8	conditioning exercise	rowing, stationary, general, moderate effort
02090	6.0	conditioning exercise	slimnastics, jazzercise
02101	2.3	conditioning exercise	stretching, mild
02105	3.0	conditioning exercise	pilates, general
02143	4.0	conditioning exercise	video exercise workouts, TV conditioning programs (e.g., cardio-resistance), moderate effort
02150	2.5	conditioning exercise	yoga, Hatha
03010	5.0	dancing	ballet, modern, or jazz, general, rehearsal or class
03015	7.3	dancing	aerobics, general
03019	8.5	dancing	bench step class, general
03025	4.5	dancing	ethnic or cultural dancing (e.g., Greek, Middle Eastern, hula, salsa, merengue, bamba y plena, flamenco, belly, and swing)
12010	6.0	running	jog/walk combination (jogging component of less than 10 minutes) (Taylor Code 180)
12020	7.0	running	jogging, general
12150	8.0	running	running, (Taylor code 200)
15055	6.5	sports	basketball, general
15055	6.5	sports	bowling, (Taylor Code 390)
15255	4.8	sports	golf, general

15430	10.3	sports	martial arts, different types, moderate pace (e.g., judo, jujitsu, karate, kick boxing, tae kwan do, tai-do, Muay Thai boxing)
15530	7.0	sports	racquetball, general (Taylor Code 470)
15600	3.5	sports	skydiving, base jumping, bungee jumping
15610	7.0	sports	soccer, casual, general (Taylor Code 540)
15670	3.0	sports	tai chi, qi gong, general
15700	3.5	sports	trampoline, recreational
17082	5.3	walking	hiking or walking at a normal pace through fields and hillsides
17165	3.0	walking	walking the dog
17302	4.8	walking	walking, for exercise, 3.5 to 4 mph. With ski poles, Nordic walking, level, moderate pace
18240	5.8	water activities	swimming laps, freestyle, front crawl, slow, light or moderate effort
18355	5.5	water activities	water aerobics, water calisthenics

Note. MET values used in the present study were assigned based upon the specific activities rather than the major heading. All content is from the 2011 Compendium of Physical Activities (Ainsworth et al., 2011).

APPENDIX J:

Summary of Additional Intercorrelations

Intercorrelations between Sociodemographics and Positive Body Image

Few sociodemographic variables were associated with the facets of positive body image measured in this study. Body appreciation, measured using the Body Appreciation Scale–2 (BAS-2), was positively correlated with age and race indicating was body appreciation higher in older women, and was higher for Caucasian women. Body appreciation was also negatively correlated with BMI indicating as body appreciation increases, BMI tends to be lower. Broad conceptualization of beauty, as measured by the Broad Conceptualization of Beauty Scale, was negatively correlated with age and positively correlated with BMI suggesting that women who have a broader conceptualization of beauty tend to be younger and have a higher BMI. The third facet of positive body image, filtering information in a body protective manner was indirectly assessed with the Body Image - Acceptance and Action Questionnaire. Women's scores on the Body Image - Acceptance and Action Questionnaire were positively correlated with age, and negatively correlated with BMI, suggesting that women who do not allow their ideas about the body interfere with their day tend to be older and have a lower BMI, respectively.

Intercorrelations Between Sociodemographics, Intuitive Exercise, and Exercise Behavior

Age, race, and income were positively correlated with women's overall score on the Intuitive Exercise Scale, suggesting that older women, Caucasian women, and those with a higher income tend to exercise more intuitively than other women. No other sociodemographic variables were correlated with women's scores on the Intuitive Exercise Scale. Education was positively correlated with women's exercise behavior, and BMI was negatively correlated with exercise behavior suggesting that women who have a higher education level and women who have a lower BMI tend to engage in higher levels of exercise behavior, respectively.

Intercorrelations Between Measures of Positive Body Image

      Women's scores on the Body Appreciation Scale–2 were significantly correlated with their scores on both the Broad Conceptualization of Beauty Scale and the Body Image - Acceptance and Action Questionnaire. These relationships suggest that women with higher levels of body appreciation tend to conceptualize beauty more broadly and continue to enjoy their day despite their feelings toward the body. The Broad Conceptualization of Beauty Scale and Body Image - Acceptance and Action Questionnaire were not significantly correlated.

Intercorrelations between Intuitive Exercise and Exercise Behavior

      Intuitive exercise and exercise behavior were not significantly related to one another.

