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Nicole Bennett

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LOMA LINDA UNIVERSITY
School of Behavioral Health
in conjunction with the
Department of Psychology

Body Dissatisfaction, Verbal Commentary, Social Influences and Cigarette Smoking

By

Nicole Bennett

A Doctoral Project submitted in partial satisfaction of
the requirements for the degree
Doctor of Clinical Psychology

September 2021

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Each person whose signature appears below certifies that this project in his/her opinion is adequate, in scope and quality, as a project for the degree Doctor of Psychology.


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ABBREVIATIONS

BMI	Body Mass Index
SATAQ-4R	Sociocultural Attitudes Toward Appearance Questionnaire- 4-Revised
EDI-3 BD	Eating Disorder Inventory-3-Body Dissatisfaction
VCOPAS)	Verbal Commentary on Physical Appearance Scale

ABSTRACT OF THE DOCTORAL PROJECT

Body Dissatisfaction, Verbal Commentary, Social Influences and Cigarette Smoking

by

Nicole Bennett

Doctor of Clinical Psychology, Graduate Program in Psychology
Loma Linda University, September 2021
Dr. Holly Morrell, Chairperson

In the United States, about a quarter of adolescent girls report clinical levels of body dissatisfaction, and approximately 15% of adults smoke cigarettes. Body dissatisfaction can predict the development of an eating disorder, and smoking is linked with dozens of diseases, both of which can lead to premature death. The current study tested body dissatisfaction as a mediator of the relationship between frequency of positive verbal commentary and smoking, and the relationship between sociocultural influences (perceived family, peer, media, and significant other pressures) and smoking, while controlling for body mass index. Participants included 397 female undergraduates (*Mean* age = 20.32) recruited from universities and online communities, who completed an online survey. Participants were primarily Hispanic (33.4%), followed by Asian/Pacific Islander (28.2%), and White (20.1%). Results demonstrated no significant mediation effect of body dissatisfaction on the relationship between sociocultural factors and smoking, and there were no significant predictors of smoking ($ps > .05$). Increases in perceived pressures from peers, family, media, and less positive verbal commentary predicted greater body dissatisfaction ($ps < .001$). Increases in pressures from significant others ($p < .01$) and BMI also predicted greater body dissatisfaction ($p < .05$). Contrary to previous research, body dissatisfaction and smoking were not significantly associated (p

> .05). Our findings corroborate prior research regarding the impact of sociocultural factors on body dissatisfaction and expand upon it by including pressures from significant others. Possible explanations for the lack of significant predictors of smoking are discussed, as well as ways to potentially modify the Tripartite Model of Influence for future studies to include smoking. Overall, these findings have implications for body dissatisfaction prevention/intervention efforts that emphasize the importance of focusing on sociocultural factors.

CHAPTER ONE

INTRODUCTION

Smoking Background

Over 1.1 billion people in the world smoked tobacco in 2015 (World Health Organization, 2015). Although there has been a decrease in the percentage of adult smokers in the United States from 20.9% in 2005, there were still 14% of US adults 18 years and older who were smokers in 2017 (Centers for Disease Control and Prevention, 2017). For individuals under 18, 3,200 engage in smoking for the first time every day (SAHMSA, 2017). In the United States, there are more than 3.5 million middle and high schoolers who smoke cigarettes, and just under 90% of adults started smoking before age 18 (Surgeon General Report, 2014).

It is widely known that smoking is the leading cause of preventable disease, disability, and death in the US, and on average, smokers die 10 years earlier than nonsmokers (Jha et al., 2013). There are approximately 480,000 premature deaths annually due to cigarette smoking (Surgeon General Report, 2014). If smoking continues at the current rate, 5.6 million American youth are projected to die prematurely from smoking-related causes (U.S. Department of Health and Human Services, 2014). Dozens of diseases and cancers have been causally linked to smoking such as strokes; coronary heart disease; diabetes; rheumatoid arthritis; and stomach, liver, colorectal, and lung cancer (Surgeon General Report, 2014). Additionally, the Surgeon General Report (2014) states that for the first time ever, women are now just as likely as men to die from diseases caused by smoking such as coronary heart disease and lung cancer.

There are many known predictors of traditional cigarette smoking, such as whether parents, siblings, and/or friends smoke; smoking rules at home; smokers in the home; exposure to smoke in cars; academic performance; susceptibility to smoking; depressive symptoms; self-esteem; school connectedness; and use of other tobacco products (Pierce, Choi, Gilpin, Farkas, & Merritt, 1996; Sylvestre, Wellman, O'Loughlin, Dugas, & O'Loughlin, 2017). In addition, observational studies have found that body dissatisfaction or weight concerns are risk factors for smoking in females (Cawley, Markowitz, & Tauras, 2004; French, Perry, Leon, & Fulkerson, 1994; Tomeo, Field, Berkey, Colditz, & Frazier, 1999; Winter, deGuia, Ferrence, & Cohen, 2002). Males have been shown to differ from females in regard to weight concerns and related smoking rates (Clark et al., 2004). Therefore, this study focuses on the established research on girls and women, and the relationship between body image dissatisfaction and smoking.

Body Dissatisfaction Background

Body dissatisfaction has been defined as having negative subjective evaluations of one's physical body or body parts, such as figure, stomach, hips, and weight (Presnell, Bearman, & Stice, 2004; Stice & Shaw, 2003). Nearly 25% of adolescent girls report clinically significant levels of body dissatisfaction, and between 13.4% and 31.8% of women experience body dissatisfaction (depending on the measurement tool and cut-off; Fallon, Harris, & Johnson, 2014). Furthermore, estimates of body dissatisfaction and dieting have been shown to range from 30% to 50% of adolescent girls, and similar levels have been found in girls as young as 8 to 11 years old (Keery et al., 2005). With regard to racial and ethnic differences in body dissatisfaction, Black girls and women are more

satisfied with bodies than White girls and women, regardless of their weight (Grabe & Hyde, 2006). The literature is mixed regarding Hispanic and Asian American girls and women. Grabe and Hyde (2006) summarize that there could be a variety of cultural factors and values driving the differences in body dissatisfaction among races and ethnicities.

Body dissatisfaction has been identified as a risk factor for eating disorders (Stice, 2002; Stice, 2011), and body image disturbance is one of the criteria for a diagnosis of anorexia nervosa and bulimia nervosa (American Psychiatric Association, 2013). Recent prevalence rates were estimated to be 0.3% for anorexia nervosa and 0.9% for bulimia nervosa; however, eating disorders are strongly associated with suicidality (Swanson, 2011), and they have the highest mortality rates of all mental health disorders (The National Eating Disorders Association, 2018). A meta-analysis of 36 studies found that overall mortality rates for anorexia nervosa, bulimia nervosa, and eating disorder not otherwise specified (now identified as other specified feeding or eating disorder in the DSM-5) were 5.10, 1.74, and 3.31 deaths annually per 1000 persons, respectively (Arcelus, Mitchell, Wales, & Nielsen, 2011). Another large meta-analysis determined that individuals with anorexia nervosa were 5.2 times more likely to die prematurely from any cause and 18.1 times more likely to die by suicide than females between the age of 15 and 34 (Keshaviah et al., 2014). These studies indicate that body dissatisfaction is linked to psychological disorders with considerable morbidity and mortality and highlight the importance of studying factors related to body dissatisfaction in the hopes of preventing and treating it.

Development of Body Dissatisfaction

Literature to date has explored various explanations for the development and maintenance of body dissatisfaction in young females. The Tripartite Model of Influence is a well-established model for understanding the factors that may impact the development of body dissatisfaction and disordered eating (Keery et al., 2005; Shroff & Thompson, 2006). The original model was developed by Thompson and colleagues (1999) and proposed that three forms of sociocultural pressures (peers, family, media) directly and indirectly influence the development of body image disturbance and disordered eating through the effects of internalized appearance ideals and social appearance comparison. Thin-ideal internalization refers to how much an individual mentally adopts what is deemed attractive by society and the extent to which they engage in behaviors aimed at producing those ideals (Thompson et. al., 1999), and social appearance comparison is described as comparing one's physical appearance with the appearance of others, such as one's peer group (Rodgers, McLean, & Paxton, 2015).

