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Eating, Substance Use, and Body Image: A Comparison of Latter-day Saint and Non-Latter-day Saint College Age Females

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This study examined differences between Latter-day Saint (LDS) and non-Latter-day-Saint (non-LDS) females in desire to engage in substance use and eating behaviors in response to negative emotion. Additionally, differences between LDS and non-LDS females regarding body image, as well as body image differences between LDS females residing inside Utah and outside Utah, were explored. Findings suggested that non-LDS females were more likely to experience increased urges to use substances in response to negative emotion than LDS females, consistent with LDS doctrine teaching the avoidance of substance use. LDS females also did not appear to substitute LDS-sanctioned eating behaviors for substance use in response to negative emotion. Additionally, LDS females were found to have a more positive body image than non-LDS females generally, although LDS females in Utah have less positive body images than LDS females residing in other states. Implications of these findings for the prevention of substance abuse and body image dysfunction are discussed.

Substance use and eating in response to negative affect serve as risk factors for the development of substance abuse disorders and eating disorders, respectively. In addition to this affectively-driven consumption pattern, culture (defined here as religion) can also influence the likelihood of developing these disorders by influencing consumption behaviors. For instance, some religions such as the Church of Jesus Christ of Latter-day Saints (LDS) discourage the use of alcohol, tobacco, and other drugs, and there are data suggesting that LDS members follow this religiously-based directive (Dyer & Kunz, 1986; Zick & Mayer, 1996) and have lower rates of substance abuse disorders than non-LDS persons (Gaustad & Barlow, 2001; Hawks & Bahr, 1999; Nelson, 2003; U.S. Census Bureau, 2007). For instance, in terms of religion, Utah is predominantly LDS, and ranks last among the fifty states in current use as percentage of the total population for marijuana, cigarettes, and binge alcohol (U.S. Census Bureau, 2007). However, yet unknown is whether religion, particularly LDS religion, influences how one responds to negative affect with respect to eating (either binge eating or restrictive eating) and if eating is being substituted for substance use given LDS directives to avoid substances, as well as evidence that LDS adults tend to weigh more on average than non-LDS adults (Merrill & Hilliam, 2006).

A second relationship between culture and disordered eating is mediated by body image. Cultural influences such as family, peers, and media encourage particular body image ideals, which then contribute to disordered eating (Rucker & Cash, 1992; Stice, 1994; Waller &

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Matoba, 1999). Previous research suggests that there are cultural body image influences on LDS women, particularly LDS women residing inside Utah (Carroll & Spangler, 2001), which is important given the increasing distress regarding body image and the related link to eating disorder behaviors. It has been suggested that the LDS directive for perfection and self-discipline may be misapplied to the body within the LDS population. It has also been posited that pressures, particularly on the BYU campus (a private religiously-based institution sponsored by the LDS Church), to marry and mate influence those in the LDS population to be overly critical of their bodies (Carroll & Spangler, 2001). Thus, it is of question whether religious subculture influences body ideals and level of body satisfaction.

To address such questions, the present study compared LDS females' and non-LDS females' attitudes regarding urges to engage in particular consumption behaviors in response to negative affect. Additionally, differences between LDS females and non-LDS females, as well as LDS females residing inside Utah and LDS females residing outside Utah, on attitudes regarding body shape and weight were investigated. This investigation aimed to answer the call for more specificity regarding culture's role in the development of psychopathology (Markey, 2004; Obesity, Fitness & Wellness Week, 2004; Polivy & Herman, 2004).

METHODS

Participants

A sample of LDS and non-LDS female college students was recruited from general education classes at six universities: Brigham Young University-Idaho, Brigham Young University-Utah, Utah Valley State College, University of Utah, the University of Idaho, and the University of Washington. Teachers of such courses invited any female students interested in participating in the study to email the researcher directly. Once participants offered contact information to the researcher, they were emailed a password and identification number to log onto a secure website. The website included self-report measures that took about 20-30 minutes to complete. Subjects received either extra credit or monetary compensation ($10) for their participation.

Subjects were all female due to previous research that suggests that women have more negative body image evaluations, stronger investments in their looks, and more frequent body-image dysphoria than men (Muth & Cash, 1997). There is also some evidence to suggest that females outnumber males approximately ten to one in the presentation of eating disorders other than binge eating disorder (Sanders, 1996).

