APPEARANCE SCHEMAS, SOCIAL PHYSIQUE

ANXIETY AND BODY IMAGE DYSPHORIA

IN EXERCISING INDIVIDUALS

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A Thesis

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of the Requirements for the Degree

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in

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Psychological Science Option

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by

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A Thesis

by

Emma K. Slankard

Spring 2017

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DEDICATION

I would like to dedicate this thesis to my husband, Matt; my parents, Russ and Kathy; and my brother, Andrew. You have been my biggest cheerleaders in every dream that I pursue, and for that I am forever grateful.

ACKNOWLDEGEMENTS

TABLE OF CONTENTS

PAGE

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

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Body image dysphoria is a prevalent issue, primarily for young women, that can potentially influence psychological and physical disorders. The image of the "perfect" body is frequently shown in media and yet impossible to achieve in reality. As a result, many individuals experience cognitive dissonance between their ideal and actual selves. For appearance schematic individuals, this dissonance can cause great distress. Social Physique Anxiety is known to be highly correlated with body image dysphoria, however the relationship between body image dysphoria and social physique anxiety in appearance schematic individuals is not thoroughly understood. This study aims to investigate this dynamic.

A survey compiling inventories for three variables: The Revised Appearance Schema Inventory (ASI-R), Social Physique Anxiety Scale (SPAS), and the Situational

x

Inventory of Body Image Dysphoria (SIBID) was distributed to CSU, Chico students at the beginning, middle and end of the semester. Students were enrolled in either a yoga, weightlifting, or aerobic dance class in the kinesiology department. Students enrolled in classes in the psychology department were used as a control group.

First, paired sample t-tests were used to identify significant changes in the three inventory scores between the beginning and the end of the semester. Next, a One-Way ANOVA was used to identify the effects of exercise and general physical activity on the three inventory scores. A second One-Way ANOVA was then used to compare SPAS and SIBID scores between individuals who had high and low ASI-R scores. Finally, a multiple regression analysis was used to identify a mediating relationship between the three variables.

Exercise and physical activity had no effect on any of the three inventory scores throughout the semester. Individuals who were more appearance schematic had greater social physique anxiety and body image dysphoria than individuals who were less appearance schematic. Finally, body image dysphoria was a mediating variable between appearance schema and social physique anxiety. In other words, appearance schematic individuals were more likely to have social physique anxiety if they also had body image dysphoria.

CHAPTER I

INTRODUCTION

Statement of the Problem

With the rapid advances in media over the past century, it is not surprising to find that expectations regarding appearance have also undergone significant changes. Movies, magazines, and other forms of media and advertisements idolize women with thin, tanned bodies and tall men with large muscles. These body types, shown frequently in media, only represent a small percentage of the population. The disparity between media and reality has become even greater with the use of airbrushing software-especially for women. These methods of perfecting images of men and women have created an increasingly unrealistic expectation regarding how people should look (Jung, 2006; Ginis et al., 2008).

While technology has been able to construct the perfect body, many people are struggling to keep up with this artificial ideal. Poor body image and eating disorders have significantly increased in the second half of the twentieth century. According to a study by Harrison and Cantor (1997), roughly one in eight females between the ages of 16 and 20 show signs of eating disorders – the most common of which are subthreshold bulimia nervosa and subthreshold binge eating disorder. Additionally, a study published by the national library of medicine found that 56% of 9th grade females and 28% of 9th

grade males reported eating related disordered eating behaviors (Croll, Neumark-Sztainer, Story & Ireland, 2002). Media has proven to be a significant predictor of eating disorder symptoms in women, as well as dieting behaviors in men (Harrison & Cantor, 1997). More specifically, television has a high correlation with body dissatisfaction, while magazines are highly correlated with drive for thinness – two concepts that are conceptually close yet distinct. Overall, men and women are more vulnerable to poor body image and resulting disorders today than they ever have been before (Harrison & Cantor, 1997).

With body image now a looming problem among individuals nationwide – especially young women – one question that has developed is how to treat issues and disorders related to body image. While there are many options, one proposed approach is through exercise. When it comes to Body Image's relationship with exercise, however, research is varied, inconclusive and even somewhat polarized. Multiple studies suggest that exercise is positively correlated with body image, specifically body image satisfaction. For example, it has been found that intense exercise is often followed by a period of heightened body satisfaction, a phenomenon known as the "halo effect," and it is largely because of this very phenomenon that exercise is used in treatment plans for individuals with eating disorders (Gehrman, Hovell, Sallis, & Keating, 2006; Williams & Cash, 2001). A study by Hensley (1996) showed that aerobic exercise is effective in steadily improving both state and trait body image. It is also believed that social physique anxiety, general anxiety and depression are higher among non-exercisers than exercisers (Atalay & Gençöz, 2008; Kostanski & Gullone, 1998). A potential reason that exercise

has a positive effect on body image could be its tendency to increase feelings of competence and self-worth, especially in women (Lindwall & Lindgren, 2005).

On the other hand, some research suggests that exercise can be negatively correlated with body image. It is believed that exercisers can potentially have body image ideals that are more difficult to obtain than non-exercisers (Greenleaf, McGreer & Parham, 2006), and that individuals who exercise for appearance related reasons report higher body dissatisfaction than those who exercise for health or pleasure related reasons (Strelan, Mehaffey & Tiggemann, 2003). Some research has found that anxiety related to physical appearance is higher among individuals who identify themselves as exercisers (Kraemer, Stice, Kazdin, Offord & Kupfer, 2001). Additionally, a study on the effect of aerobic dance on body satisfaction over the course of 8 weeks showed no significant results (Aşçi, Kin, & Koşar, 1998).

Purpose of the Study

The present study aims to further examine the effects that various exercises may have on body image by investigating these two theoretical approaches. Therefore, the first purpose of this study is to examine the effects of participating in a semester-long yoga, weightlifting or aerobic dance class on social physique anxiety, body image dysphoria and appearance schema. Furthermore, this study is interested in the potential mediating relationship between appearance schema, social physique anxiety and body image dysphoria.