There is considerable empirical support for the Tripartite Model, including studies supporting internalization of the thin ideal and social comparison to others' appearance as mediators of the relationship between sociocultural influences and on body image (Keery, van den Berg, & Thompson, 2004). Keery and colleagues (2004) demonstrated that the relationship between parental influence and body dissatisfaction was fully mediated by internalization and social appearance comparison. Additionally, they found that the relationships between peer influence and body dissatisfaction and media influence and body dissatisfaction were partially mediated by both internalization and comparison. Furthermore, they showed a direct path between the sociocultural influences and

restriction of food intake. Many studies have supported the associations between internalization of the thin ideal and social appearance comparison as predictors of body dissatisfaction (Keery, van den Berg, & Thompson, 2004; Rodgers, Chabrol, & Paxton, 2011; Shroff & Thompson, 2006).

Additional support for the Tripartite Influence Model is shown by how these sociocultural factors can provide strong messages about what is acceptable and unacceptable physically (Heinberg, Thompson, & Stormer, 1995). However, findings vary with regard to the effect that sociocultural factors may have on body image and weight related concerns, and for whom. For individuals with elevated body mass, lack of support from parents and peers, as well as perceived pressure to be thin from peers, have been shown to predict body dissatisfaction (Bearman, Presnell, Martinez, & Stice, 2006; Presnell et al., 2004). With regard to media influence, magazine ads containing full or parts of bodies and television programs such as soap operas, movies, and music videos, have been found to predict an increase in body dissatisfaction (Tiggemann & McGill, 2004; Tiggemann & Pickering, 1996). Similarly, a study focusing on college women determined that body image perceptions were significantly affected by both peer and media influences (Winston, 2006). In contrast, Presnell and colleagues (2004) did not find media or family pressure to significantly predict body dissatisfaction, and more recently, a meta-analysis of over 200 studies by Ferguson (2013) showed only very small effects from media influence. Ferguson (2013) suggests from reviewing the literature that the effects of media influence may be more limited to women with preexisting body concerns or those with a higher susceptibility for body image concerns, such that media acts as a reminder more than a cause. In addition, there may be bidirectional effects of

these factors for women who already have high body dissatisfaction (Mills, Shannon, & Hogue (2017). For example, a woman with high body dissatisfaction may already focus her attention on her body compared to others, and may be more likely to seek out media that features thin, idealized body images (Mills, Hogue, Tiggemann, (in preparation). The lack of consistency of the literature regarding the effects of media on body dissatisfaction highlights the importance of conducting additional research on the relationship between sociocultural factors such as pressure from the media and body dissatisfaction.

The literature is limited regarding the impact of significant others on body dissatisfaction. However, studies have shown that increased pressure, commentary, and criticism regarding physical appearance from a partner may have an adverse effect on women's body image and body satisfaction (Befort, Robinson Kurpius, Hull-Blanks, Nicpon, Huser & Sollengerger, 2001; Cash, Thériault, & Annis, 2004; Evans & Stukas, 2007). Carriere and Kluck (2014) expanded the Verbal Commentary on Physical Appearance Scale (VCOPAS; Herbozo & Thompson, 2006) to include an evaluation of feedback from romantic partners.

Verbal Commentary

There has been a large body of research documenting the impact of teasing and negative commentary on appearance and body dissatisfaction as an additional sociocultural factor. Nearly 30% of adolescent girls report being teased about their weight by family members, and the perceived pressure to be thin predicts increases in body dissatisfaction (Stice & Whitenton, 2002). In a longitudinal study with adolescent females, about a quarter of the girls reported experiencing weight-based teasing at least a

few times in the previous year, and such teasing led to overall appearance dissatisfaction (Neumark-Sztainer et al., 2002). Even teasing from parents has been shown to significantly predict body dissatisfaction and increase the odds of having a sibling who teases, which contributes to higher levels of body dissatisfaction as well (Keery et al., 2005). Furthermore, a study by McLaren, Kuh, Hardy, and Gauvin (2004) showed that hearing negative comments while growing up had a significant effect on body esteem for middle-aged women. They studied almost 900 women in their 50s and found that there were enduring negative effects on body satisfaction from the negative comments received as a child. To add to the long-lasting seriousness of appearance-related teasing, the authors found no evidence that the detrimental effects could be reversed by receiving compliments as an adult, even from the women's partners.

While the majority of literature to date has focused on negative appearance-related commentary, more recent research has shown that even positive commentary can have a negative impact. The current study focused on examining the impact of positive commentary as it is a less researched area and has potentially important implications for body dissatisfaction. Herbozo, Stevens, Moldovan, and Morrell (2017) examined the impact of positive commentary in a racially/ethnically diverse sample of women. They found that African American and Latina American women reported stronger negative responses to positive commentary regarding their weight/shape compared to European American women, and such negative responses correlated with more body dissatisfaction in African American women in particular. It is possible that this is due to reinforcement of Western societal ideals of female attractiveness that may be perceived as less desirable or applicable to minority women.

Recently, studies have begun examining the impact of positive feedback and not just the frequency. Positive commentary may foster the thin-ideal standards of appearance for women leading to internalization of the societal standard (Herbozo et al., 2017), an important aspect of the Tripartite Influence Model. The impact of positive commentary has been shown to be detrimental to body dissatisfaction of some women due to a phenomenon known as *complimentary weightism* (Calogero, Herbozo, & Thompson, 2009), as well as through *self-objectification* (Fredrickson & Roberts, 1997). Complimentary weightism refers to the notion that although an appearance-related comment may make a woman feel good, it also reminds her that she is being looked at and evaluated based on her appearance (Calogero et al., 2009), which is also the basis of objectification theory (Fredrickson & Roberts, 1997). Having pre-existing high levels of body dissatisfaction may lead women to interpret positive comments negatively, as they may be more sensitive to reminders of their body being judged and “on display.” Additionally, Bailey and Ricciardelli (2010) found that a higher frequency of negative comments as well as positive comments were associated with more social comparisons, another key variable of the Tripartite Influence Model.

Body Dissatisfaction and Smoking

Studies have in general shown a link between smoking and body dissatisfaction. Many studies have found that body dissatisfaction or weight concerns are risk factors for smoking, particularly in females (Cawley, Markowitz, & Tauras, 2004; French, Perry, Leon, & Fulkerson, 1994; Tomeo, Field, Berkey, Colditz, & Frazier, 1999; Winter, deGuia, Ferrence, & Cohen, 2002). It has also been suggested that women smokers may

be more dissatisfied with their bodies than women in general (King, Matacin, Marcus, Bock, & Tripolone, 2000). In regard to body mass, Howe et al. (2017) determined that body mass index (BMI) and body dissatisfaction are associated with smoking uptake in adolescence. Additionally, it has been shown that smokers with higher BMIs consume more cigarettes per day and may be more nicotine-dependent than lean smokers (Rupprecht, Donny, & Sveda, 2015). More specifically, among a sample of adults 18-65 years of age, there was a U-shaped curve association between percentage of smokers and BMI (Chatkin, Mottin, & Chatkin, 2010). There was a negative correlation between smoking and BMI for lean smokers but a positive correlation among overweight, obese, and morbidly obese smokers. Another recent study found the opposite, stating that current smokers had lower BMI compared to never smokers (Plurphanswat & Rodu, 2014). Plurphanswat and Rodu (2014) suggest that their findings could be attributed to the fact that cigarettes suppress appetite and increase metabolism.

The majority of the literature focuses on the many potential factors that could contribute to the relationship between smoking and higher BMI. Barrett-Connor and Khaw (1989) suggest an increase in fat accumulation and insulin resistance due to chronic smoking, both of which can contribute to the development of obesity (Rupprecht et al., 2015). Additionally, overweight and obese individuals may also be engaging in other unhealthy behaviors such as low intake of fruits and vegetables, low leisure time physical activity, and high alcohol intake compared to non- and ex-smokers. (Chiolero, Wietlisbach, Ruffieux, Paccaud, & Cornuz, 2006). Chiolero (2006) and colleagues also found an increase in cigarette consumption with higher frequency of each unhealthy behavior listed above for individuals 25 years old and older.

Furthermore, frequent smokers have been shown to have higher levels of body dissatisfaction, drive for thinness, fear of fatness, and eating pathology (Copeland, Spears, Baillie, & McVay, 2016). Females in particular commonly engage in smoking as a form of perceived weight-control (Klesges, Meyers, Klesges, & LaVasque, 1989), and obese individuals may use smoking as a weight-reduction method (Rupprecht et al., 2015). Camp, Klesges, and Relyea (1993) also suggest that the perception of regular smoking as a means of weight-control is associated with White, female smokers who engage in restrained eating habits. However, BMI has not been shown to be related to compensatory smoking (i.e., smoking more to counteract the effects of overeating; White, 2012). This suggests that smoking is not an effective means of weight control, but instead may be used in an effort to offset the effects of overeating resulting in eating, shape, and weight concerns (White, 2012).