A total of 153 participants were included in the current analysis. As noted in Table 1, the majority of the sample was Caucasian, single, freshman, LDS, and between the ages of 18-19.

Measures

The Emotional Eating Scale and The Emotional Eating Scale-Revised for Substance Use (EES and EES-R): The EES (Arnow, Kenardy, & Agras, 1995) is a 25-item self-report scale that assesses the intensity of the relationship between negative mood and urge to eat. Items are scored on a 5-point Likert scale ("no desire to eat" to "an overwhelming desire to eat"). However, this instrument was modified to adequately address hypotheses. The 5-point Likert scale remained intact, but varied from −2 to +2 with the 0 point being "no change in urge to eat." This alteration allowed participants to respond equally to the possibility of a decreased desire to eat (first subscale) and an increased desire to eat (second subscale) in response to negative emotion. Thus, the scale ranged from "a large decreased urge to eat" to "a large increased desire to eat." The EES was reported to have an internal consistency of .81 and test-retest reliability of .79. Since the original EES was intended to explore eating behaviors primarily of binge eaters, some of the directions were modified to include both binge and restricting behaviors in response to negative emotion. The internal reliability was .84 for the increased portion and .81 for the decreased portion of the EES in the current study. Further, the EES was modified to explore substance use (EES-R). The EES-R substituted substance use for all instances of "an urge to eat or decreased urge to eat." Thus, the scale ranged from "an overwhelming decreased desire to use substances" to "an overwhelming desire to use substances." The internal reliability was .95 for the increased portion and .98 for the decreased portion of the EES-R in this study.

The Dutch Eating Behavior Questionnaire and the Dutch Eating Behavior Questionnaire-Revised for Substance Use (DEBQ and DEBQ-R): Seven items of the 9-item Emotional Eating subscale of the DEBQ (Van Strien, Frijters, Bergers,

Table 1
Participant Characteristics

Characteristic	N	Percentage of Total Sample (N=153)
Religion		
Catholic	9	5.9%
Baptist	4	2.6%
Protestant	9	5.9%
Latter-day Saint	105	68.6%
Jewish	2	1.3%
Agnostic	9	5.9%
Atheist	1	0.7%
Other Christian	12	7.8%
Other (Not Islamic, Buddhist, Hindu)	2	1.3%
University		
University of Utah	13	8.5%
BYU-Utah	42	27.5%
Utah Valley State College	12	7.8%
BYU-Idaho	42	27.5%
University of Idaho	25	16.3%
University of Washington	19	12.4%
Year		
Freshman	80	52.3%
Sophomore	37	24.4%
Junior	25	16.3%
Senior	10	6.5%
Graduate	1	0.7%
Marital Status		
Single	127	83.0%
Married	16	10.5%
Divorced	1	0.7%
Cohabitating	9	5.9%
Age		
18-19	99	64.7%
20-21	26	17.0%
22-23	7	4.6%
24-25	11	7.2%
26-27	3	2.0%
28-29	1	0.7%
30-39	2	1.3%
40 and over	4	2.6%
Ethnicity		
Hispanic	9	5.9%
African American	2	1.3%
Caucasian	126	82.4%
Asian	7	4.6%
East Indian	1	0.7%
Native American	2	1.3%
Other (Not Pacific Islander)	6	3.9%

& Defares, 1986) were used as a measure of eating in response to negative emotion. This scale was chosen because it measures similar emotional eating behaviors as the EES and thus provides an appropriate supplement measure of emotional eating. DEBQ items are measured on a 5-point, Likert-type (1 = never, 5 = very often) format. Van Strien et al. (1986) reported that the 9-item Emotional Eating subscale was shown to have very high internal consistency reliability (a = .93) across females. Further, the DEBQ was also revised for substance use. All items used for the eating portion of the DEBQ begin, "Do you have a desire to eat when...?" For substance use items, the DEBQ-R reads, "Do you have a desire to use substances (alcohol, tobacco, drugs) when...?" The internal reliabilities for the DEBQ and the DEBQ-R in this study were .83 and .95, respectively.