CHAPTER II

LITERATURE REVIEW

Body Image

Previous studies present two primary approaches to defining body image, and other concepts related to body image. One approach holds that, as of yet, there is still no established or widely accepted model with which body image can be compared and assessed (Ginis, Strong, Arent, Bray, & Bassett-Gunter, 2014). The lack of a model is due largely to the fact that body image is a multidimensional construct made up of three main components: cognition, emotion and behavior. This multidimensional view of body image makes it difficult to account for all the variables that could potentially affect it (Sabiston & Chandler, 2009). The breadth of this definition alone poses a problem in studies attempting to assess body image's relationship to other variables. In order to accurately assess body image, the three aforementioned components must be dissected and examined individually to gain a proper understanding of how it develops and functions. In addition, body image is looked at as a trait-like construct that, as a whole, is less susceptible to situational variation, making it incompatible with short-term experimental studies (Sabiston & Chandler, 2009).

The other approach to body image is primarily a cognitive one. It is based on Bartlett's 1932 Schema Theory, which was further analyzed and developed by Alba and Hasher (1983). While the first approach is correct in identifying body image as a complex

and layered construct, focusing on the cognitive aspects of body image can be incredibly insightful. Our mental frameworks are largely shaped by our environment and the interactions we have with it. In turn, the type of mental framework we develop about a domain influences and guides the emotions and behaviors associated with it. With this view, one's cognitive perception of their body is the primary result of body image, while the emotional and behavioral components are simply by-products.

There is a great deal of research supporting the schematic approach to body image. Some researchers have looked more closely at the distinction between perceived body image and actual body changes, establishing that the cognitive discrepancy in body image is primarily due to internalized body ideals, leading to greater perceived discrepancies in individuals (Cash & Pruzinsky 1990; Tiggemann & McGill 2004; Martin Ginis, McEwan, Josse, & Phillips, 2012).

According to Higgins' Self-Discrepancy Theory, the self is divided into three categories. The "actual self" is what we perceive ourselves to be or be like. The "ideal self" is what we would strive or hope to be. Finally, the "ought self" is the self that we believe others want or think us to be (Higgins, 1987). Experiencing discrepancy between any of these three representations can lead to a range of emotional discomfort from mild to severe. The cognitive discrepancy between the ideal physical self and the actual physical self is typically significant, especially for women. This discrepancy would be particularly distressing to individuals who place great value on their appearance, motivating them to take measures to lessen that discrepancy (Cash & Pruzinsky 1990; Tiggemann & McGill 2004). If body image is largely schematic, then perceived changes through attempts to lessen the discrepancy could be enough to improve an individual's

body image and make them more satisfied with the ideal/actual discrepancy (Vitousek & Hollon, 1990). Additionally, the schematic approach may explain why research on the relationship between body image and exercise is varied- the results rely largely on the individual's perception of themselves rather than the actual exercise.

One study attempted to look at the effect on body image that different types of exercise may have, primarily between strength and aerobic exercise (Martin Ginis et al., 2012; Ginis et al., 2014). Finding that aerobic exercise had a greater positive influence on body image, they reported that strength training could be perceived by women to be less compatible with obtaining the ideal female body, which is thinner and leaner than the male ideal body (Brownell, 1991). It is possible that individuals perceive certain exercises to be more helpful in obtaining that ideal and reduce their cognitive discrepancy than other exercises. Other research has concluded that body satisfaction and SPA are more likely to be affected by perceived change (Martin Ginis et al. 2012; Brownell, 1991) rather than actual physical change.

Overall, most studies on perceived body image support the assertion that perceived changes, primarily in beliefs about one's body, have a greater effect on body image than actual physical changes (Martin Ginis et al. 2012). The Exercise and Self-Esteem Model (Sonstroem & Morgan 1989) illustrates the findings that changes in physical self-perception has a more direct relationship to body image. Actual physical changes also influence body image; however, the relationship is more distal than perceived changes (Martin Ginis et al., 2012; Ginis et al., 2014). This could potentially have an interesting connection to the findings that women often rate their body dissatisfaction as too great, while men tend to rate their dissatisfaction in closer relation

to their actual body mass (Kostanski & Gullone, 1998). Exercise, overall, is a greater predictor of body satisfaction in males than in females (Hausenblas & Fallon, 2002). Previous research on body image supports the fact that it is a perceptual, and therefore cognitive, construct. Because schema theory is also cognitively based, it would be an appropriate lens to use when attempting to understand body image.

For these reasons, this article will focus primarily on the cognitive and perceptual aspects of body image, specifically body image dysphoria, which involves negative emotions regarding one's body in various contexts. Cash (2002) stated that Body image dysphoria supports a cognitive-behavioral approach to body image, explaining that "contextual events activate schema-based processing of self-evaluative, affect-laden information about one's appearance" (362). Additionally, studies have shown that body image dysphoria has a significant relationship with both affective and cognitive evaluation of one's body (Denniston, Roth & Gilroy, 1991). The body image dysphoria measure captures one's emotional disposition towards and cognitive perception of the body. The particular qualities of this measure fit nicely with the second theme of this study: schema.

Schema Theory

Schema Theory asserts that relevant information is held and organized in mental frameworks called schema. We are capable of creating schema about tangible objects, as well as abstract constructs. The schemata that we create are stored in long-term memory, and are mental templates that, when activated, help to guide and determine what information is encoded, stored, and later retrieved from our long-term memory.

Previously developed schemata are activated to make sense of new, incoming information.

One of the strengths of Schema Theory is the fact that it accounts for error in processing, encoding and even perceiving information, which can be relevant to the study of distorted body image. The development of schema is highly individual and experience based; no two individuals have the exact same schema of any given domain. However, there are similarities in the creation and influence of schema between individuals (Alba & Hasher, 1983).

When we are presented with new information, we immediately and automatically search for the correct schema to activate and extract from long-term memory. If the information fits most of the schema, but not all, we may make minor adjustments to our current schema to account for the new information. This process is called assimilation. If, however, the information about a specific domain is relevant but does not fit our current schema at all, a larger adjustment to the schema might be required to make room for the new information. This larger overhaul is called accommodation.

