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Merging Two Scales: A Comprehensive Measure of Physical Appearance-Related Social Anxieties

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MERGING TWO SCALES: A COMPREHENSIVE MEASURE OF PHYSICAL
APPEARANCE-RELATED SOCIAL ANXIETIES

by

Kimberly Allen Smith

A Dissertation
Submitted to the Graduate School,
the College of Education and Human Sciences
and the School of Education
at The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

Approved by:

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ABSTRACT

Physical appearance-related social anxieties have been identified as feelings individuals experience in general and in different social situations based on their outward appearance. Two instruments have been used to assess the construct of social anxiety, the social physique anxiety scale (SPAS) and the social appearance anxiety scale (SAAS). This cross-sectional study implemented a non-experimental design with randomization of the total sample (n=1214) into three equal groups. Participants were recruited using a crowdsourcing sampling platform, MTurk. This study was broken into three Phases: confirming the factor models for the SPAS and SAAS, using an exploratory technique to determine the factor structure of combining the SPAS and SAAS, and confirming the appropriate measurement model derived from the combination of the two scales. Demographic variables were collected in order to establish potential differences on the SPAS and SAAS among demographic characteristics of the participants. Results showed there was a significant difference in total SPAS and SAAS scores among biological sex, gender identity, and exercise behaviors. Phase 1 confirmed the measurement model for both the SPAS and SAAS independently. Findings exhibited that the high-order two-factor model was the best fitting model for the SPAS data and confirmed the SAAS had a unidimensional factor structure but that best fit was achieved through correlation of three sets of error terms. Phase 2 tested the SPAS and SAAS as a combined measure, using an exploratory factor analysis with two and three fixed factors. Results indicated that the three-factor solution was the most parsimonious model ending with 20 items. Phase 3 used a confirmatory factor analysis to establish the three-factor model was an appropriate measurement model but concluded with the higher-order three-factor model being the

best fit for the data. Because the SPAS and SAAS use summed scores to report overall levels of physical appearance-related anxiety, the higher-order models functioned better over the correlated factor models. The SPAS and SAAS are accurate instruments in assessing levels of physical appearance-related anxiety as independent measures and as a combined scale. The use of the combined scale may give a more encompassing measure of one's overall level of physical appearance-related anxiety.

KEYWORDS: social physique anxiety, social appearance anxiety, factor validity, measurement model, MTurk

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DEDICATION

I would like to dedicate this dissertation to my family and close friends that have supported me throughout my journey to becoming a Ph.D.

To my mom, Ann Marie Allen, your never-ending faith in me and constant encouragement and motivation to keep moving forward has given me the strength to pursue my biggest dreams. Thank you for being my sounding board when I needed assurance, my biggest cheerleader throughout all of the challenges I have faced over the years, for never letting me take the easy way out, and for always reminding me that a pedicure and a glass of wine is the best remedy for relieving stress.

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LIST OF ABBREVIATIONS

<i>AC</i>	Attention Checks
<i>CDC</i>	Centers for Disease Control and Prevention
<i>CFA</i>	Confirmatory Factor Analysis
<i>CFI</i>	Comparative Fit Index
<i>CST</i>	Central Standard Time
<i>EFA</i>	Exploratory Factor Analysis
<i>HIT</i>	Human Intelligence Task
<i>IRB</i>	Institutional Review Board
<i>ML/MLE</i>	Maximum Likelihood Estimation
<i>MTurk</i>	Amazon Mechanical Turk
<i>NE</i>	Expectation of Negative Evaluation
<i>PC</i>	Physique Presentation Comfort
<i>PDT</i>	Pacific Daylight Time
<i>RMSEA</i>	Root-Mean-Square Error of Approximation
<i>SAA</i>	Social Appearance Anxiety
<i>SAAS</i>	Social Appearance Anxiety Scale
<i>SEM</i>	Structural Equation Modeling
<i>SI</i>	Situational Influence
<i>SPA</i>	Social Physique Anxiety
<i>SPAS</i>	Social Physique Anxiety Scale
<i>SRMR</i>	Standard Root Mean Squared Residual
<i>TLI</i>	Tucker-Lewis Index

CHAPTER I – INTRODUCTION

Background

Throughout most of the 20th century, the standard portrayal of American women in the media was an image that mirrored “white, young, tall, firm but not excessively muscular, and simultaneously curvaceous, full-breasted, and extremely thin,” (Adams, Behrens, Gann, & Schoen, 2017). By the end of the century, along with these features, characteristics such as professionalism, class, and imposing a sense of authority formed the foundation that the media reflected (Adams et al., 2017). Western men and women were often seen wearing suits in business-type professions, and it was rare to see a woman bare shouldered in prestigious work environments, such as public news broadcasting. In the 21st century, the media has started to shift from this conventional style, as broadcasters and even business professionals are straying away from the elite uniform that previously had implied authority to adopting the new styles and trends prevalent in today’s fashion (Adams et al., 2017). While men’s business attire still is expected to consist of a suit, women have started wearing sleeveless dresses, tighter and more revealing clothing, and trendy outfits in professional work environments. These characteristics have highlighted the aspects of beauty and attractiveness that may trigger unrealistic expectations of women based solely on appearance (Choate, 2005). Forbes, Adams-Curtis, Rade, and Jaberg, (2001) concluded that the internalization of the ideal female figure and appearance being portrayed in the media was predictive of increases in body dissatisfaction seen among women, particularly college females.

Within the past decade, there has been a shift in media influence towards a newly evolved health and fitness trend, emphasizing body image, appearance, and physique

(Linder & Daniels, 2018). Ersöz (2016) suggested there are many factors within the media, specific to the latest health and fitness trend that has led people to emphasize certain life goals that may not be realistically attainable. Even decades ago, Ryan and Deci (2000) suggested that commercial media exposure could trigger a focus on materialism, which would also disrupt people's sense of well-being. Crawford and Eklund (1994) also suggested the need to achieve the appearance that is desired, such as being fit or athletic, reflected motives of acquisitive self-presentation. Based on the research of Hoffner (1996), some adults idolize certain public figures in the media and have a desire to be thought of and compared favorably to them. The concept of wishful identification is what initiates the adoption of certain behaviors, attitudes, and characteristics of the people they admire (Hoffner, 1996).

In a free-market system where it is theorized that the consumer is in charge of transactions, the tables have been turned; in practice the consumer is often the victim of powerful corporations who fine-tune their marketing to increase profits and gain market share (T. O'Brien, personal communication, March 25, 2020). Marketing strategists have found that using sexualized media to promote their brand or product has been effective at luring consumers because they have learned that some women specifically, aspire to achieve the ideal body image of the models that the media are portraying (Linder & Daniels, 2018). Although there has been concern for how this media-driven strategy could affect the young (Dittman, 2002; Story & French, 2004), and those who have pre-existing lower self-esteem, anxiety, or depression (Atalay, Altan, & Gençöz. 2008; Russel & Cox, 2013; Watt & Konnert, 2018) there has been no previous investigation on the impact of this sexualized-media content specifically on women (Jones & Crawford,

2006). This was perhaps because there has not been a measure identified to specifically capture individuals' critical perspective of themselves, in regard to their physical appearance, based on media-driven cultural expectations (Linder & Daniels, 2018; Warren, 2017).

As a result of living in a new media-driven culture, women have become more apt to view their bodies as an object (Choma, Visser, Possebon, Bogaert, Busseri, & Sadva, 2010). It has been found that females who feel their physique and appearance fall short of what others expect may express related anxieties in social settings because they feel they do not measure up to the culturally accepted ideal and physically attractive body (Sabiston, Crocker, & Munroe-Chandler, 2005). Therefore, by allowing themselves to focus on being evaluated by others in this manner, women are also subject to what is known as self-objectification (Linders & Daniels, 2018). Conceptually speaking, self-objectification is the idea of individuals viewing themselves not as human beings, but rather as objects. The idea of being viewed as an object in turn has made individuals more at risk for developing social anxieties or even depression, which has become prevalent with the rise in frequent engagement with the media (Linders & Daniels, 2018).

One possible contributing factor that has influenced this shift in focus to the physical aspects of appearance is the media-based exposure to the different idolized public figures, who are being sexually objectified (Aubrey, 2006). Linder and Daniels (2018) made the argument that mental health practitioners needed a way to address problems associated with media influence and self-objectification in men and women. Basow, Foran, and Bookwala (2007) supported that because of today's media influence, women face unique body image concerns that have appeared to be driven by the

sociocultural messages in regard to thinness. Along with the media, social groups, such as campus organizations or clubs, the presence of increased sexualized gender stereotypes has heightened the chance of one experiencing self-objectification and body dissatisfaction (Snapp, Hensley-Choate, & Ryu, 2012). This focus on physical attractiveness and sexual appeal has perhaps influenced women more than it ever has before (Linder & Daniels, 2018).

Focht and Hausenblas (2004) proposed that in all facets of social environments and interactions, reports have shown an increase in individuals becoming conscious and aware of their impression's recognition by others. In 1954, Leon Festinger proposed individuals have an instinctive ambition to compare and evaluate themselves to others. His theory of social comparison supports the notion that individuals would experience anxiety or other mental health related issues if they viewed their appearance as being mediocre when comparing themselves to others, particularly in regard to media-driven cultural expectations (Koyunco, Tok, Canpolat, & Catikkas, 2010). Consequently, because society has become heavily reliant on social media to obtain new information and set goals, reports of individuals experiencing different forms of anxiety and depression have become increasingly predominant (Focht & Hausenblas, 2004).

Influence of Exercise

For decades, exercise has been positively linked to physical and psychological health benefits (Loi, Dow, Ames, Moore, Hill, Russell, & Lautenschlager, 2014). The Center for Disease Control and Prevention (CDC) recommends that adults should be exercising at least 150 minutes a week, which in turn decreases risk for morbidity (Hagger, Hein, & Chatzisarantis, 2011). Fox (1999) found exercise could also be

effective in improving mental well-being, largely through the enhancement of mood and self-assessments. Brown (2000) explained that regular participation in exercise often enhanced one's physique, which led to a reduction in weight, increased muscle tone, and an increase in self-esteem and confidence. Despite these benefits seen from exercise, the majority of Americans fail to participate in the amount of physical activity deemed necessary by the CDC (Brunet & Sabiston, 2009). Given the prevalence of inactivity, research studies have focused on how to increase individuals' motivation to adopt a healthier lifestyle by including regular daily activity (Hagger et al., 2011).

In the past several decades, a multitude of studies have documented the influences that exercise and physical activity have on an individual's psychological and physical health, quality of life, and well-being (Miles, 2007). Engaging in exercise for health-based reasons has been associated with body image concerns and endorsement of disordered eating, more than exercising for appearance-motivated reasons (Gonçalves & Gomes, 2012; Vartanian et al., 2012). Evidence suggested that exercising for one's health was possibly a protective mechanism against experiencing feelings of body image dissatisfaction or engaging in harmful behaviors such as those associated with eating disorders (Gonçalves & Gomes, 2012; Vartanian et al., 2012). Therefore, health-related motives for exercise have been considered intrinsic motives, whereas physical appearance has appeared to drive extrinsic motives (Vartanian et al., 2012).

There has been a consistent pattern of negative psychological conditions, such as anxieties and depression, that have been linked to appearance and, therefore, appearance-related motives to exercise or even lose weight (Vartanian, Wharton, & Green, 2012). Media influence has been functioning as an external motivation to exercise, suggested by

recent reports from areas in the health and exercise fields (Hauff, 2016). Additionally, these authors and others have found that social factors could alter females' body image assessments and create body image disturbances (Vaes, Paladino & Puvia, 2011). Yet, there has been no investigation into how social media and social comparisons from social media exposure, have impacted changes in body image and exercise behaviors (Hauff, 2016).

Individuals who are motivated by appearance-based reasons have been shown to have lower self-esteem, higher body image dissatisfaction, and at a higher risk for developing body dissatisfaction and eating disorders (Vartanian et al., 2012). More specifically, it has been shown that body image dissatisfaction has been higher and continued to increase in women across younger age groups, often leading to problematic changes in dieting and eating behaviors, (Adams et al., 2017). Vartanian et al. (2012) reported that the association between appearance-motivated exercise and body image was a unique relationship. Hurst, Dittmar, Banerjee, and Bond (2017), suggested that psychological mindsets could be triggered by feelings of guilt to conform to sociocultural standards, contributing to an indirect relationship between appearance-based exercise and body image concerns.

As compared to general appearance concerns, such as hair color, skin tone, or facial features, "body ideals" refer to specific, desired body types such as thinness or muscle tone (Crane, MacNeil, Lally, Ford, Bujak, Brar, Kemp, Raha, Steinberg, & Tarnopolsky, 2015). Exercise is rooted in the internalization of specific body ideals and has been associated with developing poor psychological health in women (Thome & Espelage, 2008). Individuals who are motivated to attain characteristics of the athletic

body ideals are at risk for misuse of dieting and increased obligatory exercise (Bell, Donovan, & Ramme, 2016). Whereas exercise motivation can stem from a variety of different areas, there appeared to be less focus for some on the benefits of health-related behaviors and more so on one's awareness of their image, due to the media-driven upsurge in appearance-related expectations.

Variations of Social Anxieties

Individuals' assessments of their appearance have been critical factors in how they believed they were being viewed by others, regardless of their actual physical appearance (Warren, 2017). Therefore, the perceived flaws in appearance was a contributing factor causing individuals with social anxieties to fear public criticism. Warren (2017) suggested that people with a negative internalized view of themselves regarding appearance, experienced different forms of anxieties in different social situations. These factors such as social interactions or environments are conceptually thought of as situational influences. Social anxiety disorder has been one of the highest diagnosed among the anxiety disorders (Levinson & Rodebaugh, 2012). Gilbert and Meyer (2005) found a greater association with fear of negative evaluation and drive for thinness than for depression. Additionally, that fear of negative evaluation was considered to be a cognitive risk factor indicating social anxiety.

One of the predominant forms of social anxiety as it pertains to physical appearance is known as social physique anxiety (SPA) (Hart, Leary, & Rejeski, 1989). SPA is described as the anxiety that individuals experience when they feel their body structure (physique) is being negatively evaluated by others. This type of social anxiety is rather unique because SPA is determined by two mechanisms; the way an individual

wants to be perceived by others (physique presentation comfort) combined with the actual response of the individual from other's opinions of them (expectations of negative evaluation) (Hart et al., 1989). Therefore, it is understood that SPA is the product of blending behavioral traits and situational factors, which affects the level or intensity of the anxiety (Schultz, 2003). This process of evaluating what individuals report on 'actual' body self and their 'ideal' body self, which includes what they want to look like, is known as ideal discrepancy. Much of the research found evaluating SPA has been conducted from the perspective that the further one is from one's ideal body the more at risk they become for experiencing SPA (Woodman & Steer, 2011). Vartanian et al. (2012) found that those wanting to improve appearance, as opposed to improve health, tend to have higher levels of disordered eating, lower self-esteem and body dissatisfaction, decreased psychological well-being, and increased SPA (Crawford & Eklund, 1994).

Social appearance anxiety (SAA) (Hart, Flora, Palyo, Fresco, Holle, & Heimberg, 2008) is a concept related to and associated with SPA. SAA has been defined as the fear of negative evaluation based on one's appearance, which falls under the category of SPA that evaluates expectations of negative evaluation. Given the similarity between these anxieties, the SAA was assessed by some of the same authors who contributed to the research on SPA (Hart et al., 2008). However, instead of focusing on specific physique concerns, SAA was intended to have a broader focus of general appearance, along with the concerns that were associated with appearance-based attractiveness (Warren, 2017). This author also alluded to the concept of SAA being unique in that it evaluated both an external perspective of body image and an internal fear of social anxiety. SAA has been

described as a psychometric property of social anxiety and understood to be a product of internalization of socio-cultural beauty standards (Warren, 2017). With the growing health and fitness trend seen in social media, individuals such as fitness “models” and “social influencers” have been modeling unrealistic standards for females, which in turn has negatively influenced the way women perceive their bodies (Koyuncu et al., 2010). Along with an increase in body image dissatisfaction among young women, as well as men, the negative psychological impacts such as SPA and SAA development, and problematic changes in dieting and exercise behaviors (Adams et al., 2017), have been attributed to the changes in the media-driven culture.

Models of social anxiety illustrate how subsets such as SPA and SAA stem from heightened fears of negative evaluation in social situations in which one is being negatively evaluated on their body image and appearance (Levinson & Rodebaugh, 2012). An important component of these perspectives again, is the influence from the situation one is in when experiencing negative evaluation. The need to evaluate the constructs associated with these unique social anxieties led to the development of specific instruments tailored to certain aspects of the awareness of body image and appearance.

Measuring Social Anxieties

The social physique anxiety scale (SPAS), developed by Hart et al. (1989), was created in order to determine the level of social anxiety that one experiences based on the fear of having their physique evaluated negatively by others (Schultz, 2003). The instrument has now further been classified as a trait-scale, due to the latent variability properties which researchers do not have the ability to directly observe (Schultz, 2003).

Therefore, the authors claimed this widely used scale has been helpful only in determining one's anticipated reaction to different environments and behaviors.

The social appearance anxiety scale (SAAS) was created to examine aspects of appearance as it pertains to looks and body shape, whereas the SPAS focused on a narrower understanding of physique-related issues (Hart et al., 2008). SAA was shown to positively correlate with measures of social anxiety and negative body image (Claes, Hart, Smits, Van den Eynde, Mueller & Mitchell, 2011) but at the time, there was no evidence of a distinct overlap among other constructs such as those similar to SPA. Instead, Hart et al. (2008) implied SAA tapped into a unique proportion of social anxiety, beyond that of negative body image, depression, personality, and affect (Levinson & Rodebaugh, 2012). Unlike SPA, SAA has been thought to address factors other than body structure and muscle tone, and more appearance-related aspects such as facial features, hair, and complexion (Levinson & Rodebaugh, 2012).

It has been shown that both the SPAS and SAAS each individually show convergent validity with other scales measuring these constructs. Scales such as the Body Shape Questionnaire (Cooper, Taylor, Cooper, & Fairbum, 1987) Brief Fear of Negative Evaluation Scale (Leary, 1983), the Multidimensional Body-Self Relations Questionnaire (Cash, 2000), and the Marlowe-Crowne Social Desirability Scale (Reynolds, 1982) were all used to help provide information on constructs similar to SPA and SAA. Additionally, the SAAS has repeatedly been positively and significantly correlated with body image dissatisfaction and fear of negative evaluation (Dakanalis, Carra`, Calogero, Zanetti, Volpato, Riva, Clerici, & Cipresso, 2016; Levinson & Rodebaugh, 2012; Warren, 2017). Given that the SPAS has been identified as a measure of body image dissatisfaction, there

has been reason to believe the SAAS may be tapping into some of the same constructs. However, there has been no known research that looks at this potential overlap of constructs if these two scales were combined.

Problem Statement

The SPAS has commonly been used to assess SPA in the area of sport and exercise science. Although the SPAS has afforded researchers valuable information and data to test different aspects of social anxieties, the initial development of the scale was based on a small sample size. Since then, little evidence has been found for the validity and factor structure of the SPAS outside of the population of young, college-aged females. Similarly, the SAAS is subject to the same scrutiny because the samples used in developing this instrument were predominately college-aged females as well. Only one validation study has been completed that specifically examined the factor structure of the SAAS since its creation in 2008. But, the sample that Levinson and Rodebaugh (2012) used was also comprised of only female college students. Therefore, further research on the SPAS and SAAS using a diverse sample was warranted.

The literature has failed to provide useful and meaningful information on the SPAS and SAAS from samples that are diverse in gender and age. Whereas convenience sampling was an easier and more time-efficient method of collecting data, results obtained using the original forms of these instruments should not have been generalized to the general population. Yet, the SPAS has been used for thirty years, and the SAAS for over a decade. Despite the abundance of evidence regarding the SPAS, and the one study on the SAAS, the factor validity of these scales were still questionable (Crawford &

Eklund, 1994; Eklund, Kelley, & Wilson, 1997; Martin, Rejeski, Leary, McAuley, & Bane, 1997; McAuley & Burman, 1993; Molt & Conroy 2000, 2001; Warren, 2017). Consequently, it was necessary for researchers to investigate both of these scales using a sample that was diverse in gender and age in order to determine the factor structure that was applicable to a more general audience. Further, collecting data from previously omitted groups could provide information on the factor validity and investigate if the two scales produced invariant results across gender and age.

In contrast to the SPAS research conducted primarily in sport and exercise science, the SAAS research has evolved from a more clinical perspective. These scales were developed to assess social anxiety as it pertained to negative evaluation from both an internal and external perspective of the individual.

Measurement of SPA is based on an individual's external view of themselves, and the measurement of SAA is centered on an internal opinion of themselves. Because there has been evidence that supports the two scales were assessing qualities of both external and internal perceptions, there was a need to consider the potential overlap of constructs of the SPAS and SAAS. Adding a third component, situational influence, could provide another dimension to understanding an individual's fear of negative evaluation. Despite the arguments that the scales were assessing different constructs, physique and structure versus physical appearance (Hart et al., 2008; Warren, 2017), there has been no known literature that has examined these two scales in combination.

Purpose Statement

The goal of this study was to validate the factor structure of the SPAS and the SAAS. Crowdsourcing sampling was used to gather a diverse sample in order to examine these two instruments and to provide normative data for different genders and age groups. Also, this study explored to what extent these two scales could be merged in order to detect factors of social anxieties using a universal and comprehensive scale.

Research Questions

1. Using a diverse sample in gender and age, how many factors were supported by a confirmatory factor analysis of both the SPAS and the SAAS?
2. What normative data can be provided from the SPAS and the SAAS?
 - a. What was the average level of SPA for Males? Females?
 - b. What was the average level of SAA for Males? Females?
 - c. How did the levels of SPA and SAA differ according to age?
3. Using an exploratory factor analysis on a second sample, what was the factor structure of the combination of the SPAS and SAAS?
 - a. Was there an overlap in constructs in the SPAS and SAAS?
 - b. Did the data support the existence of a third factor, situational influence?
4. Using a confirmatory factor analysis on a third sample, did the proposed model hold as a valid universal measure of social anxiety?

Justification

Because it is plausible that young females are most vulnerable when it comes to body image, the ability to assess the constructs of SPA and SAA was important. More recently, there has been an increase in people who reported psychological distress, anxieties, and even depression as it pertained to being looked at by others (Warren, 2017). Psychological distress, anxiety, and depression have been prevalent for years in social situations, but these maladies are now being associated with images of beauty portrayed in social media (Adams et al., 2017; Warren, 2017) thus increasing pressure on women to meet these standards. The new-formed cultural expectations and pressures of the media have shown to have significant ramifications for young adults, which could expose or heighten levels of anxieties or depression (Bekker & Boselie, 2002).

Since the development of the SPAS, the instrument has been under investigation by many researchers and has been criticized for the lack of evidence of construct validity and factor analyses using diverse samples (Molt & Conroy, 2000; 2001). These authors documented that, over the course of ten years, researchers have tested several factor models which seemingly fit the samples, respectively, but the findings were not consistent. Therefore, it would be beneficial to determine a factor structure reflective of a large, broader sample varying in gender and age. Evidence of unidimensional models, two-factor correlated and uncorrelated models, and a two-factor higher-order model have resulted in inconclusive findings, which has left the entire SPAS vulnerable to question (Molt & Conroy, 2000). Over the years, authors have continued to further examine the validity and factor structure of the SPA scale developed by Hart et al. (1989) but have used mostly samples of college-aged students.

There was a similar need to establish factor validity of the SAAS, because to date, there have been only five studies to do so. Though there has been variability in regard to the participant samples, each study concluded with different results. The range of samples have included American female college students, Turkish adolescents, Italian adolescents, Canadian gay men, and two clinical studies: one evaluating patients with eating disorders, and one with systemic sclerosis (Warren, 2017). Nonetheless, findings thus far have been compared to a young, female population. While it has been understood that the construct of SAA is useful in areas of body image and mental health (Warren, 2017), the SAAS score needs to be generalizable to other populations. By obtaining a large diverse sample, it would allow for researchers to establish norms for scoring and interpreting these measures, since there has been no evidence found regarding this aspect of measurement.

A key contribution needed regarding the SPAS and SAAS has been to provide evidence that includes samples from a diverse population, outside of young, often white, adult females. The over-representation of this demographic has been highly skewed towards college-aged individuals, and little evidence has been found that identifies SPA and SAA across the lifespan (Warren, 2017). Obtaining a more robust sample that is diverse in gender and age was a major component to this study. There has been an evident need to acquire information from individual's that experience these different forms of social anxiety in a sample that was more representative of the global population (Hart et al., 2008; Warren, 2017). In effort to collect a more universal sample, a crowdsourcing sampling method was employed. This particular sampling frame allowed for

participants to participate in a survey, via an online platform called Amazon Mechanical Turk (MTurk).

With the majority of the studies using these two scales being cross-sectional by design, there has been no investigation as to where the onset of developing SPA or SAA may have occurred. Given that SPA and SAA are relevant to a broad audience, it was important to understand where these developments originate. According to a study by Warren (2017), there has been a growing need to investigate potential sources, like social media, that have been thought to be what promoted these anxieties. Though the author suggested that the review of literature “indicates that being exposed to weight-based derogatory media may lead to increases in self-reported SAA in women,” (p.42) there has been no investigation into this problem. This further supported the need to better assess the development of these types of social anxieties due to media exposure, which could not be done with the existing data of majority college-aged females.

Another aspect to consider was related to the potential construct overlap of these two scales. Having a scale that could assess perceived presentation comfort, expectations for negative evaluation, and situational distress using appearance-based motives for exercise behaviors would be important for practitioners, researchers, and interdisciplinary studies. Despite the extensive investigation of these two scales, there has been only one known study to investigate the scales concurrently. Investigation into the ability to merge these two scales to potentially identify overlapping constructs using a sample more representative of the population could give more depth to the understanding of these constructs and provide practical significance for the use of these measures independently or as a combined instrument assessing SPA and SAA.

Theoretical Framework

The nature of SPA is highly personalized to the individual who is experiencing it. Since the creation of the SPAS by Hart, Leary, and Rejeski (1989) there has been a need to understand all aspects of social anxiety and how it pertains to mental health, motivation, and exercise behavior. Some of the psychological variables such as global self-efficacy, self-esteem, body dissatisfaction, weight dissatisfaction, fear of negative evaluation, and body cathexis, have been found to correlate well with SPA (Eklund & Crawford, 1994). Self-objectification theory has been determined to be the root of various negative outcomes such as body shame, risk for developing eating disorders, decreased self-esteem, depression, and anxiety (Choma et al., 2010; Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998; Slater & Tiggemann, 2012; Grabe, Hyde, & Lindberg, 2007) after repeated exposure to the media.