The *perception* of being overweight may influence smoking behaviors more than self-reported BMI. Levels of perceived importance of being thin among female adolescents have been shown to predict smoking initiation, such that those who value thinness most strongly have been shown to be more likely to become established smokers (Honjo & Siegel, 2003). For example, girls who thought they were overweight in 8th and 11th grade, regardless of whether they were actually overweight, were more likely to smoke as young adults (Koval, Pederson, Zhang, Mowery, & McKenna, 2008). Further, Stice and Shaw (2003) determined that initial elevations in body dissatisfaction predicted an increased risk for onset of both experimental and regular cigarette smoking in adolescent females.

Other studies have shown that poor body image, low self-perceptions, and anxiety can lead girls to engage in cigarette experimentation and health compromising behaviors (Okeke, Spitz, Forman, & Wilkinson, 2013; Crocker et al., 2001). While Blow and Cooper (2014) found that smokers did not exhibit greater body dissatisfaction, they suggest that body dissatisfaction may be more related to smoking initiation than to smoking continuation. Given that most studies support a link between body dissatisfaction and smoking, more research is needed to determine the mechanisms through which body dissatisfaction may lead to smoking, in the interest of developing more effective interventions, such as preventive efforts to target young adult women who are at risk for developing body dissatisfaction (Stice et al., 2011). Such efforts could include strategies aimed at reducing internalization of the thin ideal and social comparison.

CHAPTER TWO

THE CURRENT STUDY

Smoking cessation efforts and programs have been underway for many years. It is critical to further understand what may lead individuals to smoke or continue to smoke, given the greatly publicized health consequences of smoking. Understanding the predictors and mechanisms for smoking behavior is crucial for these prevention and cessation efforts. Elevations in body dissatisfaction, body mass index, and a drive for thinness or a fear of fatness have been shown to be associated with smoking, particularly among women. Identifying whether or not body dissatisfaction mediates the relationship between sociocultural factors and smoking will improve upon research in both the smoking and body image/eating disorder fields by identifying potential targets for treatment in an effort to prevent further morbidity and mortality.

Based on the Tripartite Model, the overarching goal of the present study was to test body dissatisfaction as a mediator of the relationship between a series of sociocultural influences (e.g., positive appearance-related verbal commentary; and pressure from family, peers, media, and significant others) and smoking behavior. Therefore, the first aim was to test body dissatisfaction as a mediator of the relationship between the frequency of positive verbal commentary and smoking behavior. We hypothesized that a greater frequency of positive verbal commentary would be associated with a decreased likelihood of smoking through the effects of lower body dissatisfaction. Finally, we aimed to determine if body dissatisfaction was a mediator of the relationships between pressures from peer, media, family, and significant others and smoking behavior. We hypothesized that greater perceived peer, media, family, and significant

other pressure would be associated with a greater likelihood of smoking through the effects of greater body dissatisfaction.

CHAPTER THREE

METHODS

Participants

Participants were recruited from subject pools at California State University San Marcos, California State Poly Pomona, University of California Irvine, California Baptist University, Pacific Union College, and La Sierra University (*Mean* age = 20.32; *SD* = 2.59). Participants were all female and primarily Hispanic (33.4%), followed by Asian/Pacific Islander (28.2%), and White (20.1%). More than half of the participants had a self-reported BMI in the average range (59.1%), with the rest identifying as overweight (21.4%), obese (14.2%), or underweight (5.3%). Demographic characteristics are summarized in Table 1.

Table 1. Characteristics of Participants

	<i>N</i> (%)
Age [<i>M</i> (<i>SD</i>)]	20.32 (<i>SD</i> = 2.59)
Race/Ethnicity	
Hispanic	128 (33.4)
White Non-Hispanic	77 (20.1)
African American Non-Hispanic	17 (4.4)
Asian/Pacific Islander	108 (28.2)
Multi-racial/Other Non-Hispanic	53 (13.8)
BMI	
Underweight	20 (5.3)
Normal weight	224 (59.1)
Overweight	81 (21.4)
Obese	54 (14.2)
Smoking Rates	
Lifetime	92 (25.7%)
30-Day	24 (12.1%)

Note. Underweight = BMI below 18.5, Normal Weight = BMI 18.5-24.9, Overweight = BMI 25.0-29.9, Obese = BMI 30.0 and above.

Procedures

Participants were recruited from the subject pools at the universities listed above as well as various online communities including Reddit, Craigslist, and Facebook.

Participants were recruited for a larger study examining potential ethnic differences in sociocultural factors (e.g., pressures felt from parents, peers, and the media) that could influence body image, eating disorder psychopathology, and smoking behaviors.

Participants were given the contact information of the primary investigator to address any questions or concerns about the study. After providing consent using an electronic informed consent form and agreeing to participate in the study, participants completed a series of questionnaires through an online survey, including the following measures that were used in the current study: Sociocultural Attitudes Toward Appearance Questionnaire-4-Revised (SATAQ-4R), Eating Disorder Inventory-3-Body Dissatisfaction (EDI-3 BD), Verbal Commentary on Physical Appearance Scale (VCOPAS), and a smoking habits questionnaire. After completing the online survey, the participants either received credit in their psychology course or were entered to win a \$25 Amazon gift card. The participating universities' ethics committees approved the study for research.

Measures

Demographics.

Participants were asked to report demographic information that included age, height, weight, ethnicity, and education.

Verbal Commentary on Physical Appearance Scale (VCOPAS)

Herbozo and Thompson, 2006). The VCOPAS consists of 21 comments that participants rate as having received in the last two years using a Likert scale ranging from “never” to “always.” The VCOPAS consists of two dimensions – frequency and impact. There are three subscales or types of comments (Negative Appearance, Positive

Weight and Shape, and Positive General Appearance). If the participant experienced the comment at all (does not choose “never”), then the participant answers a follow up question about how that comment made her feel. Our study only utilized responses to the frequency ratings of the VCOPAS Positive Weight and Shape subscale. Examples of items include: “You’ve gained weight,” “You have pretty eyes,” and “You are in great shape.” Responses range from “very positive” to “very negative” (see Appendix A). The VCOPAS has good internal consistency and test-retest reliability (all $> .70$). The VCOPAS Positive Weight and Shape subscale had adequate internal consistency ($\alpha = .78$).

Eating Disorder Inventory-3-Body Dissatisfaction (EDI-3 BD)

Garner, 2004). The EDI-3 is a self-report questionnaire consisting of 91 items to assess the symptoms and psychological features of eating disorders. The EDI-3 consists of three subscales: Drive for Thinness, Bulimia, and Body Dissatisfaction. The Body Dissatisfaction subscale consists of ten items that measure satisfaction with specific body areas, such as waist, hips, thighs, and buttocks, using a Likert scale ranging from “always” to “never” (see Appendix B). Only the Body Dissatisfaction subscale was used in the current study. Examples of items from the body dissatisfaction subscale include: “I think my stomach is too big,” “I think my thighs are too large,” and “I like the shape of my buttocks.” According to Clausen, Rosenvinge, Friborg, and Rokkedal (2011), the Body Dissatisfaction subscale has a Cronbach’s alpha of .90 for clinical samples and .93 for nonclinical samples). Multiple factor analyses show that the EDI-3 is valid (Cumella, 2006). The EDI-3 Body dissatisfaction demonstrated good reliability in the current study

($\alpha = .85$).

Sociocultural Attitudes Toward Appearance Questionnaire-4-revised (SATAQ-4R)

Schaefer et al., 2017). The SATAQ-4R measures internalization of appearance ideals such as an individual's acceptance of societal ideals and standards, and appearance pressures such as the pressure to achieve the societal standard of what is ideal. The SATAQ-4R is a 31-item scale with seven subscales: (1) Internalization: Thin/Low Body Fat, (2) Internalization: Muscular, (3) Internalization: General Attractiveness, (4) Pressures: Family, (5) Pressures: Media, (6) Pressures: Peers, and (7) Pressures: Significant Others. This study used the Family, Media, Peers, and Significant Others subscales. Participants identify the extent to which they agree with the statements with responses ranging from "definitely disagree" to "definitely agree" (see Appendix C). Examples of items include: "I feel pressure from family members to improve my appearance," "My peers encourage me to get thinner," and "I feel pressure from the media to look in better shape." The SATAQ-4R has been shown to have good internal consistency, test-retest reliability, and construct validity among college women (Schaefer, Harriger, Heinberg, Soderberg, & Kevin Thompson, 2017). In the current study, the Family Pressure, Peer Pressure, Media Pressure, and Significant Other Pressure subscales of the SATAQ-4R all demonstrated excellent reliability ($\alpha = .90, .91, .96, \text{ and } .95$, respectively).