The Beliefs About Appearance Scale (BAAS): The BAAS (Spangler, 1997) is a 20-item, 5-point (0 = not at all to 4 = extremely) self-report scale that assesses the degree of endorsement of beliefs about the consequences of appearance for relationships, achievement, self-view, and feelings. Higher scores indicate greater endorsement of beliefs that positive feelings, self-worth, and interpersonal and work successes are dependent on appearance. The BAAS was used to assess participants' tendency to focus on appearance-related stimuli and to determine how much participants believe that their appearance affects their quality of and functioning in life (Spangler, 1997). The BAAS has been shown to possess high internal consistency and test-retest reliability. Spangler and Stice (2001) reported internal consistency reliability levels of .94, .95, and .96 in separate samples as well as test-retest reliability correlations of .73 and .83 in separate samples. The internal consistency for the BAAS was .96 in this study.

The Balanced Inventory of Desirable Responding (BIDR): The BIDR (Paulhus, 1988) is a 40-item inventory that is scored on a 7-point Likert-type scale. It measures the related constructs of self-deception and impression management that have been shown through factor analysis to be distinct (Paulhus, 1991). A particular advantage of the BIDR given that subjects were recruited from church-sponsored universities is that BIDR norms are available for religious adults (Paulhus, 1988). The BIDR has been shown to correlate with other measures of social desirability (Paulhus, 1988). The internal reliabilities for the BIDR total scale, self-deception subscale, and impression management subscale in this study were .27, .45, and .04, respectively.

The Multidimensional Body-Self Relations Questionnaire (MBSRQ): The MBSRQ (Cash, 1994) is a 69-item self-report scale that assesses several components of body image. Respondents rate their degree of agreement or disagreement with statements on a 1 (definitely disagree) to 5 (definitely agree) scale. The MBSRQ comprises 10 subscales with adequate reliability and validity (Cash, 1994). The five MBSRQ subscales used in this study were as follows:

1. The *Appearance Evaluation scale* (APPEVF) consists of seven items that measure the degree of satisfaction with one's overall looks. Higher scores indicate more positive feelings about appearance, whereas lower scores indicate greater unhappiness with physical appearance. The Appearance Evaluation scale has been found to have a Cronbach's alpha (internal consistency) of .88 and a 1-month test-retest reliability of .86 for females. However, the internal reliability of the APPEVF was .23 for this study.

2. The *Appearance Orientation scale* (APPORF) consists of 12 items that measure the extent of investment in one's appearance, such as time spent in grooming behaviors. Higher scores indicated greater investment in appearance. The internal consistency of the Appearance Orientation scale has been found to be .85 and the 1-month test-retest reliability was .90 for females. The internal reliability for the APPORF was .39 in this study.

3. The *Body-Areas Satisfaction scale* (BASS) consists of nine items that measure satisfaction or dissatisfaction with discrete aspects of one's appearance. High scorers are generally content with most areas of their body, whereas low scorers are unhappy with the size or appearance of several areas. The internal consistency of the BASS was found to be .73 and the 1-month test-retest reliability was found to be .74 for females. The internal reliability of the BASS was .84 in this study.

4. The *Overweight Preoccupation scale* (OWPR) consists of four items that assess level of fat anxiety, weight vigilance, dieting, and eating restraint. A higher score in this area indicates a greater level of preoccupation and concern about becoming overweight. The internal consistency of the Overweight Preoccupation scale was found to be .76 and the 1-month test-retest reliability was found to be .89 for females. The internal reliability of the OWPR was .83 in this study.

5. The *Self-Classified Weight scale* (WTCLASS) con-

sists of two items that assess a construct reflecting fat anxiety, weight vigilance, dieting, and eating restraint. A higher score in this area indicates a greater perception of being overweight. The internal consistency of the Self-Classified Weight scale was found to be .89 and the 1-month test-retest reliability was found to be .74 for females. The internal reliability of the WTCLASS was .82 in this study.

The Body Appreciation and Respect Scale (BARS): The BARS (Spangler, 2007) is a 30-item self-report scale that assesses positive feelings and negative feelings (separate subscales) toward one's body. Respondents rate their degree of agreement or disagreement with statements on a 0 (*not at all true*) to 4 (*completely true*) scale. Psychometric properties of the BARS are currently under exploration. However, the positive feelings subscale of the BARS had an internal reliability of .94 and the negative feelings subscale of the BARS had an internal reliability of .96 in this study.