The phenomena of SPA and SAA have been grounded within social cognitive theory due to the varying nature of individuals' observations of themselves, the environment, and their exercise behavioral patterns (Bandura, Adams, & Beyer, 1977). Particularly, evidence has shown a shift towards the self-presentational branch of this theoretical base (Schultz, 2003). Self-presentation theory has provided the foundation for factors contributing to exercise motivation (Focht & Hausenblas, 2004; Schultz, 2003) as it pertains to the social anxieties, SPA and SAA.

According to Crawford and Eklund (1994), people engaged in exercise to enhance or maintain their physical appearance or in order to match a social identity or image, such as appearing fit or athletic (Leary, 1992). Supporting the presumed media-driven expectation, the two additional theories the SPAS and SAAS were built upon, included

aspects of self-determination theory and self-comparison theory (Crawford & Eklund, 1994). Authors have suggested that those who were externally motivated to exercise for appearance-based reasons were mimicking aspects of self-determination theory. Studies grounded in this theory have revealed that those with higher levels SPA were independent and motivated, which in turn, predicted higher physical activity levels (Ersöz, 2016).

Individuals who are driven to be viewed similarly to others tend to compare themselves to social influencers in the media and society, specifically to gauge their progress towards their self-imposed ideal image (Perfloff, 2014). “Social media domains and exercise settings provide a realm for individuals to compare themselves to others socially, physically, and in relation to exercise behavior,” Hauff (2016, p.21). This aspect clearly provided a link between exercise motivation and self-comparison as it pertains to the media.

Assumptions

The assumptions of this study were that the sample collected would be representative of the general population. Anyone was allowed to be an Amazon Mechanical Turk worker, as long as each individual met the guidelines set by Amazon. Also assumed was that the participants answering the questionnaires were thoroughly reading the statements and responding accordingly. The data collected did not include any identifying information and was kept anonymous and confidential. Additionally, it was assumed that the instruments being used in this study were accurately measuring the constructs for SPA and SAA.

Definition of Terms

Body affect – how one is satisfied with their physical self; related to concepts of body image and body esteem

Body concept – one's attitudes towards their body image

Body ideals – specific, desired body types such as thinness or muscle tone

Body image – one's mental picture of both their physical and functional characteristics

Expectation of negative evaluation – discrepancy between the actual responses of the individual compared to other's opinions of them

Ideal discrepancy – the difference between reported 'actual' body self and their 'ideal' body self, which includes what they want to look like

Physique presentational comfort – a level of comfort an individual will feel about their outward physical appearance, and how they believe to be perceived by others

Self-objectification – the idea of one viewing one's self not as a human being, but rather an object, and the focus on being evaluated by others in a manner that

Situational influence – the impact from the situation or environment in a social setting where one is subject to experiencing social anxieties

Social appearance anxiety – the fear of negative evaluation based on one's appearance, specifically outward appearance

Social physique anxiety – the anxiety that one experiences when they feel their body structure (physique) is being negatively by others

CHAPTER II – LITERATURE REVIEW

Today's Social Media

Social media has dramatically changed the way people go about their day-to-day lives. It is a platform that allows for individuals to gain access to news, information on products, network with others, and connect families and loved ones who are miles apart. Statistics from 2019 show there are 3.2 billion people using social media worldwide (Emarsys, 2019), which equates to roughly 42% of the current world population interacting with some form of media on a regular basis. On average, people are spending 2 hours and 22 minutes a day interacting with some type of media platform. Social media has become almost unavoidable, all powerful, and it appears to be here to stay (Hogue & Mills, 2019). With the prevalence and accessibility of all forms of media, it is important for practitioners in various settings such as schools, offices, and medical facilities, to have a global method of addressing the potential impact from exposure to certain media agendas. The SPAS and SAAS seem to provide information on constructs that are associated with negative impacts being seen from this new media driven culture.

Influence from Media Exposure on Body Image Perceptions

Findings from Linder and Daniels (2018) suggest there has been steadily increasing reports over the past decade of negative effects based on media exposure, such as one's body image being disrupted, and their self-esteem lowered. It is believed that the heightened media exposure is becoming more harmful to individuals due to the broad range of sexualized images being portrayed on social media, in addition to those found in advertising. Although both males and females being users of social networking sites, Perloff (2014) found that there seems to be a greater concern for the effect media has on

women's body image. Perloff (2014) examined the differences between gender on how people's opinion of their body image was being affected by the media. The author claimed women who have lower self-esteem are consistently striving for the perfect body, which makes them far more susceptible to developing anxieties, such as SPA, SAA, and depression. They are also being heavily influenced by media images of a thin ideal. Consistent with findings, the influence from the media, along with social situations where individuals are at a higher risk of their body or appearance being negatively evaluated, can trigger low self-esteem and thus lower psychological well-being (Adams et al, 2017; Warren, 2017; Yaman, Ç., 2017).

Sabiston and Chandler (2009) examined the relationship between fitness-related magazine advertisements and the sensitivities of body image in healthy-weight females. There were 211 undergraduate females from a university in southern Ontario who participated in this study. Body image opinions were assessed before and after seeing a variety of advertisements. The findings of this study concluded that the affective domain of body image awareness, also known as SPA, was subjective the most to the different fitness advertisements that were being viewed. Specifically, SPA levels increased in the individuals after they had been shown the fitness related advertisements.

Self-objectification is one negative impact that has been largely associated with the increasing exposure to sexualized media content, specifically in regard to females (Linder & Daniels, 2018). Although studies have shown that images illustrated with sport or performance have had positive effects on self-perception, these authors investigated how media images of athletes, in a performance and sexualized manner, while examining the individuals' self-objectification and physicality (Linder & Daniels, 2018). They found

participants who viewed the performance and sexualized images of athletes, indicated the sexualized images increased one's self-objectification, and images that were portraying performance yielded an increase in physicality self-descriptors. Additionally, they found women were more inclined to engage in peer- appearance conversations after viewing sexualized images, which highlights the potential negative influence from this type of media. Linder and Daniels (2018) also provided there were copious amounts of evidence that supported the argument that today's media is filled with sexualized content. Linder and Daniels (2018) also suggested that the prevalence of this form of media is gaining popularity and appears to be becoming problematic. SPA has been largely associated with body image, which is defined as "the mental picture one forms of one's body as a whole, including both its physical and functional characteristics and one's attitudes toward these characteristics, also referred to as body concept," (Body image, 2007, p.128).

With studies conducted specifically on the negative influence media has on women's self-image, there is hope for a potential positive impact media can have on self-image as well. In a study by Yu in 2014, 380 female college students were asked to take a web-based survey on the effects of viewing thin-idealized body images versus non-thin idealized body images. The results indicated that those who were exposed to the thin-idealized body image showed greater body dissatisfaction than those exposed to the non-thin idealized body images (Yu, 2014). The results of the study indicated that lower body dissatisfaction, when exposed to non-thin idealized body images, alludes to the idea of developing a greater positive body image. The author suggested by using non-idealized body images more in the media, it may lower the body dissatisfaction rates.

Media-Driven Health and Fitness Trend Yielding Unrealistic Expectations

Along with an increase in body image dissatisfaction among young women as well as men, the negative psychological impacts such as SPA and SAA development, and problematic changes in dieting and exercise behaviors (Adams et al, 2017), have been attributed to the changes in the media-driven culture. Some claim “the issue of whether people stand behind a behavior out of their interests and values, or do it for reasons external to the self, is a matter of significance in every culture and represents a basic dimension by which people make sense of their own and others’ behavior,” (Ryan & Deci, 2000, p.69).

Through the media, women have consistently received gender-specific cultural messages which conveyed a women’s physique and defined a large part of their personhood (Oswald & Lindstedt, 2006). This has become problematic, specifically for women. Individuals who started to perceive their appearance or physique deviating from the media-influences norm, were more at risk of experiencing internal distress (Snapp et al., 2012). It has been suggested that gender-related culture expectations are what lead to the increase in SPA and SAA among college students, and more specifically in females (Claes et al., 2011). However, SPA and SAA are not just impacting college-aged individuals. The same negative impacts have also been documented by adolescents and middle-aged adults.

Factors Contributing to Exercise Behavior

Motivation can be evaluated using several different methods, as each individual can be motivated by factors unique to them (Ryan & Deci, 2000). These authors

acknowledged that an individual's motivation is derived from social conditions which they have become accustomed to. A technique that has often been used when conceptualizing motivation is grouping the characteristics as internal motives, external motives, health-based motives, and experience-based motives (Pethkar, Naik, & Sonawane, 2010). In the context of exercise, experience-based motives have been modified to express motives based on maintaining or changing one's appearance (Vartanian et al., 2012). Common positive motives that are associated with exercise behaviors include health, fitness, stress reduction, enjoyment, and wellness (Aalton, Rottensteiner, Kaprio, & Kujala, 2014; Ebben & Brudzysnski, 2008). These health-based motives are unique to each person, whereas negative motives such as conforming to societal pressures have started to impact individuals at large (Zervou, Stavrou, Koehn, Zounhia, & Psychountaki, 2017).

Throughout the literature, SPA has been deemed as a common contributor associated with exercise behavior (Vartanian et al., 2012). Many studies have linked exercise participation to the level of SPA being experienced, but it is unclear as to what this direct relationship looks like (Ersöz 2016). It has been suggested that SPA can act as an indirect effect, while others argue an inverse relationship between exercise and SPA, based on gender or daily activity level (Aalton et al., 2008; Vartanian et al., 2012). Ersöz (2016) stated that according to previous studies, individuals may be engaging in or avoiding exercise due to a level of SPA that one is experiencing. Further, the level of SPA is understood as being regulated by both internal and external motives (Ersöz, 2016; Vartanian et al., 2012). Therefore, it appears different motivation factors are impacting the decline being seen in health-related behaviors such as exercise. One way that has

been found to promote a positive influence on well-being and health-related behavior is to specify environments that support an individuals' involvement in regular physical activity, versus exploit their vulnerabilities (Ersöz, 2016).

In virtually all aspects of social situations, there are influences and evaluations from one's self, others, and the environment, which can impact motivation to exercise (Focht & Hausenblas, 2004). Further, self-presentation is one of the main contributing factors that influence exercise motivation. Many women battle concerns of appearance or physique causing a barrier to forming exercise habits (Focht, & Hausenblas, 2004). SPS is another factor that has been believed to hinder motivation and results in decreased regular exercise participation (Ersöz, 2016). Additionally, environmental factors can play a role in the level of SPA one experiences. Therefore, it is important to also account for individual differences in social situations that can influence one's level of SPA (Focht, & Hausenblas, 2004).

Health-Related Behaviors (Intrinsic Motives)

Exercise is one way of improving one's anxieties, specifically as it pertains to appearance (Fox, 1999). Exercise has also been shown to be effective in improving mental well-being, largely because of the ability to enhance one's mood and self-perceptions (Fox, 1999). Some psychologists refer to self-esteem as being a core indicator of mental health because it is essentially a representation of overall self-worth (Fox, 1999). Some researchers also believe certain aspects of psychological benefits may differ across different populations and age (Taylor, Sallis, & Needle, 1985).

Kasser and Ryan (1996) examined how the emphasis people place on intrinsic aspirations such as personal growth differed among individuals, compared to extrinsic

goals like wealth, fame, or image that could possibly have an indirect effect on satisfying needs. They concluded that when individuals place a stronger importance on their intrinsic goals, it is positively linked to well-being indicators such as self-esteem and self-worth, while inversely contributing to triggers of depression and anxiety. Therefore, exercising for health-related reasons can provoke positive exercise behaviors. Pila, Stamiris, Castonguay, and Sabiston, (2014) found that individuals who tend to exercise for reasons such as enjoyment, satisfaction, or for health-related goals, were less likely to compare themselves to others.

Health-related behaviors that are considered intrinsic motives like improving mental and physical health in order to prevent disease or disorders, which in turn can improve self-confidence and self-esteem (Taylor, Sallis, & Needle, 1985). Understanding the essential components that elicit positive motivation and experience may enhance performance and well-being, which holds a greater value to society where media exposure is currently impacting individuals at large (Linder & Daniels, 2018; Perloff, 2014; Sabiston, & Chandler, 2009).

Appearance-Related Behaviors (Extrinsic Motives)

Whereas research has found that participating in exercise can lead to significant improvements in body image, it is specific to the individual and depends on the motivation behind their reasoning to exercise (Vartanian et al., 2012). In particular, women commonly choose to participate in exercise for reasons such as improving appearance or relieving stress or for social engagement; however, men are typically driven by their competitiveness to exercise (Zervou et al., 2017). Conceptually, both men and women are often motivated to exercise to maintain or achieve a desired appearance,

which has more recently been evoked by the new health and fitness trend seen in the media (Adams et al., 2017; Linder & Daniels, 2018).

A consistent pattern of appearance-related exercise has been associated with negative psychological states and the desire to lose weight (Vartanian et al., 2012). Additional research has suggested that women who exercise in order to enhance their appearance are more likely to develop disordered thoughts and feelings of guilt than if they do not exercise (Homan, 2010). Further, researchers imply that appearance-based behaviors themselves are also associated with poor psychological health (Vartanian et al., 2012).

Pila et al. (2014) used a quantitative and qualitative design that led to greater understanding of body-related envy and its association with motivation to exercise. In the qualitative portion of the mixed-method study, four different profiles emerged such as the lack of importance, unattainable body goals, highlighting unrealistic body expectations, motivation from others, and body-related comparisons were found to be manifested as jealousy (Pila et al., 2014). One group reported that acceptance of their bodies is important because physical appearance is controlled by genetics and inevitable. There was also reporting of outward appearance, and experience of public self-consciousness, which impacted exercise motivation. Some participants claimed they were highly competitive and motivated by others and compared their appearance and accomplishments to those they envied (Pila et al., 2014).

Negative emotionality is referred to the feeling of guilt one experiences from not exercising (Pritchard & Beaver, 2012). Individuals who have a preoccupation with exercise usually are the ones who plan their day around when they go to the gym

(Pritchard & Beaver, 2012). Additionally, these individuals are ones who have either had weight management problems or appearance anxiety in the past, and feel it is their obligation to go to the gym and exercise. Thome and Espelage (2008), found that exercising for these reasons correlated with obligatory exercise. Although the authors found no differences in gender in obligatory exercise, they did however conclude that there are gender differences in reasons to exercise. Further, they concluded that women did not view obligatory exercise as a technique for weight control, but rather a method to increase muscle tone (Pritchard & Beaver, 2012; Thome & Espelage, 2008).

Situational Influence (External Motives)

Research supports that different external and internal perceptions tend to limit motivation to exercise. Further, there is a third component that appears to be relevant but has yet to be mentioned as a factor of exercise motivation. This element will be referred to as “situational influence” which is defined as the impact from situations or environments in social settings where one is already at risk for experiencing social anxieties.

The construct of SPA has been determined to be the result of how an individual’s behavioral traits are evaluated by others in social situations. Therefore, environmental factors have been thought to influence the intensity of the anxiety that one anticipates or experiences (Schultz, 2003). Further, researchers have largely diverted from evaluating the impacts of certain social situations in regard to social anxieties (Hart et al., 1989).

Katula, McAuley, Mihalko and Bane (1998) also investigated different influences from environmental factors on exercise self-efficacy with regard to these physical and social constructs. The participants in this study underwent a series of exercise sessions in

a variety of places such as a gym or outdoors in order to mimic normal environments. In both settings, the participants exercised in front of a mirror at different times throughout the duration of the session. Results indicated that exercising in front of a mirror elicited greater changes in self-efficacy levels relative to the exercise setting (Katula et al., 1998). Additionally, levels of self-efficacy also varied by gender, suggesting that men experienced a greater level of self-efficacy than women. Those who reported higher levels of SPA also has lower expectations of physical capability and appearance. Furthermore, they tended to exercise at a lower intensity for shorter durations and were in poorer physical shape (Katula et al., 1998).

The extent to which particular differences may impact an individual's anxiety response to being observed in social exercise settings have thus far been inconclusive (Katula et al., 1998; Schultz, 2003). Objects such as mirrors and even other individuals who are exercising may increase social anxieties in gym settings. Additionally, Katula et al. (1998) found that significantly higher levels of SPA were experienced in gym or outdoors settings than a lab setting. Though there is minimal evidence, there is a clear risk for experiencing greater distress in social situations among individuals with heightened levels of social anxieties.

Social Anxieties Associated with Media Exposure

Social Physique Anxiety

Throughout the literature examining influence on exercise behavior related to motivational factors, and even eating pathology, one construct that has received substantial attention is SPA. SPA has been determined a sub-component from the parent

construct of social anxiety. SPA though has a unique contribution that incorporates negative evaluation because one's physique and manifests in social contexts (Hart et al., 1989). Physique refers to one's physical form or body structure, including body fat, lean muscles, and general physique (Hart et al., 1989).

"The picture of our body which we form in our mind," has been defined by Schilder (1935, p. 11) as the foundational concept of body image. SPA has been identified as closely aligning with the original concept of body image as it pertains to the anxiety felt in response to other's evaluating their physique. This phenomenon was transformed by including body esteem, also known as body affect, which was referenced in the development of items for the SPAS (Hart et al., 1989).

In their original article, Hart et al., (1989) distinguish SPA from related concepts of body image and body esteem, which refers to one's satisfaction with their appearance. While considerable research has examined individual's own opinions or feelings about their body, there is limited research in the domain of others' observations (Hart et al., 1989). Therefore, the construct of SPA was introduced to address this gap in the literature.

It is important to understand the perspective of an individual with SPA. Indications that someone is experiencing SPA may include avoiding environments where their physique is exhibited (Hart et al., 1989). The severity of the anxiety will vary for different individuals. Further, this may be a coping mechanism for preventing negative situations, such as feeling exposed or open for scrutiny. Consequently, by avoiding potentially negative situations, individuals can be inhibiting their chances of improving their physique (Hart et al., 1989). Individuals that become preoccupied with the thought

of always being on display, can often experience issues with depression, and they may even be at an increased risk for developing different eating disorders. Developing a scale such as the SPAS was intended to allow the identification of those individuals that are more at risk and are dealing with the effects of SPA.

There has also been evidence that body image and body affect are related to overall self-image and are directly related to self-esteem. Studies that have linked these concepts have also alluded to the applicability of influencing exercise behaviors and mental health (Hart et al., 1989). Reasons that can be viewed as self-presentational such as physical desirability, body tone, and maintaining a certain weight, seem to be important factors and have been positively associated with SPA (Brown, 2000; Crawford & Eklund, 1994).

Brown (2000) suggested that SPA does influence exercise motivation, therefore this anxiety is a result of certain interactions within the situational aspects related to one's presentation of their physique. SPA can also be negatively related to motivational constructs, such as self-efficacy and intrinsic motivation (Frederick & Morrison, 1996; Thøgersen-Ntoumani & Ntoumanis, 2007).

In another study further investigating the SPA construct and the contributing factors, Crawford and Eklund (1994) assessed 104 college-aged women's level of SPA, body size and weight, occurrence of exercise, their attitudes regarding where they exercise, and their reasons for exercising. This study used a unique method compared to other studies of SPA by showing two video clips of an aerobics class. In one video, the exercisers wore tightly fitted clothing that enhanced their physique and the other video showed the exercisers in loose, not form-fitting clothing. Results from watching these

two videos concluded that individuals with higher SPA levels responded negatively to certain exercise settings where form-fitting clothing emphasized physique compared to those with low SPA.

Social Appearance Anxiety

Social phobia is an anxiety disorder that is diagnosed when there is persistent fear and is associated with certain social situations when embarrassment or humiliation can occur (Hart et al., 2008). This type of social anxiety is often combined with a fear of being negatively evaluated (Hart et al., 2008). Negative evaluation based on one's appearance has been associated with eating disorders and other body image disorders (Hart et al., 2008). Associated with these disorders comes an increase risk in developing or heightening social anxiety disorders (Hart et al., 2008).

SAA has been conceptualized as the fear of negative evaluation in certain social situations that differs from social anxiety because of the focus being specifically on outward appearance. The initial examination of the construct of SAA started with the now-abundant evidence collected from researching the SPAS (Dakanalis et al., 2016; Hart et al., 2008). However, the SPAS was constructed to measure insights into physique presentational comfort (PC) and the expectations of negative evaluation (NE), not specific elements of appearance (Hart et al., 1989; 2008). According to Dakanalis et al. (2016), it was the emphasis society had put on the importance of overall appearance and attractiveness that initiated the development of the SAAS to assess perceived anxiety in social situations where physical appearance is on display and subject to judgment by others.

Instead of focusing on specific physique concerns, the concept of SAA was intended to capture the broader focus of general physical outward appearance such as attractiveness (Warren, 2017). This author also alluded to the concept of SAA being distinctive in that it evaluates both the individual's perceptions from an external perspective of body image and an internal battle of social anxiety. SAA has been thought of as a psychometric mechanism of social anxiety and is understood to be a product of internalization of socio-cultural beauty standards (Warren, 2017). The evolving trend in health and fitness seen in the media is that of portraying unrealistic standards for females, which has negatively influenced the way women view their bodies (Koyuncu et al., 2010).

Hart et al. (2008) suggested there was an overlap between negative body image, which was a main factor for eating disorders, and social anxiety, another related factor. Therefore, the authors created a scale that could be used to help assess these negative thoughts and that pulls from both constructs. Besides physique and outward appearance, there were other important aspects of appearance that Hart et al. (2008) believed were being left out. Aspects such as attractiveness, personality traits, social skills, and mental health were all characteristics that seemingly displayed positive traits of one's appearance (Hart et al., 2008; Levinson & Rodebaugh, 2012). Hart et al. (2008) also proposed physical appearance may be highly related to social anxiety due to the stress from society on overall attractiveness. Therefore, Hart et al. (1989) suggested that aspects beyond physique are related to societal judgments of appearance, and that a measure such as the SAAS would encompass an overall assessment of social anxieties regarding one's physical presence.

Patterns of Social Anxiety Differences by Gender and Age

Social anxiety, or fear of social situations due to perceived negative evaluation from others (Hinrichsen, Wright, Waller, & Meyer, 2003; White & Warren, 2014), manifests in a large percentage of women with eating disorders (Godart, Flament, Lecrubier, & Jeammet, 2000). The common trend of social anxiety disorder is disproportionately higher in women with eating disorders compared to the general population (Ruscio, Brown, Chiu, Sareen, Stein, & Kessler, 2008). For example, one study found that 20% of women with eating disorders also met criteria for social anxiety disorder (Kaye, Bulik, Thornton, Barbarich, & Masters, 2004).

Researchers have been investigating the effects of different social anxieties such as body affect and body image for over 70 years, each consistently finding gender differences in body satisfaction (Hart et al., 1989). Body dissatisfaction has been shown to be more prevalent in females, and often found from studies examining female college students (Hart et al., 1989). Because perspectives on appearance were found to be affected by gender and cultural differences (Russell & Cox, 2003), gender was thought to interact with cultural differences in predicting SAA. For example, one study suggested that Asian American men perceived themselves to be too thin (Hart, Rotondi, Souleymanov, & Brennan, 2015). These authors also proposed individuals who suffer from relatively high social anxiety regarding appearance employ behaviors that attempt to conceal perceived “problem areas,” such as wearing loose fitting clothes (Hart et al., 2015).

Eklund, Mack, and Hart (1996) argued “evidence reveals social physique anxiety to be significantly associated with the importance women place upon self-presentational

motives for exercise,” (p. 282). Exercising to improve body structure, physical attractiveness, and for weight control are the main motives for exercise in women (Crawford & Eklund, 1994). For men, it is adhering to masculinity aspects such as muscularity that keep them motivated to exercise (Crawford & Eklund, 1994). Rodin (1992) also implied that cultural ethos regarding the body should be investigated in order to determine the construct of SPA as it pertains to motivated behavior. Rodin’s three-year longitudinal study was designed to determine if relationships among health behaviors, like diet and activity levels, emotions and sensitivities (SPA), and body composition exist in female adolescents. There were 501 Canadian females between the ages of 14-17 who participated in this study over a three-year period. Researchers used questionnaires to assess the different variables at three different time points over the course of three years. Findings suggested the predictor variable of self-perception was highly correlated with SPA (Rodin, 1992). Further, Rodin found that SPA levels remained relatively constant throughout the duration of the study. Therefore, it was concluded that changes in SPA were associated with changes in self-perception of body image and attractiveness.

Women would experience higher levels of SPAS during a physique exam that included assessments of lean muscle or fat mass (Hart et al., 1989). These women also documented they experienced more negative thoughts about their body as opposed to women with lower SPA. Those who scored highest in SPA were also more likely to be heavier, have a higher percentage of body fat, and reported their size as being significantly larger than women with low SPA (Hart et al., 1989). The authors conclude that the SPAS is a useful measure for identifying highly physique anxious individuals,

who are more likely to experience negative weight-related consequences as a result of this anxiety.

Chu, Bushman, and Woodard (2008) examined 370 students at a Midwestern university to explore the possible correlation between SPA and self-declared obligation to exercise, along with the additional factor of modality of exercise. Findings from this study concluded that women reported higher levels of SPA than men and felt more obligated to diet and exercise in order to lose weight. Additionally, this study found that women who have a higher commitment to an exercise routine also experience a lower level of SPA. However, these authors suggested there was no difference in obligation to exercise between men and women.

Thome and Espelage (2004), found that exercising for appearance or weight management correlated with obligatory exercise. Although this study found no difference between gender in obligatory exercise, it did however find differences among reasons to exercise. For women, obligatory exercise for weight control was not as important as it was for exercising in order to increase muscle tone. According to Fallon and Rozin (1985), women also were more concerned with maintaining thinness and lower body fat, therefore they often were more concerned with lowering body weight. Similar to other findings, men were motivated to exercise for reasons such as health benefits, strength, and endurance (Demerast & Allen, 2000; Furnham, Badmin, & Sneade, 2002). Men also can be more concerned with musculature and maintaining low body fat (Olivardia, 2002). Crawford and Eklund (1994) proposed women who engage in regular exercise have inverse results associated with SPA, meaning if they are participating in an exercise program regularly, they are at a decreased risk of experiencing anxieties such as SPA.

A study by Koyuncu et al. (2010) also found that female collegiate athletes had the highest self-esteem and body image satisfaction scores compared to non-athletes, as well as decreased levels of SPA. These findings are related to those of Hasenblas and Downs (2001) concluding, “the possibility that athletes, because of their high physical activity levels, may more closely resemble the current aesthetic ideal of a thin/lean and fit physique for females,” (p.69).

College women are particularly at risk for developing SPA due to the transitional period and development that occurs from adolescence to young adulthood (Chote & Schwitzer, 2009; Sanftner, Ryan, & Pierce, 2009). Adams et al. (2017) suggest it is because of their encounters with peers through the developmental transitions, dating, and involvement in campus groups that set a standard of physical appearance they must maintain (Chote & Schwitzer, 2009). Additionally, studies have shown that a vast majority of college females have weight loss goals because they see themselves as being overweight (Snapp et al., 2012). Although these concepts are prevalent in young adult females, similar ideas and understanding can potentially be carried over, outside of college. Individuals who previously had negative perceptions of themselves are at greater risk for experiencing SPA attributable to the evidence media influence on appearance, health, and exercise (Adams et al., 2017).