APPENDIX K:

Discussion of Exploratory Regression

To address the concern that sociodemographic variables and BMI may influence the outcome of the regression analyses, the present study included an additional analysis to determine how covariates would affect a simplified model. The simplified model included body appreciation, health and enjoyment motives for exercise, and weight and appearance motives for exercise as well as the interactions between body appreciation and each motive for exercise. In this analysis, the covariates were not introduced until the final step of the regression; thus, allowing the researcher to evaluate the impact covariates had on the relationship between body appreciation as well as motives for exercise and exercise behavior. Prior to covariates being introduced in the model, body appreciation was not a statistically significant predictor of exercise behavior. The findings do not align with the findings of Homan and Tylka (2014), as exercise behavior was a positive predictor of body appreciation, and the interaction between exercise behavior and appearance motives for exercise, was a negative predictor of body appreciation. That is, women who had the lowest appearance motives for exercise consistently had the highest body appreciation regardless of exercise frequency where as women with the highest appearance motives had the lowest body appreciation despite exercise frequency. In this study, once the covariates were included in the model in the final step, health and enjoyment motives for exercise remained a significant positive predictor of exercise behavior; however, education was positively associated, and BMI was negatively associated with exercise behavior. Although the patterns of significance did not change for major study variables with the inclusion of covariates, because some sociodemographic variables were predictors of exercise behavior they should be included in future analyses examining the relationships between positive body image and exercise behavior.

APPENDIX L:

UWM IRB Approval

UNIVERSITY of WISCONSIN

UW MILWAUKEE

Department of University Safety & Assurances

Melissa Spadanuda
IRB Manager
Institutional Review Board
Engelmann 270
P. O. Box 413
Milwaukee, WI 53201-0413
(414) 229-3173 *phone*
(414) 229-6729 *fax*

http://www.irb.uwm.edu
spadanud@uwm.edu

New Study - Notice of IRB Exempt Status

Date: February 8, 2018

To: Lori Klos, PhD
Dept: Kinesiology

Cc: Natalie Ramsey

IRB #: 18.181
Title: Exploring positive body image and motives for exercise as predictors for exercise behavior
and intuitive exercise among women

After review of your research protocol by the University of Wisconsin – Milwaukee Institutional
Review Board, your protocol has been granted Exempt Status under Category 2 as governed by 45
CFR 46.101(b).

This protocol has been approved as exempt for three years and IRB approval will expire on
February 7, 2021. If you plan to continue any research related activities (e.g., enrollment of
subjects, study interventions, data analysis, etc.) past the date of IRB expiration, please respond to
the IRB's status request that will be sent by email approximately two weeks before the expiration
date. If the study is closed or completed before the IRB expiration date, you may notify the IRB by
sending an email to irbinfo@uwm.edu with the study number and the status, so we can keep our
study records accurate.

Any proposed changes to the protocol must be reviewed by the IRB before implementation, unless
the change is specifically necessary to eliminate apparent immediate hazards to the subjects. The
principal investigator is responsible for adhering to the policies and guidelines set forth by the
UWM IRB, maintaining proper documentation of study records and promptly reporting to the IRB
any adverse events which require reporting. The principal investigator is also responsible for
ensuring that all study staff receive appropriate training in the ethical guidelines of conducting
human subjects research.

As Principal Investigator, it is also your responsibility to adhere to UWM and UW System Policies,
and any applicable state and federal laws governing activities which are independent of IRB
review/approval (e.g., FERPA, Radiation Safety, UWM Data Security, UW System policy on
Prizes, Awards and Gifts, state gambling laws, etc.). When conducting research at institutions
outside of UWM, be sure to obtain permission and/or approval as required by their policies.

Contact the IRB office if you have any further questions. Thank you for your cooperation and best
wishes for a successful project

Respectfully,

Melissa C. Spadanuda

Melissa C. Spadanuda
IRB Manager

APPENDIX M:

Informed Consent – General

University of Wisconsin-Milwaukee
Informed Consent to Participate in Research

Study title: Exploring positive body image and motives for exercise as predictors for exercise behavior and intuitive exercise among women.

Researcher[s]: Lori Klos, Ph.D., R.D., Natalie Ramsey, B.S.

We're inviting you to participate in a research study. Participation is completely voluntary. If you agree to participate, you can always change your mind and withdraw. There are no negative consequences, whatever you decide.

What is the purpose of this study?
The purpose of this research is to gain an understanding of the relationships between positive body image and health promoting behaviors.