Assimilation and accommodation are results of successful encoding of new information; however, Schema Theory also accounts for shortcomings in the encoding and retrieval process. Specifically, it may adequately account for the distortions that occur in relation to one's body image. Schema theory takes our encoding process and breaks it down into four stages: Selection, Abstraction, Interpretation and Integration, and addresses the potential mistakes that can be made at each stage.

The first stage, selection, is the filtering and selection of new incoming information for further processing. A specific schema will be activated and pulled from

long-term memory, serving as the lens through which you look at the new information. If this new information does not fit, or is not relevant to the schema, it will likely be overlooked completely. This poses a problem if the wrong schema is activated, or if you have no schema concerning a certain domain at all. If this occurs, then only the information that is most relevant to the activated schema will be selected to advance to the next stage of encoding, running the risk of overlooking vital information.

The second stage, abstraction, is the process of further reducing the newly selected information. In this process, information is boiled down so that the meaning remains but the original form is discarded. Information is integrated into schemas as generalized knowledge rather than specific instances. Though this a is more cognitively efficient strategy, it runs the risk of resulting in misinformation because of the loss of detail that occurs during this stage of encoding.

The third stage, interpretation, is where logical inferences and conclusions are made to fill in the gaps to understand and make meaning of the information. These "gaps" are filled in with what would be most probable given the information that is available. This also allows us to concretize ideas in order to more easily understand them. The danger in this process comes when inferences are remembered as a part of the original set of information, when in reality they had been added later to fill in for the missing pieces of information.

The fourth and final stage of encoding, according to Schema Theory, is integration. Integration involves making the new information part of an existing schema, or possibly into a completely new schema if the new information is novel.

As you can see, schemata influence how we perceive, encode and process new information. How information is processed throughout the various stages of encoding can have a major influence on how future information is received. Information related to appearance, for example, if processed in a negative context, may render the individual less likely or even incapable of encoding positively-related information regarding their body. This leads us to a more specific subcategory of schema called Self-Schema (Alba & Hasher, 1983).

The schematic view of body image asserts that individuals hold mental self-representations of what our bodies are like (Schlundt & Johnson, 1990), which is essentially a self-related schema. The term self-schema was first coined by Hazel Markus (1977) and refers to organized knowledge that is relevant to one's self. This information is drawn and encoded through our specific experiences, and in turn guides how we process information about ourselves. Our various Self-Schemata combine to make up what is called our "Self-Concept." Self-schemata mediate our behavioral and emotional responses to stimuli; therefore, the self-concept is an important determiner of eating disorders (Stein, 1996).

Self-schemata represent what is central and vital to a person's identity, or self-concept. Individuals can have many or few self-schemata, and the self-schema that make up the self-concept differ between individuals because they can be created around any characteristic of the person (Stein, 1996). Individuals tend to have significant understanding and mastery of the information related to our self-schemata, because it is highly accessible and concerns ourselves. Since we are generally deeply familiar with what makes us "us", self-schemata can be considered expert-knowledge structures. This

means that self-schema knowledge includes both declarative knowledge about what you are, as well as procedural knowledge regarding behaviors, rules, and strategies that allow us to efficiently and seamlessly function in this domain.

Self-schemata have been found through previous studies to work as a strong framework through which body image can be examined and understood. This is especially effective because of Schema Theory's ability to account for shortcomings and errors in processing (Markus, 1977). The current study will use Schema and Self-Schema as a foundation for understanding and observe body image. The specific self-schema that will be used and referred to in this study is appearance schema.

Appearance schema is a specific category of self-schema. An individual who has a thoroughly developed, accessible and central self-schema in the domain of appearance is considered appearance schematic, while an individual who does not have a self-schema related to appearance is considered appearance aschematic. It should be noted that an appearance aschematic individual may still have an appearance schema, however it would be considered a more generic schema rather than a self-schema. It is likely that the development of gender schema influences which aspects of appearance are focused on and valued. Females in the U.S., for example, generally want their physique to look thinner and more tan while men in the U.S. desire more height and muscle tone (Hausenblas & Fallon 2002; Brownell, 1991).

When it comes to body image, it is believed that individuals who are appearance schematic have lower body image and body satisfaction ratings than individuals who are appearance aschematic. Similarly, appearance schematic individuals exhibit more negative moods, and are more likely to show negative reactions when

exposed to media that show the cultural ideal body. Appearance schematic individuals are also more vulnerable to the negative emotions that can result from cognitive discrepancies of the self-categories. In other words, discrepancy between "actual" appearance and "ideal" appearance will threaten the self-concept and identity of an appearance schematic individual (Jung & Lennon, 2003). This is a larger concern today than in previous decades because of the portrayal of the ideal male and female body through media.

This theory ties neatly into Appearances Schemas. Media and other pop culture influences play a large role in defining ideals for both men and women. Children who grow up under these influences may develop thorough schemata on what men and women should look like, which in turn influences the self-schemata that are adopted. All this information will eventually be transferred to their own self-schema, thus playing a role in the development of their "ideal self."

Social Physique Anxiety

A concept that is closely correlated with body image is Social Physique Anxiety (SPA), which is a fear of one's physical appearance being evaluated by others (Hart, Leary, & Rejeski, 1989). Individuals who have high SPA feel especially anxious in situations where their bodies are on display for others to see. Social Physique Anxiety has also been proven to increase in women after exposure to videos and images of other individuals who fit the ideal cultural body-type (Sabiston & Chandler, 2009; Ginis, Prapavessis & Haase, 2008). Atalay and Gençöz (2008) found that SPA is greatly impacted by perceived body image. This suggests that SPA is less trait-like than

originally perceived because it can be influenced by both dispositional and situational factors (Ginis & Leary, 2004).

SPA is a concept that is closely related to body dissatisfaction, eating disorders, preoccupation with body shape, weight, and even exercise dependence (Atalay & Gençöz, 2008; Cook et al. 2015). It is generally agreed upon that Anxiety Disorders can be at least temporarily improved through regular exercise and physical activity. Few studies have been conducted, however, on the effects of exercise on this particular type of anxiety. Additionally, the fact that SPA is anxiety-based may further support our focus on the cognitive aspect of body image.