There has been further research demonstrating that women’s body image is based on an important factor of age. Literature has found that late adolescent girls change their diet frequently, consistently weigh themselves, and refer to themselves as fat. Additionally, females between the ages 24-35 appear to have a strong drive to achieve the social expectation of thinness (Adams et al., 2017). Rodin (1992) suggested that gender-

related culture expectations has aided in the rise of SPA among college students, and more specifically females. SPA and SAA are not just impacting college-aged individuals, these types of social anxieties are also being experienced by middle-aged adults.

McAuley, Bane, and Mihalko (1995) suggested that middle-aged women between the ages of 45-55 are subject to greater social anxieties than what previous samples of adolescent and college-aged females has shown.

Niven, Fawkner, Knowles, Henretty and Stephenson, (2009) conducted a study that explored how maturation influenced SPA regarding the amount of physical activity and the reason for engaging in physical activity in adolescent girls. There were 164 fifth grade girls who completed initial and follow-up measures. After comparing both tests, the results indicated that exercise participation decreased in the follow-up measures. Girls who matured at a later age had higher levels of SPA, because the higher motivation for physical activity was positively correlated with the SPA levels (Niven et al., 2009). Although a negative correlation was found between SPA and physical activity level as girls mature, SPA levels have a tendency to increase (Niven et al., 2009).

The original SPAS was developed using one sample of female undergraduate students. Consequently, it is unknown whether this model holds for men or whether these results will be replicated with other college samples. Based on the extant literature on sex differences in body image (Demarest & Allen, 2000; Furnham et al., 2002), men tend to be more concerned with musculature and attaining low body fat (Olivardia, 2002).

Women, on the other hand, tend to be more concerned with thinness and low body weight (Fallon & Rozin, 1985). Accordingly, many men report wanting to gain muscle whereas most women report wanting to lose body fat (Olivardia, Pope, Mangweth, & Hudson,

1995). These concerns are commonly referred to as a drive for muscularity versus a drive for thinness (Smolak & Murnen, 2008). As a result of these sex differences in body image concerns, different forms of social anxiety may be salient to men and women. The study by Russel (2002) is one of the few with a primary focus of SPA in college males. Russel (2002) sought to examine self-esteem, body satisfaction, and SPA among males with different racial backgrounds. In this study, 557 African American and Caucasian males were assessed using the SPAS. Results from this study suggested that males with reportedly high body dissatisfaction also experienced higher levels of SPA compared to those with low body dissatisfaction (Russel, 2002). Additionally, Caucasian males reported higher levels of SPA and lower levels of self-esteem compared to their African American counterparts (Russel, 2002; Russel & Cox, 2003).

Russel and Cox (2003) examined the possible link between SPA, body dissatisfaction and self-esteem regarding race in 168 African American and Caucasian college-aged females. Repeating the method used in Russel (2002), the participants completed the SPAS along with anthropometric measurements. Findings from this study concluded that African American females reported higher perceived and actual weight yet had lower SPA. Also, these females had lower body dissatisfaction scores and slightly elevated self-esteem compared to their Caucasian counterparts (Russel & Cox, 2003).

When comparing male and female undergraduate students, the females tend to evaluate their appearance in a more negative way and claim to be unsatisfied with different aspects of their physical appearance and body image (Gillen & Lefkowitz, 2006). Basow, Foran, and Bookwala, (2007) suggested that women are driven by society expectations of a thin body image that in turn increases their risk of developing eating

disorders. In social groups, such as campus organizations or clubs, the presence of increased sexualized gender stereotypes has heightened the chance of one experiencing self-objectification and body dissatisfaction (Snapp et al., 2012).

Since 1975, there has been a steady increase seen in media portrayals of men emphasizing aesthetics rather than the typical performance features (Linder & Daniels, 2018). One study using an advertisement in *Sports Illustrated* concluded there was only a slight difference between how the female athletes in the magazine and swimsuit models were being exemplified (Linder & Daniels, 2018). This supports the argument that not only men's, but also women's' portrayals in the media are evolving from the traditional depiction of performance, and now are being represented in a sexualized manner (Kim & Sagas, 2014).

Theories and Constructs of Social Anxieties

Albert Bandura pioneered the concept of self-efficacy, which has been defined as the feeling of confidence and contentment with completions of tasks (Bandura, Adams, & Beyer, 1977). A common tendency for individuals is to pursue tasks in which they feel they can succeed and avoid those in which they are not confident or are uneasy about. Self-efficacy for an individual is not only determined by their opinions of themselves, but also directly related to the types of activities they choose to engage in. Additionally, the level of self-efficacy an individual has can be related to the coping strategies they use to overcome stressful situations that provoke different forms of anxiety (Bandura et al., 1977).

Social anxieties are rooted in the overall construct of self-efficacy and self-presentation theory (Koyuncu et al., 2010). A study conducted by Nehl, Blanchard, Kupperman, Sparling, Rhodes, Torabi, and Courneya (2012) used the social cognitive theory, specifically the use of self-efficacy, as a predictor to examine the likelihood of exercise participation among different ethnic and gender groups of college students. The authors assessed physical activity and self-efficacy level over the duration of two months in order to determine if there were differences between exercisers and non-exercisers. Like the findings from the study by Bandura et al. (1977), this study also concluded that individuals who exercise regularly had higher levels of self-efficacy than those who do not participate in exercise. Despite these findings, there were no differences in the level of self-efficacy among gender or ethnicity (Nehl et al., 2012).

The connection between social anxieties and body image disturbances is largely due to the level of one's self esteem (Koyuncu et al., 2010). There are three core self-evaluation traits that determine an individual's level of self-efficacy, which include evaluation-focus, fundamentality, and breadth or scope (Judge & Bono, 2001). These authors explained self-esteem is considered "the most fundamental manifestation of core self-evaluation as it represents the overall value that one places on oneself as a person," (Judge & Bono, 2001, p. 80). Other traits that contribute to the process of self-evaluation generalized self-efficacy, internal locus of control, and emotional stability (Judge & Bono, 2001; Srivastava & Maurya, 2017).

Self-Presentation Theory

There have been several theoretical foundations upon which the phenomena of SPA and SAA were built. One most commonly seen in the literature is self-presentation

theory (Eklund, Mack, & Hart, 1996). Self-presentation theory was introduced by Schlenker and Leary (1982), which they described as the idea that people attempt to impact the interpretations of others based on their own accomplishments. They explained that individuals with this trait tend to call distinct attention to aspects of themselves which they are fond of, while deemphasizing other areas that may be a cause of stress or anxiety. An example of this is described as an individual who uses desired personality aspects or accomplishments to influence others to think a certain way and avoid or not acknowledge those aspects, they are not confident in, such as body image or physique (Schlenker & Leary, 1982). Awareness of other individuals' opinions can sometimes initiate anxiety with regard to performance or behavior in social settings. If one feels they are being perceived negatively in these settings, it may also lead to a decrease in self-esteem and evoke feelings of inferiority (Koyunco et al., 2010; Schlenker & Leary, 1982).

Individuals who present themselves to others in a way that demands a desired impression of superiority in their minds, often are aware they are doing so (Koyunco et al., 2010; Schlenker & Leary, 1982). Therefore, self-presentation can be thought of as a goal-oriented action in which one believes they can influence others' opinions of themselves based on their actions. Specific motivations behind the urge to obtain positive self-presentation include peer approval, a sense of autonomy, and fear of negative evaluation by others, and often longing for confirmation of their assessment of themselves (Eklund, Mack, & Hart, 1996). Feelings of anxiety can occur in different social settings when the individual recognizes the interaction between their own self-perception and the opinions of those around them. Awareness of that interaction or fear

of the disconnect between the two views could also elicit the response of having self-presentational apprehension (Schlenker & Leary, 1982). The self-presentation model is composed of impression monitoring, impression motivation, and impression construction (Eklund et al., 1996). This triad approach is similar to what Bandura's (1986) social cognitive theory implies, that the interactions among these three self-presentation factors are what this model illustrates (Eklund et al., 1996). Additionally, factors within an individual's private life can also increase SPA and SAA within different social settings.

Impression monitoring is the aspect of self-presentation that is associated with self-awareness and derailed interactions. A common example of this is how much people pay attention to public images in a range of media including social media, social media included (Leary & Kowalski, 1990). The monitoring process has two parts. The extent to which one thinks about themselves and how others perceives them is the component of self-awareness. Their disrupted interactions are the consequence that result when something has gone wrong. In many cases with regard to SPA and SAA, factors such as weight or appearance being a focus in a social setting can influence self-awareness, and in turn, has potential for a negative situation to occur, like becoming embarrassed (Leary & Kowalski, 1990). Derailing interactions are classified as a setting which varies from normal expectations.

Impression motivation occurs when individuals feel the need to govern their social image or presentation portrayal (Leary & Kowalski, 1990). There are three branches to impression management (Leary, 1993). Outcome relevance is a circumstance in which a person feels that others' opinions are important in order to gain respect. This can be influenced by how much the individual feels that their own views affect other's

goals. The more important attaining a goal is to the individual, or outcome value, the more it impacts impression management. A third aspect pertaining to impression management is the technique in which one attempts to change how they are being perceived by others (Koyunco et al., 2010). Impression construction is influenced by individual factors as well as social factors, which results in behavioral modifications.

Women engage in exercise for reasons that are construed as self-presentational, which include enhancing physical attractiveness, increasing body tone, or for exercising for weight control (Crawford & Eklund, 1994). Factors such as health or enjoyment do not appear to be specifically related to SPA. There has been a consistent theme in the literature that suggests self-presentation is a strong indicator of exercise motivation. Many women, even regular exercisers, battle concerns of appearance or physique which can lead to a barrier in forming routine exercise behaviors and habits (Crawford & Eklund, 2004). Along with others, these authors indicated SPA and SAA are factors that can hinder regular exercise participation, suggesting a strong relationship between social anxieties and exercise behaviors or habits, but also recognizing that individual differences may mediate this effect (Focht & Hausenblas, 2004).

Social Comparison Theory

Among body image disturbance research, the most prevalent framework of SPA and SAA derived from Festinger's (1954) self-comparison theory (Koyuncu et al., 2010). Festinger's (1954) social comparison theory appears to be the common link between exercise behaviors and appearance-based motives. Social comparison theory describes the tendency to compare one's self to people who they perceive as being similar (Koyunco et al., 2010). The people to whom they seemingly compare can be peers or

family members, or sometimes public figures, such as celebrities or models (Martinez, 2018). These comparisons often occur in those who have similar attributes such as age, race, and appearance (Franzoi & Klaiber, 2007; Koyunco et al., 2010). Some dimensions also include gender and physique, which can vary among different cultural standards. Social comparison and attention to cultural standards are becoming guidelines by which people are evaluating their body image and structure (Franzoi & Klaiber, 2007).

Social comparison theory is based on how individuals view their own social and personal worth compared to how they perceive others, by defining themselves as being better or worse (Martinez, 2018). People sometimes compare themselves to others for reasons such as improving self-confidence, self-motivation, and developing a positive self-image (Festinger, 1954; Martinez, 2018). As a result, people are thought to be continually evaluating themselves and others based on features like attractiveness, wealth, intelligence, and success (Festinger, 1954). Most people have the social skills and impulse control that help to eliminate the urge to compare, but for others it is a part of their nature (Festinger, 1954). Festinger (1954) suggested that people who regularly compare themselves to others often experience negative thoughts and feelings such as dissatisfaction or guilt, and tend to participate in self-destructive behaviors. Researchers have also suggested that the pressure females face to achieve a certain desired appearance have arisen from constant assessments of their bodies compared to the perceived ideal female figure represented by cultural expectations (Franzoi & Klaiber, 2007).

Self-Determination Theory

The Brunet and Sabiston (2009) study support Ryan and Deci's (2000) claim that higher levels of self-determination generates positive behavioral outcomes. Self-

determination theory also provides the foundation for the ways in which a social environment can influence such behaviors (Ryan & Deci, 2000). Positive outcomes, like physical activity, can work as forms of motivation for individuals who lack the fulfilment of basic psychological needs (Brunet & Sabiston, 2009; Ryan & Deci, 2000). The basic psychological needs include competence, autonomy, and relatedness. Their study confirmed a model that suggests SPA is a controlling factor that hinders need satisfaction. Additionally, findings that SPA has a significant secondary effect on motivation further corroborates Ryan and Deci's (2000) suggestion that motivation cannot be directly influenced by these factors, but instead SPA may prevent need satisfaction and elicit decreased levels of self-determined motivation. Brunet and Sabiston (2009) claim that perceived autonomy and relatedness did not have a significant relationship with motivation, due to the perceptions of these basic psychological needs varying by the type of task.

Self-determination theory suggests that the constructs of motivation is multidimensional (Ersöz, 2016; Ryan & Deci, 2000). This range starts with amotivation, which is a lack of motivation, to extrinsic motivation being a type of controlled motivation, to an autonomous motivation known as intrinsic motivation (Ersöz, 2016). An individual who does not see that value or believe that the activity will result in the desired outcomes can be classified as having amotivation (Thogersen-Ntoumani & Ntoumanis, 2006). Extrinsic motivation has four levels that are regulated by the level of self-determination. The first and lowest level of extrinsic motivation is known as external regulation. In the context of exercise, this refers to individuals who participate in physical activity merely to be recognized or avoid negative consequences. Individuals who engage

in exercise for pride and to gain self-worth or to avoid feelings of shame or guilt experience a motivation termed introjected regulation, a second level of motivation (Thogersen-Ntoumani & Ntoumanis, 2006). The third level of extrinsic motivation is what is called identified regulation, in which an action is completed because of its value, importance or usefulness to the individual. The last and highest level of extrinsic motivation is known as integrated regulation. This is when an action occurs willingly and is completely self-determined. The autonomous type of motivation is referred to as intrinsic motivation, in which an individual is motivated to do a certain activity simply out of their own interest or enjoyment (Thogersen-Ntoumani & Ntoumanis, 2006).

Self-Objectification Theory

The theory of self-objectification may be the source in which the fear of negative evaluation stems from repeated exposure to the media, leading to outcomes such as decreased self-esteem, depression, and anxiety (Choma et al. 2010; Fredrickson et al. 1998; Grabe et al. 2007; Slater & Tiggemann, 2012). Sabiston and Chandler (2009) examined the correlation between exposure to fitness-related magazine advertisements and the opinions of body image in healthy weight females. Using 211 undergraduate females from a university in southern Ontario, body image perceptions were assessed before and after seeing a variety of advertisements. The findings of this study concluded that the affective domain of body image awareness, also known as SAA, was influenced the most by fitness advertisements. This means SAA levels of the participants increased as a result of seeing fitness related advertisements.

Linder and Daniels (2018) describe the development of objectification theory from the result of women basing their attitudes towards their bodies on social and cultural

expectations of beauty and attractiveness. As a result of living in a new media-driven culture, women are at risk of viewing their bodies as if they were an object and can be evaluated by others, a process known as self-objectification (Linder & Daniels, 2018). This can occur through engagement with the media or from interacting with others.

Measuring Social Anxiety

The Development of the Social Physique Anxiety Scale

SPA has been defined as a “subtype of social anxiety that occurs as a result of the prospect or presence of interpersonal evaluation involving one’s physique” (Hart et Leary, and Rejeski, 1989, p. 96). It is important to have a valid and reliable measure in order to understand a construct as integrated and complex as SPA. Therefore, the SPAS was created in order to assess negative feelings about one’s appearance being evaluated, but in a more specific context, physique. The items in the SPAS were specific to one’s body form, such as body fat, muscle tone, and body structure. Over the course of developing the SPAS, the number of indicator items was condensed from the initial 30 self-reported items to a 14-item measure (Hart et al., 1989). After further investigation, the authors removed an additional three items, and then replaced one to create the current 12-item SPAS used today. Hart et al. (1989) used 195 college students for the initial construction of the SPAS. The sample was represented equally by gender, with 97 females and 98 males. The authors implemented three studies in the preliminary process of developing the SPAS, designing it to be a unidimensional instrument, but it lacked significant evidence of factor validity and structure during the initial investigations (Hart et al., 1989).

Following the development of the SPAS in 1989, there has been a consistent need to investigate the 12-item scale and its response reliability and validity (Eklund, Mack & Hart, 1996; McAuley & Burmen, 1993; Petrie et al., 1996). One of the first validation studies using the SPAS employed a principal components analysis from data collected on 43 college-aged females, and 43 college-aged males. Given only 89 subjects were used in the study to validate this scale is evidence alone that the process of developing the SPAS was not comprehensive and the validity of the instrument needs further examination (Eklund et al., 1996).

As Eklund, Kelley, and Wilson, (1997) stated, the central construct of SPA and the application of this self-presentational theoretical perspective has been studied frequently in an attempt to determine the appropriate factor structure. Although the studies examined the validity of the SPAS, problems with the measurement tool still surfaced regarding the psychometric properties it tested (Eklund et al., 1997). Hart et al.'s original wording of item 2 read "*I would never worry about wearing clothes that might make me look too thin or overweight.*" This statement implies a double-barreled response, and because of that, it inherently becomes confusing, which can affect an individual's response to the item. Several studies have claimed that this item has been the root of poor performing analyses and inconclusive scale properties (Carwford & Eklund, 1994; Eklund et al., 1997; McAuley & Burmen, 1993; Petrie et al., 1996). These results suggested item 2 favored a specific gender or lacked relevance to certain samples (McAuley & Burmen, 1993). Additionally, Crawford and Eklund (1994) stated the relationship between negatively and positively worded items was the source of the reported awkwardness and inconsistency of the responses.

Many have since investigated the dimensionality and factor validity of the scale. Again, the initial problematic item, item 2, continued to raise questions. Discrepancies were either with the conflicting negative wording or how relevant the item is to the individual (Crawford & Eklund, 1994; Lantz, 1991; McAuley & Burman, 1993). One of the few studies that looked at the 12-item model and the 11-item model, removing item 2, was by McAuley and Burman (1993). This study investigated the proposed unidimensional 12-item SPAS. Again, using college-aged and adolescent females, the factor analyses concluded that a single-factor structure did not produce a goodness-of-fit index (McAuley & Burman, 1993) that met the .90 criterion (Bentler, 1992). Following this study, the authors suggested there may be hierarchical order to this SPA phenomenon.

Eklund et al. (1996) studied 503 female college students on their response to the 12-item SPAS in order to determine an appropriate factor model. The study investigated three potential models: the original unidimensional model proposed by Hart et al. (1989), a two-factor uncorrelated model, and a speculated high-order factor model suggested by McAuley and Burman (1993). The authors found that there was significant evidence for a higher-order model in conjunction with two factors. Factor 1 was comprised of the items that were positively worded, therefore pertained to physique presentation comfort (PC), and Factor 2 was formed by the cluster of negatively worded items that represented expectations of negative physique anxiety (NE), each of the factors being subordinate SPA (Eklund et al., 1996). Like other studies, item 2 remained problematic. Eklund et al. (1996) therefore suggested that rephrasing item 2 (“*I worry...*”) into a positive statement may be an effective resolution. Although this study

was pertinent in determining the factor structure of the SPAS, there were still questions on the reliability and validity of the instrument regarding different ages, gender, and cultural samples. There has been limited data available on the SPAS factor structure, as it pertains to these different demographic groups.

From the existing literature at the time, Petrie et al. (1996) hypothesized that there were two directions that the SPAS could be analyzed. One was dividing the SPAS into two factors, suggested by McAuley and Burmen (1993) and Eklund et al. (1996) to allow for the two factors (PC and NE) to be examined independently. The second suggestion was to establish a global scale score (sum score), which could be computed in order to represent an overall physique anxiety level. Recognizing that men have typically been an underrepresented sample in the literature regarding the factor validity of the SPAS, it was imperative to be able to demonstrate the differences that appear to exist between gender responses (Hart et al., 1989). Although detecting gender differences was an important objective for this study, the sample was not equally represented between males (n=120) and females (n=168). In order to determine the validity of both the total scale score and the two factors, the study used the 12-item SPAS, resulting in a total score between 12-60. This followed the method of Eklund et al. (1996) in which factor 1 was comprised of 5 items, and factor 2 used the remaining 7 items. Results from this study also supported that factor 2 was most indicative of predicting levels of SPA for both males and females.

Like McAuley and Burmen (1993) item 2 did not result in a significant factor loading on either of the factors. Authors further agreed that using a positively worded statement would potentially provide a solution to the issue of wording with item 2. The CFA confirmed the higher order factor structure in separate models with these college-

aged males and females (Eklund et al., 1996; McAuley & Burmen, 1993). Authors emphasized the importance of testing the higher order model using a larger and diverse sample, although this still remains undone. Eklund et al. (1996) explained the importance of finding the best instrument to measure the construct of SPA, whether it be the use of full 12-item scale, Factor 1, or Factor 2. The authors also indicated that Factor 2 may be the most accurate way to directly measure SPA. Additionally, they also proposed that Factor 1 provided information on a separate, but related construct, which may potentially overlap with SAA, and potentially adding a dimension to the SPAS.

Eklund, Kelley, and Wilson (1997) attempted to further examine item 2 and how it related to the structures seen in other factor analysis studies. First, the authors attempted to replicate how 117 male students responded to the changed wording of item 2, suggested by Petrie et al., (1996). Second, they tested if the modified wording of item 2 would resolve the errors being seen in the measurement. Lastly, these authors examined if there was factorial invariance across gender, even with the magnitude of gender differences being noted. Again, the sample used for these investigations consisted of 293 college students, 153 of them were male. Using this newly derived sample of male students in this study, like Petrie et al. (1996), Eklund et al., (1997) confirmed the higher order factor model of Eklund et al. (1996) using the original wording

Eklund et al. (1997) also suggested that the use of the modified item 2 fit better with the NE factor, when using the revised wording. These authors also indicated that the PC factor would now only be indicated by items 1, 5, 8, and 11. Coincidentally, the positively worded items loaded on the PC factor, and the negative items indicated NE. These findings from Eklund et al. (1997) opened the door to the investigation of a

possible measurement artifact within the SPAS. These authors similarly reported that the SPAS was variant across gender in their study. Although studies have indicated the need for evidence that supports similar findings in other demographic groups there was still a need to evaluate the extent to which these findings are relevant to demographic groups (Eklund et al., 1997).

Martin, Rejeski, Leary, McAuley, and Bane, (1997) argued for the SPAS to be viewed as a two-factor correlated model, disagreeing with the higher-order model that Eklund et al. (1996) had proposed. These authors indicated that since Eklund et al. (1996) did not report the cross-loadings of the PC factor items, instead they suspected those items loaded high on both factors. According to Martin et al. (1997), if that were to happen, it would add measurement error to the model. Another point these authors made was that Eklund et al. (1996) did not provide enough evidence of their model possessing discriminant validity. Further, they claimed that the basis of the argument was never made clear, and unpublished analyses and reports appeared to be causing the confusion between a unidimensional conception of SPA and a two-dimensional classification of some additional construct that included a physique anxiety component, (Martin et al., 1997). These authors were also one of the only who suggested the data-driven exploratory process and structural equation modeling used in determining the hierarchical model was misleading.

In response, Martin et al. (1997) proposed the 9-item SPAS by eliminating items 1, 2, and 5. By doing this, it also eliminated the factor of PC, which had been argued by Eklund et al., 1996 and Petrie et al., 1996, as being a strong component in determining SPA. The study again examined only females, college-aged individuals, as well as

conference attendees, and aerobics instructors by data pooled from Hausenblas and Martin (1996). Results from this study indicated there was no statistical difference between the 9-item unidimensional model and the two-factor models, although the internal consistency was highly correlated with the 12-item model ($r = .98$), suggesting that the 12- and 9-item models capture virtually the same variance (Martin et al., 1997). Again, these authors recommended further investigation of the different forms of SPAS in diverse samples, particularly as it pertains to men. Additionally, they suggested using a CFA, superior to an EFA strategy, in order to feasibly verify the different conceptual foundations of the SPAS in other populations. Until this, there was no argument for the use of confirmatory models for investigating the different SPAS models.

Molt and Conroy's (2000) investigation into the different factor models of the SPA were warranted once Martin et al. (1997) proposed the 9-item SPAS, and their conclusions were based on only female responses to the modified scale. Therefore, the extent to which the 9-item scale fits for men was still unknown. Further, the researchers acknowledged the gender differences in mean SPAS scores, and the overall factor structure differences had not yet been addressed. In order to do this, Molt and Conroy (2000) used invariance testing to examine if SPAS scores were equivalent across gender. These authors made the argument that without a valid and stable measure of SPA, the scale was not useful for researchers and practitioners. Corresponding to the methods that have been tested, the original 12-item, as well as the modified 9-item, and 7-item SPAS models were all assessed in order to determine the validity of the measures independently.

Molt and Conroy (2000) examined the scale using all proposed models, including the rewording of item 2. Findings from these analyses concluded that the SPAS items indicated only one construct, and the item wording was irrelevant to the proposed methodological effects, according to Molt and Conroy (2000). These findings support the question of potential method effects, similar to what Eklund et al., (1997) were concerned with.

The 9-item scale was comprised of items 3, 4, 6, 7, 8, 9, 10, 11, 12. The items that were removed included items 1, 2, and 5, the positively worded and reverse scored items (Molt & Conroy, 2000). Continuing to investigate better fit, the authors eliminated item 11 due to redundancy expected with item 6. Item 12 was removed because of issues with wording eliciting the possible difference in response between genders. According to Molt and Conroy (2000) the internal consistency of the 9-item and 7-item scales had a Cronbach alpha of .67 and .72, respectively, concluding the 7-item measure the more reliable measure. This study deemed the 7-item scale to be the most accurate and valid method of measuring SPA for this population (Molt & Conroy, 2000).

Controversy continued about the factor structure of the SPAS (Eklund et al., 1996; Martin et al., 1997; Molt & Conroy, 2000), claiming the factor of NE pertinent to SPA, but PC not contributing as a factor, but as a method effect (Eklund et al., 1996; Molt & Conroy, 2001). This argument supported the claim of method variance due to the factor loading of positive or negative items, not true score variance (Molt & Conroy, 2001). Attempts to resolve the assumed method variance were inconclusive, with evidence supporting a 12-item two-factor structure scale, and a unidimensional scale using 9-items, 8-items, and also 7-items (Eklund et al., 1996; Martin et al., 1997;

McAuley & Burman, 1993; Molt & Conroy, 2000; 2001; Petrie et al., 1996). A common, and additional potential flaw in all of these studies, was that they were conducted using samples of college-aged students, and predominantly females. Molt and Conroy (2001) argued that it was unknown if the model would be replicable or would fluctuate due to the sample, and that further investigation of these factor structures needed to be studied using more diverse samples. Additionally, the authors stated that the latent mean structure had not been evaluated in these models, in order to test the invariance of the SPAS by gender. Without this information and measurement equivalence of the 7-item model, comparisons between any groups will continue to be invalid and lack generalization (Molt & Conroy, 2001).

