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The Effect of Mainstream Media on Body Image
and Stress Reactivity in Latina Females

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Abstract

The role of mainstream media in women's views of female beauty and body image has been well documented. However, few published studies have observed ethnic differences in physiological stress reactivity that may occur from pressures to comply with a particular image of beauty. This study examined whether the exposure to the mainstream ideal body image would negatively affect Latina women's physiological and psychological functioning, and how their responses differed in comparison to their White counterparts. Participants included college-aged female students from Pitzer College who self-identified as Latina or Caucasian. Participants completed questionnaires assessing, body esteem (MSBRQ-AS; SATAQ; CDFRS), ethnic identity (SEE), state anxiety (STAI-State) and affect (PANAS) prior to and following exposure to Victoria's Secret or Chrysler automobile commercials. Physiological stress reactivity was assessed through changes in systolic and diastolic blood pressure, as well as salivary cortisol. 3-way ANOVA tests indicated a significant 2-way interaction between condition and time on participants' levels of diastolic blood pressure, $F(1, 27) = 4.266$, $MSe = 29.803$, $p = .049$, $\eta^2 = .136$, as well as ratings of appearance evaluation, $F(1,36) = 5.733$, $MSe = 3.692$, $p = .022$, $\eta^2 = .137$, and body satisfaction $F(1,36) = 4.27$, $MSe = 4.747$, $p = .046$, $\eta^2 = .106$. Women who viewed the Victoria's Secret commercials demonstrated increased levels of diastolic blood pressure and reported lower ratings of body esteem in comparison to women who viewed the Chevy Sonic commercials. Potential trends in anxiety reactivity and the internalization of mainstream female beauty in Latina women following exposure to the stimuli are further discussed.

The Effect of Mainstream Media on Body Image and Stress Reactivity in Latina Females

In Western media, the ideal female physique is depicted as significantly below what is considered to be a healthy body weight (National Eating Disorder Association, 2002). Research has shown that viewing these representations may lead to body image disturbance and anxiety, both of which are risk factors for eating disorders (Groesz, Levine, & Murnen, 2002). Analyzing the depictions of beauty presented in US media, Rodin and colleagues (1985) found that the norm highlighted in American advertisements conveys a message in which female beauty is associated with social rewards, such as professional status. This may cause women to internalize an unrealistic ideal as a standard to meet or exceed (Bordo, 1993). It has been demonstrated that fashion models are significantly thinner than 98% of American women (Smolak, 1996). For instance, while the average American woman stands 5 ft. 4 in. tall and weighs 140 lbs., the average fashion model stands 5 ft. 11 in. tall and weighs 117 lbs. (National Eating Disorder Association, 2002). It is likely that these gross differences in body weight and shape between average females and fashion models have negatively affected women's self image and psychological functioning.

Several studies have found that following exposure to mainstream media, women reported higher levels of body dissatisfaction and increased internalization of a thin ideal body shape (Groesz, Levine, and Murnen, 2002; Hofschire & Greenberg, 2002). In studies examining the effects of these images on ethnically diverse women's self-concept and psychological well-being (Dounchis, Hayden, & Wilfley, 2001; Gordon, Castro, Sitnikov, & Holm-Denoma, 2010; Rubin, Fitts, & Becker, 2003), it has been shown that, similar to Caucasian females, African American and Latina women also consider the dominant beauty

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ideal to be women who are tall and extremely thin with European features (Goodman, 2002; Parker, Nichter, Vuckovic, Sims, & Ritenbaugh, 1995). Despite similarities in describing the dominant ideal body image, some studies have reported differences in the ways in which various ethnic groups respond to mainstream media's portrayal of female beauty. For instance, one study revealed that in comparison to Caucasian women, Latina women were more accepting of heavier female body types (Paeratakul, White, Williamson, Ryan, & Bray, 2002).

Reasoning for this variation has been associated with cultural differences in perceptions of beauty and body image. In contrast with Euro-American cultures, Latin cultures present their own norms and perceptions relating to female beauty and body shape (Warren, Gleaves, Cepeda-Benito, Fernandez, & Rodriguez-Ruiz, 2005). For example, in observing ethnic differences in ideologies related to body image, Rubin and associates (2003) found that Latina and Black women were more likely than Caucasian women to describe the ideal body in terms of style, health, and spirituality, rather than in terms of shape or size.

Research suggests that Latina women who are more connected to their culture of origin may not internalize the imagery depicted in mainstream media, viewing ideal female physique in US media with disinterest or ambivalence (Warren et al., 2005). However, some studies have found that Latina women were just as likely to be negatively affected by media depictions as White women, expressing greater concerns about weight gain, lower self-esteem, and body shame (Seo & Torabi, 2006; Viladrich, Bruning, & Weiss, 2009).

In relation to body image perceptions, researchers have considered the possibility that acculturation to U.S values might lead to negative body image perceptions in Latina women (Gowen, Hayward, Killen, Robinson, & Taylor, 1999; Pepper & Ruiz, 2007). Acculturation is characterized as a process of attitudinal change that may occur in individuals who either

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reside in multicultural societies or who come into contact with a new culture (Marin, 1992). Thus, one explanation for the discrepancies in the research could be the failure to account for the degree of acculturation as a moderating variable. This study addressed this by examining whether Latina women who report more acculturation toward mainstream US society demonstrated more psychological distress in response to viewing media images of the ideal female body.

To date, no published study has examined women's physiological stress responses to viewing media images of the ideal female body. Thus, it is unclear whether chronic exposure to these images has detrimental physiological effects on women. In a study examining the relationship between dieting and cortisol output in women, Putterman and Linden (2006) discovered that women who placed greater importance on appearance and reported negative perceptions regarding their own body image, also demonstrated higher levels of cortisol in the afternoon than women who did not share similar perspectives. The relationship between blood pressure and body image issues has also been explored, with results indicating that women who reported negative attitudes toward personal body image and eating also demonstrated higher levels of diastolic ambulatory blood pressure than women who reported neutral or positive attitudes (Bedford, Linden, & Barr, 2011). These findings suggest that low body-esteem might be associated with heightened physiological arousal in response to media images of the ideal body. However, no published research has investigated differences in the relationships between body image attitudes and physiological stress.