The Attention to Body Shape Scale: A New Measure of Body Focus (ABS): The ABS (Beebe, 1995) is a 7-item self-report scale that assesses the degree to which one pays attention to one's body shape. Respondents rate their degree of agreement on a scale from a (*definitely disagree*) to e (*definitely agree*). Higher scorers suggest greater attention to body shape. Beebe (1995) reported internal consistency reliability measures of .70-.83 in three separate studies for females, and test-retest reliability correlations of .76 for females. The ABS had an internal reliability of .67 in this study.

The Body Shape Questionnaire (BSQ): The BSQ (Cooper, Taylor, Cooper, & Fairburn, 1987) is a 34-item self-report scale that assesses concerns about body shape, and in particular, the experience of "feeling fat." Respondents rate their degree of agreement or disagreement with statements on a 1 (*never*) to 6 (*always*) scale. Higher scorers indicate greater concern with body shape. The BSQ has been shown to have satisfactory test-retest reliability, concurrent validity, and criterion validity (Rosen, Jones, Ramirez, & Waxman, 1996). The internal consistency has been found to be .97 (Evans & Dolan, 1993), consistent with the internal reliability in this study.

Data Analysis [1]

Social Desirability. Correlational analyses were used to determine if the response pattern on any of the questionnaires was significantly associated with social desirability responses. To test for possible group differences in social desirability responding, means on the BIDR were compared in LDS and non-LDS groups. Additionally, correlations between the BIDR and other measures were compared across groups. Significant differences were found between LDS and non-LDS females on the BIDR total score (TOT) and the BIDR impression management subscale (IM), as noted in Table 2. As expected, religious populations tend to score higher on this scale (Paulhus, 1988). Additionally, the BIDR TOT and IM subscale were also significantly correlated with most measures. Thus, the BIDR IM subscale was used as a covariate in analyses between religious groups. The IM subscale was used as there did not appear to be a significant difference between LDS and non-LDS populations on the self-deception subscale (SD), and the IM subscale is a more specific measure of social desirability than the TOT scale.

Given that there were no significant differences between LDS females residing inside Utah and LDS females residing outside Utah on the BIDR IM, the BIDR SD, or the BIDR TOT, as noted in Table 3, no covariate was used in within LDS location analyses (described below).

Consumption Analyses. Analyses of covariances (ANCOVAs) were performed to compare means between LDS and non-LDS groups on the six measures addressing the primary hypotheses regarding cultural effects on food and substance consumption using the BIDR IM subscale as a covariate. T-tests were also performed to compare means between LDS females residing inside Utah and LDS females residing outside Utah on the six measures addressing primary hypotheses. A more conservative level of alpha was used for each comparison given multiple comparisons to control for familywise error (Bonferroni correction = .05/6 = .0083; Howell, 2002).

Body Image Analyses. A multivariate analysis of covariance (MANCOVA) was used to compare means on the subscales of all body-related measures between LDS and non-LDS groups. A multivariate analysis of variance (MANOVA) was also used to compare means on all the subscales of all body-related measures between LDS females residing inside Utah and LDS females residing outside of Utah. The significant MANCOVA and MANOVA were followed by pairwise comparisons to determine where the differences resided.

Table 2
Social Desirability: T-tests Between LDS and Non-LDS Females on the BIDR

Scale	Mean (SD)	*t*	*p*
TOTAL			
LDS	12.41 (5.47)	7.53	.007
Non-LDS	10.22 (4.13)		
IM			
LDS	7.98 (3.53)	9.61	.002
Non-LDS	5.35 (2.33)		
SD			
LDS	4.43 (2.89)	0.00	.991
Non-LDS	4.88 (2.86)		

Note. TOTAL = The Balanced Inventory of Desirable Responding-Total Scale; IM = The Balanced Inventory of Desirable Responding-Impression Management Subscale; SD = The Balanced Inventory of Desirable Responding-Self-Deception Subscale.