Although Molt and Conroy (2001) addressed the 7-item factor structure (items 3, 4, 6, 7, 8, 9, 10), factorial invariance across two sample of women and across gender and latent mean structure, their observations were made from using archival data from samples of previously published studies. Again, proving problematic, because while addressing concerns, the samples still consisted of only college students (Molt & Conroy, 2001). Results of this study verified the unidimensional 7-item model, the invariance between same and opposite gender groups, as well as confirmed there was evidence for true score variance by gender (Molt & Conroy, 2001). The authors were able to control for the error-score variance and reject the possible method effects that had been questioned and claimed the instrument had provided the most accurate estimate of true-score gender differences in SPA to date (Molt & Conroy, 2001). These findings were consistent with others who had shown women having higher SPAS scores (Crawford & Eklund, 1994; Eklund et al., 1996; Eklund et al., 1997; Hart et al., 1989; Martin et al.,

1997; Petrie et al., 1996). Molt and Conroy (2001) and proposed that the gender differences were possibly being related to a shift in modern cultural trends, along with increased societal pressures targeting young women.

With evidence provided by Molt and Conroy (2001), the 7-item model was deemed invariant, and the notion of method effects had been eliminated based on their findings. Scott, Burke, Joyner, and Brand (2004) examined the test retest capabilities of the 7-item SPA scale, in order to assess the reliability of the measure. Employing a new sample, this model was found to be consistent with the original 12-item scale designed by Hart et al. (1989) gaining more evidence for validity and reliability evidence for this measure. Although this study replicated Molt and Conroy's (2001) study, it investigated the model using a different sample that was part of existing data from another study. Whereas this supports the use of a 7-item measure for SPA, having only seven items to test one construct can arguably be problematic.

In 2004, Lindwall took the modified scales that had been investigated and examined them using Swedish male and female college students. Gender differences regarding factor structure were just starting to be investigated and these scales needed to be tested using other samples from different cultures (Molt & Conroy, 2000; 2001). Therefore, Lindwall (2004) replicated the study with a design similar to the ones that already tested the factor validity in the 12-, 9-, and 7-item models and that considered the impact of the culture differences due to being from Sweden. The justification for the study was to provide validity evidence that the SPAS was a cultural-sensitive measure, pertinent to the world of sport and exercise (Lindwall, 2004).

Lindwall (2004) used maximum-likelihood estimations to analyze the different models. The study compared two 7-item models, one eliminating item 8 and another, item 12. Results indicated that the 7-item model without item 12 was a better fit for this sample. These findings did not support the ones from Molt and Conroy (2000; 2001), that factors were invariant or that there was substantial item uniqueness. A pivotal observation Lindwall (2004) made was that “some items are, conceptually, most likely perceived and interpreted differently across gender due to the cultural norms and ideals for men and women, particularly with respect to the body and appearance,” (p.497). A specific example of this, item 12, asks about feelings when being evaluated while wearing a swimsuit. For men, the calibration of the scale may be inherently different from the start, when compared to women due to difference in gender alone (Lindwall, 2004). Similar differences in gender response were seen with item 8 and item 6, suggesting the need for more studies to examine gender differences as they pertain to invariance of factor structure and latent mean structure among men and women (Lindwall, 2004).

The SPAS has been one of the most researched instruments used in exercise and sport psychology (Molt & Conroy, 2001). However, the original SPAS was developed using one sample of female undergraduate students. Consequently, it is still unknown whether this model holds for men or whether these results can be replicated with other college samples. These authors too suggest additional invariance testing and factor analysis of the SPAS models using different samples diverse in age, culture, socioeconomic status, and exercise participation are warranted. Further, Molt and Conroy (2000) suggest “future researchers might generate additional items to form a broader

measure that more adequately samples the possible domain of social physique anxiety,” (p. 1016).

The Development of the Social Appearance Anxiety Scale

The SAAS considers the fear of negative evaluation associated with appearance and body shape. The SPAS was designed to focus on physique-related issues such as body fat, muscle tone, and body proportions (Hart et al., 2008). Further, it did not include items that were assessing other domains such as appearance-related anxiety. Hart et al. (2008) created the SAAS to address the need of having an instrument that specifically considers factors of appearance, which may also be prompting an increase in anxiety when one is being evaluated. The 16-item scale was comprised of statements about appearance characteristics, which participants answered on horizontal scale with responses ranging from 1 – *not at all*, to 5 – *extremely* (Hart et al., 2008). A few examples of statements include: *“I get nervous talking to people because of the way I look”* and *“I worry that others talk about flaws in my appearance when I’m not around,”* (Hart et al., 2008). Three samples were used in the development of the SAAS, all producing a unidimensional model that demonstrated internal consistency ($r = .84$) and validity measures (Hart et al., 2008). With results indicating high test-retest reliability, the authors suggested the scale accurately measured SAA over time. Though the SAAS was found to be related to similar measures of body image disturbance and social anxieties, it was only moderately correlated with factors of SPA (Hart et al., 2008).

Higher self-reported scores on the SAAS is considered an indicator of negative body image, or body image disturbance (Hart et al., 2008). The authors created the instrument to specifically focus on aspects of appearance and attractiveness, but also to

reveal the over emphasis on obtaining a certain body type or becoming preoccupied with weight. Additionally, they found the SAAS was helpful in predicting signs of depression and social anxieties.

Levinson and Rodebaugh (2012) have been the only ones to investigate and attempt to validate the factor structure and validity measures of the SAAS. Using measures of negative affect, fear of negative evaluation, and the Big Five personality traits, the authors used two samples of undergraduate students to validate the SAAS. Findings were conclusive with Hart et al. (2008) supporting the 16-item, single-factor model. Levinson and Rodebaugh (2012) suggested that SAA may be just a form of social anxiety, not a new type of anxiety.

Following the validation study by Levinson and Rodebaugh (2012), only five other studies have explicitly examined the factor structure of the SAAS as a part of the methodology, in their respective samples (Warren, 2017). In a clinical sample of eating disorder patients, Claes et al. (2011) used a confirmatory factor analysis, which evidenced the usefulness of the SAAS as a measure of social anxiety and fear of negative evaluation based on appearance. The authors concluded that increased body dissatisfaction, change in appearance, weight gain, and drive for thinness in eating disorder patients are all additional factors that can significantly impact this type of fear of negative evaluation.

In addition to the predominantly U.S. undergraduate student samples (Hart et al., 2008; Levinson & Rodebaugh, 2012) and a relatively small sample of eating disorder patients (Claes et al., 2001), studies have also investigated the factor structure in Turkish (Sahin, & Topkaya, 2015) and Italian adolescents (Dakanalis et al., 2016). Each of these

studies have supported a unidimensional factor structure, along with excellent internal consistency reliability. Specifically, Dakanalis et al. (2016) found that the SAAS single-factor model held up using gender, age categories, and health diagnostics in the sample of Italian adolescents. Although results conclude a unidimensional model, it was again suggested that the SAAS may be a clearer indicator of negative body image rather than a specific form of social anxiety (Dakanalis et al., 2016).

Hart, Rotondi, Souleymanov, and Brennan, (2015) assessed Canadian gay and bisexual men among people of color on the psychometric properties of the SAAS. The authors credited themselves to extending the knowledge factors beyond the impact stress has on SAA by encompassing minority stress-related variables. Some of these factors included internalized homophobia and racism experiences, which Hart et al. (2015) declared were significantly related to SAAS scores. Again, the authors confirmed a single-factor model, but with a relatively small, unique and specific sample.

Along with fear of negative evaluation based on appearance characteristics, an additional component surfaced with investigations into the SAAS (Dakanalis et al., 2016; Hart et al., 2015; Levinson & Rodebaugh, 2012). Another study in a clinical population supported the notion of an additional component that may be related to SAA, which was labeled as social discomfort (Mills, Kwakkenbos, Carrier, Gholizadeh, Fox, Jewett, Gottesman, Roesch, Thombs, & Malcarne, 2018). In addition to confirming the unidimensional model, the SAAS was highly related to measures of social discomfort, expectation of negative evaluation, and symptoms of anxiety and depression. Authors suggested further investigation into the new component of social discomfort was warranted, as other studies have also referred to a possible additional element, which is

related to being in specific social situations (Dakanalis et al., 2016; Hart et al., 2015; Levinson & Rodebaugh, 2011; Mills et al., 2018).

Lack of Evidence from the SPAS and SAAS

Multiple studies have declared that the SPAS must be examined in diverse samples (Crawford & Eklund, 1994; Eklund et al., 1996; Lindwall, 2004; Martin et al., 1997; McAuley & Burman, 1993; Molt & Conroy, 2000; Petrie et al., 1996). Further, due to the abundant evidence of college-aged females' level of SPA, investigation into the developmental process of SPA would be beneficial. Additionally, evidence of invariance in the SPAS across gender and age groups would lend valuable information and usefulness to practitioners. Similarly, the factor structure of the SAAS has been examined by Dakanalis et al., 2016; Hart et al., 2008; Hart et al., 2015; Levinson and Rodebaugh, 2012; Mills et al., 2018; and Warren, 2017, concluding there need is for validation and invariance testing of this scale in a diverse sample.

Social anxiety models have proposed that subsets such as SPA and SAA stem from heightened fears of negative evaluation in social situations in which individuals are being negatively evaluated on their body image and appearance (Levinson & Rodebaugh, 2012). An important component of these perspectives again, is the influence of the situation one is in when experiencing negative evaluation. Evaluating constructs associated with these unique social anxieties led to the development of specific instruments tailored to certain aspects of the perception of body image and appearance.

Results of validation studies have indicated that SAA is a construct unique from general fears of negative evaluation (Hart et al., 2008), although it may fall into the general class of social anxiety. Outcomes from SEM suggest that SPA is best

considered as an aspect of general body dissatisfaction, whereas SAA is more closely related to general social anxiety. Therefore, the authors suggested that the SPAS and the concept of SPA may be largely redundant with existing measures of body dissatisfaction (Hart et al., 2008). In contrast, Frederick and Morrison, (1998) and Hart et al., (1989) used structural modeling to discuss the SPAS as a measure of social anxiety. Findings from the structural model suggested that the SPAS may be better thought of as a subset of body image disturbance.

Research has shown the constructs within the SPAS and SAAS demonstrate convergent validity (Dakanalis et al., 2016; Hart et al., 2008; Levinson & Rodebaugh, 2012; Warren, 2017). Additionally, the SAAS has repeatedly been found to positively and significantly correlate with measures of body image dissatisfaction and fear of negative evaluation (Dakanalis et al., 2016; Levinson & Rodebaugh, 2012; Warren, 2017). Because the SPAS has been identified as a valid measure of body image dissatisfaction, there is reason to believe the SAAS may also be assessing elements of the same constructs although there is no known research that looks at this potential overlap of constructs if these two scales were combined.

To that end, Hart et al. (2008) suggested that the SAAS taps into social anxiety and negative overall body image rather than negative physique-related body image and has promise of high effectiveness as a measure. Further, the SAAS appears to account for much of the overlap between social anxiety and body image disturbance, as it accounts for a significant amount of variance in the constructs (Hart et al., 2008). Moreover, the authors suggested “there may be some utility in having a measure that taps into both social anxiety and negative body image that encompasses

but is not limited to physique,” (Hart et al., 2008, p. 29). Therefore, an investigation into a broader, more applicable scale that combines these elements of social anxieties, fear of negative body-related evaluation, and situational influence is merited.

CHAPTER III – METHODOLOGY

Research Design

Information for this cross-sectional study was gathered using a non-experimental design which employed a survey method approach. A crowdsourcing sampling plan was implemented in order to capture data representative of the population using both male and female participants, ages 18-65 years. This form of sampling allowed for data collection to be obtained through an online platform that reached a large audience. The use of crowdsourcing sampling was applied exclusively for examining instrument development and validation in the area of educational measurement and research.

This sample was a better representation of individuals' levels of SPA and SAA compared to previous studies and consisted of approximately 1200 participants who were divided into three groups. The goal was to have equal representation of gender and age ranges within each group. One group of participants was used to assess the factor structure of the SPAS and SAAS using a confirmatory factor analysis (CFA). The second group was used to assess the SPAS and SAAS instruments as a combined measure to identify potential overlap of underlying constructs using an exploratory factor analysis (EFA). The EFA is a data-driven technique, therefore, it allowed for the item loadings to group according to the underlying factors. A third group of 400 participants was then used to conduct a confirmatory factor analysis (CFA) to determine an appropriate measurement model for the combined scale. The three groups were not analyzed together, nor did they serve as control or comparison groups.

Participants

The participants for this study were recruited from Amazon Mechanical Turk (MTurk), which has the largest database of online workers compared to other crowdsourcing platforms (Goodman & Paolacci, 2017). Participation in the study was strictly voluntary, and participants went through an informed consent process before data collection began. The goal for this part of the study was to collect panel data from approximately 1200 participants, who completed a questionnaire comprised of items from the SPAS and the SAAS. The sample was divided into three groups ($n=400$) in order to appropriately assess the research questions with different statistical analyses. The Amazon MTurk workers who participated in the survey must have been 18 years of age or older and have an active account with MTurk. Therefore, it was presumed participants were computer-literate and had met the criteria and terms of agreement set by Amazon to be allowed to participate in completing surveys through the Amazon MTurk system.

Demographics

Amazon launched MTurk in 2005, and within the first decade over 15,000 published articles referenced the use of this data collection platform (Goodman & Paolacci, 2017). Historically, 70% of the MTurk workers were from the U.S. and the majority of them were females (Iperiotis, 2010). MTurk has expanded to more than 60 countries outside of the United States. Now, 47% of workers reside in the U.S. and 34% are from India (Goodman & Paolacci, 2017), whereas the remaining 19% of workers are from various other countries. The average reported age of MTurk workers was 33.5 years, and the workers generally provided fewer extreme responses than the general population (Goodman & Paolacci, 2017). These authors also documented that 80% of the

MTurk workers were Caucasian. Ipeirotis (2010) determined that 52% of the workers were female and from the U.S., and the majority of male workers were predominately from India. However, this type of gender distribution was considered to be representative of the general global population (Hitlin, 2016; Hydock, 2018), the most representative it has been in the history of consumer research (Goodman & Paolacci, 2017). It is, however, important not to overgeneralize based on gender findings from this study alone.

Selection Criteria

Due to the flexibility and convenience of MTurk and other crowdsourcing platforms, the ability to collect electronic data has increased, leading to employment of roughly 100,000 Amazon MTurk active workers (Buhrmster, Kwang, & Gosling, 2011; Hydock, 2018). To that end, workers must be qualified, based on certain criteria set by the requesters, in order to participate in the available surveys. Researchers are able to use the MTurk qualification system to set criteria, also known as filters, in order to access only the workers who are qualified to participate in their study. Different filters are available such as requesting only workers who have completed a college degree, are from a certain country, or who have a 95% (or higher) success rate. Further, one benefit to using Amazon MTurk is that it gives the researcher the option of *not* compensating workers who appear to have not completed the survey truthfully or responsibly.

Exclusion Criteria

Exclusion criteria for this study were addressed in the Informed Consent Document (Appendix A) and excluded participants younger than 18 years old, older than 65 years old, and whose nationality was not the United States or from countries similar to the United States. The countries considered to be similar included Canada, Australia,

New Zealand, United Kingdom, and Ireland (Anon, 2004; Anon, n.d.; Hagger et al., 2010; 2017; Lowe, 2018; Smith, Schneider, & Francis, 2007; Smithers, 2009).

Participants who were not from these countries were not included in this study due to potential cultural differences which may have caused undesired variation in responses. Different cultural expectations and beliefs about appearance do not align with those of the Western American cultural. The context that both of the instruments were developed in was based on the mindset that an attractive physical appearance is thin and highlights one's musculature (Crane et al., 2015; Linders & Daniels, 2018). The two instruments assessing individuals' anxiety towards their appearance and body image were developed with this cultural bias towards Western American appearance (Hurst et al., 2017; Levinson & Rodebaugh, 2012; Warren, 2017).

For this reason, countries with cultures inherently different than that of the United States were not included in this study. MTurk has the ability for the requester to select the country that a participant is from, so that only those who were from the designated countries were able to participate in the survey. The filter that was set for this criterion stated, "*Location is one of Australia, Canada, Iceland, New Zealand, United Kingdom, or United States.*" This process helped in limiting variation in responses of participants from other countries who do not have the similar cultural expectations or beliefs (Group, 2014).

Cost

Participants who complied and appeared to answer the questionnaire truthfully were compensated for their time with a small monetary reward. According to Ipeirotis (2010) rewards are usually small and typically average about 15 cents per 15-minute

survey (Goodman & Paolacci, 2017; Hydock, 2018). For this study, participants could receive a \$.20 reward after full completion of the questionnaire and if their responses had been approved by the requester. This reward was distributed to the MTurk workers' account through Amazon. It was estimated that it would cost \$60.00 for every 300 participants, resulting in a total cost of \$240 to reach 1200 participants. The requester paid an additional fee to MTurk that was based on the amount the workers are being paid. This fee was calculated based on the reward given to the workers. For this study, the fee was 20% of the total cost of \$240.00, which was roughly \$48.00. All transactions were completed online through the requester's Amazon MTurk account.

Participant Variation

Participant data were collected in four separate time blocs. Each bloc was designed to collect data starting at a different time of day and would consist of 300 participants. Collecting responses from eligible participants starting at different time periods was to account for variation and potential confounding variables associated with the time of day. Goodman and Paolacci (2017) suggested that the gender and age of the MTurk worker could influence the responses according to time of day. This did not necessarily mean the responses would have changed according to the time the survey is given, but that the distribution of participant demographics could have varied according to the time of day. In order to capture the most representative sample, the start time of each bloc was staggered to yield better results, in terms of data collection. Therefore, the survey was administered starting at four different times of the day, on four randomly selected days, over a period of two weeks. This method also allowed for the researcher to modify the filters within the MTurk qualification system in order to refine the eligibility

of workers according to any gaps or under-representation of gender or age in the responses from participants in the existing sample pool. However, no modifications were made to the MTurk qualifications between data collection blocs.

Procedure

Prior to data collection, the Institutional Review Board (IRB) at the University of Southern Mississippi approved this study to be completed using human subjects (Appendix B). Along with obtaining IRB approval, the questionnaire was created using Qualtrics, comprised of the items within each instrument. The layout of the questionnaire can be found in (Appendix C). The question blocs were delivered in a random order per participant, to negate systematic error. Participants were able to complete the questionnaire only once and had 24 hours to finish the survey once they had started. IP addresses were captured via Qualtrics, therefore prevented ballot stuffing.

The two questionnaires were administered to participants via a Qualtrics survey link that was uploaded to Amazon MTurk by the researcher. In order to attract MTurk workers, a Human Intelligence Task (HIT) was created by the requester. The HIT was strategically worded and filtered accordingly to recruit participants who were able to provide accurate and quality data. Based on the information provided by MTurk and the criteria set by the requester, only eligible participants were able to access and complete the survey. The title of the HIT was “What do you see when you look in the mirror? Reflections of social anxieties (<10 minutes)” to entice participants to complete the survey.

MTurk workers were recruited following the data collection plan outlined in Figure 1. The first survey (bloc 1) released at 8:00 AM and ran for 24 hours, or until 300 participants had completed the survey. If 300 participants completed the questionnaire before the 24-hour period, the bloc closed. In the case there were not 300 completed surveys before the 24-hour cap, the bloc stayed open until the 300-participant cap was met. The second wave (bloc 2) started at 12:00 PM on a different day and stayed open for 24 hours or until 300 participants had completed the survey. The third day, starting at 4:00 PM, the third survey (bloc 3) opened and ran until 300 participants had completed the task or 24 hours had lapsed. On the final day, the last survey (bloc 4) opened at 8:00 PM running for 24 hours or the 300-participant cap was met.

DAY 1: BLOC 1	DAY 2: BLOC 2	DAY 3: BLOC 3	DAY 4: BLOC 4
	<i>Screen data</i>	<i>Screen data</i>	<i>Screen data</i>
START SURVEY 8:00 AM	Start Survey 12:00 PM	Start Survey 4:00 PM	Start Survey 8:00 PM
END SURVEY 8:00 AM (DAY 2)	End Survey 12:00 PM (Day 3)	End Survey 4:00 PM (Day 4)	End Survey 8:00 PM

Figure 1. *MTurk Data Collection Plan*

Figure 1 represents the data collection schedule to collect responses from Amazon Mechanical Turk.

During the time frame between each bloc ending and before the next bloc begins (see Figure 1), the researcher scanned and approved the MTurk responses and download the data from Qualtrics. Then, the researcher ran preliminary analyses on the demographics of the participants. The preliminary analyses functioned as screens to detect if gender or age gaps were apparent in the existing data. Modifications to the

MTurk filters for participants would have then been made accordingly. However, the distribution of responses revealed there were no under-represented sample demographics. Therefore, no modifications were made to the filters or HITs.

Eligible participants who were interested in completing the survey were presented a brief informed consent letter at the start of the questionnaire (Appendix A) that described the purpose of the study, compensation for their time, voluntary participation, confidentiality agreement, and potential risks and benefits. If the participant chose to proceed with the survey, they advanced to the next screen by clicking the arrow at the bottom right of the Qualtrics interface. Participants were allowed to leave the study at any time by exiting the screen. However, compensation was awarded to workers only after full completion of the survey, and upon approval of their submitted responses by the requester.

Buhrmster et al. (2011) suggested it could be assumed that MTurk workers are self-motivated and therefore enjoy completing online tasks. So, it would be expected that the participants are providing quality information and have remained attentive to the task at hand. Although this may be true, items referred to as Attention Checks (AC) were inserted into the questionnaire to capture the attentiveness of the participant. These self-reported items were not a variable assessed during data analyses. One AC that was used in this study asked the age of the participant at the beginning of the study, and then had them enter the year they were born at the end of the survey. This method also ensured participants were at least 18 years old, and eligible to participate in the study. A second AC consisted of one item in each questionnaire, being directional, which stated "*I am*

paying attention, therefore select the response moderately,” changing the SPAS to 13-items and the SAAS to 17-items for the purpose of this study.

Another strategy that was used to account for potential systematic error was to divide the SPAS and SAAS into 2 sections in order to randomize the order in which the participants would see and respond to the items. The delivery pattern of the scales can also be found in Table 1. Each scale was delivered in its entirety before the next scale, regardless of which section was presented first. While this only accounted for potential error that could have been caused by fatigue or ordering of the scales, each item was not randomized. Therefore, the conclusions from this study can be analyzed under the assumption that the responses were more accurate than if the scales were delivered in the same order to all 4 blocs.

Table 1 *Data Collection Bloc Information*

	Day	Time	Date	SPAS-1	SPAS-2	SAAS-1	SAAS-2
Bloc 1	Tuesday	8:00 AM CST 6:00 AM PDT	4/21	1	2	3	4
Bloc 2	Friday	12:00 PM CST 10:00 AM PDT	4/24	3	4	1	2
Bloc 3	Monday	4:00 PM CST 2:00 PM PDT	4/27	2	1	4	3
Bloc 4	Thursday	8:00 PM CST 6:00 PM PDT	4/30	4	3	2	1

Instrumentation

Demographics

At the start of the questionnaire, the participants were instructed to answer several demographic questions. These included gender, age, and daily activity level. Gender was assessed in a two-step process (Group, 2014) biological sex (male or female) followed by gender identity. The response choices included in the item referring to gender identity included straight, gay or lesbian, bisexual, transgender or transsexual, and gender non-conforming. Capturing the participants' gender identity as well as their biological sex was intended to help better understand the constructs of social anxiety and potential differences one experienced according to their gender.

Age was a self-reported as a numeric value and was asked immediately following the participant's consent to the study. If the participant entered a value that was 17 or less, they were automatically removed from taking the survey. For data analysis purposes, age categories were not grouped *a priori*. Age was also helpful in the preliminary analysis phase to ensure data collection yielded a representative sample distribution.

Daily activity level was determined using the CDC recommendations for physical activity. Participants selected one out of the four statements that best described their activity level. The CDC recommendations were as follows: (1) 150 minutes, or more of moderate-intensity aerobic activity (i.e. brisk walking) muscle-strengthening activities on two or more days a week, working major muscle groups (legs, back, arms) or (2) 75 minutes, or more of high-intensity aerobic activity (i.e. jogging, running) muscle-strengthening activities on two or more days a week, working major muscle groups (legs,

back, arms). For those who identified themselves as meeting one of these two standards of daily recommended activity were considered “exercisers” for this study. Those who selected one of the following statements: (3) Less than 50 minutes of aerobic activity per week and little to no muscle-strengthening activities or (4) I do not exercise on a regular basis, were considered “non-exercisers” for this study. The two groups were used to further understand potential differences and as a covariate. After the demographic questions, the participants were presented with the SPAS and SAAS. The final demographic question, which also served as an AC, prompted the participant to enter the year in which they were born.

Social Physique Anxiety Scale

The SPAS is a 12-item questionnaire that assesses an individual’s level of anxiety or fear of being negatively evaluated based on their physique (Hart et al., 1989). The participants selected their response choice that best corresponded with the statements. It was measured by a 5-point, horizontal scale with responses ranging from 1 – *not at all*, to 5 – *extremely*. Examples of the statements included “*Unattractive features of my physique/figure make me nervous in certain social settings*” and “*There are times when I am bothered by thoughts that other people are evaluating my weight or muscular development, negatively*” (Hart et al., 1989). The self-reported responses were analyzed at the item level, as well as summed to examine overall levels of SPA. The range of SPAS scores could be from 12-60, with 60 indicating a very high level of SPA.

Table 2 *Items in the Social Physique Anxiety Scale*

Social Physique Anxiety Scale
1. I am comfortable with the appearance of my physique/figure.*
2. I would never worry about wearing clothes that might make me look too thin or overweight.*
3. I wish I wasn't so uptight about my physique/figure.
4. there are times when I am bothered by thoughts that other people are evaluating my weight or muscular development negatively.
5. when I look in the mirror, I feel good about my physique/figure.*
6. unattractive features of my physique/figure make me nervous in certain social settings.
7. in the presence of others, I feel apprehensive about my physique/figure.
8. I am comfortable with how fit my body appears to others.*
9. it would make me uncomfortable to know others were evaluating my physique/figure.
10. when it comes to displaying me physique/figure to others, I am a shy person.
11. I usually feel relaxed when it is obvious that others are looking at my physique/figure.*
12. when in a bathing suit, I often feel nervous about the shape of my body.

*Items 1, 2, 5, 8, and 11 will be reverse coded for analysis purposes.