The fact that SPA has a closer relationship to aspects of body image than other types of anxiety could influence how it is affected by exercise. This is an important factor to consider, especially since exercise is often prescribed as a treatment for anxiety disorders (Ströhle, 2008). Depending on the results of the study, it may be beneficial to treat SPA more like a body image related disorder rather than an anxiety disorder.

Research Questions

The first research question asks if the three variables of this study (Appearance Schema, Social Physique Anxiety and Situational Body Image Dysphoria) change over the course of one semester. According to Schema Theory, established schemas are difficult to change once they are created. Appearance schematic individuals, as mentioned earlier, have highly established appearance schemas. Social physique anxiety and body image dysphoria, on the other hand, are both situationally induced. This information supports the hypothesis that participants' appearance schemas will remain

relatively stable while their social physique anxiety and body image dysphoria scales will undergo more change throughout a semester.

The second research question is dependent on the findings for our first question. If there are changes for any of those variables, the next step is to ask if involvement in a semester-long yoga, weightlifting or aerobic dance class influenced any of those changes. The results of this study regarding exercise and body image dysphoria are hard to predict. In our case, exercise may prove to be beneficial to appearance schematic individuals who have higher SPA and poor body image. It may, however, just as well show that exercise negatively influences the body image and SPA of appearance schematic individuals, or has no effect at all.

The third research question asks if body image dysphoria and social physique anxiety are significantly different between appearance schematic and appearance aschematic individuals. Though inconclusive research does not allow us to form a hypothesis regarding exercise, previous research does support the hypothesis that appearance schematic individuals will have higher levels of SPA and Body Dysphoria than appearance aschematic individuals (Jung & Lennon, 2003). Finally, we hypothesize that there is a mediating relationship between appearance schema, social physique anxiety and body image dysphoria.

Finally, the fourth research question asks if there is a mediating relationship between appearance schema, social physique anxiety and body image dysphoria. The correlation between these three variables are strong, however the nature of how they interact with each other is unclear.

CHAPTER III

METHODOLOGY

Participants

Participants consisted of students at California State University, Chico enrolled in various classes in the Kinesiology or Psychology departments. Young adulthood is a particularly sensitive age when it comes to body image. It has been reported that women under the age of 25 show greater distortion when estimating the body shape and weight that men find most attractive. Women over 30, however, are much more accurate with this estimate (Demarest & Allen, 2000). A separate study showed that while drive for thinness and body dissatisfaction are consistent among different age groups, bulimia nervosa increases with age (Garaigordobil & Maganto, 2013). Overall, young adulthood may be a particularly sensitive time for both men and women regarding how they are perceived by the opposite sex. These perceptions may have a large influence on body image dysphoria and social physique anxiety.

Participants in the experimental groups were enrolled in Yoga, Aerobic Dance and Weightlifting classes, while participants in the control group were enrolled in any class in the Psychology department. Multiple forms of exercise were used to increase generalizability of any findings regarding exercise and body image. For the first round, there was a total of 162 female participants, 23 male participants and 2 participants who chose not to disclose their sex. A total of 85 participants identified as white or Caucasian, 52 identified as Latino or Hispanic, 5 identified as African-American or Black, 11

identified as Asian or Pacific. Islander, and 8 listed their ethnicity as "other". Participants

ranged from 16 to 73 years old, with an average age of 21.5 years.

For the final round, there was a total of 46 female participants and 3 male

participants and 2 who chose not to disclose their sex. A total of 20 participants identified

as white or Caucasian, 18 identified as Latino or Hispanic, 5 identified as Asian or

Pacific Islander, and 3 as "other". Participants ranged from 18 to 26 years old, with an

average age of 19.12. It is important to note that the participants in the final round are the

participants who completed round one AND took the same survey at the end of the

semester. The difference in numbers was due to the large attrition rate of 70%. There are

many factors that may have contributed to the decline in participation. To begin with, the

study did require participation in the same 30-minute survey three times over the course

of four months. The length of the survey may have led to survey fatigue for many

participants. Additionally, students were asked to participate in this study primarily for

course credit. There may have been less motivation to commit to an extensive

longitudinal survey for exercise courses, which have lighter workloads than academic

courses. Table 1 provides information regarding the participants of the study.

Table 1

Descriptives

Ethnicity	Round 1	Round 3
Asian/Pacific Islander	11	5
African-American/Black	5	0
Latino/Hispanic	52	18
White/Caucasian	85	20
Other	8	3
Missing	1	0
Class	Round 1	Round 3

Psych	47	8
Yoga	65	13
Weightlifting	30	14
Aerobic Dance	20	11
Gender	Round 1	Round 3
Male	23	3
Female	137	41
Missing	2	2

Procedure

Three body-image related inventories were compiled into one online survey through Qualtrics. Kinesiology students accessed the survey directly through Qualtrics, while Psychology students accessed the survey through SONA – an online system that allows students in the Psychology Department to participate in research for course credit. Participants were required to sign an informed consent before beginning of the survey. The survey included questions regarding demographic information such as age, ethnicity, and class information for course credit. This study required participants to be enrolled in either a psychology class, a yoga class, a weightlifting class or an aerobic dance class through Chico State's Psychology or Kinesiology departments.

Participants were required to take the same survey at three points throughout the semester: The first round was open between August 26th and September 12[th,] 2016. The second round was open between October 17th and October 22[nd,] 2016. The third and final round was open between November 27th and December 3[rd,] 2016. Participants could complete the survey at any point during the open periods. Participants were dropped if they did not give informed consent.

Certain analyses that did not require longitudinal information were completed using data from the first round of surveys. Overall, this round had the largest number of participants (162), and would therefore provide more powerful and reliable results. Analyses that did require longitudinal information were completed using data from the final round of surveys, which totaled 46 participants.

<div align="center">Measures</div>

Social Physique Anxiety Scale (SPAS)

This measure is a 12-item scale that assesses the level of anxiety individuals experience when they feel that their physique is being evaluated or observed by others in a social setting. This scale has been shown to have high internal and test-retest reliability (Hart, Leary, & Rejeski, 1989) with a Cronbach's alpha of .90. Additionally, a reliability of the SPAS scale for this study showed a Cronbach's alpha of .91. This scale asks participants to record how characteristic a number of statements are about themselves from 1 (Not at all characteristic of me) to 5 (Extremely characteristic of me). Statements in the survey include sentences such as "In the presence of others, I feel apprehensive about my physique or figure". High scores on this scale represent higher levels of Social Physique Anxiety.