Table 3
Social Desirability: T-tests Between LDS Females Inside and Outside Utah on the BIDR

Scale	Mean (SD)	*t*	*p*
TOTAL			
Inside UT	12.02 (5.12)	-0.88	.379
Outside UT	12.98 (5.95)		
IM			
Inside UT	7.53 (3.40)	-1.57	.119
Outside UT	8.63 (3.67)		
SD			
Inside UT	4.48 (2.84)	0.23	.815
Outside UT	4.35 (2.98)		

Note. TOTAL = The Balanced Inventory of Desirable Responding-Total Scale; IM = The Balanced Inventory of Desirable Responding-Impression Management Subscale; SD = The Balanced Inventory of Desirable Responding-Self-Deception Subscale.

RESULTS

Consumption Analyses

Using the BIDR IM as a covariate, non-LDS females were found to be more likely to experience increased urges to use substances in response to negative emotion than LDS females, as measured by the decreased portion of the EES-R, $F(2, 150) = 12.92$, $p < .001$, and the DEBQ-R, $F(2, 150) = 24.02$, $p < .001$. There were no significant differences between LDS and non-LDS females regarding increased or decreased urges to eat in response to negative emotion. Means and standard deviations are provided in Table 4.

Body Image Analyses

The overall MANCOVA, Hotelling's T, for all body-related measures across religious groups was significant, $F(2, 150) = 1.94$, $p < .05$. As shown in Table 5, 8 of the 10 body-related measures were found to differ significantly between groups using the BIDR IM as a covariate. LDS females endorsed greater investment in appearance, greater beliefs that positive feelings, self-worth, and interpersonal and work successes are dependent on appearance, more positive feelings toward their bodies, and more satisfaction with their bodies and body shape than non-LDS females. Non-LDS females endorsed greater preoccupation with being overweight and more negative feelings about the body than LDS females. Means and standard deviations are provided in Table 5.

Location Analyses

Regarding urges to participate in substance use and eating behaviors in response to negative emotion, there were no differences between LDS females residing inside Utah and LDS females residing outside Utah.

The overall MANOVA, Hotelling's T, for all body-related measures across location (inside Utah and out-

Table 4
Consumption Analyses

Scale	Mean (SD)	*F*	*df*	*p*
EESDEC				
LDS	36.41 (11.83)	0.31	(2, 150)	.736
Non-LDS	36.67 (12.20)			
EESINC				
LDS	59.60 (17.55)	1.07	(2, 150)	.346
Non-LDS	62.83 (19.36)			
EESRDEC				
LDS	60.64 (19.79)	12.92	(2, 150)	.000
Non-LDS	47.27 (23.23)			
EESRINC				
LDS	69.47 (21.07)	2.99	(2, 150)	.053
Non-LDS	73.48 (20.51)			
DEBQ				
LDS	17.97 (4.97)	0.80	(2, 150)	.452
Non-LDS	18.00 (6.00)			
DEBQR				
LDS	9.90 (5.24)	24.02	(2, 150)	.000
Non-LDS	14.29 (7.79)			

Note. EESDEC = The Emotional Eating Scale-Decreased Subscale; EESINC = The Emotional Eating Scale-Increased Subscale; EESRDEC = The Emotional Eating Scale-Revised for Substance Use-Decreased Subscale; EESRINC = The Emotional Eating Scale-Revised for Substance Use-Increased Subscale; DEBQ = Dutch Eating Behaviors Questionnaire; DEBQR = Dutch Eating Behaviors Questionnaire-Revised for Substance Use.