Smoking Habits Questionnaire

The smoking habits questionnaire includes 17 items pertaining to an individual's

involvement with and frequency of smoking behaviors. Only two of the questions asked were used. Participants were asked whether or not they have smoked within their lifetime (Yes or No) and if they have smoked during the past 30 days (Yes or No).

Statistical Analysis

Analyses were completed using SPSS version 25 (IBM Corp, 2017). In the current study, we used a series of simple mediation analyses with bootstrapping to test body dissatisfaction as a mediator of the relationship between frequency of positive verbal commentary and smoking, and the relationship between sociocultural influences (family, peer, media, and significant other pressures in separate analyses) and smoking, while controlling for body mass index (BMI; see Figure 1). We ran analyses predicting lifetime and 30-day smoking behavior separately. These outcome variables are categorical, and therefore logistic mediation analyses were conducted.

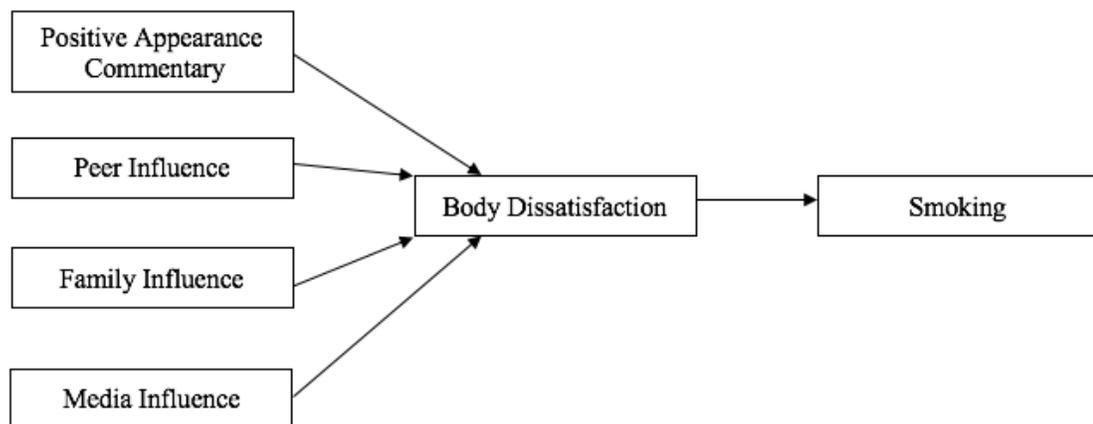


Figure 1. Proposed mediation model. A separate mediation analysis was conducted for each sociocultural influence variable

Historically, the causal steps strategy (Baron & Kenny, 1986) and the product-of-coefficients approach, such as the Sobel test (Sobel, 1982), have been the most common approaches to testing mediation. However, these approaches can be less efficient than bootstrapping because the causal steps approach has low power and requires very large samples, and the Sobel test assumes a normal distribution (Hayes, 2009). Bootstrapping demonstrates good power and does not assume normality of the distribution of the indirect effect. We ran the analysis using the mediation macro for SPSS called “PROCESS” (version 2.16; Hayes, 2013). During the bootstrapping process, estimates of regression coefficients, standard errors, and 95% CIs were calculated using 10,000 randomly drawn samples.

To calculate the minimum required sample size for our analyses, we used a formula based on a simulation study by Peduzzi, Concato, Kemper, Holford, and Feinstein (1996): $N = 10k/p$, where N = sample size; k = number of predictors (seven for the current analysis); and p = the proportion of “successful” events, or in our case the proportion of individuals who responded “yes” to each of the smoking items listed below. Results indicated that we would need 273 participants if using the outcome variable “Have you ever smoked a cigarette in your lifetime?”, and 579 participants using the outcome variable “Have you smoked a cigarette in the past 30 days?” Results of these calculations indicated that our sample size of 397 was more than adequate for analyses using lifetime smoking as our outcome variable, but less than satisfactory for our analyses using 30-day smoking as our outcome variable.

CHAPTER FOUR

RESULTS

A series of simple logistic mediation analyses with bootstrapping were used to determine whether body dissatisfaction mediated the relationship between frequency of positive appearance commentary and smoking (lifetime and 30-day), and the relationship between sociocultural influences (perceived pressures from family, peers, media, and significant others) and smoking, while controlling for body mass index. Descriptive statistics and correlations are presented in Table 2.

Since the mediation analyses included both continuous and categorical outcome variables, we tested the assumptions of both linear and logistic regression. The data met all the assumptions for linear regression. For the logistic regression, the linearity in the logit assumption was violated for four of the mediation models. First, for the analysis where positive commentary was the predictor and 30-day smoking was the outcome, the body dissatisfaction variable violated this assumption. In the analysis where perceived media pressure was the predictor and 30-day smoking was the outcome, BMI was the variable that violated the linearity in the logit assumption. Additionally, in both models (30-day and lifetime smoking) where perceived pressure from significant others was the predictor, significant other influence was the variable that violated the assumption. We also tested for outliers, of which there was one that demonstrated high levels of leverage, discrepancy, and influence across models. We tried deleting the outlier as well as using square-root transformations, neither of which fixed the violation of the linearity of the logit or changed the results of the analyses. Therefore, the results for these variables should be interpreted with caution until they can be replicated.

Table 2. Descriptive Statistics and Pearson Correlations of Body Dissatisfaction, BMI, Verbal Commentary, and Sociocultural Influences

Variable	1	2	3	4	5	6	7	<i>M</i>	<i>SD</i>
1. BMI	1	-.471**	.390**	.278**	.182**	.205**	-3.23**	24.74	5.45
2. Positive Appearance Commentary		1	-.258**	-.237**	-.166**	-.166**	.434**	12.77	4.26
3. Family Pressure			1	.501**	.411**	.386**	-.453**	2.70	1.26
4. Peer Influence				1	.483**	.575**	-.466**	2.14	1.07
5. Media Influence					1	.379**	-.494**	3.64	1.32
6. Significant Other Influence						1	-.357**	2.03	1.12
7. Body Dissatisfaction							1	36.30	11.14

* $p < .01$. ** $p < .001$.

Results indicated no significant mediation effects of body dissatisfaction on the relationships between positive appearance commentary and sociocultural influences, and smoking behavior (see Table 3). In addition, body dissatisfaction, positive appearance commentary, and sociocultural influences were not directly associated with lifetime or 30-day smoking, $ps > .05$ (b and c' paths in Figure 2; b and c' columns in Table 3).

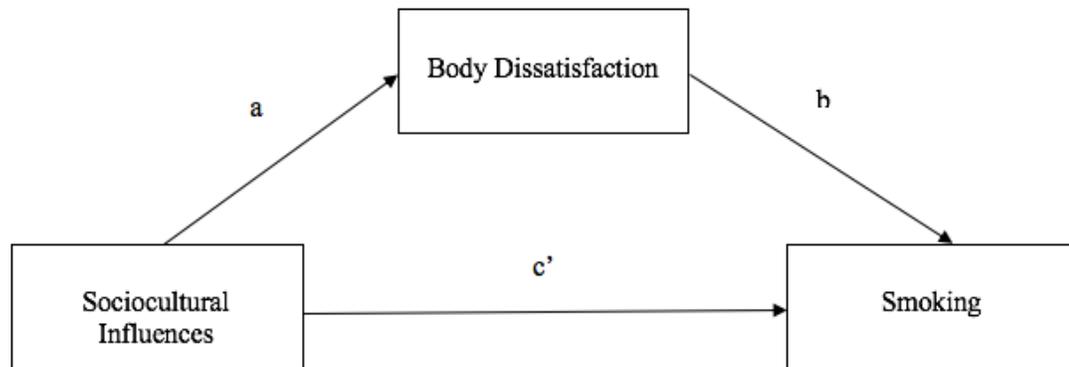


Figure 2. Path Diagram of Analyses Testing Body Dissatisfaction as Mediator of Relationship Between Sociocultural Influences and Smoking, After Controlling for Body Mass Index. The model was rested using each sociocultural influence (positive verbal commentary, family, peer, media, and significant other influence) as predictors of either lifetime smoking or 30-day smoking.