As demonstrated by the previously cited research, Latina women are faced with the task of negotiating between paradoxical cultural domains in which conflicting views of female beauty are valued. Though several studies have analyzed acculturation and body image in Latina women, no published studies have examined whether the pressures to

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comply with opposing cultural attitudes towards body image results in increased stress responses in these women compared to their Caucasian counterparts. This study addressed this gap in the literature by investigating the effect of mainstream media's depiction of body image on stress reactivity in Latina women. Specifically, this study examined salivary cortisol and cardiovascular reactivity to exposure to the mainstream ideal body image in Latina and Caucasian college students. Based upon past research, it was hypothesized that women who were exposed to Victoria's Secret advertisements (experimental condition), would report lower levels of body esteem, higher levels of state anxiety, and lastly, higher levels of cortisol and cardiovascular reactivity than women who were exposed to a control condition depicting Chevy Sonic automobile advertisements. In addition, it was predicted that acculturation would moderate psychological and physiological responses in Latina women, such that Latina women who reported more acculturation would have greater stress reactivity to the Victoria's Secret commercial than those who reported low acculturation.

Method

Participants

Participants enrolled in introductory psychology courses at Pitzer College were invited to complete a pre-screening questionnaire on SurveyMonkey.com to determine eligibility for the study. Individuals who were eligible for the study indicated on the pre-screening questionnaire that they were female, at least 18 years of age, and identified as either Latina/Hispanic or White/Caucasian. Twenty-four Caucasian and seventeen Latina female undergraduate students ($M_{age} = 22$ years, age range: 18-40 years old) from Pitzer College were recruited for this study. Participants received either research credit or \$10 in compensation for their participation.

Materials

Rosenberg Self-Esteem Scale (RSE). Participants' self-esteem was measured using the RSE (Rosenberg, 1965), a 10-item scale that asked them to rate such statements as, "I take a positive attitude toward myself" and "I have a number of good qualities" on a 7-pt Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The RSE Scale has demonstrated good reliability and validity across a large number of different samples (Blascovich & Tomaka, 1991). Self-esteem is a well-established correlate of body esteem (Pliner, Chaiken, & Flett, 1990; Goldenberg & Shackelford, 2005), and its inclusion will allow for analyses to eliminate self-esteem as a confounding variable.

Multidimensional Body-Self Relations Questionnaire-Appearance Scale (MBSRQ-AS). Participants' body esteem was assessed using the MBSRQ-AS, (Cash, 2000) a 34-item scale that was developed to examine individual's attitudes towards their own body image and appearance. The scale consists of five subscales: Appearance Evaluation (AE), Appearance Orientation (AO), Overweight Preoccupation (OP), Self-Classified Weight (SW), and lastly, the Body Areas Satisfaction Scale (BASS) (Cash, 2000). Participants were asked to respond to such statements as, "It is important that I always look good." using a 5-pt Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The MBSRQ-AS has demonstrated strong reliability and validity, with Cronbach's α of the five subscales ranging from .79 to .89 (Cash, 2000). In addition, it has been found that the subscales of the MBSRQ-AS are established correlates of other instruments assessing body image (Brown, Cash, & Mikulka, 1990).

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Contour Drawing Figure Rating Scale (CDFRS-Modified). The CDFRS (Thompson & Gray, 1995) consists of nine figures of women's bodies that are organized in numerical order from 1 (*smallest*) to 9 (*largest*). For this study, a modified version of the CDFRS was utilized (Swami, Frederick, Aavik, Alcalay, Allik, Anderson, & ... Zivcic-Becirevic, 2010), that removed the ribs on drawings 1 to 3 (which were sometimes confused with breasts) and changing the facial features to opaque boxes (to minimize the effects of facial features, hair style, and perceived ethnicity) (Swami et al., 2010). Participants viewed two sets of the nine figures. In the first set, participants were asked to choose the figure that most represented their personal body type. In the second set of figures, participants were asked to choose the figure that demonstrated the ideal body type that they would most like to emulate (Swami et al., 2010). The CDFRS has demonstrated good test-retest reliability, with a Cronbach's α ranging from .71 to .90 (Thompson & Gray, 1995; Wertheim, Paxton & Tilgner, 2004).

Sociocultural Attitudes Towards Appearance Scale (SATAQ). To assess the role of mainstream media in participants' views of their own appearance, the SATAQ was utilized (Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004). The SATAQ is a 30-item scale that assesses the extent to which societal influences affect individuals' perceptions of body image. It consists of three subscales, including the internalization of social media (Internalization-General), the pressures experienced from exposure to mainstream media (Pressures), and the use of social media as a source of information (Information) (Thompson et al., 2004). Participants were asked to rate such statements as "I compare my body to the bodies of people who are on TV" using a 5-pt Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Internal consistencies for the

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three subscales of the SATAQ were found to be strong (Calogero, Davis, & Thompson, 2004), with the range of Cronbach's α for each subscale as follows: Internalization-General (0.93–0.97), Pressures (0.94–0.95), and Information (0.94–0.96). In addition, The SATAQ has demonstrated strong convergent validity with other instruments measuring body image (Thompson et al., 2004).