What will I do?
You will complete a series of questions regarding your thoughts, feelings, and attitudes toward your body and exercise as well as report your exercise engagement for the previous week. The survey will take approximately 30 minutes to complete.

Risks
Some questions may be considered personal or upsetting. You can skip any questions you don't want to answer, or stop the survey entirely. Resources for concerns regarding eating and body image include Health at Every Size https://haescommunity.com/ and the National Eating Disorders Association www.nationaleatingdisorders.org.

- There is the risk that online data may be hacked or intercepted. This is a risk you experience any time you provide information online. We're using a secure system to collect this data, but we can't completely eliminate this risk.
- Qualtrics Research Services could link your worker ID (and associated personal information) with your survey responses. Make sure you have read Qualtrics Research Services participant and privacy agreements to understand how your personal information may be used or disclosed. Qualtrics Research Services is an online crowdsourcing platform allowing researchers to recruit participants, administer surveys, and compensate participant through one platform.
- There is a chance your data could be seen by someone who shouldn't have access to it. We're minimizing this risk in the following ways:
    - We'll remove your personal identifying information and provide you with a study ID number.
    - We'll remove all identifiers after reviewing and approving the study for compensation.
    - We'll store all electronic data on a password-protected, encrypted computer.
    - The researchers will keep your identifying information separate from your research data, but we will be able to link it to you. We'll destroy this link after we finish collecting and analyzing the data.

Possible benefits: The proposed study will add to the growing body of literature by exploring positive body image in a multifaceted manner, as well as exploring functional and appearance motives for exercise. The data gleaned will provide guidance for future more complex and advanced statistical methods to see how concepts are interrelated. Further, it will guide and provide focus to future interventions aiming to increase exercise engagement that has the potential to be life-long due to a reduced risk of injury and greater enjoyment with movement.

Estimated number of participants: 500

How long will it take? The survey will take approximately 30 minutes to complete.

1

141

Costs: None

Future research: The researchers may conduct other analyses of your responses (after all identifying information has been removed). While you won't be informed of the details of these studies, any new projects will be submitted to the UWM Institutional Review Board (IRB) for review and approval.

Funding source: University of Wisconsin – Milwaukee College of Health Sciences is funding this research study.

Where will data be stored? On the researchers' password-protected computers in secure offices on the UWM campus.

How long will it be kept? Data will be kept for 7 years.

Who can see my data?
- We (the researchers) will have access to de-identified (no names, birthdate, address, etc.) so we can conduct the study and analyze the data.
- The Institutional Review Board (IRB) at UWM, the Office for Human Research Protections (OHRP), or other federal agencies may review all the study data. This is to ensure we're following laws and ethical guidelines.
- We may share our findings in publications or presentations. If we do, the results will be aggregate (grouped) data, with no individual results. If we quote you, we'll use a pseudonym (fake name).
- Qualtrics Research Services: Because Qualtrics owns the internal software, and to issue payment, Qualtrics will have access to your Qualtrics ID. There is a possibility Qualtrics could link your worker ID (and associated personal information) with your survey responses.

Contact information:
For questions about the research, complaints, or problems: Contact Lori Klos at lklos@uwm.edu or Natalie Ramsey at nmramsey@uwm.edu.

For questions about your rights as a research participant, complaints, or problems: Contact the UWM IRB (Institutional Review Board; provides ethics oversight) at 414-229-3173 or email irbinfo@uwm.edu.

Please print or save this screen if you want to be able to access the information later.
IRB #: 18.181
IRB Approval Date: 02/08/2018

Agreement to Participate
If you meet the eligibility criteria below and would like to participate in this study, click the button below to begin the survey. Remember, your participation is completely voluntary, and you're free to withdraw at any time.
- I am a female.
- I am at least 18 years old.
- I am a citizen of the United States.
- I can communicate fluently in English.
- I am not currently pregnant or breastfeeding.
- I have not been pregnant within the previous 12 months.
- I do not have a history of an eating or exercise-related disorder.
- I do not currently have any physical limitations impacting my ability to participate in exercise.
- I do not currently have a chronic disease impacting my participation in exercise.

2

APPENDIX N:

Informed Consent- No Positive Body Image

University of Wisconsin-Milwaukee
Informed Consent to Participate in Research

Study title: Exploring positive body image and motives for exercise as predictors for exercise behavior and intuitive exercise among women.

Researcher[s]: Lori Klos, Ph.D., R.D., Natalie Ramsey, B.S.