Table 5

Body Image Analyses

Scale	Mean (SD)	*F*	*df*	*p*
OVERALL				
LDS		1.94	(2, 150)	.044
Non-LDS				
ABS				
LDS	23.89 (5.39)	2.47	(2, 150)	.088
Non-LDS	24.90 (5.20)			
BSQ				
LDS	96.73 (37.72)	10.44	(2, 150)	.000
Non-LDS	106.40 (44.13)			
BAAS				
LDS	50.09 (17.30)	4.76	(2, 150)	.010
Non-LDS	49.10 (18.20)			
APPEVF				
LDS	3.12 (.84)	3.85	(2, 150)	.024
Non-LDS	2.94 (.95)			
APPORF				
LDS	3.58 (.60)	3.68	(2, 150)	.027
Non-LDS	3.52 (.70)			
BASS				
LDS	3.19 (.72)	6.12	(2, 150)	.003
Non-LDS	3.01 (.77)			
OWPR				
LDS	2.88 (1.13)	4.48	(2, 150)	.013
Non-LDS	3.15 (1.14)			
WTCLASS				
LDS	3.30 (.66)	2.52	(2, 150)	.084
Non-LDS	3.49 (.83)			
BARSPOS				
LDS	49.47 (12.73)	12.78	(2, 150)	.000
Non-LDS	42.63 (12.39)			
BARSNEG				
LDS	25.92 (11.09)	8.43	(2, 150)	.000
Non-LDS	32.08 (15.62)			

Note. ABS = The Attention to Body Shape Scale; BSQ = The Body Shape Questionnaire; BAAS = The Beliefs About Appearance Scale; APPEVF = The Appearance Evaluation Scale; APPORF = The Appearance Orientation Scale; BASS = The Body Areas Satisfaction Scale; OWPR = The Overweight Preoccupation Scale; WTCLASS = The Self-Classified Weight Scale; BARSPOS = The Body Appreciation Respect Scale-Positive Feelings Subscale; BARSNEG = The Body Appreciation Respect Scale-Negative Feelings Subscale.

side Utah) for the LDS sample was significant, $F(1, 103) = 3.65$, $p < .01$. As shown in Table 6, 2 of the 10 body-related measures were found to be significant. LDS females residing inside Utah report greater concern with body shape and greater preoccupation with becoming overweight than LDS females residing outside Utah. Means and standard deviations are provided in Table 6.

DISCUSSION

To expand upon previous work suggesting cultural influences on eating and substance use behaviors, LDS females and non-LDS females were compared regarding urges to participate in eating and substance use behaviors in response to negative emotion. Non-LDS females were found to be more likely to experience increased urges to use substances when experiencing negative emotion than LDS females. These findings are consistent with previous research suggesting that alcohol and drug use is influenced by cultural factors (Charles & Britto, 2001; Gonet, 1994; Marsh & Dale, 2005; Mateos, Paramo, Carrera, & Rodriguez-Lopez, 2002; Walsh, 1992; Wray & Young, 1992), and more specifically, substance use is influenced by religion (Bazargan, Sherkat, & Bazargan, 2004; Benson, 1983; Charles & Britto, 2001; Meteos et al., 2002; Simons, Simons, & Conger, 2004; Walsh, 1992). Results are also consistent with previous findings suggesting that the LDS population is influenced by LDS doctrinal directives regarding the avoidance of substances (Hawks & Bahr, 1999; Nelson, 2003; U.S. Census Bureau, 2007) when compared to a non-LDS population. Contrary to initial hypotheses, significant differences between LDS females' and non-LDS females' attitudes regarding eating behaviors in response to negative emotion were not found; rather, LDS and non-LDS females did not report significant differences in urges to eat in response to negative emotion.

These findings are inconsistent with a hypothesis offered by Merrill and Hilliam (2006) to account for LDS adults having a higher mean weight than non-LDS adults in Utah; that is, that food is being used as a substitute for LDS discouraged behaviors such as use of tobacco, alcohol, coffee or tea in the LDS population. It may be that other factors such as a greater number of children among LDS families account for higher weights in LDS adults, as number of children has been associated with higher weight in persons across populations (Brown, Kaye, & Folsom, 1992; Heliovaara & Aromaa, 1981; Pyke, 1956). However, it should be noted that the current study included college students, primarily a younger population than the general adult population. Additionally, the current study included participants in Washington, Idaho, and Utah, and thus findings may be different if studied only within Utah. However, it may instead be the case, as Merrill and Hilliam (2006) suggest, that the acceptance of overweight individuals is more common among the LDS religion. If this second hypothesis is accurate, it may be that eating when experiencing negative emotion is more acceptable in the LDS population, and thus the LDS population may be less aware than the non-LDS population that they are experiencing an increased urge to eat. Consequently, if this is the case, the LDS population may have a decreased ability to self-report increased (or decreased) desire to eat in response to negative emotion, which may have played a role in results of the current study.