While there were no significant mediation effects, there were several significant individual paths in the mediation model (a path in Figure 2; a column in Table 3). Positive appearance commentary was associated with less body dissatisfaction, such that a one-point increase in positive appearance commentary was associated with a .86- and .90-point decrease in body dissatisfaction for lifetime smoking and 30-day smoking,

respectively ($b = .86$ and $.90$, $R^2_{adj} = .178$ and $.150$, $ps < .001$). Additionally, perceived pressures from family, peers, media, and significant others were also significantly associated with greater body dissatisfaction across all models.

Table 3. Results of Mediation Analyses of Body Dissatisfaction on Sociocultural Influences, Positive Appearance Commentary, and Smoking

	<i>a</i>	95% CI	<i>b</i>	95% CI	<i>c'</i>	95% CI	<i>ab</i>	95% CI
Positive Appearance Commentary								
Lifetime Smoking	.861***	[.576, 1.147]	.100	[.975, 1.025]	1.027	[.959, 1.101]	-.000	[-.025, .023]
30-Day Smoking	.899***	[.498, 1.298]	1.008	[.964, 1.053]	1.041	[.917, 1.182]	.007	[-0.388, .054]
Family Influence								
Lifetime Smoking	-3.450***	[-4.475, -2.424]	1.007	[.975, 1.039]	1.179	[.891, 1.561]	-.022	[-.150, .103]
30-Day Smoking	-3.894***	[-5.527, -2.262]	.997	[.934, 1.063]	.914	[.476, 1.754]	.013	[-.253, .345]
Peer Influence								
Lifetime Smoking	-4.073***	[-5.199, -2.947]	.996	[.965, 1.028]	.940	[.686, 1.288]	.017	[-.135, .167]
30-Day Smoking	-4.469***	[-6.172, -2.765]	1.000	[.937, 1.068]	.966	[.479, 1.948]	-.001	[-.349, .414]
Media Influence								
Lifetime Smoking	-3.726***	[-4.586, -2.865]	1.012	[.978, 1.047]	1.263	[.948, 1.665]	-.044	[-.190, .105]
30-Day Smoking	-4.021***	[-5.425, -2.616]	1.021	[.953, 1.095]	1.442	[1.337, 2.843]	-.084	[-.492, .326]
Significant Other Influence								
Lifetime Smoking	-2.775***	[-3.872, -1.677]	1.001	[.971, 1.032]	1.093	[.829, 1.441]	-.003	[-.112, .097]
30-Day Smoking	-2.233**	[-.939, -.148]	1.003	[.943, 1.066]	1.042	[.590, 1.840]	-.006	[-.199, .206]

* $p < .05$, ** $p < .01$. *** $p < .001$.

Specifically, a one-point increase in perceived family pressure was associated with a 3.45- and 3.89-point increase in body dissatisfaction for models predicting lifetime and 30-day smoking, respectively ($b = -3.45$ and -3.89 , $R^2_{adj} = .231$ and $.219$, $ps < .001$). A one-point increase in perceived peer pressure was associated with a 4.07- and 4.47-point increase in body dissatisfaction for models predicting lifetime and 30-day smoking, respectively ($b = -4.07$ and -4.47 , $R^2_{adj} = .247$ and $.238$, $ps < .001$). For every one-point increase of perceived media pressure, there was a 3.73- and a 4.02-point increase in body dissatisfaction for lifetime and 30-day smoking ($b = -3.73$ and -4.02 , $R^2_{adj} = .95$ and $.267$, $ps < .001$). Finally, a one-point increase in perceived pressure from significant others was associated with a 2.77- and a 2.23-point increase in body dissatisfaction for models predicting lifetime and 30-day smoking ($b = -2.77$ and -2.23 , $R^2_{adj} = .174$ and $.125$, $p < .001$ and $p < .01$). Additionally, higher BMI was associated with greater body dissatisfaction in all analyses ($b = -.54$ to $-.25$, $R^2_{adj} = .14$ to $.30$, $ps < .05$; see Table 4).

Table 4. BMI as a Predictor of Smoking across Models of Sociocultural Influences

	Lifetime Smoking		30-Day Smoking	
	Odds Ratio	95% CI	Odds Ratio	95% CI
Positive Appearance Commentary	1.011	[.960, 1.065]	.996	[.904, 1.105]
Family Pressure	.960	[.900, 1.025]	.996	[.854, 1.162]
Peer Pressure	.970	[.912, 1.032]	.992	[.857, 1.150]
Media Pressure	.964	[.904, 1.027]	.985	[.850, 1.141]
Significant Other Pressure	.967	[.909, 1.029]	.989	[.855, 1.143]

CHAPTER FIVE

DISCUSSION

To our knowledge, the current study is the first to test body dissatisfaction as a mediator of the relationship between sociocultural influences and smoking. We found that body dissatisfaction did not mediate the relationship, and contrary to previous research, body dissatisfaction and smoking were not significantly associated. No sociocultural influences (family, peers, media, and significant others) were associated with smoking, either. Conversely, all sociocultural influences were significantly associated with body dissatisfaction, which both corroborates prior research and expands upon it by including pressures from significant others, as there is limited research with significant others and smoking in this context.

With respect to the lack of significance in the mediation analysis, one plausible explanation is that we measured the occurrence of smoking rather than the frequency of smoking. In order to truly predict smoking behavior, it may not be enough to simply know whether or not an individual has smoked in their lifetime but may instead be equally or more important to know the pattern of smoking behavior for those who do smoke. Identifying the frequency and pattern of smoking behavior, such as number of cigarettes per day or week, may have provided more context to understand how sociocultural influences and body dissatisfaction can impact smoking behaviors in individuals who identify as having smoked or currently smoke. Additionally, a belief that smoking is a means to achieve weight-control may also be a more sensitive outcome variable.

The lack of significant predictors of smoking may be explained in part by the

racial/ethnic makeup of our sample compared to the percentages of smokers in the United States by racial/ethnic category. Overall, our sample was consistent with the general population regarding smoking amongst multi-racial/multi-ethnic individuals. In the United States, 20% of multiple race individuals are current smokers (Wang et al., 2018), and 27% of the multi-racial participants in our study reported smoking in their lifetime and 19% in the last 30 days. However, despite these initial similarities, there are some differences between our sample and the U.S. population that may help explain our findings. First, the current sample primarily comprised Hispanics/Latino/as and Asian/Pacific Islanders. Approximately one-third of the sample identified as Hispanic/Latino, and more than one-fourth identified as Asian/Pacific Islander. According to the Centers for Disease Control (CDC, 2017), only about 10% of Hispanics and 7% of Asians report current cigarette smoking. However, smoking rates among these racial/ethnic groups in our sample were much higher than the national average, with 23% of Hispanic participants reporting smoking in their lifetime and 15% in the last 30 days, and 18% of Asian Americans reporting smoking in their lifetime and almost 7% in the last 30 days. Additionally, current smoking rates for American Indians were much lower in our sample than in the general population (0% vs. 24%, respectively; Wang et al., 2018), even though the number of American Indians in our sample was reflective of the number of American Indians in the general U.S. population (1% vs. 2%, respectively; United States Census Bureau, 2013). However, it should be noted that 75% of American Indians did report smoking in their lifetime, which supports data showing higher smoking rates among this particular racial/ethnic group (Jamal et al., 2018). Another difference between our sample and the general population is that, according to the Centers for

Disease Control, 14.9% of African Americans smoke, but 0% of African Americans in our sample reported being current smokers and 33% reported having smoked in their lifetime. It is estimated that African Americans make up 13.4% of the national population, where our sample consisted of only 4.4% (United States Census Bureau, 2017). This variation in the racial/ethnic makeup of our sample compared to the general population may help explain the difference in reported smoking rates.

Another possible reason none of our predictors of smoking were significant is that body dissatisfaction may be too far removed in time or in the causal chain of events from smoking behavior (i.e., body dissatisfaction may be more *distal* from smoking behavior). Other constructs such as the perception of being overweight, a drive for thinness, and weight control smoking, rather than body dissatisfaction may be closer in time or in the causal chain of events to smoking behavior (i.e., more *proximal* to smoking behavior). The perception of being overweight and the importance of being thin have been shown to predict smoking behavior (Honjo & Siegel, 2003; Koval et al., 2008). While frequent smokers have been shown to have higher levels of body dissatisfaction, there may be more to the equation, such that high levels of body dissatisfaction may lead to a drive for thinness and fear of fatness, which have also been shown to be more prevalent in frequent smokers and may therefore lead to smoking (Copeland, Spears, Baillie, & McVay, 2016).