Appearance Schema Inventory-Revised (ASI-R)

This is a 20-item self-report scale to measure participant's individual psychological investment in their physical appearance. This scale had a Cronbach's alpha of .88 for women, and .90 for men, and satisfactory intercorrelation of ($r = .51$ for women and $r = .53$ for men). A reliability analysis of the ASI-R for this study showed a Cronbach's alpha of .834. Participants are asked to rate how strongly they agree or

disagree on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree) with statements such as "If I look good on a given day, it's easy to feel happy about other things". High scores on this scale represent a greater appearance schema (Cash & Labarge, 1996).

Situational Inventory of Body-Image Dysphoria Short Form (SIBID-S):

This 20-item scale measures body-image emotions across different situational contexts, including social and non-social scenarios (Cash, 2002). The SIBID-S has a Cronbach's Alpha of .96 for both men and women, as well as a reliability of .80 for men and .86 for women. A reliability analysis of the SIBID-S showed a Cronbach's alpha of .954. Participants are asked to record how often various situations elicit negative emotions regarding their body on a scale of 1 (Always) to 5 (Never). The inventory includes situations such as "When I am trying on new clothes at the store". High scores on this inventory represent greater body image satisfaction, while low scores represent greater body image dysphoria.

General Activity Level:

Participants were asked to describe their activity level throughout the day, not including exercise. They were asked to choose a level of activity that best described them. The options ranged from 1 (sedentary) to 4 (Very Active). The following options and descriptions were provided:

1. Sedentary - spending most of the day sitting (e.g. desk job), or do only basic activities of daily living (household chores, shopping, etc.). No moderate or vigorous activities.

2. Lightly Active - Spending a good part of the day on your feet (e.g. teacher, salesman), do daily activities that are equal to walking for 30 minutes at 4 mph (i.e. walking dog).

3. Active - Spending a good part of the day doing some physical activity (e.g. waitress, mailman) or daily activities that are equal to walking for 1 hour and 45 minutes at 4 mph.

4. Very Active - Spending most of the day doing heavy physical activity (e.g. bike messenger, carpenter), or daily activities that equal walking for 4 hours and 15 minutes at 4 mph.

Analysis Plan

In order to address the questions established in this study, four analyses will be performed. The first analysis will involve a simple paired-sample t-test to compare the means of the three inventory scores between the beginning and the end of the semester. The goal of this analysis is to see if participants' scores are significantly higher or lower at the end of the semester than they were at the beginning.

The second analysis will involve a repeated measures multivariate analysis of covariance. The aim of this analysis is to see if the differences between inventory scores at the beginning and end of the semester were influenced by participants' general activity level outside of the exercise class. While the first analysis is meant to establish if there are differences at all, this analysis aims to identify whether or not activity level accounts for any differences found.

The third analysis will involve a one-way MANOVA. This analysis will compare social physique anxiety and body image dysphoria scores between students with high and

low appearance schema scores. The purpose of this analysis is to confirm previous studies that assert that individuals with high appearance schemas have greater social physique anxiety and body image dysphoria.

Finally, a mediation analysis utilizing the bootstrapping method will be used to confirm a mediating relationship between appearance schemas, body image dysphoria and social physique anxiety. The purpose of this is to further understand the specific dynamic between these three correlated variables.

CHAPTER IV

FINDINGS AND RESULTS

Research Question 1

Multiple paired sample t-tests were conducted to compare appearance schema, social physique anxiety and situational body image dysphoria scores at the beginning and end of the fall semester, 2016. This analysis would show whether or not participants showed significant changes in their ASI, SIBID, and SPA scores between the beginning and the end of the semester. This analysis does not address factors that affect changes in the scores, however that question is further addressed in the analysis for research question number two.

There was no significant difference in situational body image dysphoria scores at the beginning (M = 3.14, SD = .88) and end (M = 3.24, SD = .86) of the semester, t(45) = -1.15, p = .257. There was a significant difference in appearance schema scores at the beginning (M = 2.38, SD = .52) and end (M = 2.52, SD = .61) of the semester, t(45) = -2.254, p = .029. There was also a significant difference in social physique anxiety scores at the beginning (M = 3.39, SD = .79) and end (M = 3.16, SD = .68) of the semester, t(45) = 3.064, p = .004. In other words, participants did show higher appearance schema scores and lower social physique anxiety at the end the end of the semester than they did at the beginning. In addition, body image dysphoria scores remained the same. The results for this analysis are shown in Table 2.

Table 2

Paired Samples t-test

Scale	Test	M	Std. Error Mean	t	df
Appearance Schema Inventory	Pre	2.38	1.235	-2.254*	45
	Post	2.52			
Social Physique Anxiety Scale	Pre	3.39	.075	3.064**	45
	Post	3.16			
Situational Inventory of Body Image Dysphoria	Pre	3.14	.084	-1.149	45
	Post	3.24			

a. *p < .05, **p < .01

Research Question 2

A repeated measures MANCOVA was used to see if activity level had a statistically significant effect on appearance schema and social physique anxiety scores. Correlations were first conducted between ASI, SIBID, SPA and Activity Level. Results of the correlation analysis can be seen in Table 3. Pre and Post test scores for both ASI and SPA were compared, controlling for general activity level. Body image dysphoria was not included because results of the paired samples t-test showed no significant change for SIBID between the beginning and the end of the semester.

In looking at between-subject effects, activity level did not have a significant effect on the changes in ASI, $F(1, 35) = 1.588$, $p = .216$, or on the changes in SPA, $F(1, 35) = .221$, $p = .641$. In sum, the hypothesis that activity level influenced appearance schema and social physique anxiety scores was rejected. Table 4 shows the results of this MANCOVA.