Scale of Ethnic Experience (SEE). The SEE (Malcarne, Chavira, Fernandez & Lui, 2006) is an instrument that was designed to assess experiences of ethnicity across various ethnic groups. In the present study, the SEE was used to examine participants' views on how their ethnic group is perceived as a part of America, as well as the extent to which they associate with their particular ethnic group. The scale consists of 32 statements that measure four factors: Ethnic Identity, Perceived Discrimination, Mainstream Comfort, and Social Affiliation (Malcarne et al., 2006). The authors tested the scale on four different ethnic groups: African Americans, Mexican Americans, Caucasian Americans, and Filipino Americans. Participants were asked to respond to such statements as, "I have a strong sense of myself as a member of my ethnic group" using a 5-pt Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Analyses of the SEE revealed good test-retest reliability and internal consistency for the scale, with Cronbach's α for the four factors ranging .83 to .91 for the total sample of groups (Malcarne et al., 2006).

Short Acculturation Scale for Hispanics (SASH). The SASH (Marín, Sabogal, VanOss, Otero-Sabogal, Pérez-Stable, 1987) is a 12-item scale that assesses level of acculturation, a process of attitudinal and behavioral change that can occur when individuals are confronted with a culture that is different from their culture of origin (Marín, 1992). The SASH scale was developed to effectively identify high and low levels of acculturation in

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college-aged Latino/Hispanic students. The SASH consists of three factors, including Use of Language, Social Media, and Ethnic Social Relations (Marín et al., 1987). Participants who identified as Latina or Hispanic were asked to respond to such questions as, “In general, what language(s) do you read or speak?” using a 5-pt Likert scale ranging from 1 (*only Spanish*) to 5 (*only English*). The SASH has demonstrated strong reliability, with a Cronbach’s α of .90 for the first factor (Use of Language), .86 for the second factor (Social Media) and .78 for the third factor (Ethnic Social Relations) (Marín et al., 1987).

State-Trait Anxiety Inventory (STAI-State). The STAI -State is a 20-item subscale of the State-Trait Anxiety Inventory that was constructed to assess the degree of individuals’ experiences of anxiety as an emotional state (Spielberger, 1983). In responding to STAI-State, participants indicated their current state of anxiety, by rating such statements as “I feel calm” and “I feel tense” on a 4-pt Likert scale, ranging from 1 (*not at all*) to 4 (*very much so*) (Spielberger, 1983). Various reliability and validity tests have been conducted on the STAI-State and have demonstrated that the STAI-State is an adequate measure for examining anxiety in a research setting (Spielberger, 1983; Barnes, Harp, & Sik, 2002). In addition, the STAI-State has demonstrated to be associated with physiological responses of stress (Nagane, 1990).

Positive and Negative Affect Schedule (PANAS). Participants’ current emotional state was measured using PANAS (Watson, Clark, & Tellegen, 1988), a 20-item scale that consists of two mood scales of 10 single-word items assessing positive and negative emotions. Each item is rated on a 5-point Likert scale ranging from 1 (*very slightly or not at all*) to 5 (*extremely*) to indicate the extent to which participants felt in a given time frame. The authors have used the scale to measure affect at this moment, today, the past few days,

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the past week, the past few weeks, the past year, and generally (Watson et al., 1988).

Reliability and validity of the PANAS have been reported (Watson et al., 1988). For the Positive Affect Scale, the Cronbach's α ranged from 0.86 to 0.90 and for the Negative Affect Scale, the Cronbach's α ranged from 0.84 to 0.87 (Watson et al., 1988). In addition, the PANAS has demonstrated strong validity in association with cardiac responses of general distress, dysfunction, and anxiety (Dowd, Zautra, & Hogan, 2010; Norlander, Johansson, & Bood, 2005).

Feelings Toward Ads Scale (FTAS). To examine participants' emotional reactions to the advertisements viewed, the FTAS (Edell & Burke, 1987) was utilized. The FTAS consists of 65 words that make up three different subscales of emotions: animated feelings, positive feelings, and negative feelings (Edell & Burke, 1987). Each word was rated on a 5-pt Likert scale, ranging from 1 (*not at all*) to 5 (*strongly*) to indicate the extent to which participants felt a certain emotion after viewing the commercials. Past tests of reliability and validity demonstrated that the FTAS is an accurate measure for examining emotional responses to media advertisements (Edell & Burke, 1987), with a Cronbach α coefficient of .98 for the animated feelings subscale, .96 for the positive feelings subscale, and .93 for the negative feelings subscale. In addition, further analyses revealed that the three dimensions of the FTAS correlate with other measures that analyze participants' attitudes toward advertisements (Holbrook, 1978; Mitchell & Olson, 1981).

Cardiovascular Reactivity and Salivary Cortisol Samples: Participants' physiological responses of stress were derived from salivary cortisol samples as well as cardiovascular reactivity through changes in blood pressure. Systolic and diastolic blood pressure were

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obtained using a Biopac System noninvasive blood pressure amplifier (NIBP100D). An arm cuff was placed on the participant's non-dominant arm. Blood pressure was recorded using Biopac System MP100 at 1000 Hz. Lastly, the salivary samples were stored frozen until they were ready to be analyzed using Enzyme-linked immunosorbent assay (ELISA).

Procedure

Participants were asked to come to the research laboratory for two separate sessions. In the first session, participants came into the laboratory and, upon completion of the consent form, were instructed to provide basic demographic information and complete a battery of questionnaires assessing self-esteem (RSE), body self-esteem (MSBRQ-AS; CDFRS-Modified, SATAQ), and ethnic identity (SEE). In addition to these questionnaires, Latina participants were also asked to complete a measure evaluating acculturation (SASH). Participants completed the measures in privacy, to increase feelings of anonymity. The first session usually lasted between 15-20 minutes.