Furthermore, none of the sociocultural influences were found to be significant predictors of smoking, again possibly due to being more distal constructs that may not directly link to smoking. The connection between perceived appearance pressures coming from family, peers, media, and significant others and potential coping mechanisms such as smoking may be weak. The tripartite influence model suggests that these sociocultural

influences lead to body dissatisfaction via internalization of appearance ideals and appearance comparisons, which in turn influence the development of eating pathology (Thompson, et al., 1999). Smoking may not fit the current version of the tripartite model as an additional negative health behavior, and the model may need to be expanded to account for smoking behavior, particularly weight-control smoking, and perhaps by adding and testing serial mediators. Thus, another possibility would be to examine smoking, via weight-control smoking, in addition to body dissatisfaction, as an outcome of thin-ideal internalization and perception of being overweight, instead of smoking as an outcome of body dissatisfaction. In addition, smoking may not fit in the Tripartite Model as a direct result of body dissatisfaction, but may instead occur alongside other predictors of body dissatisfaction, such as anxiety or low self-perceptions (Okeke et al., 2013).

Another possible explanation for smoking not being predicted by sociocultural influences is that the participants reported low amounts of perceived pressures, thus potentially reducing the chances that such pressures may contribute to body dissatisfaction and lead to smoking. The average response on the Sociocultural Attitudes Towards Appearance Questionnaire-4R (SATAQ-4R) for family, peer, and significant other pressures was between 2 and 2.6 when responding to items asking about receiving appearance pressure, where a response of 1 indicates “Definitely Disagree,” and a response of 5 indicates “Definitely Agree.” This means that, on average, participants were not reporting pressure from their family, peers, or significant others regarding their physical appearance. Additionally, the average response for perceived pressure from the media was 3.6. On this scale, a response of 3 indicates “Neither agree nor disagree.” This suggests participants in our sample did not strongly endorse pressures from the media

either, which therefore may have reduced the chance of the pressures contributing to body dissatisfaction.

The finding that smoking was not significantly associated with body dissatisfaction is inconsistent with previous literature. Even though our sample had higher percentages of smokers by race/ethnicity compared to the general population, the average score on the body dissatisfaction scale was 36.29, where the highest possible score is 60. This suggests that our participants reported only moderate levels of body dissatisfaction. Thus, participants who endorsed smoking may be choosing to do so for reasons other than body dissatisfaction, such as to control weight. Furthermore, body dissatisfaction may only predict smoking at higher levels of body dissatisfaction, as women who smoke have been shown to be more dissatisfied with their bodies than women in general (King et al., 2000), or high body dissatisfaction may be more associated with smoking initiation in women rather than smoking continuation (Blow & Cooper, 2014).

Another possible reason that sociocultural influences were not associated with smoking behavior may be that these influences may depend on individuals' BMI, such that the relationship between sociocultural influences and smoking may be stronger at higher BMI levels. Even though we statistically controlled for BMI in our analyses, only 21.4% and 14.2% of our sample were overweight and obese, respectively. This is consistent with national rates among college women (21.7% overweight and 16.8% obese; American College Health Association, 2018), but is far lower than rates among adults over age 20 in the general population (39.8% obese and 31.8% overweight; Fryar, Carroll, & Ogden, 2018). It is possible that sociocultural influences may apply more to women who have a higher BMI or who are older than typical college age. In contrast, it is

also possible that the perception of being overweight may have more to do with smoking behaviors than actual self-reported BMI (Honjo & Siegel, 2003).

The frequency of positive appearance commentary and smoking were not significantly related in the current study. One potential explanation is that a higher incidence of positive appearance commentary may not counteract the reasons some women with high body dissatisfaction choose to smoke. Some women may choose to smoke for reasons other than those related to body image concerns, such as to regulate negative affect (Morrell & Cohen, 2006). Therefore, the frequency of positive appearance commentary may not influence the individual to smoke more or less if their reasons for smoking are not due to body dissatisfaction or body image concerns. Another possible explanation is that women in our sample reported a relatively low incidence of receiving positive appearance commentary. The average score on the Verbal Commentary on Physical Appearance Scale (VCOPAS) was 12.7 for positive commentary, where the highest score is 55 and the lowest score is 5. It is possible that the relationship between positive appearance commentary and smoking is only observable at higher levels of positive commentary.

The analyses testing predictors of body dissatisfaction produced significant associations between each sociocultural influence and levels of body dissatisfaction. These findings align with previous literature (Befort, Robinson Kurpius, Hull-Blanks, Nicpon, Huser & Sollengerger, 2001; Cash, Thériault, & Annis, 2004; Evans & Stukas, 2007; Presnell et al., 2004; Tiggemann & McGill, 2004; Tiggemann & Pickering, 1996). The Tripartite Model of Influence is a well-established model for understanding factors that impact the development of body dissatisfaction and disordered eating, It includes

sociocultural pressures as both direct and indirect influences on the development of body dissatisfaction (Keery et al., 2005; Shroff & Thompson, 2006). Our results support previous findings that sociocultural influences predict body dissatisfaction. Family and peer pressures have been shown to predict body dissatisfaction consistently (Bearman et al., 2006; Presnell et al., 2004), while the media pressure has been less clear. Ferguson (2013) suggested that media effects may be more of a reminder than a cause of body dissatisfaction. Our results add support to the findings that media pressure predicts body dissatisfaction. However, the mechanisms by which it predicts body dissatisfaction should be further evaluated in order to determine if media pressure is more of a perpetuating factor among women who already have high body dissatisfaction.

The influence of significant others on the development of body dissatisfaction has been demonstrated. Previous research has shown that increased pressure, commentary, and criticism regarding physical appearance from one's partner may adversely impact women's body satisfaction (Befort, Robinson Kurpius, Hull-Blanks, Nicpon, Huser & Sollengerger, 2001; Cash, Theriault, & Annis, 2004; Evans & Stukas, 2007). Our results confirm previous research that more perceived appearance pressure from significant others is associated with an increase in body dissatisfaction (Carriere & Kluck, 2014). Furthermore, given that our results corroborate findings from previous studies on the effects of sociocultural pressures from significant others, our study supports the validity of the significant others scale as a new scale within the SATAQ-4R.

Our findings regarding the effect of frequency of positive appearance commentary on body satisfaction add to the growing body of research. Contrary to our hypothesis, our results demonstrated that more positive appearance commentary was associated with less

body dissatisfaction. Previous research in this area has produced mixed results. McLaren, Kuh, Hardy, and Gauvin (2004) found that the frequency of positive commentary is associated with less body dissatisfaction, but other studies have found that frequency positive commentary is associated with more body dissatisfaction (Herbozo, Stevens, Moldovan, & Morrell, 2017; Herbozo & Thompson, 2006). Based on the Tripartite Influence Model, however, we hypothesized that positive commentary would be associated with greater body dissatisfaction due to complementary weightism and self-objectification. It is possible that, since our sample reported relatively low rates of positive commentary ($M = 12.7$), the participants may not have experienced enough positive commentary to also experience complementary weightism and self-objectification. Our findings suggest that there may be other factors mediating the relationship between positive commentary and body dissatisfaction, such as the impact of positive appearance commentary (i.e., how it was experienced) and how that may influence the effects of such commentary. Furthermore, the impact of pre-existing levels of body dissatisfaction may lead women to interpret positive comments negatively.

Limitations

The results of the current study should be interpreted in light of several limitations. First, our sample only included college women; thus, we are limited to understanding sociocultural pressures, body dissatisfaction, and smoking in this population. There may be differences in sociocultural influences for women who are not currently in college, who have never attended, or who return to college later in life. It is likely that family, peers, media, and significant others' influences impact women

differently at different stages in life. However, given that body dissatisfaction, smoking, and eating pathology are highly prevalent among college-age women, our results are generalizable to the groups that are most strongly affected by these issues.

Furthermore, we were limited in our ability to measure smoking behavior. Our sample size was not large enough to yield adequate power when using other outcome variables that may have provided additional insight into smoking behavior (i.e., number of cigarettes per day or frequency of smoking). Our statistical power was also limited in our analyses predicting 30-day smoking, which may indicate that some of our non-significant findings were the result of Type II error. As described in more detail in our Results section, there were violations of the assumption of linearity in the logit for logistic regression for four models, which may have also contributed to several non-significant findings. As a result, it is possible that our results represent underestimates of relationships in the population.

Additionally, we did not examine internalization of appearance ideals and appearance-based social comparisons. These have been shown to be mediating factors between sociocultural factors and body dissatisfaction and likely influence the interpretation of positive appearance commentary for some women. We also did not measure psychological factors such as depression or anxiety that have been shown to impact the development of body dissatisfaction and smoking behavior (Morrell & Cohen, 2006). Future studies may benefit from including these variables as a way of expanding the tripartite model to include potential serial mediators and test smoking as a potential negative health behavior outcome.

