2007-06-25

Eating and Substance Use: A Comparison of Latter-day Saint and Non-Latter-day Saint College Females

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Eating and Substance Use: A Comparison of Latter-Day Saint and Non-Latter-Day Saint College-Age Females

by

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A dissertation submitted to the faculty of

Brigham Young University

in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

Department of Psychology

Brigham Young University

August, 2008

BRIGHAM YOUNG UNIVERSITY

GRADUATE COMMITTEE APPROVAL

of a dissertation submitted by

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This dissertation has been read by each member of the following graduate committee and by majority vote has been found to be satisfactory.

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BRIGHAM YOUNG UNIVERSITY

As chair of the candidate's graduate committee, I have read the dissertation of Monika Sandberg in its final form and have found that (1) its format, citations and bibliographical style are consistent and acceptable and fulfill university and department style requirements; (2) its illustrative materials including figures, tables, and charts are in place; and (3) the final manuscript is satisfactory to the graduate committee and is ready for submission to the university library.

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ABSTRACT

Eating and Substance Use: A Comparison of Latter-Day Saint and Non-Latter-Day Saint College-Age Females

Monika Sandberg

Department of Psychology

Doctor of Philosophy

This study examined differences between Latter-Day Saint (LDS) and non-Latter-Day Saint (non-LDS) females across six universities in the United States regarding desire to engage in substance use and eating behaviors in response to negative emotion. Additionally, this study explored 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. 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, as has previously been suggested by other researchers. Additionally, LDS females were found to have 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. Body image findings are substantial since body image distress is rampant and is a risk factor for the development of eating disorders. Clinical implications, limitations, and future directions are discussed.

ACKNOWLEDGMENTS

I would like to thank the numerous individuals who aided in the completion of this project. First, I want to thank my dissertation chair, Dr. Diane Spangler, for her guidance and support, but especially for her encouragement of an original research idea and tremendous influence in my development in the area of eating disorders. I want to thank my dissertation committee and Dr. Spangler's lab group for their input and support. Special thanks to Ed Peterson for his assistance in the development and maintenance of the website used in this dissertation, for his help with data collection and analyses, and his emotional support generally. Also, thank you to Art Marshall and Mercedes Reisinger-Marshall for their guidance throughout my graduate school training. Many thanks to my family, classmates, and professors for keeping me focused and motivated throughout graduate school.

I also wish to thank the women who participated in the study and The Brigham Young University Psychology Department and Women's Research Institute for their financial support of this project.

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Introduction

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 eating behaviors. For instance, some religions such as the Latter-Day Saint religion 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 (Hawks & Bahr, 1999; Nelson, 2003; Gaustad & Barlow, 2001; U.S. Census Bureau, Statistical Abstract of the United States, 2003). 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). More specifically, it is unknown 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, in press).

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 leads to disordered eating (Rucker & Cash, 1992; Stice, 1994; Waller & Matoba, 1999). Previous research suggests that there are particular 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 related link to eating disorder behaviors.

Statement of Problem

Culture, specifically religion, and negative affect, influence the consumption behaviors of substance use and eating. Furthermore, substance use and eating behaviors increase the risk of future psychopathology, specifically substance abuse and eating disorders, respectively. However, there is little research addressing religious subcultural influences on urges to engage in consumption behaviors (alcohol, tobacco, drugs, binge eating, and restricting behaviors) in response to negative affect in a single study. Furthermore, there is no evidence that these behaviors have been studied together as a response to negative affect within the LDS population.

In addition, although prior research suggests no differences between LDS and non-LDS females regarding beliefs about the body, it has been suggested that the LDS directive for perfection and self-discipline may be misapplied within the LDS population. Such claims identify the pressures, particularly on the Brigham Young University (BYU) campus, to marry and mate as influencing 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.

Statement of Purpose

To address this gap, 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, 2004, Polivy & Herman, 2004).

The following manuscript will draw from several literatures to describe the influence of negative affect and religion on consumption behaviors. Although there are many cultural influences on consumption behaviors, religion as a cultural influence was of particular interest in the current study. Religion can be viewed as a cultural variable given its possible influence on the development of norms and acceptance, as well as discouragement, of particular types of consumption behaviors and body images within religious groups.