Social Appearance Anxiety Scale

The SAAS is comprised of 16-items and assess an individual's level of anxiety or fear of being negatively evaluated based on their overall appearance (Hart et al., 2008). The participants were asked to select their response choice that best corresponded with the statements. It was also measured by a 5-point, horizontal scale with responses ranging from 1 – *not at all*, to 5 – *extremely*. Examples of the statements in the SAAS included “*I am concerned people will find me unappealing because of my appearance*” and “*I am frequently afraid I would not meet others' standards of how I should look*” (Hart et al., 2008). The self-reported responses were analyzed at the item level and also summed in order to examine the overall level of SAA. The range of SAAS scores could be from 16-80, with 80 indicating a very high level of SAA.

Table 3 *Items in the Social Appearance Anxiety Scale*

Social Appearance Anxiety Scale	
1.	I feel comfortable with the way I appear to others.*
2.	I feel nervous when having my picture taken.
3.	I get tense when it is obvious people are looking at me.
4.	I am concerned people would not like me because of the way I look.
5.	I worry that others talk about my flaws in my appearance when I am not around.
6.	I am concerned people will find me unappealing because of my appearance.
7.	I am afraid that people find me unattractive.
8.	I worry that my appearance will make life more difficult for me.
9.	I am concerned that I have missed out on opportunities because of my appearance.
10.	I get nervous when talking to people because of the way I look.
11.	I feel anxious when other people say something about my appearance.
12.	I am frequently afraid I would not meet others' standards of how I should look.
13.	I worry people will judge the way I look negatively.
14.	I am uncomfortable when I think others are noticing flaws in my appearance.
15.	I worry that a romantic partner will/would leave me because of me appearance.
16.	I am concerned that people think I am not good looking.

*Item 1 will be reverse coded for analysis purposes.

Data Collection

Once the Qualtrics link was published, the requester uploaded it to MTurk using their requester account. The requester created a project titled “*What do you see when you look in the mirror? Reflections of social anxieties (<10 mins).*” The description of the project was, “*Assessing how social physique anxiety and social appearance anxiety influence your reflection,*” using the keywords: *survey, social anxiety, appearance anxiety, physique anxiety, exercise, and judgment*. The requester indicated that the participants could receive \$0.20 for completing the survey and would be allotted 24 hours to complete the survey. The survey link would expire after 24 hours or once the 300 MTurk worker completion cap was met. This did not prevent those still completing the survey from submitting their responses, however it did not allow any new MTurk workers to start on the questionnaire ones the 300 caps were met. The qualification filters

required workers to be “Masters” and have a 95% or higher HIT approval rating. Further, the HIT was designated as “private” therefore it was visible only to those who met the specified criteria in order to complete the survey.

The preview of what the MTurk worker would see is illustrated in Figure 2. This layout informed the workers about compensation, time, and described what the survey was designed to assess. After completion of the survey, the worker was prompted to enter a code. The code was specific to the data collection bloc (i.e. day 1, bloc, 1.) The code was the numeric date, month and day, and the bloc number; for example, 0415.01. Entering the code as instructed also served as an AC. Those who did not enter the correct code were not approved for compensation. Participation of MTurk workers was completely voluntary, and they would receive no penalty for ending the survey. However, failure to complete the survey would result in zero compensation. After each data collection bloc had ended, the requester would approve the appropriate participant responses and download the data from Qualtrics for analyses.

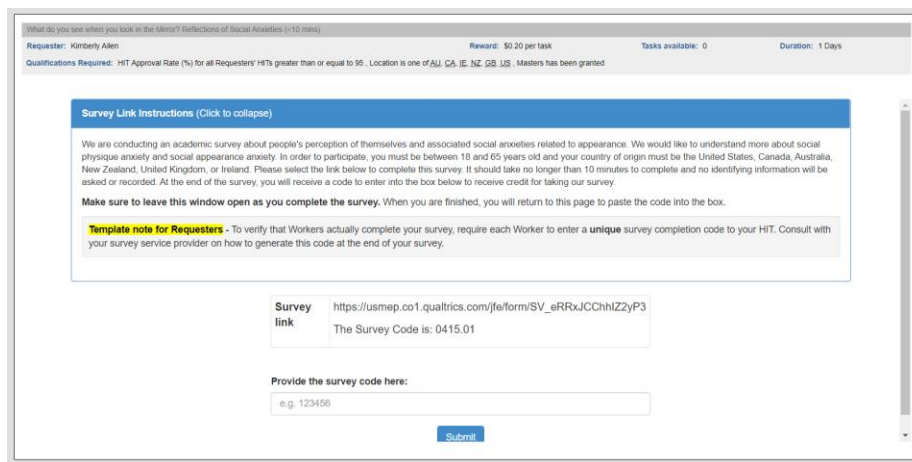


Figure 2. *Preview of MTurk Interface*

Data Analysis

Prior to conducting data analyses, the data were downloaded from Qualtrics into a CSV file, as well as into a software program, SPSS (IBM Corp.). Each bloc was downloaded and had a separate CSV and SPSS file in order to run preliminary analyses before starting the next data collection bloc. After all data collection blocs were completed and downloaded, they were then combined into one dataset as an SPSS file. The SPSS file contained all of the participant responses from each bloc, creating a single dataset to be used for data analyses. The CSV files were stored for coding references and backup purposes.

The dataset was then cleaned and visually inspected for missing values and extreme outliers. Any missing data were designated as missing values and labeled with a score of -99. Diagnostics and assumptions were evaluated as well, in order to determine the distribution and variation of the dataset. After the data had been cleaned, the participants were then randomly assigned into three equal groups.

MTurk Demographics

Research questions regarding the demographics of the samples were analyzed in SPSS. Frequencies and distributions were reported through descriptive statistics. Demographic data information was reported in tables to summarize overall sample and group characteristics. Along with tables, graphics have been pictured in order to demonstrate any patterns or trends in the data.

Phase 1: Confirmatory Factor Analysis

To begin, the factor structure and validity of the SPAS and the SAAS were analyzed using a statistical program, *Mplus*®, from the data in sample group 1 (n = 404)

using a CFA. The CFA is a portion of Structural Equation Modeling (SEM) that indicates relationships among latent variables and the associated indicator items. Four models were tested on the SPAS; a unidimensional model, a two-factor correlated and uncorrelated model, and a two-factor higher-order model to determine simple solution.

The chi-square (χ^2) statistics were used to determine absolute fit and assumed multivariate normality. Model fit indices were examined using the comparative fit index (CFI) where values above .90 indicated good fit (Bentler, 1992). Additionally, the root-mean-square error of approximation (RMSEA) with values less than .08, and the Tucker-Lewis Index (TLI), values above .90 were also used to indicate good fit. Cronbach's alpha (α) was used to address internal consistency reliability of the model. Results have been reported separately for each scale, and the parsimonious model for each scale evidences the validity of the SPAS and SAAS in a sample that is diverse in gender and age. The findings from this data technique revealed the appropriate factor model for this particular sample.

Phase 2: Exploratory Factor Analysis Merging the SPAS and SAAS

Sample group 2 (n = 405) data were used to conduct an EFA combining the items from the two scales using SPSS. The KMO and Bartlett's test, scree plot, MAP, and parallel analyses were run to indicate the number of factors detected in the model. Item loadings below .35 were considered non-loading items, and the final model showed only items loading on one factor in order to get simple structure. It was hypothesized that the EFA would indicate three factors, also referred to as latent variables: physique presentation comfort (PC), expectation of negative evaluation (NE), and situational influence (SI). The item loadings helped to determine which items were indicators of

each factor. Once the parsimonious model was found, the factor structure was further examined using a confirmatory factor analysis on the third sample group.

Phase 3: Confirmatory Factor Analysis on the Combined Scale

The factor structure model produced by the EFA served as the base model for constructing and testing the measurement model. The CFA was again analyzed by using a software program, *Mplus*©. The CFA allowed for the factor structure to be set *a priori* to examining the model fit. The measurement model was developed to examine the latent variables: physique presentation comfort (PC), expectation of negative evaluation (NE), and situational influence (SI) using the items from the SPAS and SAAS.

CHAPTER IV RESULTS

MTurk Sample Demographics

The crowdsourcing sampling plan demonstrated to be an effective method for collecting a large sample ($N = 1214$) that was diverse in gender and age. Using the Amazon MTurk platform to collect data on the SPAS and SAAS reached a large population. By collecting samples in a randomized bloc pattern, it mimicked random time sampling. There were minimal restrictions set for potential participants, so the samples that were collected were considered to have the same probability for potential threats to internal validity. Furthermore, when the sample was randomly assigned to three groups, it was determined that the groups were statistically not different, except for physical activity level (see Table 4). Therefore, equal variance was assumed, and later tested for equal variance within each phase of data analyses.

Physical activity level was not significantly different among blocs ($1.701, p = .165, F(3) = 1.257, p = .288$) according to the preliminary analyses that were completed during the data collection period. An analysis of variance test was run after the formation of the three groups and the homogeneity of variance test was violated only after the blocs within the total sample were randomly assigned to the three groups. This was because out of the 1214 participants, 193 reported that they did not exercise at all, compared to the ones who reported they did ($n = 1021$). Therefore, the distribution of those 193 participants from the four blocs then resulted in unequal variance between the three groups once they were formed based on exercise behavior. But for all other demographic characteristics, equal variance was assumed, and the groups were considered similar.

Table 4 Analysis of Variance Between Groups on Total SPAS and SAAS Scores

	Levene Statistic	Sig.	<i>F</i>	Sig.
Sex	0.585	0.577	0.144	0.866
Age	1.639	0.195	2.066	0.127
Nationality	2.339	0.097	0.809	0.445
Physical Activity	3.454	0.032	1.014*	0.363
Exercise	5.558	0.004	1.420*	0.242

* Welch statistic was reported in cases where there was violation of the Levene's test. Variability was tested using the Sum Scores of the SPAS and SAAS.

Descriptive patterns and frequencies of each demographic characteristic can be found in Tables A1-A4 in Appendix D. The majority of the participants reported they were heterosexual (87%), from a sample that was 45.4% male and 54.6% female. Another similarity between groups was the mean age of the participants, which ranged from 34 to 36 years old ($SD = 11.2 - 11.9$). These values are slightly above what other studies using MTurk have reported, but for these findings it was advantageous to collect data from individuals who were not in the college age range. The sample had a mean and median of 35 years, but the mode was 25 ($n = 61$), which is the age of traditional students who are nearing the end of a four-year degree. However, this was not an issue once the three groups were formed.

Nationality was also a demographic characteristic that was collected, in order to ensure that cultural differences would not potentially impact the participants' responses. Therefore, exclusion criteria were set in order to limit the possibility of differences in SPAS and SAAS scores occurring. The majority of the participants ($n = 1063$) reported they were from the United States which accounted for 87.4% of the sample. The remaining 12.7% were from either Canada ($n = 93$) or the United Kingdom ($n = 55$), with only 2 who reported they were from Australia, and 1 from Ireland. New Zealand was also

a country included in the criteria, but there were no participants who reported that was their country of origin. Participants who selected the answer choice 'other' were eliminated from this study.

The final characteristic was the reported exercise behaviors of the participants. There were four choices that participants could choose from, and each came from the CDC guidelines for Daily Recommended Activity for adults. For this study, two groups were formed that classified the participants as either "exercisers" or "non-exerciser" based on their response. The sample consisted of 58.9% exercisers (n = 715) and 40.9% non-exercisers (n = 496).

MTurk Response Analyses

The participant data were collected over a two-week period in late spring 2020. The days were selected *a priori* and were chosen based where during the week they fell (see Table 4). Meaning each week, data was intended to be collected at the beginning of the week and towards the end of the week. This was to account for potential confounding factors that could have affected variability in SPAS and SAAS scores. Weekends were not included as collection days given most individuals were likely to follow a regular work schedule, Monday through Friday. The participants were given a code to enter when they completed the survey. In order for them to be compensated, they had to have entered the correct code designated for that data collection bloc. The order of the scales were also alternated randomly, reducing the chance of systematic error due to fatigue or other confounds.

Submission Response Approvals and Attention Checks

The overall the total number of responses for the questionnaire was relatively high. Specific details and count for response approvals and eliminations can be viewed in Table 5. Amazon MTurk operates on Pacific Daylight Time (PDT) therefore the times that the questionnaire was posted by the requester were reflected in PDT rather than Central Standard Time (CST). There were several details worth noting in regard to the response patterns seen within each bloc. The first bloc started on a Tuesday morning, and was slow to capture any responses ($n = 12$) until later that evening ($n = 185$). This could have been due to a technological error or system malfunction, but it is worth mentioning that the majority of the data collected in that bloc was not collected during the early morning hours that week.

The second bloc ran more smoothly, with a steady number of responses being submitted. Since this bloc started mid-morning (10:00 AM PDT), and the Blocs were not significantly different, it can be assumed the times for bloc 1 and bloc 2 accounted for those participants who work mostly in the first half of the day. When analyzing the data between blocs, results indicated that there was equal distribution of sex and age, and therefore no adjustments to the HIT qualifications were made at any time. Due to the number of participant responses that had to be eliminated based on the exclusion criteria, the last collection bloc was extended until 400 participants had completed the study, rather than 300, in order to collect a large enough sample. Within each of the blocs, there were several participants who did not pass the attention checks. These ACs were put in place to identify those who were not paying attention and possibly clicking a response

choice at random. Using the three AC items, it resulted in approximately 10% of the data from each bloc having to be eliminated from analyses.

Table 5 *Analysis of MTurk Responses*

	Bloc 1	Bloc 2	Bloc 3	Bloc 4	Total
Recorded responses	340	354	338	404	1436
Attention Check Eliminations	30	35	31	42	138
<i>AC 1 (instructed response)</i>	22	16	20	21	79
<i>AC 2 (instructed response)</i>	4	8	8	16	36
<i>AC 3 (year entered)</i>	4	9	3	5	21
Incomplete Responses	19	2	4	8	33
Age (-18)	2	0	0	0	2
Age (66+)	4	9	9	9	31
Excess of Missing Data	0	4	14	0	18
Total Eliminated	55	50	58	59	222
Total Analyzed	285	304	280	345	1214

Note: AC 1, AC 2, and AC 3 have been accounted for in the totals for Attention Check Eliminations.

Demographic-Related Norms

Collecting data using Amazon MTurk provided the opportunity to capture information regarding the SPAS and SAAS from a diverse group of participants. While the demographics have been discussed collectively for this sample (n = 1214), these characteristics have not been evaluated as factors in regard to the level of SPA or SAA one may be experiencing. In order to better examine these factors, the sample was divided into five groups according to age (see Table 6).

The age groups were selected around the stages of adulthood suggested by Medley (1980). For the purposes of this study, participants were grouped as follows: New Adulthood (ages 18-25 years), Early Adulthood (ages 26-35 years), Primary Adulthood (ages 36-45 years), Middle Adulthood (ages 46-55 years), and Late Adulthood (ages 56-65 years). Each of these stages can be related to age-specific experiences, which would

gather information from the different phases of life. With these five groups, the patterns of SPA and SAA were investigated according to the phase of life the participant was in. Generalizations are only able to be made based on the mean age of the participant groups.

Table 6 *Distinct Age Groupings*

AGE	Frequency	%	<i>M</i>	<i>SD</i>
18 – 25 years	300	24.7	22.1	2.7
26 – 35 years	405	33.4	30.5	2.8
36 – 45 years	282	23.2	40.2	2.9
46 – 55 years	137	11.3	50.4	2.7
56 – 65 years	90	7.4	60.3	3.0

Differences in SPA and SAA levels based on demographic characteristics among the total sample can be found in Table 7. The majority of the MTurk participants experienced a higher than average (where average is the median of the scale ranges) levels of social anxiety. The group that reported the highest levels of SPA were those in New Adulthood (38.6 years of age), and the lowest was reported from those in the Middle Adulthood group (35.1 years of age). Similar to what has been seen in the literature, females reported having higher levels of social physique and appearance anxiety than males.

Overall, the average SPAS and SAAS scores were similar among the participants from the different countries, with the exception of one participant who was from Ireland. The participant from Ireland reported having high levels of SPAS (56) and SAAS (60), for which scores were relatively high on both scales. Therefore, individuals from the United States, Canada, Australia, and the United Kingdom can all be considered as having the same reported levels of experiencing social anxiety.

Table 7 Total SPAS and SAAS Scores Based on Demographics

	<i>N</i>	Total SPAS Score		Total SAAS Score	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Age Group					
18-25 years old	280	38.56	11.34	45.04	18.49
26-35 years old	386	36.84	11.41	41.01	17.70
36-45 years old	274	37.14	11.65	38.51	17.96
36-45 years old	132	35.08	12.72	36.11	19.02
36-45 years old	88	35.75	12.06	33.32	15.69
Sex					
Male	518	33.75	10.54	37.16	16.81
Female	636	39.71	11.94	42.78	19.08
Nationality					
United States	1016	37.02	11.97	40.18	18.53
Canada	87	37.75	8.30	42.48	15.92
Australia	2	38.00	15.56	36.50	23.33
United Kingdom	52	36.04	11.00	37.65	17.04
Ireland	1	56.00		60.00	
Exercise					
Exercisers	685	36.05	11.56	38.95	17.70
Non-Exercisers	473	38.52	11.71	42.13	18.91

Exercise behavior was also examined as a factor of SPAS and SAAS scores. More than half of the participants were exercisers and collectively reported one of the lowest mean scores on the SPAS. It is worth noting that although exercisers appear to have lower SPAS scores than those who do not exercise, individuals still reported higher than average SPA levels.

To further examine the differences among different factors of the SPAS and SAAS related to demographics, comparisons were made between the different levels within each of the variables (see Table 8). There was a significant difference among the different age groups on both the SPAS and SAAS. Since equal variance was assumed, the post hoc analysis used for pairwise comparisons was Tukey HSD. The results indicated that there was a significant difference between New Adulthood and all other groups ($p =$

.046), as well as between Early Adulthood and Late Adulthood ($p = .003$). This also supports findings from the literature, that younger adults do experience higher levels of social anxieties, and that as age increases, likely will SPA and SAA.

Gender identity was also captured as another potential factor in determining SPA and SAA levels. Those who identified as being “straight” reported a mean SPAS score of (36.55) and a SAAS score of (39.26). Even though only 13% of the participants identified with a gender that was not straight, results suggest that there was a significant difference that occurred between those who were straight (36.94) and bisexual (41.98). Nevertheless, there were no significant differences in SPA or SAA levels ($p > .05$) between those who were straight and all other reported gender identities. However, the confidence intervals were extremely far spread in cases where $n < 50$, which means these estimations may not be considered accurate compared to the mean scores in the population.

Table 8 *Analysis of Variance Between Demographic Characteristics on SPAS and SAAS*

	Levene Statistic	Sig.	<i>F/t</i>	Sig.
<i>SPAS</i>				
Age	1.397	0.233	2.432	0.046
Sex	17.866	<.001	-8.995*	<.001
Gender	0.310	0.871	6.674	<.001
Nationality	6.165	<.001	0.836*	0.502
Exercise	0.343	0.558	-3.558	<.001
<i>SAAS</i>				
Age	1.186	0.315	28.212	<.001
Sex	17.014	<.001	-5.312*	<.001
Gender	1.047	0.382	8.894	<.001
Nationality	2.097	0.099	0.902	0.462
Exercise	4.976	0.026	-2.883*	0.004

* Estimates (*F/t*) were based on equal variance not assumed because there was violation of the Levene’s test.

Nationality was the only demographic characteristic where there were no significant differences in reported levels of SPA or SAA. While the data were skewed with more participants being from the United States, the mean scores on the two instruments were not statistically different. Therefore, it can be concluded that from this study, a person's country of origin does not contribute to the levels of SPA or SAA they may experience. However, this was only examined in countries that were considered to be culturally similar to the United States.

The last demographic characteristic that contributes to the differences seen in SPAS and SAAS scores is exercise. The two groups were formed using CDC guidelines for daily recommended activity. Therefore, conclusions can be made that those who do not exercise (i.e. do not meet the guidelines set by the CDC to be considered physically active) experience significantly higher levels of SPA and SAA compared to those who do exercise. While the claim that exercise may change one's level of anxiety, these results only solidify that people who do establish exercise behaviors are at a lower risk for experiencing them.

Phase 1: Establishing Factor Structures

The database which contained 1214 responses from MTurk workers from all data collection blocs was randomly distributed into three equal groups based on sample size. This process was done through a function in SPSS, which assigned random uniform numbers to each row of data, ranked them by percentile, and then randomly assigned them to a group. The three groups were then used to analyze each phase of this study independently.

Phase 1 Sample Characteristics

The sample used for Phase 1 consisted of 404 MTurk participant's responses. Of these, 186 were male and 217 were female, where 305 participants identified as being straight, 5 were gay or lesbian, 44 identified as being bisexual, 3 were transgender or transsexual, and 1 reported as being gender non-conforming. These results indicated that 86.6% of this sample was considered heterosexual. The mean age for this group was 34.9 years old, with a standard deviation of 11.7 years.

Other demographic information collected for this study included nationality and exercise behavior. The Phase 1 sample consisted of 360 participants reporting they were from the United States, which accounted for 89.1% of the data. Participants were also from other countries that included Canada (n = 26), Australia (n = 1), and the United Kingdom (n = 17). These countries were identified *a priori* as being culturally similar to the United States, therefore it was presumed that the participants would respond similarly to those from the United States. Another factor that was examined was reported exercise behavior, based on the CDC requirements for recommended daily physical activity. In this sample, 61.9% of the participants (n = 250) reported they met the CDC recommendations and were considered exercisers. The other 154 participants either did not meet the guidelines set by the CDC or reported that they did not participate in exercise or physical activity.

Confirmatory Factor Analysis: Determining the Factor Structure of SPAS

Mplus© was used to analyze the different measurement models that have been used to investigate the factor structure of the SPAS. A CFA was conducted to test the higher-order measurement model of the 12-item SPAS using the Maximum Likelihood

Estimations (ML) for the chi-square (χ^2) test of model fit and the Satorra-Bentler correction factor to calculate chi-square difference tests (Satorra & Bentler, 2010) to determine significant differences between models ($\Delta\chi^2$). Along with this measure of goodness of fit, the absolute fit index Root Mean Square Error of Approximation (RMSEA), incremental fit indices such as Comparative Fit Index (CFI), and Tucker-Lewis Index (TLI) were used. To determine the “goodness” of fit, the indices were evaluated using the criteria suggested by Muthén and Muthén (2012). These recommendations were as follows: an RMSEA of .5 or less is to be considered an indicator of good fit, a CFI and TLI value of .95 or greater is also indicative of being a good fit (West, Taylor, & Wu, 2012). Along with these criteria, Asparouhov and Muthén (2018) also suggested the use of the Standardized Root Mean Squared Residual (SRMR) as an indicator of approximate fit. Exact fit would still be concluded if the chi-square test of model fit was not significant ($p > .05$). Otherwise, approximate fit could also be used to support goodness of fit along with the other fit indices.

Martin et al., (1997) was among the first to study the factor structure of the SPAS using techniques such as confirmatory factor analysis and structural equation modeling. While there have been numerous models that have been tested regarding the validity of the instrument, there were four that have been continuously mentioned and tested using different samples. These models included the 12-item unidimensional model (Crawford & Eklund, 1994; McAuley & Burmen, 1993; Hart et al., 1989), the two-factor uncorrelated model (Eklund et al., 1996), the two-factor correlated model (Martin et al., 1997), and the two-factor hierarchical model (Eklund et al., 1996). The higher order model has been recognized by many as the best fit model for the SPAS. Because this

model has been designated the most indicative of predicting levels of SPA, it was used as the comparison, examining each of the aforementioned models in reverse order of when the models were initially validated in the literature. Results from these CFA models can be found in Table 9.

Higher-Order Model

The proposed hierarchical model consisted of two factors, physique presentation comfort (PC) and expectations of negative physique anxiety (NE) (see Figure 3). In this model, Factor 1 consisted of the items that were positively worded, and Factor 2 was formed from the group of negatively worded items. Each of these first-order factors were considered subordinate to the overarching factor, SPA (Eklund et al., 1996). Since the latent variable SPA had only two indicators, PC and NE, the model was unidentified (negative degrees of freedom). Therefore, the error terms of the first-order latent variables were constrained to be considered equal (Eklund et al., 1996).

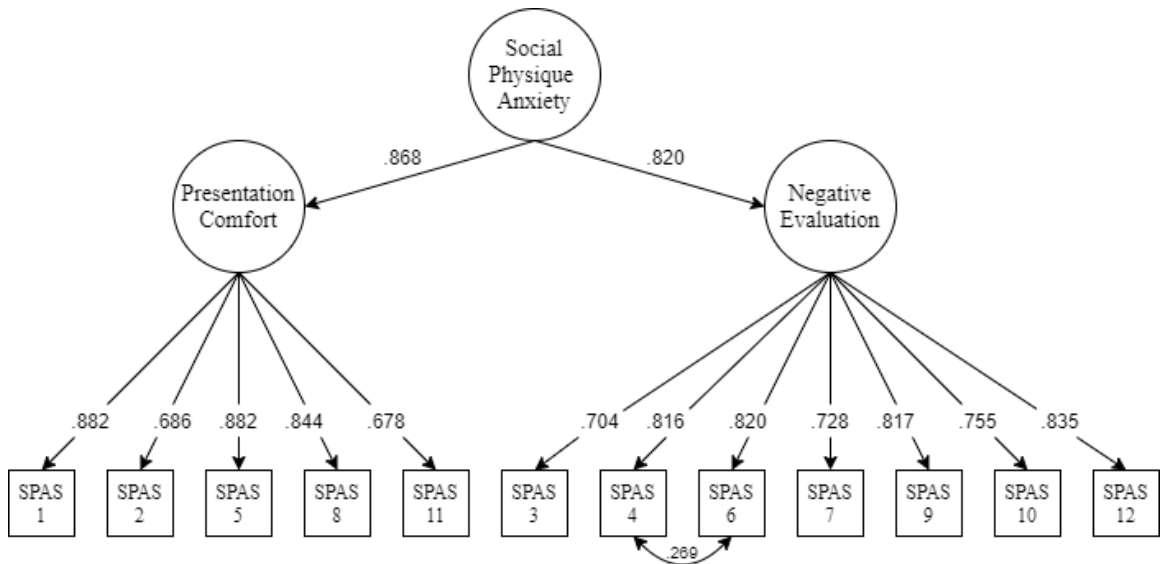


Figure 3. *Standardized Factor Loadings for Higher-Order Model*

Results from the CFA indicated that the higher-order model produced good fit with the data ($\chi^2(53) = 200.72, p < .001, CFI = .95, TLI = .94, RMSEA = .08, 90\% CI [.07, .09]$). The SRMR was also below the threshold of .08 at .04, which also indicated good fit. While the fit indices indicate good fit, the modification indices indicated that correlating the error terms for items 6 and 4 would improve the model fit. These items theoretically could be addressing the same construct, just in a different way, therefore the modification was justified. Results indicated that the model did fit better ($\Delta\chi^2(1) = 26.31, p < .001$), after correlating the two items ($\chi^2(52) = 161.44, CFI = .97, TLI = .96, RMSEA = .07, 90\% CI [.06, .08], SRMR = .04$). Furthermore, the standardized factor loadings were all acceptable and ranged from .68 to .89. This is displayed in Figure 3. The hierarchal model was also determined to be superior to all subsequent models tested.