Conclusions and Implications

This study was the first to test body dissatisfaction as a mediator of the relationship between sociocultural influences and smoking among college-aged women. It was also among the first to test the new SATAQ-4R subscale measuring appearance pressures from significant others. Additional aims included confirming the relationship between body dissatisfaction and smoking, the impact of sociocultural factors on the development of body dissatisfaction, and the relationship between positive appearance commentary and body dissatisfaction.

Overall, our study provides insight into how sociocultural influences may affect body image in young adult women. Specifically, all of the tested sociocultural factors were shown to significantly influence body dissatisfaction. These findings have implications for body image intervention efforts that emphasize the importance of focusing on sociocultural factors. Body dissatisfaction should be targeted more directly in treatment to help prevent the development of eating pathology and eating disorders. Furthermore, it may be beneficial to assess body dissatisfaction thoroughly as part of a comprehensive clinical intake even when clients do not seek therapy for body image concerns. It is possible that the ways in which potential body dissatisfaction has developed may contribute to the individual's presenting problem (e.g., relational stress due to perceived pressures).

There would also be benefit in developing studies that test the utility of formal assessment of sociocultural pressures impacting clients. Our findings indicate that significant others and positive verbal commentary have a direct impact on body dissatisfaction. Bulik, Baucom, Kirby, and Pisetsky (2011) discussed the benefit of

partners being involved in treatment of adults with anorexia nervosa in addition to cognitive behavioral therapy for adults. Therefore, a focus on body image concerns that involves significant others could be critical in early prevention efforts for development of body dissatisfaction and eating disorders. The treatment of smoking has also been shown to benefit from involvement of significant others as well (Roski, Schmid, & Lando, 1996). Roski et al. (1996) demonstrated that partners who engaged in fewer undermining behaviors were more successful at abstaining from smoking. Clinicians should consider not only the positive or supportive role a partner has in smoking cessation efforts, but also any negative influences that may impact the client's efforts, even those related to the client's appearance.

The impact of positive appearance commentary on body dissatisfaction remains unclear. Carriere and Kluck (2014) and McLaren and Kuh (2004) found that positive appearance comments were associated with less body dissatisfaction in college women and mid-age women, respectively. However, others have suggested that positive commentary may be associated with greater body dissatisfaction due to the internalization of the thin-ideal, complimentary weightism, and self-objectification (Herbozo et al., 2017; Fredrickson & Roberts, 1997). These mixed findings suggest that the relationship between positive appearance related commentary and body dissatisfaction may depend on a host of yet to be identified moderators. Any mediation effects may be further moderated as well, such that models of these relationships may need to include conditional processes (e.g., moderated mediation). Clinical implications include fully evaluating and monitoring the impact of significant others' pressures about appearance as well as any appearance commentary a client may be receiving and how it

may be impacting the client positively or negatively. Research to date has shown that more negative commentary is associated with being more negatively affected by the commentary, perhaps due to internalization of the feedback (Herbozo & Thompson, 2006).

Our study supports extensive research showing the impact of media on girls' and women's body image, and therefore supports efforts to regulate media production and distribution. Recent research has evaluated attempts to reduce body dissatisfaction and improve body image through various forms of disclaimer labels on thin-ideal images in the media, such as generic labels indicating digital alteration, consequence labels indicating the image may make women feel bad about themselves, informational labels indicating the model was underweight, or labels with a picture of a paint brush (Tiggemann & Brown, 2018). Qualitatively, adults and adolescents have been found to be skeptical of the effectiveness of disclaimer labels (Paraskeva, Lewis-Smith, & Diedrichs, 2017). Unfortunately, the results have demonstrated that digital alteration disclaimer labels in all sizes and forms do not reduce body dissatisfaction when viewing thin-ideal images (Bury, Tiggemann, & Slater, 2017; Cragg, Mulgrew, & Kannis-Dymand, 2017; Fardouly & Holland, 2018; Tiggemann & Brown, 2018; Tiggemann, Brown, Zaccardo, & Thomas, 2017) and may in fact exacerbate body image concerns, eating disorder symptoms, and negative affect (Kwan et al., 2018). Furthermore, labeling digitally unaltered images has not been found to increase or decrease body dissatisfaction (Tiggemann, Slater, & Smyth, 2014). It may be that viewing airbrushed models, regardless of disclaimer label, still reinforces the thin-ideal standard and desired image (Paraskeva et al., 2017).

Our findings suggest that future studies designed to examine women of different ages and who are in different stages of life may provide context for the progression and impact of sociocultural influences, body dissatisfaction, and smoking behavior. There may be differences in how women of different ages develop or maintain body dissatisfaction and what may drive them to smoke. Further research is also necessary to evaluate effective methods for reducing body dissatisfaction through viewing media images. Some research suggests improvement in body image as a result of increasing diversity in the images presented and by using average-sized models (Diedrichs & Lee, 2011), as well as by focusing more on health and functionality of the body rather than image (Paraskeva et al., 2017). Media literacy has also been examined, and recently social media literacy has been found to moderate negative effects of appearance ideal social media images (Tamplin, McLean, & Paxton, 2018). Research shows that newer forms of media, such as social media, also have negative effects on body image and appearance issues (Fardouly & Holland, 2018; Mills et al., 2017). However, recently social media literacy has been found to moderate negative effects of appearance ideal social media images (Fardouly, Pinkus, & Vartanian, 2017; Tamplin et al., 2018). Research should continue to examine the effects of social media use, as the function of its impact on body dissatisfaction may differ from traditional media (i.e., television and magazines) due to the interactive nature and ability to actively adjust one's image. A recent review found that the use of social networking sites is associated with body image and disordered eating, but also that appearance-based social comparison mediates the relationship between social network use and body image and disordered eating (Holland & Tiggemann, 2016). It may be important to consider a client's interaction with

traditional and social media and how that could be impacting their treatment in a clinical setting.

Although our study did not find relationships between sociocultural pressures and smoking cigarettes, or between body dissatisfaction and smoking cigarettes, previous literature supports these relationships. Due to this lack of consistency, more research is needed, perhaps by modifying the Tripartite Model by examining smoking, in addition to body dissatisfaction, as an outcome of thin-ideal internalization and perception of being overweight, instead of smoking as an outcome of body dissatisfaction, as well as testing if smoking occurs alongside other predictors of body dissatisfaction. Additionally, as mentioned previously, may be important to specifically examine weight-control smoking.

Given that more youth are now introduced to nicotine via e-cigarette use rather than through traditional cigarette use, and e-cigarette use among youth has surpassed traditional cigarette use (Cullen et al., 2018), future studies should examine how e-cigarette use may or may not fit into the Tripartite Model. Previous research has shown that college-aged women in particular report smoking traditional cigarettes for weight-control and weight-reduction efforts (Camp et al., 1993; Klesges et al., 1989; Rupprecht et al., 2015; White, 2012). To date, studies have not evaluated the use of e-cigarettes for weight-control reasons (Patel et al., 2016; Tsai et al., 2018). Thus, it will be important for future studies to assess the relationship between e-cigarette use and weight control, as well as e-cigarette use and variables in the Tripartite Model. If future research shows a relationship between sociocultural pressures, body dissatisfaction, other variables from the Tripartite Model, and cigarette use (traditional and electronic), it may be useful to incorporate evidence-based smoking prevention and cessation treatments into treatment

programs for eating pathology. Similarly, when providing smoking cessation treatment, particularly for young women, assessing for body dissatisfaction will be important.

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APPENDIX A

VERBAL COMMENTARY ON PHYSICAL APPEARANCE SCALE (VCOPAS)

Sometimes, people say things that affect how we feel and think about our appearance. The following is a list of comments that may have been made about you. Please read each item and rate how often you think you have been the recipient of such a comment or similar comment (using the scale provided, *never* to *always*).

If you rate an item as 1, then go directly to the next item. However, if you rate an item as 2, 3, 4, or 5, please also rate how that comment made you feel (using the scale provided, *very positive* to *very negative*).

Rate the items based on your exposure to the following comments within the past **2 YEARS**.