Three to five days later, participants returned to the laboratory to participate in the second session of the study. The reasoning for this delay between sessions was to control for potential residual effects from the questionnaires that could affect cardiovascular recording and measures of state anxiety and affect following participants' exposure to the series of commercials. During the second session, participants were first asked to complete questionnaires measuring state anxiety (STAI-State) and state affect (PANAS), while also providing a salivary cortisol sample. Next, participants were led into a separate, private viewing room, where they provided five minutes of baseline data recording cardiovascular activity that was measured by blood pressure. During this time, all participants viewed

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footage from a meditation film to ensure that, regardless of condition, they experienced the same relaxing footage as a baseline prior to exposure of the stimuli. The stimuli consisted of a series of five brief commercials advertising products from the same company. Participants were randomly assigned to either Group A, which involved viewing five commercials advertising Victoria's Secret lingerie (Experimental Group) or Group B, which involved viewing five commercials advertising the Chevy Sonic automobile (Control Group). The two groups of commercials were closely matched in terms of their duration (five minutes) and their energetic and upbeat tones. In addition, the principal investigator was blind to the group of commercials that were viewed by each participant.

After watching the commercials, participants provided a second salivary cortisol sample and completed post-test questionnaires assessing state anxiety (STAI-State) and state affect (PANAS), while five minutes of cardiovascular activity was recorded. Upon completion of the measures assessing positive/negative affect and state anxiety, participants were asked once again to complete the body-esteem questionnaires as well as a questionnaire that assessed participants' feelings toward the group of commercials that they saw (FTAS). Upon participants' completion of these questionnaires, they were given the option to receive psychological research credit or \$10 in compensation. The participants were thanked for their participation and informed that the study was complete. The second session usually lasted between 30-35 minutes.

Results

Preliminary Analyses

Prior to analysis, scores from each of the scales assessing body esteem, ethnic identity, acculturation and psychological reactivity were first categorized and computed into subscales previously determined by the authors of the measures. In addition, because

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participants were asked to respond to measures assessing body esteem, anxiety, and affect before and after the presence of the stimuli, the subscales were computed twice as pre- and post-assessments. In variables with missing cases present, this data was left unanalyzed. (See Table 1. for frequencies).

Table 1.

Summary of valid and missing numbers of scores for MBSRQ-AE, MBSRQ-BASS, CDFRS, STAS-State, PANAS-Positive, PANAS- Negative, systolic/diastolic blood pressure reactivity, and cortisol reactivity

	MBSRQ-AE	MBSRQ-BASS	CDFRS-Modified	SATAQ-Internalization	STAI-State	PANAS-Positive	PANAS-Negative	Systolic Reactivity	Diastolic Reactivity	Cortisol Reactivity
Valid N =	40	40	40	40	39	36	35	31	31	38
Missing N =	1	1	1	1	2	5	6	10	10	3

Analyses

A series of 3-Way Mixed-Design ANOVAs using $\alpha = .05$ were conducted for this study to assess the effects of two between-subjects factors and one within-subjects factor on physiological reactivity, psychological reactivity, and body esteem. The between-subjects factors included ethnicity (Latina vs. Caucasian) and condition (experimental vs. control). The within-subjects factor consisted of time (pre- vs. post-assessments) with regard to the presence of the stimuli.

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Physiological Reactivity

Three-way ANOVA's assessing changes in diastolic and systolic blood pressure (See Table 2 for means and standard deviations) revealed a significant 2-way interaction between condition and time on levels of diastolic blood pressure, $F(1, 27) = 4.266$, $MSe = 29.803$, $p = .049$, $\eta^2 = .136$. As demonstrated in Figure 1., diastolic blood pressure increased upon viewing the Victoria's Secret commercials, and slightly decreased upon viewing the Chevy Sonic commercials. There was not a significant 2-way interaction between condition and time on systolic reactivity. In addition, there was not a significant 2-way interaction between ethnicity and time on diastolic reactivity or systolic reactivity. Lastly, there was no significant 3-way interaction between condition, ethnicity, and time on diastolic or systolic blood pressure reactivity.

A Three-way ANOVA examining effects on cortisol indicated no significant 2-way or 3-way interactions between condition, ethnicity, and time. However, a follow up ANOVA assessing only Latina women revealed a trend in the interaction between condition and time on levels of cortisol, $F(1,14) = 3.83$, $MSe = .003$, $p = .07$, $\eta^2 = .215$. (See Figure 2.) Specifically, Latina women had increased levels of cortisol following the Victoria's Secret commercials and decreased levels of cortisol following the Chevy Sonic commercials.

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Table 2.

Summary of means (and standard deviations in parenthesis) for pre and post-test levels of diastolic/systolic blood pressure and cortisol as a function of condition, ethnicity, and time

Measure	Commercial			
	Victoria's Secret	Chevy Sonic	Total	
Diastolic BP Pre				
	Latina	78.17 (14.71)	85.64 (6.65)	82.76 (10.59)
	Caucasian	77.77 (13.01)	77.32 (6.47)	77.57 (10.34)
	Total	77.90 (13.07)*	81.48 (7.66)*	
Diastolic BP Post				
	Latina	83.75 (8.86)	84.75 (8.17)	84.37 (8.08)
	Caucasian	81.56 (8.21)	75.75 (6.14)	78.97 (7.75)
	Total	82.29 (8.18)*	80.25 (8.39)*	
Systolic BP Pre				
	Latina	138.05 (14.77)	131.97 (19.30)	134.31 (17.30)
	Caucasian	125.53 (22.24)	128.53 (16.70)	126.86 (19.47)
	Total	129.70 (20.44)	130.25 (17.52)	
Systolic BP Post				
	Latina	135.98 (22.32)	131.51 (20.25)	133.23 (20.26)
	Caucasian	125.53 (19.59)	132.62 (17.31)	128.55 (18.46)
	Total	128.86 (20.40)	132.07 (18.21)	
Cortisol Pre				
	Latina	.32 (.30)	.20 (.18)	.27 (.25)
	Caucasian	.35 (.38)	.46 (.43)	.40 (.39)
	Total	.34 (.34)	.35 (.36)	
Cortisol Post				
	Latina	.35 (.28)	.15 (.16)	.26 (.25)
	Caucasian	.30 (.25)	.39 (.32)	.34 (.28)
	Total	.32 (.25)	.30 (.29)	

Notes: * $p < .05$

Figure 1.