Table 3

Correlation Matrix for ASI, SPA, SIBID, and General Activity Level

		R1_ASI	R1_SPA	R1_SIBID	R1_ACTIVE
R1_ASI	Pearson Correlation	1			
R1_SPA	Pearson Correlation	-.442[**]	1		
R1_SIBID	Pearson Correlation	.502[**]	-.816[**]	1	
R1_ACTIVE	Pearson Correlation	.011	.071	-.169	1

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4

Repeated Measures MANCOVA controlling for General Activity Level

Source	Measure	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	ASI	23558.784	1	23558.784	114.743	.000
	SPA	77.592	1	77.592	86.072	.000
R3_ACTIVE	ASI	326.111	1	326.111	1.588	.216
	SPA	.199	1	.199	.221	.641
Error	ASI	7186.105	35	205.317		
	SPA	31.552	35	.901		

Research Question 3

While the first two analyses focused on identifying trends and effects over time, the following to analyses address the dynamic between the three variables. A one-way multivariate analysis of variance (MANOVA) was conducted to compare social physique anxiety and situational body image dysphoria scores between high and low appearance schematic participants. Data from Round one was used in this analysis, since longitudinal

information was not necessary. The group of 162 participants had an average appearance

schema score of 3.52. The analysis was conducted using two groups: the 84 participants

who scored below the average and the 78 who scored above the average. The MANOVA

revealed a significant multivariate main effect for appearance schema, Pallai's Trace = .887,

F (98, 210) = 1.724, p = .001, partial eta squared = .443. The Pallai's Trace Multivariate

Test was chosen over the Wilks' Lambda option in order to account for the significant

Levene's test results for SPA and SIBID. Power to detect the effect was 1.00. Thus

Hypothesis 1 was confirmed. Given the significance of the overall test, the univariate main

effects were examined. Significant univariate main effects for region were obtained for

SPA, F (1, 49) = 1.937, p <.002, partial eta square =.472, power = .999; and SIBID, F

(1,49) = 2.563 , p <.001 , partial eta square = .542, power = 1.00. The results of this

analysis are shown in Table 5.

Table 5

One-Way MANOVA comparing SPA and SIBID between participants with high and
low Appearance Schema scores

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	SPAS	47.156[a]	49	.962	1.937	.002	.472
	SIBID	67.381[b]	49	1.375	2.563	.000	.542
Intercept	SPAS	948.574	1	948.574	1909.251	.000	.947
	SIBID	1129.364	1	1129.364	2105.054	.000	.952
ASI	SPAS	47.156	49	.962	1.937	.002	.472
	SIBID	67.381	49	1.375	2.563	.000	.542
Error	SPAS	52.664	106	.497			
	SIBID	56.869	106	.537			
Total	SPAS	1629.514	156				
	SIBID	1823.750	156				

| Corrected | SPAS | 99.820 | 155 |
| Total | SIBID | 124.250 | 155 |

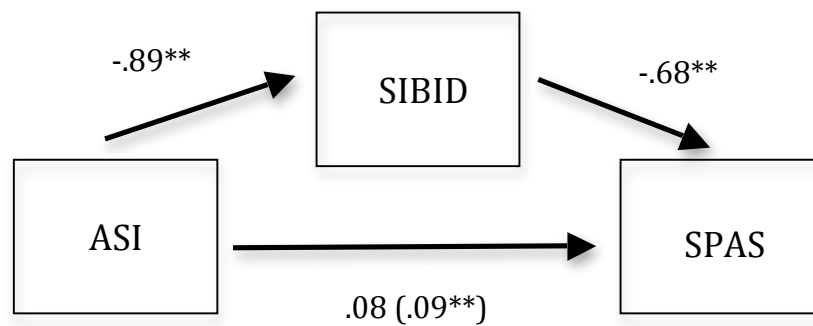a. R Squared = .472 (Adjusted R Squared = .229)
b. R Squared = .542 (Adjusted R Squared = .331)

Research Question 4

In order to test for mediation, a nonparametric bootstrapping analyses was conducted (see Preacher & Hayes, 2004) to test the meditational model. In this type of analyses, mediation is significant if the 95% confidence intervals for the indirect effect does not include 0 (Preacher & Hayes, 2004). As Figure 1 illustrates, the standardized regression coefficient between appearance schema and body image dysphoria was statistically significant, as was the standardized regression coefficient between body image dysphoria and social physique anxiety. The effect of ASI of SIBID was -.89, while the effect of SIBID on SPAS was -.68. Both had a significance at less than .001. The direct effect between ASI and SPAS was .08, while the standardized indirect effect was (-.89)(-.68) = .61. We tested the significance of this indirect effect using bootstrapping procedures. Since longitudinal information was not needed for this analysis, data from the first round was used, which had the largest N. Unstandardized indirect effects were computed for each of 5,000 bootstrapped samples, and the 95% confidence interval was computed by determining the indirect effects at the 2.5th and 97.5th percentiles. The bootstrapped unstandardized indirect effect was .61. Thus, the indirect effect was statistically significant and SIBID fully mediated the relationship between appearance schema and social physique anxiety. The mediation model is shown in Figure 1.

Figure 1

Mediation Model between ASI, SIBID, and SPA

-.89**   SIBID   -.68**

ASI   SPAS

.08 (.09**)

Note **p < .01

CHAPTER V

DISCUSSION

Research Question 1

Our first question was to examine whether appearance schema, social physique anxiety and situational body image dysphoria changed over time. There were significant differences in AS and SPA between the beginning and the end of the semester, however there was no significant difference in SIBID between the beginning and the end of the semester. While this does show that there was a change in scores over the semester for two out of the three inventories, it does not explain the factors that influenced these changes. Further analysis to answer this question is performed for the second research question.

The results of this analysis are somewhat contrary to expectation, and are worth discussing further. Social Physique Anxiety showed a significant decrease throughout the semester. The average SPA score for all 46 participants who completed the semester-long study decreased between the beginning and the end of the semester. Overall, all four groups of participants became less anxious regarding their appearance as the semester progressed. This supports findings discussed in the literature that SPA may be less trait-like than originally believed. In other words, SPA can be influenced by varying situational factors as well as fixed dispositional factors.