If findings accurately reflect that LDS females do not experience a different degree of increased or decreased urges to participate in eating behaviors in response to negative emotion when compared to non-LDS females, and non-LDS females experience increased urges to participate in substance use in response to negative emotion when compared to LDS females, it is of question how LDS females respond to negative emotion, assuming that individuals experience negative emotion and respond in some way. Future research could examine how the LDS population responds to negative emotion and possibly relate findings to previous research suggesting that the LDS population has lower levels of substance use (Hawks & Bahr, 1999; Nelson, 2003; U.S. Census Bureau, 2007). Better understanding of how LDS populations resist substance use in the face of negative emotion could be of use in the prevention of substance use.

Regarding body weight and shape, as hypothesized, LDS females endorsed greater investment in appearance, more beliefs that positive feelings, self-worth, and interpersonal and work successes are dependent on appearance, more positive feelings toward their bodies, and less negative feelings toward their bodies than non-LDS females. Non-LDS females endorsed less satisfaction with their bodies and body shape, greater preoccupation with being overweight, and greater attention

Table 6
Body Image Analyses: Location (LDS Sample Only)

Scale	Mean (SD)	*F*	*df*	*p*
OVERALL				
Inside UT		3.65	(1, 103)	.000
Outside UT				
ABS				
Inside UT	24.40 (5.36)	1.40	(1, 103)	.240
Outside UT	23.14 (5.41)			
BSQ				
Inside UT	103.42 (37.12)	4.94	(1, 103)	.028
Outside UT	87.09 (36.88)			
BAAS				
Inside UT	49.45(17.01)	0.20	(1, 103)	.654
Outside UT	51.00 (17.88)			
APPEVF				
Inside UT	3.13 (.87)	0.00	(1, 103)	.974
Outside UT	3.12 (.80)			
APPORF				
Inside UT	3.64 (.63)	1.14	(1, 103)	.288
Outside UT	3.51 (.57)			
BASS				
Inside UT	3.11 (.70)	1.81	(1, 103)	.182
Outside UT	3.31 (.75)			
OWPR				
Inside UT	3.09 (1.12)	5.87	(1, 103)	.017
Outside UT	2.56 (1.07)			
WTCLASS				
Inside UT	3.38 (.71)	2.50	(1, 103)	.117
Outside UT	3.17 (.57)			
BARSPOS				
Inside UT	47.89 (12.71)	2.36	(1, 103)	.127
Outside UT	51.74 (12.55)			
BARSNEG				
Inside UT	26.45 (10.79)	0.34	(1, 103)	.561
Outside UT	25.16 (11.60)			

Note. ABS = The Attention to Body Shape Scale; BSQ = The Body Shape Questionnaire; BAAS = The Beliefs About Appearance Scale; APPEVF = The Appearance Evaluation Scale; APPORF = The Appearance Orientation Scale; BASS = The Body Areas Satisfaction Scale; OWPR = The Overweight Preoccupation Scale; WTCLASS = The Self-Classified Weight Scale; BARSPOS = The Body Appreciation Respect Scale-Positive Feelings Subscale; BARSNEG = The Body Appreciation Respect Scale-Negative Feelings Subscale.

to body shape than LDS females. Thus, results support consistent findings regarding more general studies of the influence of culture on attitudes regarding body weight, shape, and eating behaviors (Apter & Shah, 1994; Powell & Kahn, 1995; Raphael & Lacey, 1994; Rucker & Cash, 1992; Ruggiero, 2003; Sim & Zeman, 2005; Stice, 1994; Stice, 2001; Waller & Matoba, 1999; Wardle & Watters, 2004). However, this is the first study that has found differences between LDS and non-LDS females with respect to body image, although other studies have also shown LDS men to have more positive body images than non-LDS men (Carroll & Spangler, 2001). More positive body images among LDS persons has important implications given the consistent and strong link between negative body image and eating disorders. One possible explanation for these findings is that LDS doctrine encourages appreciation of the body (Pinborough, 2003), and thus LDS persons view their bodies with more appreciation than non-LDS persons.