Pre and post-levels of diastolic blood pressure as a function of condition and time

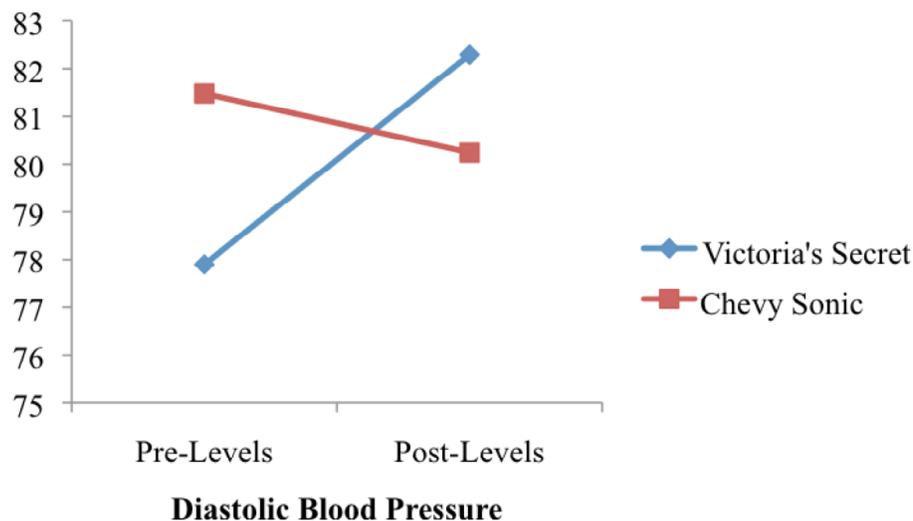
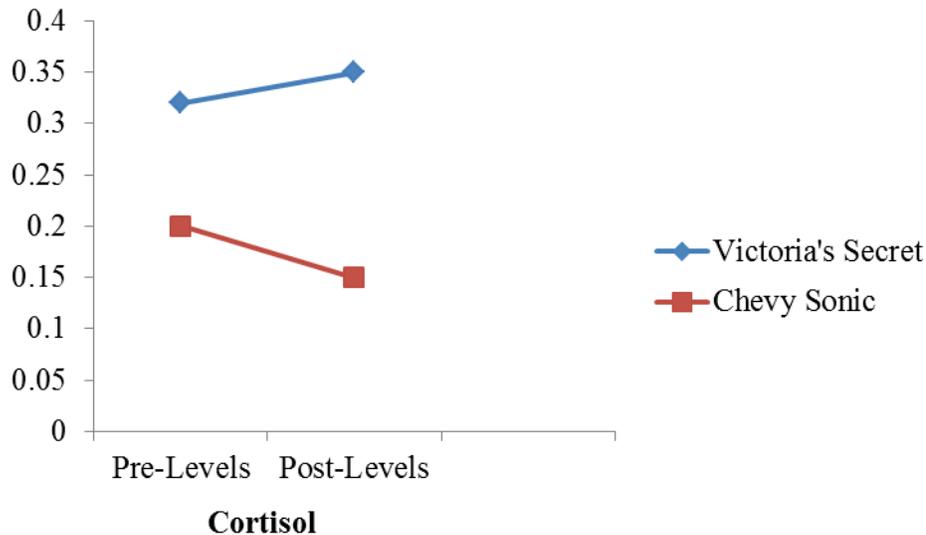


Figure 2.

Pre and post-levels of cortisol as a function of condition and time



Psychological Reactivity

When scores of state anxiety were subjected to the 3-Way ANOVA, results indicated no significant 2-way or 3-way interactions between condition, ethnicity, and time, (See Table 3. for means and standard deviations). However, the mean scores of anxiety suggest that Latina women who viewed the Victoria's Secret commercials reported higher levels of state anxiety reactivity than all other groups.

Scores of positive and negative affect were also subjected to 3-Way ANOVAs. Results demonstrated no significant 2-way or 3-way interactions between condition, ethnicity, and time on positive or negative affect reactivity.

A follow up Pearson product-moment correlation coefficient was computed to assess the relationship between body esteem (MBSRQ-AS) and psychological reactivity in women in response to the stimuli. In participants from the experimental condition, a

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significant negative relationship was found between ratings of pre-test appearance evaluation (MBSRQ-AE) and state anxiety level, $r(19) = -.471, p = .031$, as well as ratings of post-test appearance evaluation and state anxiety levels, $r(19) = -.492, p = .023$. After viewing the Victoria's Secret commercials, decreased ratings from pre and post-tests assessments of personal appearance were associated with increased levels of state anxiety.

Table 3.

Summary of means (and standard deviations in parenthesis) for pre and post-test scores of STAI-State, PANAS-Negative and PANAS-Positive as a function of condition, ethnicity and time

Measure	Commercial			
	Victoria's Secret	Chevy Sonic	Total	
STAI-State Pre				
	Latina	39.88 (10.47)	38.29 (6.37)	39.13 (8.53)
	Caucasian	36.69 (8.33)	37.54 (10.77)	37.08 (9.32)
	Total	37.90 (9.08)	37.83 (9.10)	
STAI-State Post				
	Latina	45.63 (11.04)	43.71 (8.46)	44.73 (9.62)
	Caucasian	41.54 (6.66)	38.00 (8.39)	39.92 (7.51)
	Total	43.10 (8.57)	40.22 (8.61)	
PANAS-Negative Pre				
	Latina	15.86 (8.82)	15.00 (4.20)	15.43 (6.65)
	Caucasian	12.92 (3.17)	16.25 (4.71)	14.19 (4.07)
	Total	13.95 (5.74)	15.67 (4.40)	
PANAS-Negative Post				
	Latina	16.14 (7.40)	13.71 (3.54)	14.93 (5.71)
	Caucasian	13.46 (2.96)	14.75 (4.56)	13.95 (3.60)
	Total	14.40 (4.96)	14.27 (4.00)	
PANAS-Positive Pre				
	Latina	15.86 (8.82)	15.00 (4.20)	15.43 (6.65)
	Caucasian	12.92 (3.17)	16.25 (4.71)	14.19 (4.06)
	Total	13.95 (5.74)	15.67 (3.37)	
PANAS-Positive Post				
	Latina	16.14 (7.40)	13.71 (3.54)	14.92 (5.71)
	Caucasian	13.46 (2.96)	14.75 (4.56)	13.95 (3.59)
	Total	14.40 (4.96)	14.26 (4.00)	