Conversely, Appearance Schema showed a significant increase throughout the semester. The average appearance schema score for all 46 participants who completed the semester-long study increased between the beginning and the end of the semester. Overall, all four groups of participants became more appearance schematic as the semester

progressed. While we cannot claim to know the cause of this change, it does present us with a better understanding of appearance schema.

It is generally agreed that established schemas are less susceptible to change. The fact that the average appearance schema did increase for participants appears to contradict this viewpoint. It is important to remember, however, that an increase in appearance schema does not mean that one's schema has been overhauled. An individual may have a mildly developed appearance schema, and this schema may be reinforced and further developed over time through various situations and experiences. When this happens, the individual is shifted from mildly appearance schematic to more thoroughly appearance schematic. Thus, we might conclude that one or more third party variable effectively reinforced and further developed the existing appearance schemas of the participants.

Situational body image dysphoria was the only variable that did not show a significant change over time. This was certainly contrary to expectation, since previous literature do not support the fact that body image is trait like. Overall, SIBID appears to be less susceptible to the same factors that influenced changes in appearance schema and social physique anxiety. The fact that AS changed when SIBID did not leads to questions about the nature of the relationship between AS, SIBID and SPA.

Research Question 2

The results of a repeated measures multivariate analysis of covariance showed no significant difference in appearance schema or social physique anxiety between the beginning and end of the semester, even when controlling for exercise conditions and general activity level. These results seem to support the position that exercise and physical activity have no direct effect on appearance schema, social physique anxiety or situational

body image dysphoria. While this is disappointing, it also means that exercise had no <u>negative</u> effect on these variables. While a positive effect on SPA, AS and SIBID would certainly be desirable, there are several things that we can gather from a lack of relationship:

Since our three inventories were all cognitive measures, we now have a better understanding of the nature of perceptual body image and its relationship to exercise. We established earlier in this study that the relationship between body image and exercise is difficult to define. This is because body image depends on an individual's unique concept of their own body. This, however, is only half of the equation. Additionally, body image depends on how that individual's personal body concept compares to their concept of a perfect – or perhaps their own potentially perfect – body. Using discrepancy theory as a foundation for understanding body image and schema, we can assume that exercise would only help to improve body image if it could lessen the discrepancy between the two concepts in the mind of the individual. Conversely, it would harm one's body image if it was perceived to highlight or the grow the discrepancy. In our case, neither happened.

While more research is necessary to continue to dissect this complicated relationship, our results support the idea that exercise and physical activity alone are not enough to change one's physical self-perception, or any anxiety regarding their physique. Therefore, strong appearance schemas, body image dysphoria and social physique anxiety are perceptual issues that may require more structured and cognitive-based intervention and therapy. It is possible that using exercise as a treatment for body image issues is questionable at best because it is a physical-based intervention, and not a cognitive-based one.

As mentioned earlier in this article, actual physical changes are less effective in improving body image than perceived changes. We can assume that most students in the exercise groups, who were all in beginning level classes, experienced some degree of physical improvement after 15 weeks of guided exercise. While the physical changes may not have involved weight loss, it is likely that the majority of students improved in their ability to perform basic tasks related to the exercise. Physical improvement in skill or technique, however, did not seem to matter when it comes to changing perceptions of body image. These results can be explained by Sonostroem's Exercise and Self-Esteem Model: Physical, and therefore distal treatments would be expected to be less effective and reliable than direct, perceptual and cognitive treatments.

Research Question 3

A one-way ANOVA showed that students who were less appearance schematic had significantly higher levels of SIBID and SPA than students who were more appearance schematic. These results align with previous research and support our current understanding of appearance schemas. Appearance schematic individuals are more likely to be focused on their appearance. Additionally, appearance schematic individuals are more vulnerable to negative emotions and thoughts regarding their bodies. It is logical, therefore, that individuals who place more emphasis on appearance, and yet who experience more negative emotions regarding appearance, would experience greater dysphoria and anxiety regarding their bodies. While this supports previous literature on appearance schemas, it still leaves some questions regarding the specific interaction between appearance schema, body image dysphoria and social physique anxiety. Thus, more analysis was necessary.

Research Question 4

A Multiple Regression analysis determined that SIBID is a mediator for AS and SPA. This tells us that if a participant had a high appearance schema rating, we can predict that this participant's social physique anxiety should also be high only if the student had a high score on the situational body image dysphoria inventory. It is possible that SPA was higher with appearance schematic participants only because body image dysphoria was also high. Additionally, the fact that SIBID functions as a mediator between AS and SPA can explain why appearance schema increased for the participants, while social physique anxiety decreased. This does not contradict our understanding of appearance schema, but merely requires further clarification of the nature of schemas themselves.

While appearance schematic individuals tend to have higher social physique anxiety and poorer body image, it is still possible to be appearance schematic and yet have a positive view of one's own body. A thoroughly developed appearance schema could simply predispose an individual to these traits, but does not guarantee it. If a distorted perception of one's body is present in an appearance schematic individual, then social physique anxiety is a likely observable and tangible result. In other words, the combination of appearance schema and body image dysphoria may be a recipe for social physique anxiety. This is not to say that individuals with high appearance schema could not have SPA if body image dysphoria is absent, but merely that the presence of dysphoria greatly increases that likelihood.

The findings of this study could potentially act as a stepping stone in understanding cognitive processes regarding body image. For example, the mediation model suggests that high appearance schema leads to greater body image dysphoria,

which in turn leads to greater social physique anxiety. In other words, greater emphasis

on physical appearance increases the likelihood of being dissatisfied with one's own

body. Dissatisfaction with one's body, in turn, increases the likelihood of experiencing

anxiety when it can be seen and evaluated by others. This could have many theoretical

and clinical applications for understanding the nature and development of body image, as

well as effective treatments for body image related disorders.

There are several advantages that support the choice to use group exercise

classes in this study. First, we can assume that a group exercise class is an environment

where emotions and thoughts regarding appearance are particularly salient, and therefore

easy to identify, record and potentially change. Second, students enrolled in an exercise

class through the university were guaranteed to participate consistently for the entirety of

the semester. Additionally, instructors in graded courses could provide incentives to

participate in the study that leisure classes could not.