Literature Review

Cultural and Affective Influences on Consumption Behavior

Consumption behaviors such as eating and substance use are of importance and concern given the risk that such behaviors pose to psychopathology such as eating disorders and substance abuse (Agras, 2001; American Psychiatric Association, 2000; Gonet, 1994; Marsh & Dale, 2005; Stein 1999; Sullivan, 1995; Troisi, 2001; Wray & Young, 1992). Many factors influence the likelihood of developing such mental health disorders (American Psychiatric Association, 2000), but two factors in particular that have been explored as influencing the likelihood of developing each of these disorders include culture and negative affect (Apter & Shah, 1994; Becker, 2004; Byrne & Mazanov, 1999; Charles & Britto, 2001; Chassin, Pillow, Curran, Molina & Barrera, 1993; Cooper & Bowskill, 1986; Dobmeyer & Stein, 2003; Marsh & Dale, 2005; Mateos, Paramo, Carrera & Rodriguez-Lopez, 2002; Monteath & McCabe, 1997; Oliver & Wardle, 1999; Polivy & Herman, 2003; Polivy & Herman, 2004; Rucker & Cash, 1992; Sanders, 1996; Sheffield, Tse & Sofronoff, 2005; Sim & Zeman, 2005; Stice, 1994; Stice, 2001; Stice & Agras, 1998; Stice, Presnell & Spangler, 2002; Stice, Shaw & Nemeroff, 1998; Swaim, 1989; Telch & Agras, 1995; Waller & Matoba, 1999; Walsh, 1992).

Markey (2004) posited a tripartite model to attempt to explain specific ways in which culture could influence disordered eating. The model identifies the three pathways of eating behaviors, body image ideals, and perception of health that are hypothesized to mediate the relationship between culture and the consumption behavior of eating. The first mediating pathway (culture→eating behaviors→disordered eating) refers to particular eating patterns and food preferences typical of a given culture such as larger meal portions or type of food consumed. The second mediating pathway (culture→body image ideals→disordered eating)

involves attitudes and values regarding physical appearance. This pathway includes a preference for a particular body size and shape. The third mediating pathway involves the perception of health, which addresses the meaning and implication of eating disorder symptoms.

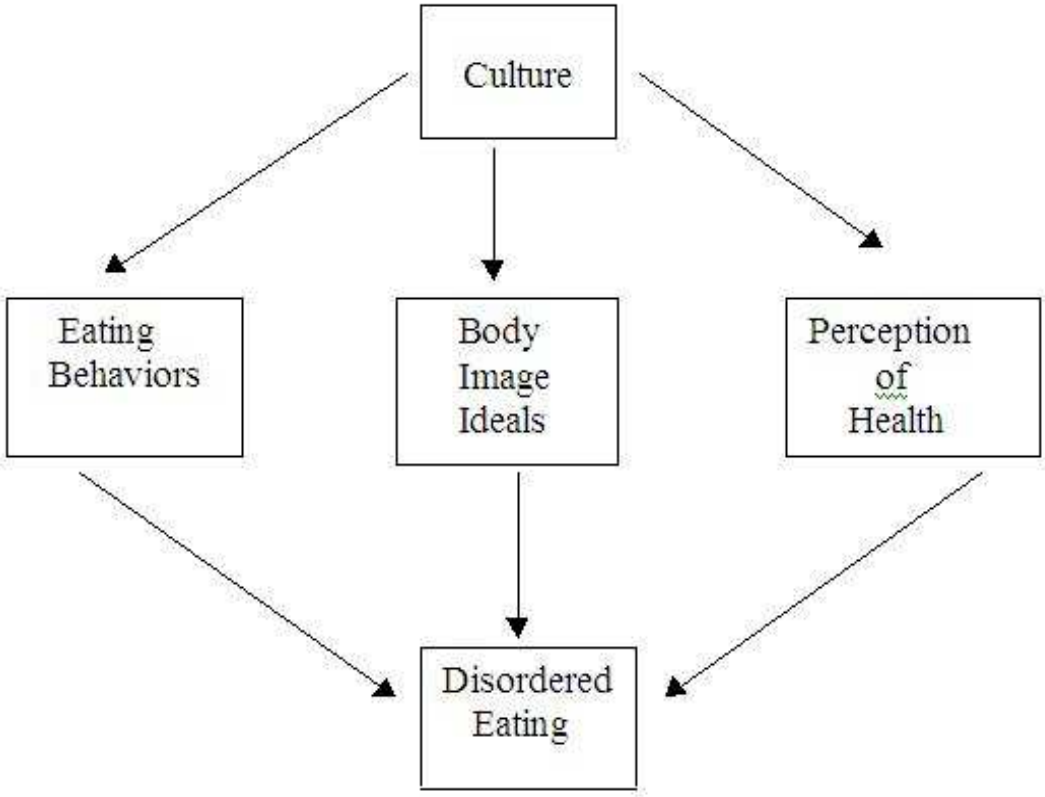

Figure 1. Markey's tripartite model explaining specific ways in which culture could influence disordered eating.

Drawing from a separate literature, culture also appears to influence substance use (Charles & Britto, 2001; Gonet, 1994; Marsh & Dale, 2005; Mateos et al., 2002; Walsh, 1992; Wray & Young, 1992). Applying Markey's model to substance use suggests an additional pathway focusing on how culture influences substance use. Furthermore, given evidence that substance use often preceeds substance abuse (American Psychiatric Association, 2000, Gonet, 1994; Marsh & Dale, 2005; Stein 1999; Sullivan, 1995; Troisi, 2001; Wray & Young, 1992), these pathways (culture→substance use→substance abuse) will be added to Markey's (2004) model to illustrate how culture affects both of the consumption behaviors of eating and substance use.