Results of analyses for body weight and shape measures comparing LDS females residing inside Utah and LDS females residing outside Utah found that LDS females residing inside Utah report greater concern with body shape and greater preoccupation with becoming overweight when compared to LDS females residing outside Utah. Although a previous study found that LDS females residing inside Utah endorse more beliefs that positive feelings, self-worth, and interpersonal and work successes are dependent on appearance than LDS females residing outside Utah and that LDS females inside Utah invest significantly more time and effort into their appearance than LDS females residing outside Utah (Carroll & Spangler, 2001), no differences in this regard were found in the current study.

Results suggest that LDS females residing inside Utah have less positive body image than LDS females residing outside Utah, and LDS females residing outside Utah may be impacted more by the pro-body LDS doctrine than LDS females residing inside Utah. Two studies, then, have now found that LDS females residing inside Utah are less satisfied with their bodies than LDS females residing outside of Utah. In the current study, this result was found even though the majority of the Inside Utah group was attending BYU-Utah and the majority of the Outside Utah group was attending BYU-Idaho. These findings imply that there is something beyond the BYU campus atmosphere pressures to marry and mate that may be contributing to less positive body image for females residing inside Utah. Future research could continue investigating what is contributing to less positive body image for LDS females residing inside Utah when compared to LDS females residing outside Utah.

An interesting finding is that significant differences regarding body image between religious groups and location (inside and outside Utah) are independent of body weight, as groups do not differ significantly on their perception of their own weight. Thus, future research should be aimed toward differences between populations in terms of body shape rather than weight. It would be useful to determine why LDS females endorse more positive views regarding body shape than non-LDS females, and LDS females residing outside Utah endorse more positive views regarding body shape than LDS females residing inside Utah, but there are no differences in weight perception between populations. Understanding how LDS females are able to maintain a more positive view of body shape than their non-LDS counterparts, as well as how LDS females residing outside Utah are able to maintain a more positive view of body shape when compared to LDS females residing inside Utah, could also aid in the prevention of body image problems and eating disorders. These exploratory analyses help answer the call for more research examining the potential effect of religion on body image and eating behaviors (Markey, 2004; Obesity, Fitness & Wellness Week, 2004; Polivy & Herman, 2004), but more research is needed to more fully understand the effect of religion on body image and eating behaviors, particularly given significant findings regarding body image differences among LDS and non-LDS females that were not found previously (Carroll & Spangler, 2001).

CONCLUSIONS

The main implications of the current study are that non-LDS females are more likely to experience increased urges to participate in substance use in response to negative emotion when compared to LDS females, consistent with LDS doctrine encouraging the avoidance of substances. Furthermore, LDS females do not appear to substitute other unhealthful behaviors such as overeating or under eating in place of substance use. These findings may have useful implications for the prevention

of substance problems, as using substances in response to negative emotion is a risk factor for substance abuse. Additionally, LDS females have more positive body images than non-LDS females generally, although LDS females in Utah have less positive body images than LDS females residing in other states. These body image differences are of interest since body image distress is rampant and is a significant risk factor for the development of eating disorders. Future directions should focus on what can be learned from LDS culture that can aid in the mitigation of body image distress.

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Footnote

[1]Intrinsic and extrinsic religiosity scores were examined using The 'Age Universal' I-E Scale-12 (Maltby, 1999) in regression analyses and *t*-tests to determine if group membership (LDS and non-LDS) is the most accurate representation of religion or if intrinsic versus extrinsic scores provided different information. Analyses were also conducted to determine if the BYU Honor Code (as measured by extrinsic religiosity) was influencing responding relating to urges to increase and decrease eating behaviors and substance use in response to negative emotion. Concerns were that participants may not be honest in their responding to questions regarding substance use due to the Word of Wisdom and The Honor Code that all BYU students must commit to before beginning classes at both BYU institutions, agreeing to refrain from any alcohol, drug, cigarette, and coffee/tea use. Given that findings using the I-E Scale produced a similar pattern of results as categorical group membership and that LDS females were found to be more intrinsically and extrinsically religious than non-LDS females, religious group membership (LDS and non-LDS) appeared to be the best differentiation of religious groups in this study, and only categorical analyses were reported. Furthermore, the BYU Honor Code did not appear to significantly affect responding, as the LDS group was found to be more intrinsically and extrinsically religious than the non-LDS group.