Two-Factor Correlated Model

Similar to the higher-order model, the two-factor correlated measurement model examined the factors PC and NE as separate constructs. Because this model closely resembled the higher-order model, the fit indices were identical fit indices ($\chi^2(53) = 200.72, p < .001, CFI = .95, TLI = .94, RMSEA = .08, 90\% CI [.07, .09]$). The same modification indices concluded the correlation of error terms of item 6 and item 4, resulting in the equivalent models ($\chi^2(52) = 161.44, p < .001, CFI = .97, TLI = .96, RMSEA = .07, 90\% CI [.06, .08], SRMR = .04$). According to the modification indices in the CFA from this sample, items 4, 7, and 12 may also be loading on the other factor. These modifications were tested and showed there were no significant double loadings ($> .35$) for these items. Because there was no theoretical justification to change the model,

the two-factor correlated model was retained using the 5 positively worded indicator items for factor 1 and the 7 negatively worded items for factor 2.

Given the equivalence of the models, using the higher-order model was superior to the two-factor correlated model (Figure 4). The higher-order model was primarily investigated in an attempt to establish a global scale score, which allowed for a sum score to be computed that represented an overall level of SPA. Since the majority of the literature uses the sum scores for reporting levels of SPA one experiences, the hierarchical model that designated SPA as the second-order factor was retained.

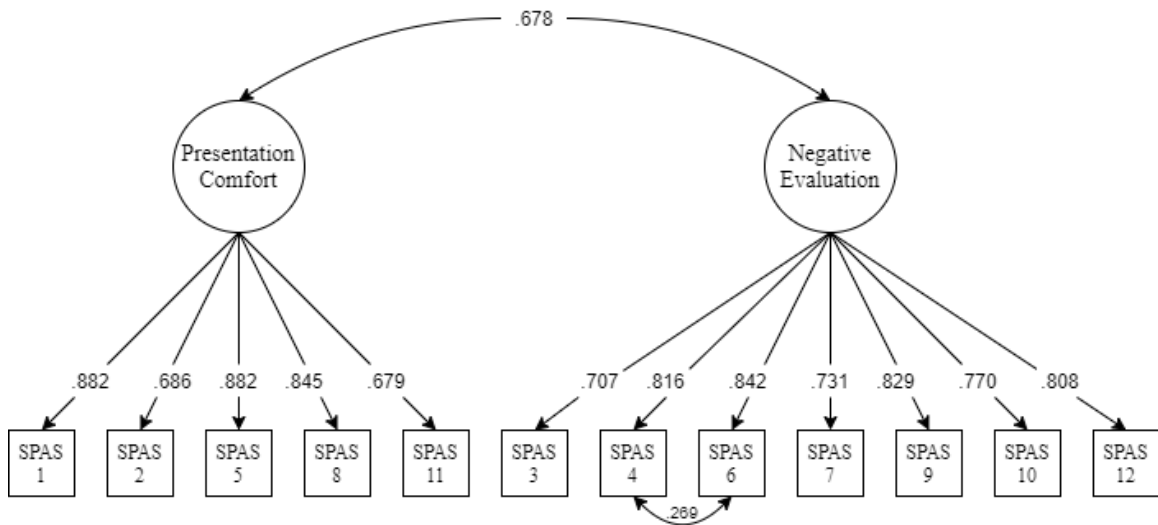


Figure 4. *Standardized Factor Loadings for Two-Factor Correlated Model*

Two-Factor Uncorrelated Model

The two-factor uncorrelated model did not fit better ($\chi^2(54) = 416.30, p < .001$, CFI = .89, TLI = .86, RMSEA = .13, 90% CI [.12, .14] SRMR= .28; see Figure 5) than the higher order model ($\Delta\chi^2(2) = 139.65, p < .001$), therefore the higher-order model was retained.

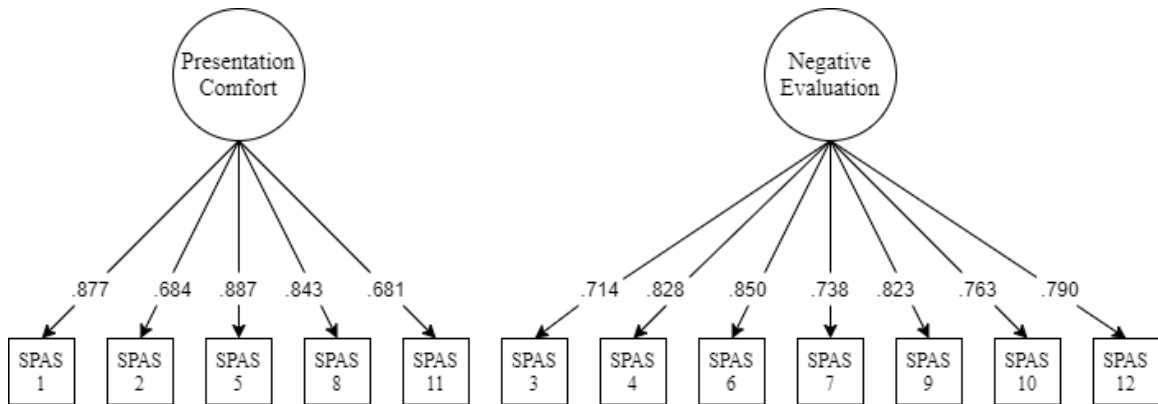


Figure 5. *Standardized Factor Loadings for Two-Factor Uncorrelated Model*

In this model, the factors were forced to be orthogonal, meaning they were to be considered statistically independent. When compared to the other models, this method proved to worsen the fit in this sample. This was determined by the differences in chi-square, and the changes in the fit indices. These model fit indices further supported the two-factor uncorrelated model was inferior to the higher-order two-factor model.

Original Unidimensional Model

Hart et al. (1989) performed three studies during the preliminary process of developing the SPAS, designing it to be a unidimensional instrument. The initial model lacked significant evidence of factor validity and structure during these investigations. The CFA conducted using this sample also lacked substantial evidence that the unitary model fit the data. Results indicated there was not good fit, ($\chi^2(54) = 740.06, p < .001$, CFI = .79, TLI = .75, RMSEA = .18, 90%CI [.16, .19] SRMR= .08). Compared to the higher-order model, ($\Delta\chi^2(2) = 321.36, p < .001$), the fit indices were not better and therefore did not provide enough support to retain the original model.

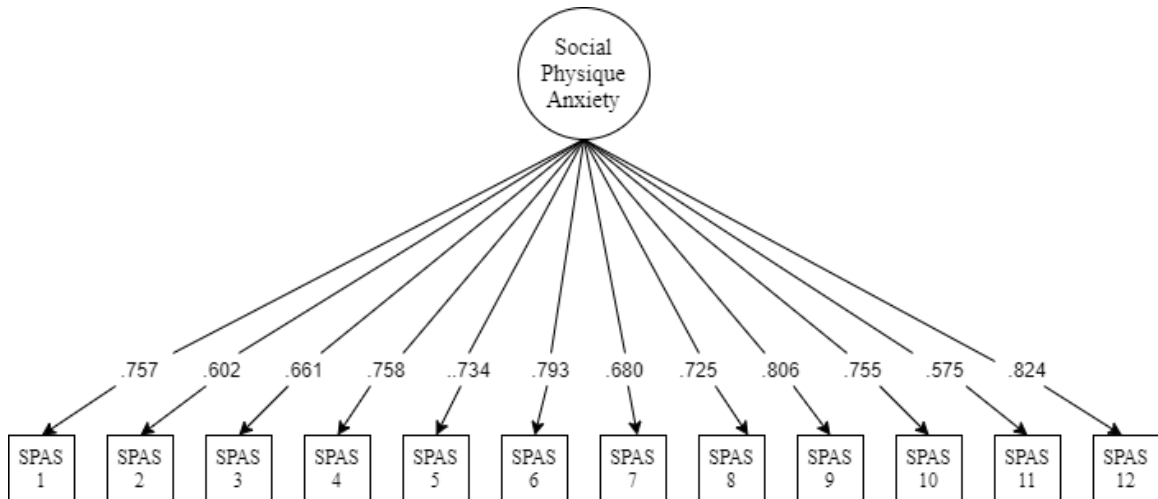


Figure 6. *Standardized Factor Loadings for Unidimensional Model: SPA*

Table 9 *SPAS Goodness of Fit Estimations by Model*

Measurement Model	df	χ^2	RMSEA	CFI	TLI	SRMR
Higher-Order	52	161.44	.07	.97	.96	.04
Two-Factor Correlated	52	161.44	.07	.97	.96	.04
Two-Factor Uncorrelated	54	416.30	.13	.89	.87	.28
Unidimensional	54	740.06	.18	.79	.75	.09

Confirmatory Factor Analysis: Determining the Factor Structure of SAAS

Hart et al., (2008) designed the SAAS to focus on overall appearance, attractiveness, and body shape. The original scale included 16-items related to appearance anxiety and supported a single-factor model. Results from the CFA on this sample indicated a unidimensional model for the SAAS ($\chi^2(104) = 601.32, p < .001, CFI = .93, TLI = .92, RMSEA = .11, 90\% CI [.10, .12], SRMR = .03$, see Figure 7). However, this proposed model did not meet the criteria for goodness of fit, and therefore did not support retaining the model.

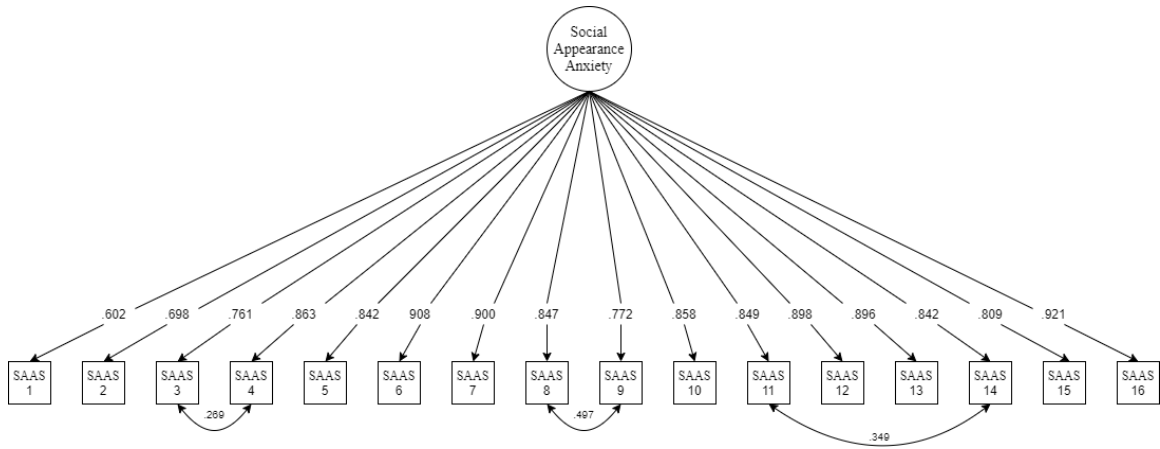


Figure 7. *Standardized Factor Loadings for Unidimensional Model: SAA*

According to the modification indices there were multiple indicators that appeared to be highly correlated with each other. Typically, a high correlation between the variables indicates a possible factor that is not in the model. But for the purposes of this analysis, there was no theoretical justification to assume there was a second factor present. Therefore, modifications were made individually until the indices reached the best fit, and a parsimonious model was confirmed.

There were five possible correlations that could have provided a better fit to the data, but only three were made before the model reached good fit (Table 10). Each of the item to item correlations made theoretical sense, and the adjustments were made in the model accordingly. These modifications were done one at a time, starting with the highest M.I. value. With these modifications, total changes in the χ^2 test, RMSEA, CFI, TLI, and SRMR supported a better fit for the model ($\Delta\chi^2(3) = 112.98, p < .001$). By the third iteration, all fit indices were met to conclude goodness of fit, and the model was retained.

Table 10 SAAS Parameter Estimates and Modification Indices

	M.I.	df	χ^2	RMSEA	CFI	TLI	SRMR
Original CFA Model		104	601.32	.11	.93	.92	.030
Correlated Error Terms							
Item 9 WITH Item 8	101.66	103	491.22	.10	.95	.94	.030
Item 3 WITH Item 2	65.30	102	422.29	.09	.95	.95	.030
Item 14 WITH Item 11	47.40	101	375.33	.08	.96	.95	.030

Phase 2: Merging the Two Scales

Phase 2 Sample Characteristics

The sample used for Phase 2 came from the second group of MTurk participants and had a total of 405 participants. Group 2 was comprised of 45.5% male (n = 183) and 54.5% female participants (n = 219), with 88.4% (n = 358) reporting their gender identity as being heterosexual. The mean age of this group was 36.2 ± 12.1 years, the median age was 34 years, and the mode was 32 years. Similar to group 1, the United States was where the majority (85.1%) of the participants were from (n = 344). There were 38 Canadians, 20 from the United Kingdom, and 1 from both Australia and Ireland. Group 2 also consisted of 237 exercisers (58.8%) and 166 non-exercisers (41.2%) per the CDC recommendations, with 72 participants reporting that they did not exercise.

Exploratory Factor Analysis: Establishing the Factor Structure of the Combined Scale

The first stage of a factor analysis is the extraction. The number of factors that can be extracted are typically outlined in the literature and based on theory. For this study, there were several fixed factors that were tested in the model. Based on the results from Phase 1, SPAS was considered a two-factor hierarchical model, and SAAS was a unidimensional model with correlated error terms. Therefore, the EFA on the combined measure was examined using 2 and 3 fixed factors, which was hypothesized to conclude

the most parsimonious simple structure. The number of factors was also determined through evaluating the Scree plot, along with the results from the test of parallel lines, and minimum average partial (MAP) variance test.

The initial EFA explored the combined measure consisting of the 12 items from the SPAS and 16 items from the SAAS using 2 fixed factors, forcing the items to load on one of the two factors. A Maximum Likelihood Estimation (MLE) analysis was used in order to determine the factor loadings. The MLE is a method of factor analysis that uses approximations of parameters of a statistical model given the sample data. This process results in possible parameter values that maximizes the likelihood of making the same observations seen in the data given the parameters. Fabrigar, Wegener, MacCallum and Strahan (1999) argued that if the data from the sample are normally distributed, an MLE factor analysis is the best choice because “it allows for the computation of a wide range of indexes of the goodness of fit of the model and permits statistical significance testing of factor loadings and correlations among factors and the computation of confidence intervals.” (p. 277). Additionally, the MLE was used because the data were normally distributed in this sample, with a Promax rotation because the sample size of this data set was greater than $n = 150$.

Two-Fixed Factor Model

The EFA using 2 fixed factors, was analyzed in order to examine potential overlap of items combining the SPAS and SAAS. This model was tested because of conflicting findings found in the literature that suggested with the combination of these two scales, redundancy of items would occur due to the items in the SPAS and SAAS potentially assessing the same constructs. There has been evidence that these two scales

can stand alone as independent measures, therefore it was assumed that when these items were combined, they would all load on the respective factor, SPA or SAA. Since the unidimensional model of the SPAS was not retained in Phase 1, the two factors PC and NE were thought to be the two that would be extracted, rather than a SPA and SAA factor. Further, there had been reason to believe that some of the items in the two scales when combined would produce the same factors the two-factor model for the SPAS did, if in fact these items overlapped. Following this proposed model, the EFA did yield a significant KMO (.974) and Barlett's test of Sphericity (11321.85, $p < .001$). The KMO test works similar to an omnibus test, therefore it was worth progressing to and analyzing in a factor analysis. Both values provided evidence that inter relationships did exist in the data.

The communalities table showed the amount of variability that each item had with all the other items. In this model, the loadings of items 2, 3 and 10 of the SPAS were relatively low (below .5) which indicated these items had less variability compared to the other items. The first factor (NE) that was extracted in the MLE analysis explained the most variability (58.7%). Since the factors were fixed at 2, only 2 factors were retained in the model, and 8.7% of the remaining variability was accounted for by the second factor. Overall, the two factors accounted for 67.5% of the total variance.

The number of factors that were extracted had been outlined in the literature, were also demonstrated in Phase 1, and have been based on theory. But the Scree plot was also evaluated, along with the results of the test of parallel lines, and MAP test for variance. The Scree plot in Figure 8, illustrates the number of factors or subscales that appeared to be present. This measure has been noted as being subjective and can result in

contradicting observations, based on individual perspectives. However, the Scree plot for the two-factor model (Figure 8) clearly illustrated the change in direction of the line starting at the 2-factor mark, but more abruptly at factor 3. The parallel lines test concluded there were two factors, although the MAP test indicated “the number of components according to the revised (2000) MAP Test is 1.” However, the MAP tends to under analyze the number of potential factors and has been considered a conservative measure.

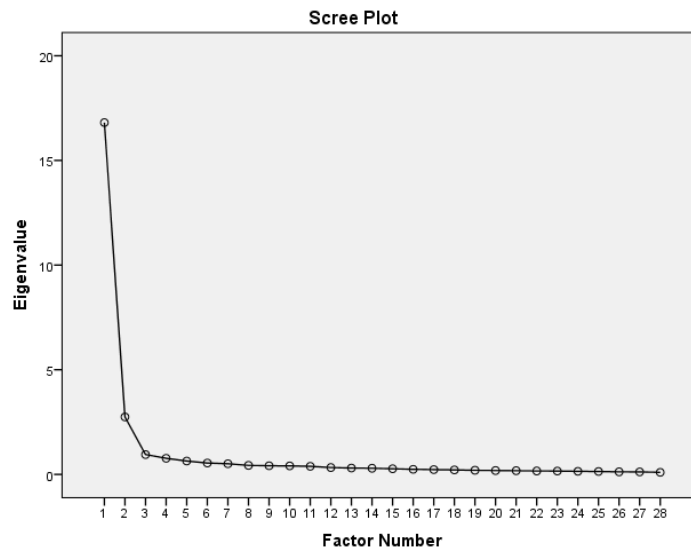


Figure 8. *Scree Plot of MLE with Two Fixed-Factors*

When evaluating the pattern matrix for this two-factor model, there were 3 items that were cross loading on both factors, SPAS items 9, 10, and 12. Each of these items were removed separately and the factor loadings were reassessed until simple structure was found. The items excluded from the final parsimonious model were the SPAS items

3, 9, 10, and 12. The final model concluded with 24 items and 2 factors which indicated the latent variables, PC and NE (see Table 11).

The parsimonious model concluded with 6 indicator items for PC, and 18 indicators for NE. The total variance explain in the model was 69.3%, where the NE factor accounted for 59.9% of the variance, and PC accounted for 9.4%.

Table 11 *Pattern Matrix for Two-Factor EFA Model*

ITEM	Factor		ITEM
	Presentation Comfort	Negative Evaluation	
SPAS 4	.714	.893	SPAS 1
SPAS 6	.692	.650	SPAS 2
SPAS 7	.697	.869	SPAS 5
SAAS 2	.634	.796	SPAS 8
SAAS 3	.704	.774	SPAS 11
SAAS 4	.909	.746	SAAS 1
SAAS 5	.906		
SAAS 6	.914		
SAAS 7	.886		
SAAS 8	.924		
SAAS 9	.838		
SAAS 10	.921		
SAAS 11	.921		
SAAS 12	.936		
SAAS 13	.871		
SAAS 14	.748		
SAAS 15	.815		
SAAS 16	.924		

Extraction Method: Maximum Likelihood. Axis Factoring. Rotation Method: Promax with Kaiser Normalization. Rotation converged in 3 iterations.

The factor correlation matrix was evaluated for evidence of validity, and a reliability analysis measured the internal consistency of the items within each factor. Results indicated significant Cronbach alphas for each of the factors, NE = .976, and PC = .906. The two factors both displayed strong alphas, meaning there was internal constancy between the items in each factor. The item to factor correlations for factor PC

were on average lower ($r = .57$) than the item to factor correlations in factor NE ($r = .65$). However, it is possible that the variation in the strength of relationships between the items in the factors may be due to the limited number of items in each factor.

Three Fixed-Factor Model

A second EFA, using 3 fixed factors, was also run in order to determine simple structure. The factors PC and NE remained in the model, but a third factor (SI) was also integrated. The three-factor solution yielded a significant KMO (.974) and Barlett's test of Sphericity (11321.845, $p < .001$), equivalent to the two-factor solution. Additionally, the communalities table showed only item 2 of the SPAS as being relatively low (.378), indicating a small amount of variability among other items.

The first factor extracted in the MLE analysis explained 58.9% of the variability. The remaining variability was accounted for by factor 2 at 8.7%, and 2.4% from the third factor. It is worth noting that these values for factor variance may have been lower due to the number of items in each factor. Overall, the three factors accounted for 70.1% of the total variance, which was higher than the baseline model (67.5%). The Goodness-of-fit Test was also reported, ($\chi^2(297) = 851.97, p < .001$), which did not indicate good fit.

The number of factors that were extracted was based on the findings in the literature. Results from Phase 1 indicated there were two first-order factors accounted for in the SPAS and one for the SAAS. With the combination of the scales, there was need to examine each of the factors as if they were independent of one another.

After evaluating the Scree plot, the results of the test of parallel lines, and MAP test for variance, investigation into the three-factor model continued. Again, the Scree plot for the three-factor model was identical to the two-factor model (refer to Figure 8),

which clearly illustrated the change in direction of the line starting at the 2-item mark, but more abruptly at item 3.

Looking at the initial the pattern matrix, only two items had significant cross loadings (where loadings $>.35$) on two factors, SAAS item 3 and 14. Each of these items were removed separately and the factor loadings were reassessed until simple structure was found. Item 2 of the SPAS had very low communality score, and low loadings on a factor, and therefore was removed in order to free potential variance of the other items. Other items excluded from the model in search of simple structure were SPAS items 7, 10 and 12, and SAAS items 2, 3, and 11.

Table 12 *Pattern Matrix for Three-Factor EFA Model*

ITEM	Factor		
	Situational Influence	Presentation Comfort	Negative Evaluation
SPAS 1		0.907	
SPAS 5		0.898	
SPAS 8		0.774	
SPAS 11		0.753	
SAAS 1		0.785	
SPAS 3			0.631
SPAS 4			0.793
SPAS 6			0.611
SPAS 9			0.486
SAAS 4	0.798		
SAAS 5	0.764		
SAAS 6	0.780		
SAAS 7	0.848		
SAAS 8	0.950		
SAAS 9	0.942		
SAAS 10	0.919		
SAAS 12	0.904		
SAAS 13	0.757		
SAAS 15	0.739		
SAAS 16	0.894		

Extraction Method: Maximum Likelihood. Axis Factoring. Rotation Method: Promax with Kaiser Normalization. Rotation converged in 3 iterations.

The most parsimonious model ended with 20 items (see Table 12). The total variance for the model concluded at 73.6%, with 60.5% accounted for by factor 1 (11 items), 10.3% by factor 2 (5 items), and 2.9% by factor 3 (4 items).

Evidence of validity was found in the factor correlation matrix, and a reliability analysis measured the internal consistency of the items in each factor. The items in factors 2 and 3 consisted of the same items found in the PC and NE factors from the two-factor model, and therefore kept the latent variable names. Although an additional item from the SAAS also loaded on factor PC, the removal of item 2 from the SPAS increased the inter-item factor correlation (.906 to .912).

Factor 1 and 3 were expected to share the remaining indicator items based on the review of literature, redundancy of the items when the scales were combined, and because of the individual wording of the items themselves. Although some of the items were eliminated due to issues with loadings, the majority of the items that were retained were from the SAAS. After further investigation, the items removed from the SPAS due to cross-loadings (7 and 10) were worded similarly to items 4-7, 12, 13, and 16 of the SAAS. The remaining four items from the SPAS in factor 3 were determined as indicators of the latent variable NE in the previous model, and therefore were retained as factor indicators in this model. Though the Cronbach alpha for this factor was not as high ($r = .894$) as the other two factors, the internal consistency of the items within this factor was still high ($> .8$).

The first factor extracted had the highest internal consistency ($r = .971$), and each of the indicator items came from the SAAS. With further investigation, the wording of these items was all associated with increased feelings of anxiety due to other people or

circumstances. Therefore, this factor was identified as SI, which encompassed the latent variable of situational influence.

Upon observing the wording of the items in both scales and comparing them to others in the same factor, there was reason to believe the three-factor model was a better fit for this measure. Given the theory and literature behind each of the factors, further investigation into the proposed models was warranted, and demonstrated in Phase 3.

Phase 3: Support for a Universal Scale

Phase 3 Sample Characteristics

The third group of MTurk participants (n = 405) was used for Phase 3 of this study in order to validate the EFA models produced in Phase 2. Group 3 consisted of 179 males and 224 females with a mean age of 34.4 ± 11.2 years. Like the other samples, gender identity groups were underrepresented, with the majority of participants reporting they were straight (85.7%). This group also had 4 participants who reported being transgender or transsexual and 4 who were gender non-conforming. The majority (88.4%) of the participants reported they were from the United States (n = 357). In this group, 29 were from Canada and 18 were from the United Kingdom. Group 3 also was comprised of 56.4% exercisers (n = 228) with 43.6% reporting as non-exercisers (n = 176). Based on the CDC recommendations for daily physical activity, 67 participants stated they did not exercise.

Confirmatory Factor Analysis: Establishing the Factor Structure of the Combined Scale

The two models that were derived from the EFA in Phase 2 were analyzed using *Mplus*© using a different sample in order to validate the factor structure of the combined

measure using items from the SPAS and SAAS. Based on the results from Phase 2, there were two possible models that could potentially fit the sample data in group 3. The initial CFA was conducted using the three-factor model which contained the original 2 factors from the SPAS along with the additional SI factor that was extracted from the EFA.

Following the three-factor model, the two-factor model derived from the EFA was also tested for good fit. The ML estimations of chi-square (χ^2), Satorra-Bentler correction factor for difference of fit ($\Delta\chi^2$), RMSEA, CFI, TLI, and SRMR were all used in order to determine good fit for the data, based on the criteria by suggested by Muthén and Muthén (2012). Better fit was determined using chi-square difference of fit tests, which compared the three-factor to the two-factor model.

EFA Driven Three-Factor Model

Findings from the EFA in Phase 2 indicated that the three-factor model did not show worse fit to the data ($\chi^2(167) = 559.74, p < .001$) compared to the two-factor model. The three-factor solution also conceptually made the most sense when evaluating the latent variables within the model. The 3 factors were consistent with the ones extracted in the EFA, which were PC, NE, and SI. Independently the SPAS showed 2 factors and the SAAS produced 1, but it was hypothesized that these factors were individual and unique to their respective scales.