1. Your outfit looks great on you.	1	2	3	4	5
	Never		Sometimes		Always
1a. How did this comment make you feel?	1	2	3	4	5
	Very Positive		Neutral		Very Negative
2. You need to start watching what you eat.	1	2	3	4	5
	Never		Sometimes		Always
2a. How did this comment make your feel?	1	2	3	4	5
	Very Positive		Neutral		Very Negative
3. You are pretty.	1	2	3	4	5
	Never		Sometimes		Always
3a. How did this comment make you feel?	1	2	3	4	5
	Very Positive		Neutral		Very Negative
4. I wish I had a body like yours.	1	2	3	4	5
	Never		Sometimes		Always
4a. How did this comment make you feel?	1	2	3	4	5
	Very Positive		Neutral		Very Negative
5. You've gained weight.	1	2	3	4	5
	Never		Sometimes		Always
5a. How did this comment make you feel?	1	2	3	4	5
	Very Positive		Neutral		Very Negative
6. You are in great shape.	1	2	3	4	5
	Never		Sometimes		Always

6a. How did this comment make you feel?	1 Very Positive	2	3 Neutral	4	5 Very Negative
7. Don't you think you've eaten enough already?	1 Never	2	3 Sometimes	4	5 Always
7a. How did this comment make you feel?	1 Very Positive	2	3 Neutral	4	5 Very Negative
8. You're looking kind of skinny.	1 Never	2	3 Sometimes	4	5 Always
8a. How did this comment make you feel?	1 Very Positive	2	3 Neutral	4	5 Very Negative
9. Your facial skin looks good.	1 Never	2	3 Sometimes	4	5 Always
9a. How did this comment make you feel?	1 Very Positive	2	3 Neutral	4	5 Very Negative
10. You shouldn't eat so late at night.	1 Never	2	3 Sometimes	4	5 Always
10a. How did this comment make you feel?	1 Very Positive	2	3 Neutral	4	5 Very Negative
11. You have pretty eyes	1 Never	2	3 Sometimes	4	5 Always
11a. How did this comment make you feel?	1 Very Positive	2	3 Neutral	4	5 Very Negative
12. You need to start exercising to lose weight.	1 Never	2	3 Sometimes	4	5 Always
12a. How did this comment make you feel?	1 Very Positive	2	3 Neutral	4	5 Very Negative
13. You have nice abs (abdominals).	1 Never	2	3 Sometimes	4	5 Always
13a. How did this comment make you feel?	1 Very Positive	2	3 Neutral	4	5 Very Negative
14. Have you considered going on a diet?	1 Never	2	3 Sometimes	4	5 Always

14a. How did this comment make you feel?	1 Very Positive	2	3 Neutral	4	5 Very Negative
15. You have a beautiful smile. Very	1 Never	2	3 Sometimes	4	5 Always
15a. How did this comment make you feel?	1 Very Positive	2	3 Neutral	4	5 Very Negative
16. Your outfit makes you look fat.	1 Never	2	3 Sometimes	4	5 Always
16a. How did this comment make you feel?	1 Very Positive	2	3 Neutral	4	5 Very Negative
17. I really like how those jeans fit you.	1 Never	2	3 Sometimes	4	5 Always
17a. How did this comment make you feel?	1 Very Positive	2	3 Neutral	4	5 Very Negative
18. Are you sure you want to eat such fattening foods?	1 Never	2	3 Sometimes	4	5 Always
18a. How did this comment make you feel?	1 Very Positive	2	3 Neutral	4	5 Very Negative
19. Have you gained weight?	1 Never	2	3 Sometimes	4	5 Always
19a. How did this comment make you feel?	1 Very Positive	2	3 Neutral	4	5 Very Negative
20. Your hair looks really good.	1 Never	2	3 Sometimes	4	5 Always
20a. How did this comment make you feel?	1 Very Positive	2	3 Neutral	4	5 Very Negative
21. You have a nice body.	1 Never	2	3 Sometimes	4	5 Always
21a. How did this comment make you feel?	1 Very Positive	2	3 Neutral	4	5 Very Negative

APPENDIX B

EATING DISORDER INVENTORY-3-BODY DISSATISFACTION

For the items below, please indicate to what extent each statement is true of you.

1 = Always 2 = Usually 3 = Often 4 = Sometimes 5 = Rarely 6 = Never

	Always					Never
1. I think that my stomach is too big.	1	2	3	4	5	6
2. I think that my thighs are too large.	1	2	3	4	5	6
3. I think that my stomach is just the right size.	1	2	3	4	5	6
4. I feel satisfied with the shape of my body.	1	2	3	4	5	6
5. I like the shape of my buttocks.	1	2	3	4	5	6
6. I think my hips are too big.	1	2	3	4	5	6
7. I feel bloated after eating a normal meal.	1	2	3	4	5	6
8. I think that my thighs are just the right size.	1	2	3	4	5	6
9. I think my buttocks are too large.	1	2	3	4	5	6
10. I think that my hips are just the right size.	1	2	3	4	5	6

APPENDIX C

**SOCIOCULTURAL ATTITUDES TOWARDS APPEARANCE QUESTIONNAIRE –
4R – FEMALE**

Directions: Please read each of the following items carefully and indicate the number that best reflects your agreement with the statement.

Definitely Disagree = 1
Mostly Disagree = 2
Neither Agree Nor Disagree = 3
Mostly Agree = 4
Definitely Agree = 5

	Definitely Disagree				Definitely Agree
1. It is important for me to look muscular.	1	2	3	4	5
2. It is important for me to look good in the clothes I wear.	1	2	3	4	5
3. I want my body to look very thin.	1	2	3	4	5
4. I think a lot about looking muscular	1	2	3	4	5
5. I think a lot about my appearance.	1	2	3	4	5
6. I think a lot about looking thin.	1	2	3	4	5
7. I want to be good looking.	1	2	3	4	5
8. I want my body to look muscular.	1	2	3	4	5
9. I don't really think much about my appearance.	1	2	3	4	5
10. I don't want my body to look muscular.	1	2	3	4	5
11. I want my body to look very lean.	1	2	3	4	5
12. It is important to me to be attractive.	1	2	3	4	5
13. I think a lot about having very little body fat	1	2	3	4	5
14. I don't think much about how I look.	1	2	3	4	5
15. I would like to have a body that looks very muscular.	1	2	3	4	5
16. I feel pressure from family members to look thinner.	1	2	3	4	5

17. I feel pressure from family members to improve my appearance.	1	2	3	4	5
18. Family members encouraged me to decrease my level of body fat.	1	2	3	4	5
19. Family members encourage me to get in better shape.	1	2	3	4	5
20. My peers encourage me to get thinner.	1	2	3	4	5
21. I feel pressure from my peers to improve my appearance.	1	2	3	4	5
22. I feel pressure from my peers to look in better shape.	1	2	3	4	5
23. I get pressure from my peers to decrease my level of body fat.	1	2	3	4	5
24. Significant others encourage me to get thinner.	1	2	3	4	5
25. I feel pressure from significant others to improve my appearance.	1	2	3	4	5
26. I feel pressure from significant others to look in better shape.	1	2	3	4	5
27. I get pressure from significant others to decrease my level of body fat.	1	2	3	4	5
28. I feel pressure from the media to look in better shape.	1	2	3	4	5
29. I feel pressure from the media to look thinner.	1	2	3	4	5
30. I feel pressure from the media to improve my appearance.	1	2	3	4	5
31. I feel pressure from the media to decrease my level of body fat.	1	2	3	4	5

APPENDIX D

SMOKING HABITS

Instructions: Please answer the following questions as accurately as you can.

1. Have you ever smoked a cigarette in your lifetime?
2. Have you smoked a cigarette in the past 30 days?
3. Do you smoke at least one cigarette a day, most days of the week?
4. On average, how many cigarettes do you smoke per day?
5. Do you smoke at least one cigarette per week, most weeks per month?
6. On average, how many cigarettes do you smoke per week?
7. Do you smoke at least one cigarette per month, most months per year?
8. On average, how many cigarettes do you smoke per month?
9. How soon after waking up do you smoke your first cigarette?
 3. Within 5 minutes
 2. 6-30 minutes
 1. 31-60 minutes
 0. After 60 minutes
10. Have you ever smoked an electronic cigarette (e-cigarette, vape) in your lifetime?
11. Have you smoked an electronic cigarette (e-cigarette, vape) in the past 30 days?
12. Do you smoke at least one e-cigarette (e-cigarette, vape) a day, most days of the week?
13. On average, how many e-cigarettes (e-cigarettes, vapes) do you smoke per day?
14. Do you smoke at least one e-cigarette (e-cigarette, vape) per week, most weeks per month?
15. On average, how many e-cigarettes (e-cigarettes, vapes) do you smoke per week?
16. Do you smoke at least one e-cigarette (e-cigarette, vape) per month, most months per year?
17. On average, how many e-cigarettes (e-cigarettes, vapes) do you smoke per month?