Notes: * $p < .05$

Body-Esteem

When scores on the MBSRQ-Appearance Evaluation were subjected to the 3-way ANOVA, (See Table 4. for means and standard deviations), results indicated a significant 2-way interaction between condition and time, $F(1,36) = 5.733$, $MSe = 3.692$, $p = .022$, $\eta^2 = .137$. As illustrated in Figure 3., for women who viewed the Victoria's Secret commercials, ratings of their personal appearances decreased while for women who viewed the Chevy Sonic commercials, ratings of their personal appearances increased. There was not a significant 2-way interaction between ethnicity and time on ratings of appearance evaluation. In addition, there was not a significant 3-way interaction between condition, ethnicity, and time on ratings of appearance evaluation or body satisfaction.

Next, when scores on the MBSRQ-Body Area Satisfaction Scale (BASS) were subjected to the 3-way ANOVA, results indicated a significant 2-way interaction between condition and time, $F(1,36) = 4.27$, $MSe = 4.747$, $p = .046$, $\eta^2 = .106$. (See Figure 4.) Ratings of body satisfaction appeared to decrease from pre to post-assessments when the Victoria's Secret commercials were viewed, and increase from pre to post-assessments when the Chevy Sonic commercials were viewed. There was not a significant 2-way interaction between ethnicity and time on ratings of body satisfaction. In addition, there was not a significant 3-way interaction on ratings body satisfaction.

Lastly, scores of body type preference (CDFRS-Modified) were subjected to the 3-ANOVA. Results demonstrated no significant 2-way interactions between condition and time, or ethnicity and time, on ratings of body type preference. Additionally, there was not a significant 3-way interaction for ratings of body type preference. However, mean scores in ratings of body type suggest that Latina women who viewed the

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Victoria's Secret commercials preferred a smaller body type in post-assessment than in the baseline assessment, relative to the women in the other three groups.

Table 4.

Summary of means (and standard deviations in parenthesis) for pre and post-test scores of MBSRQ-AE, MBSRQ-BASS, CDFRS- Modified as a function of condition, ethnicity, and time

Measure	Commercial			
MBSRQ –AE Pre	Ethnicity	Victoria's Secret	Chevy Sonic	Total
	Latina	24.44 (6.91)	24.71 (3.45)	24.56 (5.50)
	Caucasian	27.77 (2.92)	25.55 (7.10)	26.75 (5.26)
	Total	26.41 (5.09)*	25.22 (5.83)*	
MBSRQ- AE PRE				
	Latina	23.11 (8.64)	25.57 (3.15)	24.18 (6.74)
	Caucasian	26.46 (3.31)	26.27 (5.78)	26.38 (4.50)
	Total	25.09 (6.12)*	26.00 (4.82)*	
MBSRQ-BASS Pre		Victoria's Secret	Chevy Sonic	Total
	Latina	29.56 (7.21)	30.14(2.79)	29.81 (5.64)
	Caucasian	34.00 (3.32)	31.73 (7.72)	32.96 (5.74)
	Total	32.18 (5.58)*	31.11 (6.20)*	
MBSRQ –BASS Post				Total
	Latina	29.00 (8.22)	30.57 (3.16)	29.69 (6.37)
	Caucasian	32.31 (4.02)	33.18 (8.45)	32.71 (6.30)
	Total	30.95 (6.14)*	32.17 (6.87)*	
CDFRS-Pre		Victoria's Secret	Chevy Sonic	Total
	Latina	1.56 (1.88)	1.29 (1.60)	1.44 (1.71)
	Caucasian	1.07 (.86)	1.09 (1.58)	1.08 (1.21)
	Total	1.27 (1.35)	1.17 (1.54)	
CDFRS-Post				Total
	Latina	1.77 (2.22)	1.28 (1.60)	1.56 (1.93)
	Caucasian	.92 (.76)	1.18 (1.66)	1.04 (1.23)
	Total	1.28 (1.55)	1.22 (1.59)	

Notes: * $p < .05$

Figure 3.

Pre and post-assessment scores of MBSRQ-Appearance Evaluation as a function of condition and time