Results from the CFA on the three-factor model presented good fit to the data ($\chi^2(167) = 528.95, p < .001, CFI = .95, TLI = .95, RMSEA = .07, 90\% CI [.07, .08], SRMR = .04$; see Figure 9). The indicators loaded on only one factor and the standardized factor loadings were all acceptable, ranging from .71 to .97. The modification indices suggested correlating the error terms of item SAAS 4 and SAAS 6

would produce better fit. Since these items also had theoretical justification for possibly assessing the same construct, they were correlated. These items did yield better fit ($\chi^2(166) = 491.63, p < .001, CFI = .96, TLI = .96, RMSEA = .06, 90\% CI [.05, .06], SRMR = .04$) which did show a significant better fit ($\Delta \chi^2(1) = 990.69, p < .001$). With these modification indices the three-factor model was retained.

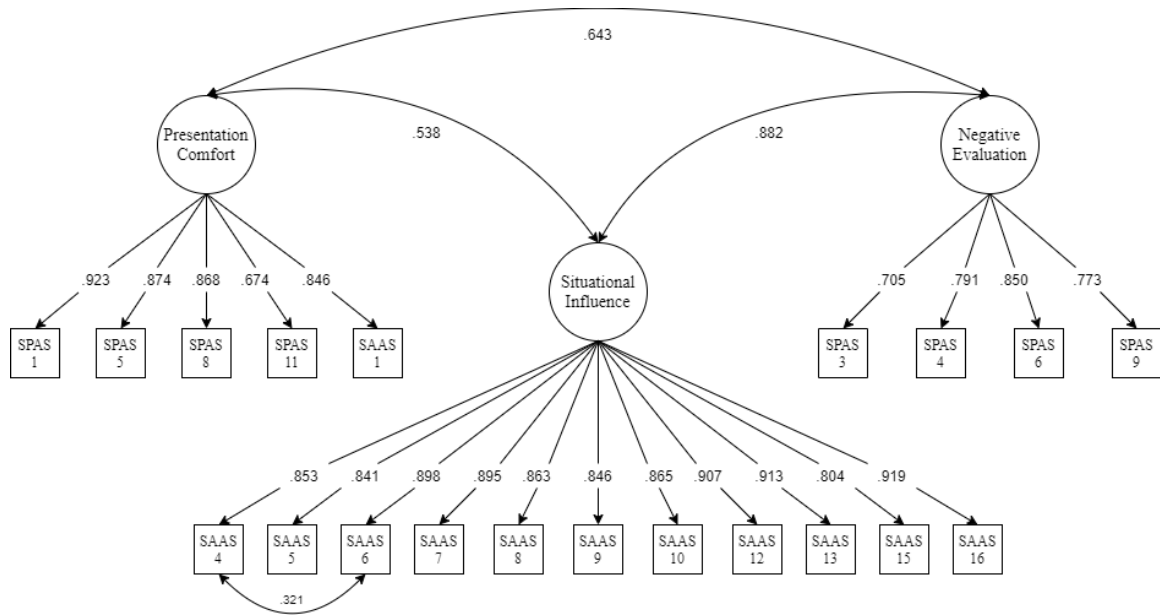


Figure 9. *Standardized Factor Loadings for Three-Factor Model*

Alternative Two-Factor Model

The EFA in Phase 2 determined simple structure was found using a two-factor solution. This two-factor correlated measurement model examined the two factors PC and NE as the two latent variables. However, MLE analysis from the EFA in Phase 2 did not support this model as being the best fit to this data. To further investigate which model was a better fit, the two-factor model was also tested as an alternative. These

results indicated the model fit worse ($\chi^2(250) = 1034.21, p < .001, CFI = .92, TLI = .91, RMSEA = .09, 90\% CI [.08, .09], SRMR = .05$; see Figure 10). The chi-square difference of fit test also determined that the three-factor model resulted in better fit indices ($\Delta\chi^2(84) = 486.29, p < .001$) than the two-factor model. Therefore, the three-factor correlated measurement model was deemed superior and retained.

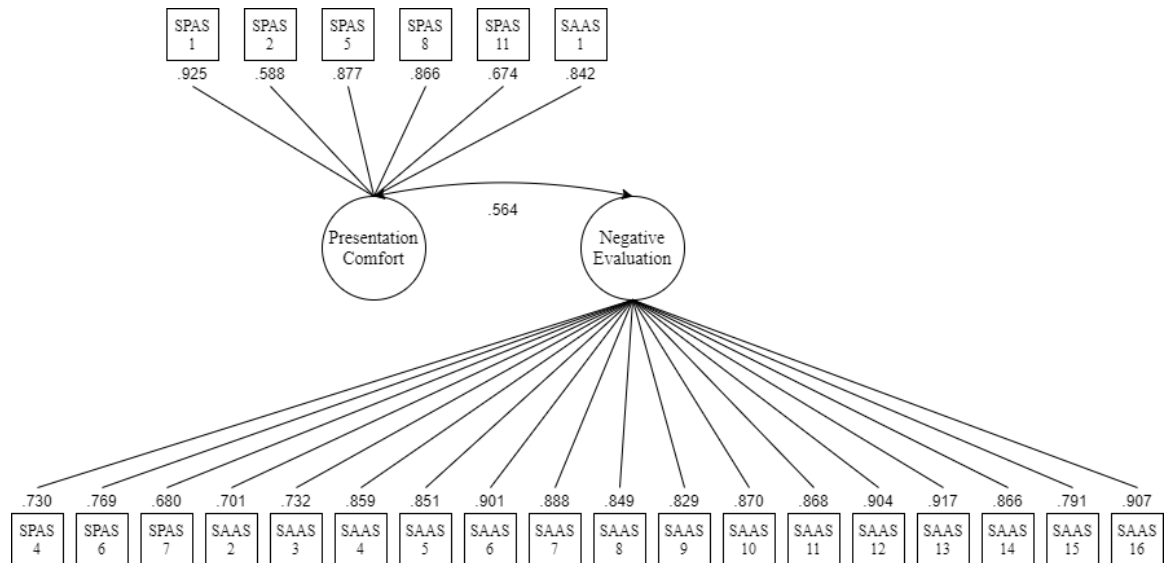


Figure 10. *Standardized Factor Loadings for the Alternative Two-Factor Model*

Higher Order Three-Factor Model

Given the high factor correlations between NE and SI ($r = .882$) and moderate correlations between PC and NE ($r = .643$), there was reason to investigate a potential higher-order model. The higher-order model seemed most reasonable given the intent to establish a global scale score, where a sum score would be computed to represent an overall level of physical appearance related social anxiety. Results from the CFA

indicated that the higher-order model closely resembled the three-factor model, with identical fit indices and modification indices which resulted in equivalent models ($\chi^2(166) = 491.63, p < .001, CFI = .96, TLI = .96, RMSEA = .06, 90\%CI [.05, .06], SRMR = .04$). The standardized factor loadings were also all in acceptable range, from .67 to .92, and the error terms for SAAS items remained correlated ($r = .321$).

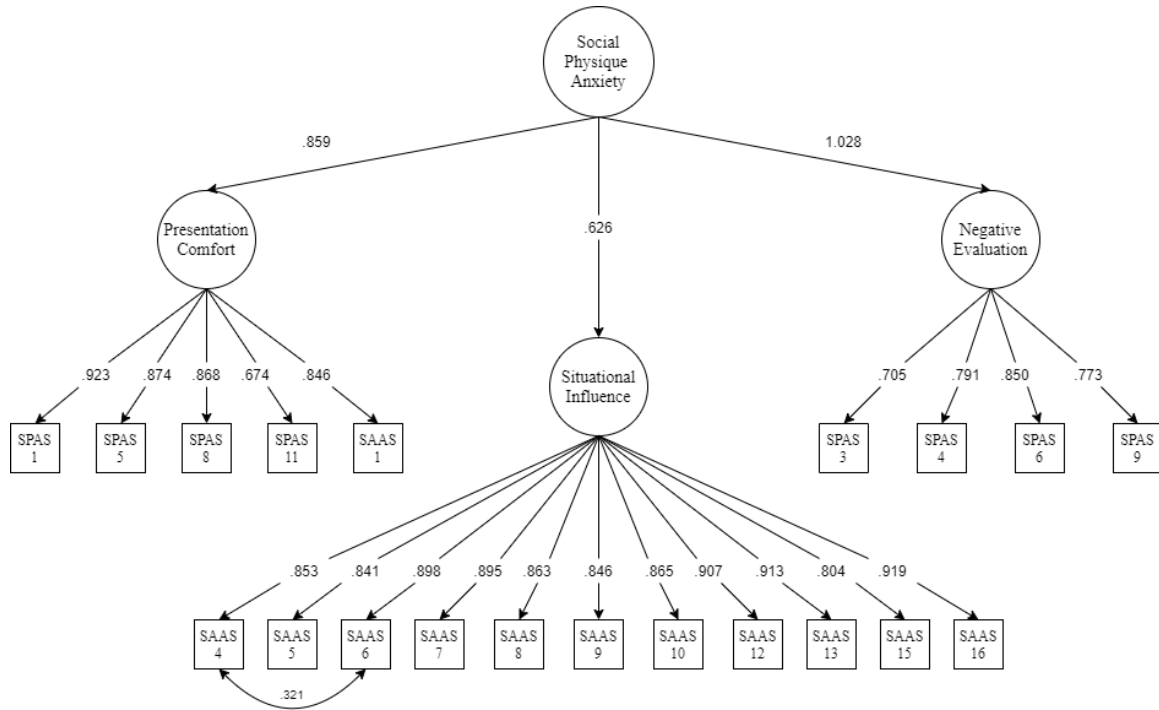


Figure 11. *Standardized Factor Loading for Three-Factor Higher-Order Model*

Of the two equivalent measurement models, the higher-order model was superior to the three-factor correlated model. The literature documented that for both the SPAS and SAAS, a sum score was the acceptable format for reporting levels of SPA and SAA that one experiences. Since the combination of these two scales was intended to provide a more universal measure of physical appearance anxiety, the hierarchical model that

designated SPA as the second-order factor with three first-order factors, PC, NE, and SI was retained.

Summary of Results

In Phase 1, the higher-order model was confirmed as the best fitting model for the data. This model was tested against three other models and fit significantly better.

Therefore, the results of Phase 1 concluded that the higher-order model was superior to all other subsequent models. During Phase 2, the evidence supported a factor model that contained three latent variables. While the two-factor model did lead to a parsimonious solution, the three-factor model appeared to be a better fit. The results of Phase 2 indicated that the three-factor model was supported and was further examined in Phase 3. Following the results of Phase 3, the three-factor higher-order model was confirmed as the best fitting model for this data. The three-factor model was superior to the two-factor model, but stronger evidence supported that there was a potential second order factor in the model. Therefore, the final model confirmed in Phase 3 was the three-factor higher-order model with 20 indicator items was superior to subsequent models. The three-factor model indicated that there were in fact three latent variables that affected one's level of physical appearance-related anxiety, presentation comfort, fear of negative evaluation, and situational influence.

CHAPTER V – DISCUSSION

Overall Findings

Results from this study indicate that relatively high overall SPA and SAA levels were experienced by a large portion of males and females in the present sample. By using a crowdsourcing sampling method, the findings from this study better represent various ages, gender, and nationality than do the results from the majority of studies that have used predominantly college-aged females. Similar to the literature, females demonstrated higher levels of SPA and SAA compared to their male counterparts, regardless of age. This study also provided a unique perspective on physical appearance-related anxieties based on gender identities. While the percentage of participants reporting they were bisexual was low compared to the overall sample, these findings further support that there appears to be another factor that is related to the social environment one is in. Further, this supports the rationale that the environment or social situation may be contributing as an external influence to one's level of social anxiety. As evidenced in this study, there is support for the claim that certain situations may increase one's level of physical appearance-related anxiety. Therefore, the latent variable SI needs to be further evaluated as a component of SPA and SAA.

From the findings in this study, it appears that individuals experience similar levels of SPA and SAA in other countries outside of the United States that are culturally similar. In terms of exercise behaviors, levels of physical appearance-related anxiety tend to be higher among individuals who did not participate in the recommended amount of daily activity according to the CDC guidelines. These findings further support that participating in physical activity may also lead to lower levels of SPA and SAA.

Based on the results from the three phases of this study, the factor structure of the SPAS and SAAS as individual scales as well as combined measures, demonstrates that the scales are accurate instruments that can be used for assessing the level of physical appearance-related anxieties individuals experience regardless of sex, gender, age, nationality, and exercise behavior. Findings from this study also supported that the best fitting model for the SPAS was comprised of the two latent variables PC and NE, but that these variables were subsidiary to the higher-order factor, SPA. The SAAS factor structure was verified as a single factor model, with the addition of 3 sets of correlated error terms indicating significantly better fit.

As hypothesized, the combination of the SPAS and SAAS yielded a factor structure that did reflect three distinct latent variables of PC, NE, and SI. After elimination of items that had double loadings or non-significant loadings, the final structure for this combined measure was comprised of 20 indicator items. Upon further evaluation in Phase 3, this three-factor correlated model was confirmed. Similar indications reflected a potential higher-order factor during the investigation of this model. Thus, the three-factor model was tested against a second-order SPA model.

The model fit indices indicated that the higher-order three-factor model did fit significantly better than the correlated three-factor model. These results supported that the three-factor higher-order model with SPA as the second-order factor was subordinate to all other models tested using the combined measure of items from the SPAS and SAAS. Conclusions from this study were based on these findings that supported the proposition for an encompassing measure of physical appearance-related anxiety.

Patterns in Reported Levels of Social Anxiety

Demographic-Related Differences

There have been numerous characteristics studied by researchers as inherent factors that influence social anxieties, specifically in regard to the levels of SPA and SAA an individual may experience (Crawford & Eklund, 1994; Eklund et al., 1996; Eklund et al., 1997; Hart et al., 1989; Martin et al., 1997; Molt & Conroy, 2000; 2001; Petrie et al., 1996). Consistent with findings in the literature, results from this study reinforce the notion that women in general, experience a higher level of physical appearance-related social anxieties compared to men. Further, evidence also supported that women not only had higher levels of SPA and SAA, but that the highest levels were more frequently experienced between the age of 18 and 25 years. This also supports findings from the literature, that younger adults do experience higher levels of social anxieties compared to older adults, but that high levels of SPA and SAA were still experienced by older adults.

Physical appearance-related social anxieties, like SPA and SAA, have been documented as not just impacting younger aged individuals, but middle-aged adults as well. This study found that individuals from 26 to 45 years old, who were in the Early and Primary Adulthood stage, were experiencing relatively high levels of social anxiety (mean scores > 35 on the SPAS, and > 47 on the SAAS), which was no different than the average levels younger individuals in the New Adulthood stage were reporting. It appears that middle-aged women between the ages of 45-55 years may be subject to relatively lower levels of anxiety, but still experience higher social anxieties.

Many studies documented in the literature have been investigations of different social anxieties and how they are related to body affect and body image according to sex.

Biological sex, which often has been referred to as gender, has also been recognized in the literature as being a key component of the differences seen among social anxieties. While the common term used in these studies has been ‘gender’ other studies have not investigated specific gender identity differences among SPA and SAA levels. Along with the abundance of evidence from the literature, the results from this study further supported that differences exist in the summed scores on the SPAS and SAAS between biological sex; reflecting that females experience higher levels of these physical appearance-related social anxieties (Hart et al., 1989).

The SPAS and SAAS were developed using samples that consisted mostly of females, and this pattern has continued over the years with the exception of a handful of studies that were exclusive to males. This trend may be related to the availability and willingness of females to participate in studies that they found meaningful or that they were intrigued. Echoing Molt and Conroy’s (2001) claim, the discrepancy seen between sexes could possibly be related to the shift in modern cultural trends, such as increased societal pressures and media advertisement targeting young women. Individuals who may identify or empathize with sensitive topics, such as experiencing physical appearance-related anxieties, could also be inclined to participate in hopes of further educating themselves and others.

One aspect from the plethora of gender studies on the SPAS and SAAS that was lacking was the inquiry into potential differences that may occur among different gender identities. In the 21st century, gender identity has become recognized as being a part of standard demographic questions, and socially accepted. One study that explicitly studied the SAAS in regard to gender identity did so using Canadian gay men (Hart et al., 2015).

While this factor of gender identity was linked more to stressors that impact SAA, the influence of homophobia was studied as a variable that affected SAAS scores. Similarly, the unique factor of gender identity was examined in this study in order to detect possible differences among the subgroups of gender that may offer alternative explanations to these findings.

Although the majority of the MTurk participants reported their gender identity as straight, roughly 10% said they were gay or lesbian or that they were bisexual. Interestingly, 8.9% of the participants claimed to be bisexual, which provided a unique perspective to the responses on the SPAS and SAAS when comparing anxiety levels among different genders. Those who were bisexual had the highest of the SPAS and SAAS scores among all genders. This observation may indicate that those who are bisexual experienced more physical appearance-related anxieties than others. This relates to the level of SPA and SAA being experienced based on who is evaluating them. It has been shown that typically, women feel more criticisms from other women, and vice versa that men compare themselves to other men. So, if one considers themselves to be bisexual, by definition they are influenced by the evaluations of both males and females. Because this was the only significant difference seen among the gender identities, and although much more inquiry is warranted, this finding tentatively supports the argument that these types of social anxieties are heavily influenced by both internal (bisexuality) and external (evaluation by other males and females) factors.

Unlike sex and age-related differences, cultural differences based on nationality has been studied very little, specifically in regard to the SPAS and the SAAS. In 1992, Rodin proposed that culture expectations, specific to gender, was what initiated the

steady increase seen over time of SPA in females. More specifically, this was thought to occur in traditional college students who tend to be between the ages 18-25 years and has since been linked to the media-driven culture (Lindwall, 2004). Differences in culture also resulted in unique expectations, but regardless of their differences each appeared to be related to some type of physical or appearance aspect (Lindwall, 2004; Molt and Conroy, 2000). Though it is pertinent to study these differences in social anxiety scales across cultures from a measurement aspect, it was not an intention of this study. The primary focus on this characteristic in regard to the scales, was to confirm that participant responses did not significantly differ among nationalities that were considered similar to the United States, which was established. However, it is important to further examine potential difference within these cultures as well as how they may affect SPA and SAA.

Exercise Behavior Related Differences

Conceptually, both men and women habitually change exercise behaviors based on their desire to achieve or maintain a certain physique or body figure (Adams et al., 2017). But more recently, these altered behaviors have been thought to be provoked more by the new health and fitness trend in the media, than for personal satisfaction or health-related reasons (Linder & Daniels, 2018). It was found that the majority of individuals in this study participated in some form of daily exercise, either vigorous or moderate. Additionally, those who participated in exercise behaviors tended to report experiencing significantly lower levels of social anxieties than those who did not exercise. While women have been documented as reporting higher levels of social anxieties, the women who regularly participated in some form of physical activity experienced lower levels of anxiety than those who did not exercise.

The majority of the studies that showed similar findings have been predominately from research done in the exercise and psychology fields. These studies found that those who participated in regular exercise typically saw positive changes to their bodies. When one was actively seeing improvements to their body, they were more likely not to experience heightened levels of social anxiety in regard to their appearance or body structure, also conceptualized as being self-reinforcing behaviors. Conversely, those who were more focused on obtaining the ideal physique or maintaining a certain figure could adversely become more at risk to experiencing SPA or SAA (Linder & Daniels, 2018). With the changes being seen in regard to the health and fitness trend, this form of social influence may be the underlying consequence of providing and setting such unrealistic expectations. Though this study investigated if exercise behavior was related to what level one experienced social anxieties in regard to appearance or physique, causal inferences cannot be made since experimental data was not collected and there was no evidence of cause and effect. However, awareness of the potential triggers of physical appearance-related anxieties further supports the need for inquiries into the impact of media-driven expectation, ideally in a way that can adjust the lens on physical appearance-related anxieties to reflect a more positive perspective.

Confirmed Model Structures for Measures of Social Anxiety

Final Factor Structure of SPAS

There have been a multitude of studies that have investigated the factor structure of the SPAS since its formation in 1989. Because of the complex and integrated factors that contribute to SPA, there have been differing structures that have been confirmed

throughout the literature. Amidst the ongoing debate regarding the argument for gender-specific scales, there has been no other study that has looked at such a large and diverse sample that accurately represented the population in terms of age.

To that end, the factor structure was evaluated with a subset of participants from the sample, testing each of the proposed models that had been designated as valid measures of the SPAS. The unidimensional model, which was the original instrument (Hart et al., 1989) had the worst fit among the two-factor uncorrelated, two-factor correlated, and the higher-order model. Conceptually, the authors of the original SPAS were under the impression there was only one component to anxiety regarding one's physique (Hart et al., 1989). As documented in the literature, there were several justifications that supported this claim. However, the data from this study paired with the arguments against a single-factor model, the need to establish an accurate measurement model resulting in two factors had greater support.

The measurement models progressively fit better, going from the unidimensional model to the two-factor higher-order model. This was plausible because of the unique relationships that existed between the two latent variables, PC and NE. Like McAuley and Burmen (1993) described, the PC factor was primarily comprised of statements that were from a positive perspective whereas the factor NE consisted of negatively worded items. This also followed the pattern that Eklund et al. (1996) found, in which PC had 5 items and NE used the remaining 7 items. Additionally, their findings supported that the two-factor model was more indicative of measuring levels of SPA in both males and females than was the unidimensional model.

The consistency of the positively and negatively worded items loading on the corresponding factors was similarly demonstrated in this study (Eklund et al., 1996; Molt & Conroy, 2001). While some have suggested this was a methodological effect or artifact, Molt and Conroy (2001) proposed controlling for the error-score variance negated the effects. Following this same approach, the results in this study were supportive of this claim and indicated that the model was an accurate estimation of SPA.

Final Factor Structure of SAAS

The investigation into the SAAS factor structure was not as intricate as the process for the SPAS. Though there have only been a handful of studies evaluating the validity of the SAAS as an instrument, there has been no documented evidence that supports a two-factor structure. Likewise, there was no indication that another factor was existing in the present data either. Although results specified a unidimensional model, it has been suggested that the SAAS could also be an indicator of negative body image (Dakanalis et al., 2016) based on the wording of the individual items. Contrary to what was hypothesized, there did not appear to be an alternative model that supported an additional factor in the SAAS. However, the high correlations between indicator items suggested a second factor could be present in an alternative two-factor model if the SAAS were combined with items from the SPAS.

Unfolding the Comprehensive Measure of Social Anxiety

Elements of the Combined Scales

The SPAS and SAAS consider the way in which an individual sees themselves based on comparative assessments and observations from others. Therefore, one's own

perception of how they look or appear is ultimately the determining factor in the level of physical appearance-related anxieties experienced (Warren, 2017). With that, there are certain factors that can influence one's perspective. Reasons related to health concerns or with the intent to stay healthy have been found as intrinsic motives, but they have not similarly been linked to affecting one's level of physical appearance-related social anxieties.

What poses the biggest challenge in determining the level of physical appearance-related anxieties one experiences appears to be factors that are associated with the way individuals believe they look (Gilbert & Meyer, 2005). Appearance-related motives such as drive for thinness or attaining an idealistic body structure have been seen as some of the more prevalent cognitive risk factors that are associated with social anxieties (Pila et al., 2014). These discerning motives have not been thought of as being physically placed upon individuals, but rather that they originate from within individuals' perception of themselves (Kasser & Ryan, 1985). Intrinsic aspirations such as achieving a sought-after figure or physical appearance can lead to obsessive and preoccupation of exercise (Pritchard & Beaver, 2012). These internal factors that the SPAS and SAAS accounted for are PC and NE. Findings from this study further support that internal motives may be associated with the influence of others, or perhaps the media-driven culture. These scales use evaluation between the positive and negative perspectives that one may have in order to determine distinct levels of physical appearance-related anxiety.

Argumentatively, the developers of the SAAS, Hart et al (2008), claimed that the constructs that were being assessed was not the same as the ones found in the SPAS. They claimed that the SAAS was unique in that it measured other characteristics of one's

overall appearance different from one's body structure or physique. Yet there had been no documented evidence that has indicated these measures have been explored as a combined measure or resulted in different constructs until now.

Perceived Physique Presentation Comfort

One of the confirmed latent variables in the SPAS is the factor PC, which pertains to a level of perceived physique presentation comfort. As noted, the indicators of this latent variable were all positively worded items that used descriptors such as "comfortable," "feel good," or "feel relaxed," to address one's level of presentation comfort. The four items that were retained from the SPAS were combined to create this factor were items 1, 5, 8, and 11. Each of these items was worded in a manner that stated how one felt about their physique or figure. The phrasing of the items suggests the internal perspective Kasser and Ryan (1985) were referring to, is to be viewed from a lens that had a positive outlook, capturing a sense of confidence that one has about their physical appearance.

Item 1 from the SAAS, "*I feel comfortable with the way I appear to others,*" closely aligned with the several of the items in the SPAS and is worded almost identically to item 8 in the SPAS. The difference between the two items is the distinction of body structure reading, "*I am comfortable with how fit my body appears to others.*" These two items directly address the concept of body image, which has been shown to be affected by the media (Perloff, 2014). Though this factor was comprised of only five items, the items appeared to capture a complete picture of what individuals think of their physical appearance.

Echoing Eklund et al. (1996), this factor was confirmed as being indicative of predicting levels of physical appearance-related anxieties in both men and women due to the dictation of these items. Because the items address physical aspects that can be assessed regardless of sex, or gender for that matter, this latent variable provided strong evidence to the accuracy of this measure. However, there was one missing item in this factor from the original SPAS, item 2.

Also documented in the literature, the one item that did not remain in the PC factor was item 2 which states, *“I would never worry about wearing clothes that might make me look too thin or overweight.”* There have been several reported issues that have arisen with the wording of this item over the years. To start, although the words “never worry” are inherently positive, they appear to come from a negative perspective (Crawford & Eklund, 1994; Eklund et al., 1997; McAuley & Burmen, 1993). Second, this item technically implies a double-barreled response (too thin, or over-weight) that could be interpreted differently by individuals. Another point McAuley and Burmen (1993) made was that the item favored gender specific responses, meaning females may systematically respond differently than males because of the relevance of the item being associated with clothing. The final criticism is based on the traditional notion that females place more emphasis on the type of clothing they wear based on how they think it complements their body (McAuley & Burmen, 1993), whereas men dress with a different perspective in mind.

An interesting observation was made from this finding, which could explain some of the variation seen in responses specific to this item among gender identities. As shown in this study, individuals who were bisexual experienced higher levels of SPA and SAA.

The “doubling” effect of pressures from both sexes, may also be the same interaction taking place here based on the underlying tendency towards a specific sex. If this were to be true, responses would likely vary based on the dominant trait, male or female, that resides within each the individual, which may cause a conflicting perspective.

Regardless, the problems originated with the contradictory wording of the item.