We're inviting you to participate in a research study. Participation is completely voluntary. If you agree to participate, you can always change your mind and withdraw. There are no negative consequences, whatever you decide.

What is the purpose of this study?
The purpose of this research is to gain an understanding of the relationships between positive body image and health promoting behaviors.

What will I do?
You will complete a series of questions regarding your thoughts, feelings, and attitudes toward your body and exercise as well as report your exercise engagement for the previous week. The survey will take approximately 30 minutes to complete.

Risks
Some questions may be considered personal or upsetting. You can skip any questions you don't want to answer, or stop the survey entirely. Resources for concerns regarding eating and body image include Health at Every Size https://haescommunity.com/ and the National Eating Disorders Association www.nationaleatingdisorders.org.
- There is the risk that online data may be hacked or intercepted. This is a risk you experience any time you provide information online. We're using a secure system to collect this data, but we can't completely eliminate this risk.
- Qualtrics Research Services could link your worker ID (and associated personal information) with your survey responses. Make sure you have read Qualtrics Research Services participant and privacy agreements to understand how your personal information may be used or disclosed. Qualtrics Research Services is an online crowdsourcing platform allowing researchers to recruit participants, administer surveys, and compensate participant through one platform.
- There is a chance your data could be seen by someone who shouldn't have access to it. We're minimizing this risk in the following ways:
  - We'll remove your personal identifying information and provide you with a study ID number.
  - We'll remove all identifiers after reviewing and approving the study for compensation.
  - We'll store all electronic data on a password-protected, encrypted computer.
  - The researchers will keep your identifying information separate from your research data, but we will be able to link it to you. We'll destroy this link after we finish collecting and analyzing the data.

Possible benefits: The proposed study will add to the growing body of literature by exploring positive body image in a multifaceted manner, as well as exploring functional and appearance motives for exercise. The data gleaned will provide guidance for future more complex and advanced statistical methods to see how concepts are interrelated. Further, it will guide and provide focus to future interventions aiming to increase exercise engagement that has the potential to be life-long due to a reduced risk of injury and greater enjoyment with movement.

Estimated number of participants: 500

How long will it take? The survey will take approximately 30 minutes to complete.

1

Costs: None

Future research: The researchers may conduct other analyses of your responses (after all identifying information has been removed). While you won't be informed of the details of these studies, any new projects will be submitted to the UWM Institutional Review Board (IRB) for review and approval.

Funding source: University of Wisconsin – Milwaukee College of Health Sciences is funding this research study.

Where will data be stored? On the researchers' password-protected computers in secure offices on the UWM campus.

How long will it be kept? Data will be kept for 7 years.

Who can see my data?
- We (the researchers) will have access to de-identified (no names, birthdate, address, etc.) so we can conduct the study and analyze the data.
- The Institutional Review Board (IRB) at UWM, the Office for Human Research Protections (OHRP), or other federal agencies may review all the study data. This is to ensure we're following laws and ethical guidelines.
- We may share our findings in publications or presentations. If we do, the results will be aggregate (grouped) data, with no individual results. If we quote you, we'll use a pseudonym (fake name).
- Qualtrics Research Services: Because Qualtrics owns the internal software, and to issue payment, Qualtrics will have access to your Qualtrics ID. There is a possibility Qualtrics could link your worker ID (and associated personal information) with your survey responses.

Contact information:
For questions about the research, complaints, or problems: Contact Lori Klos at lklos@uwm.edu or Natalie Ramsey at nmramsey@uwm.edu.

For questions about your rights as a research participant, complaints, or problems: Contact the UWM IRB (Institutional Review Board; provides ethics oversight) at 414-229-3173 or email irbinfo@uwm.edu.

Please print or save this screen if you want to be able to access the information later.
IRB #: 18.181
IRB Approval Date: 02/08/2018

Agreement to Participate
If you meet the eligibility criteria below and would like to participate in this study, click the button below to begin the survey. Remember, your participation is completely voluntary, and you're free to withdraw at any time.
- I am a female.
- I am at least 18 years old.
- I am a citizen of the United States.
- I can communicate fluently in English.
- I do not consider myself to have a positive body image.
- I am not currently pregnant or breastfeeding.
- I have not been pregnant within the previous 12 months.
- I do not have a history of an eating or exercise-related disorder.
- I do not currently have any physical limitations impacting my ability to participate in exercise.
- I do not currently have a chronic disease impacting my participation in exercise.

2