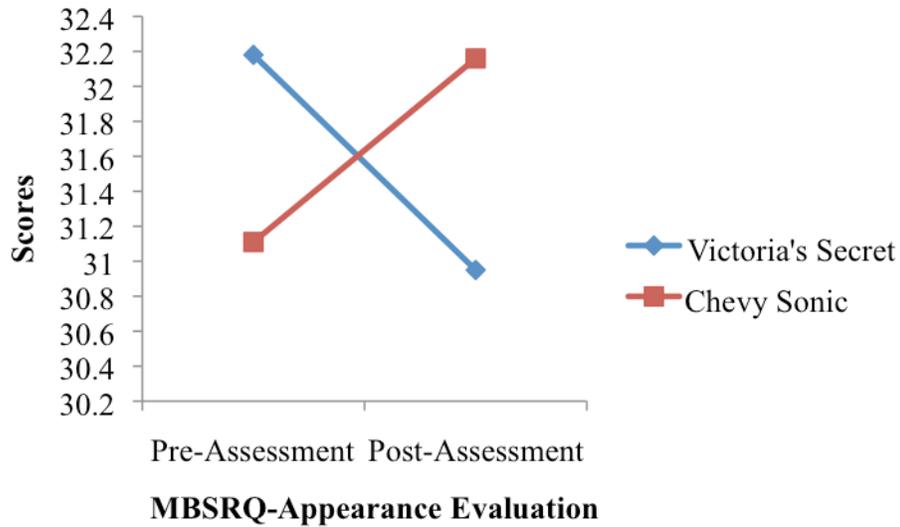
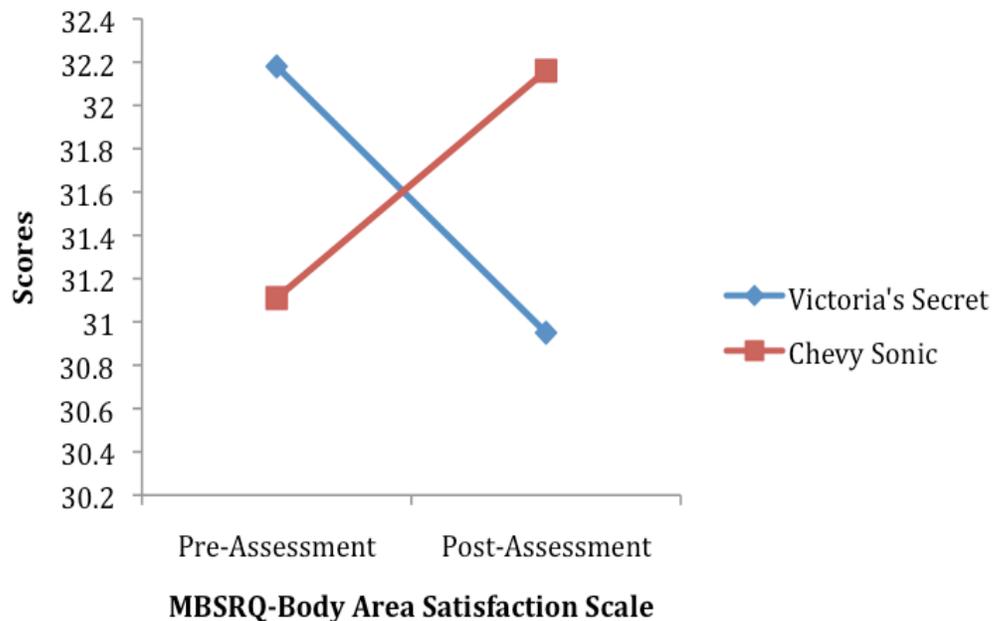


Figure 4.

Pre and post-assessment scores of MBSRQ-Body Area Satisfaction Scale as a function of condition and time



Role of Acculturation in Reactivity

Pearson product-moment correlation coefficients were computed to assess the relationship between acculturation (SASH) and psychological reactivity in Latina women. Scores on the acculturation scale were not found to be significantly correlated with Latina's state anxiety reactivity, positive affect reactivity, or negative affect reactivity. A similar analysis assessing the relationship between mainstream comfort (SEE-Mainstream Comfort) and state anxiety reactivity in Latina women revealed a significant correlation, $r(12) = .582, p = .029$, such that, regardless of condition, increased ratings of comfort with mainstream American values were associated with increased state anxiety reactivity. In addition, there was a significant trend between mainstream comfort and negative affect reactivity in Latina women, $r(15) = .519, p = .069$, such that higher scores of comfort with mainstream American values were associated with greater negative affect reactivity.

Pearson product-moment correlation coefficients were also computed to assess the relationship between the internalization of mainstream media's images of beauty (SATAQ-Internalization) and psychological reactivity in women in response to the stimuli. Results revealed that, in Latina women, baseline and post-assessments of internalization of mainstream body image were significantly correlated to state anxiety reactivity (Baseline: $r(13) = .561, p = .030$; Post-test: $r(19) = .589, p = .021$), as well as positive affect reactivity (Baseline: $r(11) = -.574, p = .032$; Post-test: $r(19) = -.585, p = .036$).

Discussion

The goal of this study was to investigate the effects of mainstream media's depiction of body image on stress reactivity in Latina women. In particular, this study examined whether exposure to the mainstream "ideal" body image would negatively affect Latina women's physiological and psychological functioning. Ethnic differences in physiological and psychological responses to the commercials were also explored. It was hypothesized that, regardless of ethnicity, women who viewed the Victoria's Secret commercials (experimental condition) would demonstrate higher levels of blood pressure and cortisol, increased anxiety and negative affect, and decreased ratings of body esteem and positive affect than women who viewed the Chrysler commercials (control condition). In addition, it was predicted that acculturation toward mainstream American values would moderate psychological and physiological responses in Latina women, such that Latina women who reported more acculturation would have lower body-esteem and greater stress reactivity to the Victoria's Secret commercial than would those Latinas who reported low acculturation.

The results were in partial support of the first hypothesis. As predicted, women demonstrated increased levels of diastolic blood pressure in response to viewing the Victoria's Secret commercials. In addition, a trend in the interaction between condition and time on levels of cortisol revealed that, in Latina women only, increased levels of cortisol were demonstrated following the Victoria's Secret commercials. While not significant, this finding suggests the possibility of heightened physiological stress reactivity in Latina women when presented with depictions of mainstream ideal female

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body image. Currently, few studies have observed the relationship between body image attitudes and physiological stress. Past findings have revealed that women who placed greater importance on appearance and reported negative perceptions regarding their own body image, also demonstrated higher levels of diastolic ambulatory blood pressure and cortisol than women who reported neutral or positive attitudes (Bedford, Linden, & Barr, 2011; Putterman and Linden, 2006). However, no published research has investigated ethnic differences in the examination of physiological stress responses to depictions of mainstream body image and physiological stress. Therefore, further investigation is necessary to better understand the implications of these depictions on stress reactivity in women.