Discrepancies found with item 2 have been commonly reported in studies evaluating the factor structure of the SPAS (Crawford & Eklund, 1994; Eklund et al., 1996; Lantz, 1991; McAuley & Burman, 1993). Presentation of those same problems were thought to be occurring in this study; therefore, the item was removed from the model. While the factor proves to hold with the five items, rewording of item 2 may provide a solution to inconsistent responses and possibly strengthen the model.

Expectation of Negative Evaluation

The other factor that initially supported the SPAS was the latent variable NE, which refers to the level of expectation one has of being negatively evaluated by others. Opposing the pattern seen in PC, these indicator items were all negatively worded and used words such as “uptight,” “nervous,” or “bothered,” in order to determine how one would feel if they were being negatively evaluated. This factor retained only four items from the SPAS and were combined to create the latent variable NE. These indicators included items 3, 4, 6, and 9 from the SPAS. The items were worded from the perspective of how the individual felt when they think others are evaluating their physique or figure in a negative way. Though these items were capturing an anticipated reaction to one being evaluated, they were worded explicitly to address negativity towards one’s physical structure or appearance.

Items in the SAAS addressed some of the same aspects of negative evaluation. Specifically, item 3 which states, *“I get tense when it is obvious people are looking at me,”* and item 14, *“I am uncomfortable when I think others are noticing flaws in my appearance.”* These two items suggest a negative reaction to an evaluation made by others, but also imply a level of subjectivity that could be inflated based on the level of physique appearance-related anxiety one may already have or be experiencing.

Similarly, the same subjective insinuation occurs in item 3, *“I feel nervous when having my picture taken,”* and item 11, *“I feel anxious when other people say something about my appearance.”* It is unknown why individuals may not like having their picture taken. While one could assume that it may be because a picture produces documented evidence of one’s appearance, it could also be for other reasons such as privacy that participants were associating the nervousness to when responding to this statement. Item 11 also refers to a negatively insinuated circumstance, when in fact the anxious feeling could have been interpreted within a positive context, like excitement. Because of the ambiguity of these four items, they were not significant indicators of the latent variable NE.

Similar to others, item 12 of the SPAS was also a problematic item in both of the EFA models that were tested. One key observation has been that some of the items are conceptually perceived and interpreted differently across gender and culture based on the expectations and norms that are associated with body appearance (Lindwall, 2004). As was item 2, item 12 is a specific example of this stating, *“when in a bathing suit, I often feel nervous about the shape of my body.”* Variation in the responses from this item could be attributed to an inherently different calibration of the response choices for men

(Lindwall, 2004). Meaning men may read and reply to this item from a positive perspective, rather than through the intended negative lens. Nonetheless, the opposing response patterns caused conflicting loadings and the item was removed from the model.

Due to the overlap of items from the SPAS and SAAS, this particular factor is relatively small with having only four indicator items. But the factor loadings paired with the internal consistency of the items supported leaving NE in the model as a latent variable. Though item 9 had a lower factor loading than the other items, it assessed the encompassing perspective of factor. It states, "*it would make me uncomfortable to know others were evaluating my physique/figure,*" which address the overarching concept of how someone feels when they perceive they are being negatively evaluated. Therefore, the item was left in the model as an indicator of NE.

Situational Influence

Different social anxiety models such as measures of negative affect, fear of negative evaluation, and the Big Five personality traits have been used to conceptualize the construct of SAA (Levinson & Rodebaugh, 2012). While there has been only a single factor extracted from the SAAS studies, it has been thought that factors within the SPA and SAA stem from heightened fears of negative evaluation in certain social situations (Levinson & Rodebaugh, 2012). This alone, makes the case for a model that potentially had three latent variables, but also supports that it is possible that a second-order factor, SPA, exists. Given there was only one factor extracted from the SAAS, there was high probability that the indicators items of that factor would all load on the same factor when combined with the SPAS. With the exception of item 1, this was true.

A key component of each of the items in the SAAS was the influence from a certain situation one was experiencing or the possibility of a specific circumstance occurring. Items 4, 6, 7, 10, 13, and 16 referred to a situation where the individual and their feelings of uncertainty were in a context based on other people. The uniqueness of these items supported the latent variable SI, because it was targeting one's feelings from an external point of view.

Based on observations, an additional external perspective was captured from responses to items 8 and 9. Item 8 states, "*I worry that my appearance will make life more difficult for me,*" and item 9 read, "*I am concerned that I have missed out on opportunities because of my appearance.*" These two items are unique in that they consider one's worry of experiencing physical appearance-related anxiety through a reflection of what may occur in the future. Also noted, these two items had the two highest loadings in the SI factor. Therefore, they appear to be the strongest indicators of SI, and possibly stem from a higher-order factor of social anxiety that is related to physique.

Oddly enough, the lowest loading indicator was item 15, "*I worry that a romantic partner will/would leave me because of my appearance.*" While this item is essentially double-barreled with future and past tense, it is still written within the context of looking forward to future events and making judgments based on current assessments of one's physical appearance. This separation in time is what strengthens that argument that this latent variable is in fact measuring one's anxiety about their physical appearance, but also that there was another major factor in play.

Since a bulk of the items from the SAAS did not load on the same factors that were in the SPAS, it supported that regardless of the combination of the scales there were three distinct constructs. However, Hart et al. (2008), made the argument that higher scores on the SAAS was also to be considered as an indicator of negative body image, or body image disturbance. Negative body image has been associated with SPA body dissatisfaction, which also has been related to SAA (Yu, 2014). Claes et al. (2011) provides evidence that the SAAS is also a measure of fear of negative evaluation based on one's physical appearance. With that, according to these standards, the two scales in fact assessed the same construct to some extent. Claes et al. (2011) also concluded that SAA indicators such as increased body dissatisfaction, change in appearance, weight gain, and drive for thinness could significantly impact fear of negative evaluation, conceptually known as SPA. Therefore, the combination of the two scales is, arguably, a reasonable solution.

Other authors have suggested further investigation into a third component of SPA, which in this case was referred to as situational influence, rather than social discomfort (Dakanalis et al., 2016; Hart et al., 2015; Levinson & Rodebaugh, 2011; Mills et al., 2018). These findings further support the addition of the construct SI, as it pertains to the influence that certain social situations may have on an individual's expectations and reactions from physical appearance-related anxieties.

Conclusions

Distinct vs Combined Scales

The justification for retaining the two-factor hierarchical model came from the relatively high factor correlations present in the two-factor correlated model. Additionally, the SPAS was developed with the intention of computing a total score that would give a practical representation of one's overall physique anxiety level (Eklund et al., 1996, McCauley & Burmen 1993). Since a total score can be derived from the higher-order model, and both latent variables showed significantly better fit indices as first-order factors subordinate to SPA, the higher-order factor structure was designated the preferred model to other subsequent to all other models of the SPAS. Though the SPAS factor structure supports the instrument as a stand-alone measure, the combined three-factor model gives better insight to an overall level of physical appearance-related anxiety. Further, results from this study indicated that the higher-order three-factor model with 20-indicator items from both the SPAS and SAAS was the best fitting model.

Along with a fear of negative evaluation that individuals may have about their physical appearance characteristics, the additional component SI, has previously surfaced during other investigations into the SPAS and SAAS (Dakanalis et al., 2016; Hart et al., 2015; Levinson & Rodebaugh, 2012). Levinson and Rodebaugh (2012) proposed that the SAAS could be assessing a form of social anxiety and not a new type of anxiety. Following that line of thinking, results from this study support the idea that the constructs of the SPAS and SAAS were all components of an overarching form of social anxiety, SPA.

In addition to confirming better fit using the higher-order three-factor model, with SPA as the second-order factor, the new model presented in this study is a strong indicator of physical appearance-related anxiety. Further, the latent variables of physique presentation comfort, expectation of negative evaluation, and situational influence are demonstrated here as being working subsets of SPA. Results from this study further reinforce the utility of a universal measure using PC, NE, and SI, which were derived from the SPAS and SAAS to create a more comprehensive measure. This further demonstrates that the higher-order three-factor model is superior to all other models and yields an overall assessment of the latent variables that contribute to physical appearance-related anxieties.

To that end, the SPAS by Hart et al. (1989), and the SAAS by Hart et al. (2008), do still function as separate and individual measures. However, with the overlap of body image disturbance, fear of negative evaluation, and appearance related anxiety, the three-factor model using subsets of items from the SPAS and SAAS accounted for the significant amount of variance between these constructs that had not been addressed in the literature (Hart et al., 2008).

The authors of the SPAS and SAAS also proposed that “there may be some utility in having a measure that taps into both social anxiety and negative body image that encompasses but is not limited to physique,” (Hart et al., 2008, p. 29). This new higher-order three-factor model not only opens opportunities for application among researchers and practitioners but offers a unique all-around perspective of an individual’s level of anxiety about their physical appearance. Therefore, the investigation into a more applicable scale that encompassed all elements of the SPAS and SAAS was productive

and ultimately led to a better understanding of internal and external aspects of physical appearance-related anxiety, by use of this overall measure.

Advantages and Disadvantages of using MTurk for Data Collection

Using crowdsourcing as a method to gather a large and diverse sample representative of the global population was effective in acquiring a substantial amount of participant data in a relatively short amount of time. The platforms that are used to initiate survey-style research of this sort appear to be conducive to implementing large-scale random time sampling. Overall, the data that were collected from participants appeared to reflect engagement, in so far as a majority of the participants passed the attention checks. With the use of technology as a primary method of data delivery, there are always unforeseen issues that may arise. In this case, there was only one instance where a problem occurred with the MTurk system. This error caused a lapse in time during which little data was collected. Even with the lag in responses during that collection period, the system refreshed, and no significant problems were seen in the data.

Because the data collection period was separated into blocs, there were fewer responses collected during the early morning hours designated for bloc 1 due to technology difficulties. However, compared to the data collected in the other morning session there were no significant differences noted. Additionally, no significant differences occurred among the data collection blocs in terms of distribution of demographic characteristics of the participants.

There were several advantages to using the MTurk platform as means for data collection. As mentioned, this sampling frame was conducive to collecting data from a large audience that was diverse in gender and age, while also accounting for excessive or

lack of variation in responses. For example, in this study the participants were sought only from the United States or a culturally similar country. While this was not to be prejudice, it was a way to ensure that any variation in response patterns would likely not be due to different cultural beliefs. Also, by means of filtering, it was also possible to set specific MTurk participant qualifications in order to ensure accuracy of responses.

Like any technology-dependent circumstance, there is risk for problems to still occur. Another issue that was noted for this study was the duplicate of participants in each bloc. Since each bloc had a different Qualtrics survey link, there was not a way to prevent ballot stuffing across data collection blocs. However, this was accounted for through offline submission approvals. By downloading the participant response data, duplicate IP addresses could be detected and removed for analysis purposes.

The other problem with using MTurk pertained to cyber security, which had to do with the detection of “fake” responses or algorithm-based responses. These types of responses were easily found once the data had been screened and AC items were analyzed. However, with the bloc method of data collection, after converting the CSV file of the approved responses to a database with no identifying variables, there was no way to connect the “fake” participants back to the MTurk ID to negate compensation. This was not common enough to cause any significant reduction in the number of recorded participant responses, but it is nonetheless worth noting. The filter for allowing on MTurk workers with a 95% approval rating or higher to be able to participate in the survey was set, but with the evolution of technology, implementing approval criteria set to 96% or higher may deter these algorithm-based responses and be a potential solution to this problem.

Implications

Utilizing a Universal Measure

The most compelling indication that the combined model was a valid measure of physical appearance-related anxiety was that the higher-order factor structure resulted in a significantly better fit, over the three-factor model. Findings from this sample's data suggest that the two scales would be a more valuable instrument by providing a "big picture" perspective. Eklund et al. (1996) and McAuley and Burmen (1993) concluded there appeared to be an overlap in constructs with SAAs, and by adding a dimension to the SPAS, it could enhance the ability of the measure to detect levels of physical appearance-related anxieties. The added dimension of SI used to address the "social" component of these anxieties not only may provide a unique external perspective, but it also shed light on the factor of situational influence that has appeared to be missing from these two measurements for quite some time (Mills et al., 2018).

The utility of a scale that can be used by anyone, regardless of gender or age, to assess the constructs of SPAS and SAAS in a combined measure is valuable in terms of general patient and client evaluation. Not only for clinical purposes, but also in exercise settings, it may be helpful in capturing a more accurate overall level of physical appearance-related anxiety. Being that the combined scale contains only 20-items, this may be an easy way to quickly assess one's anxiety level about their physical appearance. Specifically, in the 21st century there has been substantial documentation of individuals reporting increased psychological distress, anxieties, and symptoms of depression (Warren, 2017). These signs of distress are becoming recognized more frequently by clinicians and practitioners, especially in regard to social anxieties associated with media-

drive society expectations of physical appearance (Adams et al., 2017; Linder & Daniels, 2018; Warren, 2017). Further, due to these societal pressures and standards reflected in the media, these expectations have exposed physical appearance-related anxieties in some, but largely has intensified these anxieties in those who have pre-existing distress.

The rise of social media and phone applications such as Instagram and Facebook have provided a platform for appearance-based ideals to thrive due to the newly formed social-network marketing techniques using a global infrastructure. Almost all public figures in today's society have at least one, if not multiple, social media accounts, and some profit as social influencers (Adams et al., 2017; Linder & Daniels, 2018; Martinez, 2018). Linder and Daniels (2018) highlighted that "conversations with peers about appearance-related issues increase the degree to which individuals internalize appearance ideals and engage in appearance social comparison," (p. 29). With constant engagement with the media and interaction on social media networks it can provide a place where negative thoughts, body dissatisfaction, and fear of negative evaluation to launch. For people already dealing with considerable stress about their weight, experiencing high levels of physical appearance-related anxiety, or even depression, becoming consumed with conforming to media-driven standards could lead into a self-destructing cycle. If the media-driven culture continues in the direction of promoting self-objectification and unrealistic body ideals, there could be grave need for a measure that can effectively address anxiety about appearance and body structure in a single measure.

In a world where social media is rapidly becoming a dominant resource (Linder & Daniels, 2018; Warren, 2017), it was important to establish a measure that not only could assess the internal perspectives of individuals' anxiety towards their physical appearance,

but also in regard to situations that they not have been cognizant of or encountered before. A measure of this capability could also provide information on how different social situations and external influences may be significantly affecting these physical appearance-related anxiety levels.

The media-driven culture will more than likely fluctuate over the coming years, but the impact on peoples' perceptions may only get worse. Therefore, in an attempt to better prepare practitioners, clinicians, and researchers for the ramifications of media influence, this study reinforces the need to establish a scale that can provide a universal comprehensive measure of overall physical appearance-related anxiety.

Limitations

The limitations of this study primarily were due to the sample gathered from MTurk, which ultimately was a form of convenience sampling. While this is acceptable for scale development purposes, results from this study should not be generalized to the general population. Although the MTurk sample included males and females from age 18 to 65 years, this did not replicate a random sampling technique needed in order to make general population inferences. Further, participants also had to meet the criteria set through MTurk by the researcher in order to generate responses. Participants were required to have a 95% HIT approval rating, therefore only the individuals who had a record of completing surveys with acceptably rated responses were included in this study.

Participants younger than 18 years old, older than 65 years old, and whose nationality not from the United States or other listed countries were excluded from this study. The additional countries that participants indicated they were from included

Canada, Australia, United Kingdom, and Ireland. New Zealand was permitted as a possible location, but no participant reported that as their country of origin. Participants who were not from the listed countries were not included in this study due to the potential cultural differences that could have caused unwanted variations in response patterns.

In regard to the questionnaire, roughly 20% of the total participant data collected had to be eliminated. The majority of the data eliminated was due to the participant not passing the ACs or incomplete responses. There were very few cases where the participants were eliminated due to not meeting the inclusion criteria, because of the filters that were set using MTurk. However, the questionnaire had 36 items to respond to, which included the ACs. So, failure to complete the survey due to fatigue is a likely explanation. The 20% of data that were eliminated would have generated a more accurate representation of the population, but the results from this study were still substantial giving the total number of participants that did complete the survey.

Instrument validity is a potential limitation to this study because there was not a distinct measure that used elements of the combined scales to compare the findings to those in this study. But there has been an extensive amount of studies that have documented that the constructs of both the SPAS and SAAS are in fact valid assessment tools. Literature has shown that the two scales have been identified as testing two independent components related to physical appearance-related anxiety. PC and NE have been established as the latent variables in the SPAS, and the single latent variable that otherwise had not been specifically named, was declared SI for the purposes of this study. While the evidence in the literature supports that these two scales are valid instruments independently, there needs to be further evaluation of the 20-item combined measure that

incorporates each of the latent variables, PC, NE, and SI as first-order factors subordinate to the overarching factor, which reflects physical appearance-related anxiety.

Future Directions

This study was one of on a few that prioritized data collection outside of the college environment that has been most commonly documented in the literature. By using a platform such as Amazon MTurk, gathering information from a select subset of the population that are not as commonly studied may be advantageous. Specifically, studies on individuals from populations in which this new universal scale may be used would be advantageous. This study examined the SPAS and SAAS in participants that were from the United States or culturally similar countries, therefore future studies should expand the inclusion criteria. There have been minimal studies investigating these scales in participants from other countries across the globe that are not similar to the United States culturally. There is a need to better understand and determine if this new universal model differs among different cultures.

From the results of this study, gender identity should be further explored as a potential enhanced risk factor for one experiencing elevated levels of physical appearance-related social anxieties. The two scales have been established as being invariant between sexes, but they should also be tested among these gender identity subgroups. Findings from this study indicated that there were significant differences among gender identity groups. Therefore, further investigation using a larger sample would help to better understand these potential differences that may exist. In addition to

the invariance of the individual measures, this new universal model using the combination of items from the SPAS and SAAS should be examined.

Along with culture and gender, the contribution of exercise behavior on one's level of physical appearance-related anxiety warrants more investigation. Like many of the studies on the SPAS and SAAS, this study was non-experimental. Therefore, these results can only be generalized based on average groupings of demographic characteristics. Experimental studies would provide a deeper understanding of the role exercise behavior plays on these types of physical appearance-related anxieties. To that end, longitudinal studies would also be helpful in providing better explanations as to when the onset of these anxieties occur. Experimental designs would also allow for further inquiry into the impact and potential effects the media has on individuals who experience these types of anxieties.

One consideration in regard to the new model would be to investigate further the correlation of items 4 and 6. The two items read similarly, but could possibly be interpreted differently based on the individual. Further examination into possibly rewording the items or even removing one item are solutions that should be explored.

Future research in this area can help to validate this new universal model using the items from the SPAS and SAAS. In doing so, it would provide a better understanding into the contribution of both the positive and negative internal factors and yield greater support for determining external factors such as the media, to strengthen the basis for this universal measure and establish a comprehensive measure of physical appearance-related anxiety.

APPENDIX A – Participant Informed Consent Letter

Dear MTurk Participant,

As a Doctoral student at The University of Southern Mississippi, I would like to invite you to participate in my dissertation study. The purpose of this study is to gather data about the social anxieties one may experience living in today's media-driven culture. By participating in this study, you will have the opportunity to reflect on your own views and attitudes toward exercise and social anxieties.

The questionnaire covers two areas of interest related to exercise and social anxiety, as well as basic demographic information. Completion of the questionnaire should take no more than 15 minutes. All data collected will be anonymous, and your participation in this project is completely voluntary. If you choose to discontinue this study at any time you will be able to exit the survey without penalty. The data collected will be used to complete dissertation requirements, presentation at professional conferences, and publishing in scholarly journals.

This project has been reviewed by the Institutional Review board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406-0001, (601) 266-6820. If you have questions concerning this research, please contact Kimberly Allen Smith at Kimberly.e.allen@usm.edu or 205-503-2070. This research is being conducted under the supervision of Kyna Shelley, PhD.

Compensation of \$0.20 will be awarded after full completion of the survey, and submitted responses are approved. Instructions will be provided at the end of the survey for submitting your answers. By completing this questionnaire in its entirety, you, the respondent, give permission for this anonymous and confidential data to be used for the purposes described above.

Thank you for your time and effort in completing this survey.

Sincerely,

Kimberly Allen Smith

APPENDIX B – IRB Approval Letter

Office of
Research Integrity



118 COLLEGE DRIVE #5125 • HATTIESBURG, MS | 601.266.6576 | USM.EDU/ORI

NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

The risks to subjects are minimized and reasonable in relation to the anticipated benefits.

The selection of subjects is equitable.

Informed consent is adequate and appropriately documented.

Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.

Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.

Appropriate additional safeguards have been included to protect vulnerable subjects.

Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI via the Incident template on Cayuse IRB.

The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.

FACE-TO-FACE DATA COLLECTION WILL NOT COMMENCE UNTIL USM'S IRB MODIFIES THE DIRECTIVE TO HALT NON-ESSENTIAL (NO DIRECT BENEFIT TO PARTICIPANTS) RESEARCH.

PROTOCOL NUMBER: IRB-20-40

PROJECT TITLE: INVESTIGATING THE SOCIAL PHYSIQUE ANXIETY SCALE AND SOCIAL APPEARANCE ANXIETY SCALE ACROSS GENDER AND AGE

SCHOOL/PROGRAM: School of Education, Educational Research and Admin

RESEARCHER(S): Kimberly Allen, Kyna Shelley

IRB COMMITTEE ACTION: Approved

CATEGORY: Expedited

7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

PERIOD OF APPROVAL: April 20, 2020

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

APPENDIX C – MTurk Questionnaire via Qualtrics

Informed Consent Document will appear on the first screen, and they will have to agree to participate before they start the questionnaire.

Demographics:

1. How old are you?

Condition: How old are you? Is less than 18. Skip to: End of Survey.

2. What is your sex?

- Male
- Female

3. How do you describe yourself? (check all that apply)

- Straight
- Gay or Lesbian
- Bisexual
- Transgender or Transsexual
- Gender non-conforming

Display this question if: How do you describe yourself? Transgender or Transsexual is Selected.

4. Do you think of yourself as?

- Transgender or Transsexual, male to female
- Transgender or Transsexual, female to male

5. Which is your country of origin?

- United States
- Canada
- Australia
- New Zealand
- United Kingdom
- Ireland

6. Do you exercise for

- 150 minutes (or more) a week of moderate-intensity aerobic activity (i.e. brisk walking) and/or muscle-strengthening activities on 2 or more days a week, working major muscle groups (Legs, back, arms)
- 75 minutes (or more) a week of vigorous-intensity aerobic activity (i.e. jogging, running) and/or muscle-strengthening activities on 2 or more days a week, working major muscle groups (Legs, back, arms)
- Less than 50 minutes of aerobic activity per week and little to no muscle strengthening activities
- I do not exercise on a regular basis

Social Physique Anxiety Scale	Not at all	Slightly	Moderately	Very	Extremely
I am comfortable with the appearance of my physique/figure	0	0	0	0	0
I would never worry about wearing clothes that might make me look too thin or overweight	0	0	0	0	0
I wish I wasn't so uptight about my physique/figure	0	0	0	0	0
there are times when I am bothered by thoughts that other people are evaluating my weight or muscular development negatively	0	0	0	0	0
when I look in the mirror, I feel good about my physique/figure	0	0	0	0	0
unattractive features of my physique/figure make me nervous in certain social settings	0	0	0	0	0
I am paying attention, therefore select the response moderately	0	0	0	0	0
in the presence of others, I feel apprehensive about my physique/figure	0	0	0	0	0
I am comfortable with how fit my body appears to others	0	0	0	0	0
it would make me uncomfortable to know others were evaluating my physique/figure	0	0	0	0	0
when it comes to displaying my physique/figure to others, I am a shy person	0	0	0	0	0
I usually feel relaxed when it is obvious that others are looking at my physique/figure	0	0	0	0	0
when in a bathing suit, I often feel nervous about the shape of my body	0	0	0	0	0

Social Appearance Anxiety Scale	Not at all	Slightly	Moderately	Very	Extremely
I feel comfortable with the way I appear to others	0	0	0	0	0
I feel nervous when having my picture taken	0	0	0	0	0
I get tense when it is obvious people are looking at me	0	0	0	0	0
I am concerned people would not like me because of the way I look	0	0	0	0	0
I worry that others talk about my flaws in my appearance when I am not around	0	0	0	0	0
I am concerned people will find me unappealing because of my appearance	0	0	0	0	0
I am paying attention, therefore select the response moderately	0	0	0	0	0
I am afraid that people find me unattractive	0	0	0	0	0
I worry that my appearance will make life more difficult for me	0	0	0	0	0
I am concerned that I have missed out on opportunities because of my appearance	0	0	0	0	0
I get nervous when talking to people because of the way I look	0	0	0	0	0
I feel anxious when other people say something about my appearance	0	0	0	0	0
I am frequently afraid I would not meet others' standards of how I should look	0	0	0	0	0
I worry people will judge the way I look negatively	0	0	0	0	0
I am uncomfortable when I think others are noticing flaws in my appearance	0	0	0	0	0
I worry my romantic partner will/would leave me because of my appearance	0	0	0	0	0
I am concerned that people think I am not good looking	0	0	0	0	0

7. What year were you born?

APPENDIX D Tables

Table A1. *Frequency of Sex and Gender by Data Collection Blocs*

		Bloc 1	Bloc 2	Bloc 3	Bloc 4	Total
Sex	Male	141	148	119	141	549
	Female	144	155	159	203	661
Gender	Straight	246	275	240	296	1057
	Gay or Lesbian	11	4	8	11	34
	Bisexual	22	24	28	34	108
	Transgender or Transsexual	3	1	1	3	8
	Gender Non-Conforming	3	1	3	1	8

Table A2. *Descriptives of Age by Data Collection Blocs*

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Bloc 1	286	18	65	34.36	10.485	109.929
Bloc 2	305	18	65	36.49	11.845	140.303
Bloc 3	279	18	65	35.02	11.937	142.500
Bloc 4	344	18	65	34.70	12.124	146.980

Table A3. *Frequency of Nationality by Data Collection Blocs*

	Bloc 1	Bloc 2	Bloc 3	Bloc 4	Total
United States	268	261	245	289	1063
Canada	15	25	23	30	93
Australia	0	0	1	1	2
New Zealand					
United Kingdom	3	19	10	23	55
Ireland				1	1
Other	22	2	4	8	36

Table A4. *Frequency of Exercise Behaviors by Data Collection Blocs*

	Bloc 1	Bloc 2	Bloc 3	Bloc 4	Total
CDC Daily Activity Requirements					
150 mins of moderate-intensity aerobic activity and/or 2 or more days of muscle-strengthening activity	75	95	85	107	362
75 mins of vigorous-intensity aerobic activity and/or 2 or more days of muscle-strengthening activity	87	96	81	90	354
less than 50 mins of aerobic activity per week and little or no muscle-strengthening activity	66	69	79	90	304
I do not exercise on a regular basis	56	45	34	58	193
Exercise Groupings					
Meets CDC Requirements	162	191	166	197	716
Does Not Meet CDC Requirements	122	114	113	148	497

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