Limitations

Although this study has, for the most part, answered many questions, there were

still some limitations. First, this study was conducted with only a small portion of students

who were registered in psychology or kinesiology classes at CSU, Chico. Additionally,

most participants were female. Therefore, to generalize the results to other ages and

genders, more participants of various groups would have been beneficial. It is important to

note, however, that our participants were primarily young women in their late teens and

early twenties, which is one of the primary demographics for body image disorders.

Second, the attrition rate for this study was quite high for various reasons

mentioned in the methods section. The length of the survey, in some cases, have led to

survey fatigue. In order to minimize this, completion and duration of each survey was considered before being used in the analysis. Incomplete surveys or surveys that were completed at an exceptionally fast rate were discarded. The analyses that used the final round of surveys, therefore, had a much smaller N than analyses that used only the first round.

Third, "general activity level" was used as a covariate in the MANOVA comparing SPA, SIBID, and ASI scores between exercise groups. While this is a logical and important factor to control, this does not include any exercise that the participant engages in. Additional factors to be considered in the future, therefore, might include exercise that the participants engage in outside of the kinesiology class that they are enrolled in.

Finally, the data analyzed for this study was based on a self-report survey. Although the scales included in the survey have high reliability and validity, it is important to take into consideration the fact that the information is based on the participant's interpretation and understanding of their own emotions and cognition.

Recommendations and Future Research

Further research on other factors that potentially impact appearance schema, social physique anxiety and situational body image dysphoria is needed. This study concluded that exercise and general physical activity do not influence these variables, and therefore exercise would not be an appropriate treatment for them. While this may eliminate one treatment option, appropriate treatments are yet to be identified. Understanding the relationship between these variables, and how they interact with each other, may give insight into future treatment approaches for body image related issues and disorders.

While this study does not provide treatment options for SPA, it does provide a basic cognitive model for appearance schema, body image dysphoria and social physique anxiety interact. While it was known that these three concepts overlap, this study further dissected the dynamic them. Understanding of this dynamic can provide insight into treatments for any of these three concepts. For example, we know that the individuals who are more appearance schematic are more likely to have body image dysphoria, while individuals who have body image dysphoria are more likely to experience social physique anxiety. In other words, individuals who place great value on their appearance have a greater chance of being dissatisfied with their own appearance when compared to the concept of an ideal body. Additionally, individuals who are dissatisfied with their appearance are more likely to experience anxiety when they feel that attention is drawn to their body. In sum, the results of this study emphasize the connection between these three concepts. Treatment for any one of these concepts should include careful consideration and inclusion of the other two.

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APPENDICES

RESEARCH INFORMED CONSENT FORM

STUDY TITLE: Exercise and Social Physique Anxiety

PRINCIPAL INVESTIGATOR: CO-INVESTIGATOR(S): Dr. Kyle Horst: Emma Slankard, Douglas Minton.

CONTACT AND PHONE FOR ANY PROBLEMS/QUESTIONS: khorst@csuchico.edu, (530)898-5368

PURPOSE OF THE RESEARCH: The current study attempts to examine the effects of different exercise interventions on levels of Social Physique Anxiety as well as differences among appearance schematic and appearance aschematic individuals and how that relates to their levels of Social Physique Anxiety.

PROCEDURES OR METHODS TO BE USED: CSU Chico students, over the age of 18, will be offered the opportunity to participate in a semester-long research study examining levels of Social Physique Anxiety. Surveys will be given to participants at the beginning of the first class of the semester, the middle of the semester, and the final class of the semester.

LENGTH OF STUDY: Participants will be asked to participate in a semester long research study.

RISKS ANTICIPATED: Although we anticipate no risks associated with participating in this study; as you complete this group and research survey/interview, you may experience distress from answering questions about your life. You are not required to complete any question items you feel uncomfortable with. If you experience any distress from this survey, or any other unanticipated negative experience from this survey, please contact Dr. Kyle Horst (contact listed above). Students may also take advantage of the counseling resources offered on campus. The Counseling Center is located in Student Services Center 430, (530)898-6345.

BENEFITS ANTICIPATED: While there are health benefits that may come from participating in these exercises classes, there are no specific benefits for participating in the study itself.

EXTENT OF CONFIDENTIALITY: The complete confidentiality of your responses is very important, and multiple steps are taken to keep your results confidential. No identifying information will be asked of you. All surveys and data will be securely stored in the PI's locked office. I understand this project is research, and that my participation is completely voluntary in completing these surveys and I am not required to answer any item I do not feel comfortable with. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

IRB APPROVAL

April 22, 2016

Ms. Emma Slankard
Mr. Doug Minton
Graduate Students, Psychology

Dear Ms. Slankard & Mr. Minton,

I am pleased to inform you that your HSRC application "**Exercise and Social Physique Anxiety**" has been approved under the ***Exempt* classification**. __Your Experiment ID Number is 216-20__. You may begin contacting potential participants. If you are contacting participants through the bulletin board or participant sign-up, please include the following information on posted sign-up forms:

1) The psychology department stamp of approval with the experiment ID number
2) Title of the study
3) Name of the principal researcher
4) Name of the faculty sponsor/mentor if the principal researcher is a student
5) Contact information (phone, email) of the principal researcher or faculty sponsor
6) Length of time of participation
7) Brief identification of the research activity
8) Days/times/rooms for the research
9) Note that participation could qualify for extra credit in class if allowed by the instructor

Please do not ask for phone numbers if the sign-up sheet is visible on the bulletin board.
Use the form and embosser available in the Psychology Department when providing participants with proof of extra credit. If you are using a raffle or drawing for a prize as an incentive, please forward to me the names and contact information of the prize winners.

At the conclusion of your data collection, please complete the included Post Data Collection Form for final approval. This form is to be completed and returned to Marsha Osborne in the Graduate School office (SSC 460).

If this research study is a part of your Master's thesis, you must provide a copy of this approval letter and a copy of the Post Data Collection Form (signed by Dr. John Mahoney, University HSRC Chair) to your graduate committee for inclusion in your thesis.

Sincerely,
Lawrence Herringer

Dr. Lawrence Herringer
Professor of Psychology
Chair, Psychology Department Ethical Treatment in Human Investigation Committee