It is also interesting that women reported less positive evaluations of their appearance and less body satisfaction after viewing the Victoria's Secret commercials than those who viewed the Chevy Sonic commercials. These findings are consistent with past findings, in which, upon exposure to mainstream media, women demonstrated higher levels of body dissatisfaction and increased internalization of a thin ideal body shape (Groesz, Levine, and Murnen, 2002; Hofschire & Greenberg, 2002).

There was no support for the hypothesis that viewing the Victoria's Secret advertisements would lead to increase anxiety in Latina and Caucasian women. Although women who watched the Victoria's Secret commercials had increased levels of diastolic blood pressure, there were no significant changes in psychological reactivity after viewing the commercials. However, women who reported lower ratings of personal appearance prior to the viewing of the Victoria's Secret commercials reported higher levels of state anxiety following the stimuli. In addition, lower ratings of personal appearance in all women following the Victoria's Secret commercials were associated

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with increased levels of anxiety. This suggests that women with poor body image may be particularly affected following the exposure to depictions of ideal body image.

Due to a small sample size, acculturation could not be examined in the present study as a potential moderating variable of psychological and physiological responses in Latina women following exposure to the Victoria's Secret commercial. However, results did indicate a significant relationship between acculturation and psychological reactivity in Latina women, such that, regardless of condition, higher levels of comfort with mainstream American customs were associated with increased levels of anxiety following exposure to the advertisements. Similarly, we also found that Latina women who reported more internalization of mainstream media's ideal of body image and beauty also demonstrated higher levels of anxiety and lower levels of positive affect after viewing the commercials. This suggests that Latina women who identify with mainstream culture may be especially vulnerable to the adverse effect of the ideal body image on psychological and physical health.

While not significant, an examination of anxiety reactivity across the four groups of women demonstrate that results were in the hypothesized direction. Specifically, which Latina women who viewed the Victoria's Secret commercials reported higher levels of state anxiety reactivity than all other groups. Thus, it is possible that Latina women who are acculturated toward mainstream customs and values may experience greater distress when exposed to American media's depictions of beauty. In previous findings, exposure to mainstream media depictions of beauty was associated with higher levels of internalization of a thin ideal body shape (Groesz, Levine, and Murnen, 2002; Hofschire & Greenberg, 2002), as well as increased levels of anxiety (Halliwell & Dittmar, 2004) following exposure to mainstream media. Furthermore, in a recent study,

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body dissatisfaction has been found to relate to increased levels of anxiety in female Latina adolescents (Ferguson, Munoz, Contreras, & Velasquez, 2011). However, to date, few publications have investigated ethnic differences in anxiety reactivity following exposure to mainstream depictions of ideal body image, and therefore, future investigation is necessary before such suggestions can be supported.

It is also possible that Latina women may not be psychologically affected by depictions of “ideal” female body image in mainstream media. This suggestion follows from some researchers’ arguments that Latina women do not connect to the imagery depicted in mainstream media, instead viewing the “ideal body image” in US media with disinterest or ambivalence (Warren et. al., 2005; Altabe, 1998). However, while not significant, mean scores in ratings of body type preference also suggest that Latina women who viewed the Victoria’s Secret commercials, relative to the women in the other three groups, preferred a smaller body type in post-assessment than in the baseline assessment. Such findings would support past studies in which Latina women, like Caucasian women, demonstrated lower self-esteem and increased body shame in response to media depictions of beauty (Seo & Torabi, 2006; Viladrich et al., 2009). In light of our findings that identifying with the mainstream was associated with increased reactivity in Latina women, it is likely that acculturation plays an important role in whether Latina women adapt the US culture’s standard of beauty.

Overall, this study has several strengths. To my knowledge, this is one of few studies that have investigated ethnic differences in the relationship between exposure to the “ideal” female body image in mainstream media and physiological stress reactivity. In addition, the relationships found between acculturation to mainstream American culture and increased anxiety in Latina women and in the experimental group suggest the

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importance of further investigating the role of acculturation in Latina women's psychological and physiological responses to depictions of mainstream beauty ideals. Lastly, while no significant results were found, the mean scores of anxiety reactivity as well as body type preference in Latina women who viewed the Victoria's Secret commercials revealed directions that are consistent with the hypotheses.

This study also has some limitations. In addition to a small sample, there was an unequal representation of Latina and Caucasian women, with a larger number of Caucasian participants than Latina participants. As a result, a small and unequal number of Latina and White women were represented in each condition, reducing the possibility of finding significant effects. One possible explanation for the unequal numbers may be due to the fact that 41.1% of the population at Pitzer College identifies as White/Caucasian, while 16.0% identify as Latino/Hispanic (Pitzer College). Another limitation of this study is the majority of significant findings were correlations and thus, causation cannot be inferred. For example, such correlations between acculturation and psychological/psychological reactivity may arise from a third factor that is influencing the two variables. Therefore, one cannot assume the differences occurring in stress reactivity were caused by self-report ratings or the ethnicity of the individual. Lastly, there is the possibility that this study lacks external validity, as individuals were evaluated in a controlled setting with manipulated variables. However, it can be argued that the commercials shown in my study are also viewed outside of a laboratory, in everyday life.

Results from this study reiterate the potential harmful effects that depictions of mainstream ideal body image may have on women's psychological and physiological well-being. While no significant 3-way interactions were found between ethnicity,

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condition, and time, given a larger sample size and the opportunity to examine the moderating role of acculturation, it is expected that future replications of this study will provide a better understanding of how the “ideal” female body image in mainstream U.S. media affects physiological and psychological functioning in Latina women.

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Appendix A.