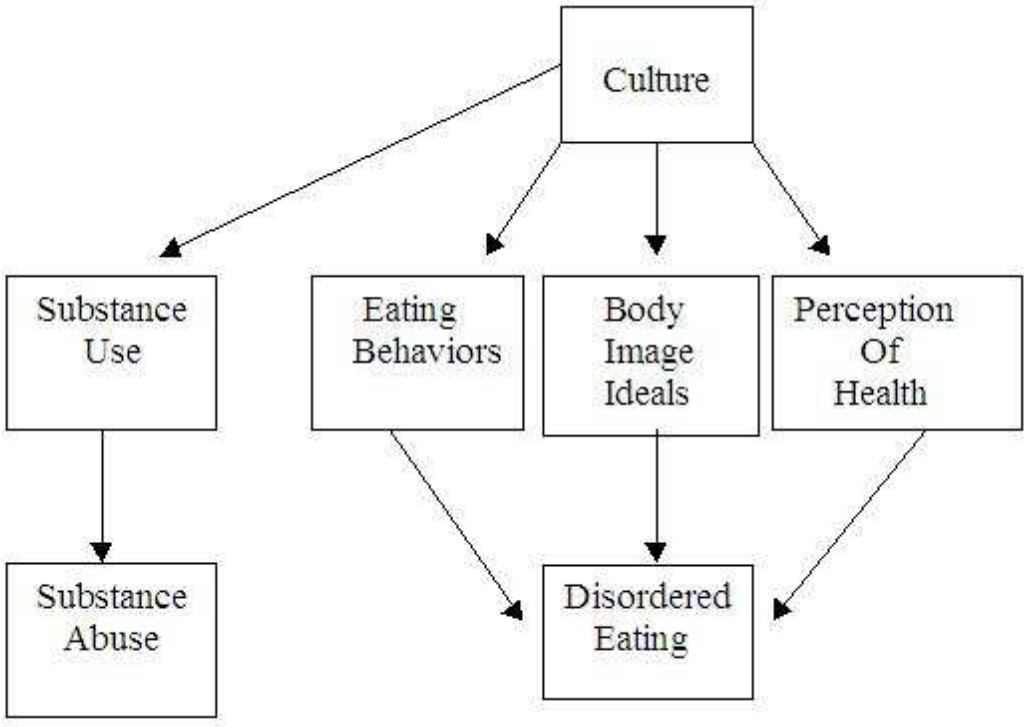

Figure 2. The expansion of Markey's tripartite model illustrating how culture could influence substance abuse.

Other literatures address the relationship of negative affect and substance use (Caldwell at al., 2002; Chassin et al. 1993; Cox & Klinger, 2004; Goldstein, 2001; Hunt, 2005; Kelder, Murray, Orpinas, Prokhorov, et al., 2001; Marsh & Dale, 2005; Newcomb & Harlow, 1986; Nunes & Levin, 2004; Pabon, 2004; Pardini, Lochman & Wells, 2004; Shoal, Castaneda & Giancola, 2005; Simons, Gaher, Correia, Hansen & Christopher, 2005; Swaim, Oetting, Edwards & Beauvais, 1989; Unger, Kipke, Simon, Johnson, Montgomery & Iverson, 1998; Simons, Gaher, Oliver, Bush & Palmer, 2005; Stevens, Colwell, Smith, Robinson & McMillan, 2005; Wills, Sandy, Shinar & Yaeger, 1999; Windle & Scheidt, 2004; Zack, Poulos, Fragopoulos, Woodford & MacLeod, 2006), as well as negative affect and eating behavior (Agras & Telch, 1998; Arnow, Kenardy, & Agras, 1995; Cooper & Bowskill, 1986; Cooper, Wells & Todd, 2004; Davis, Freeman & Garner, 1988; Dobmeyer & Stein, 2003; Elmore & de Castro, 1989; Holhlstein, Smith & Atlas, 1998; Hsu, 1990; Jeppson, Richards, Hardman & Granley, 2003; Milligan & Waller, 2000; Polivy & Herman, 1993; Stice, 2001; Stice & Agras, 1998; Stice, Akutagawa, Gagger & Agras, 2000; Stice, Presnell & Spangler, 2002; Telch & Agras, 1996; Waller, Babbs, Milligan, Ohanian & Leung, 2003; Wertheim, Koerner & Paxton, 2001). These pathways will be added to Markey's (2004) model to illustrate how negative affect affects both types of consumption behaviors, namely substance use and eating. [1]

The relationships in the final model will be highlighted as they are discussed throughout this dissertation.

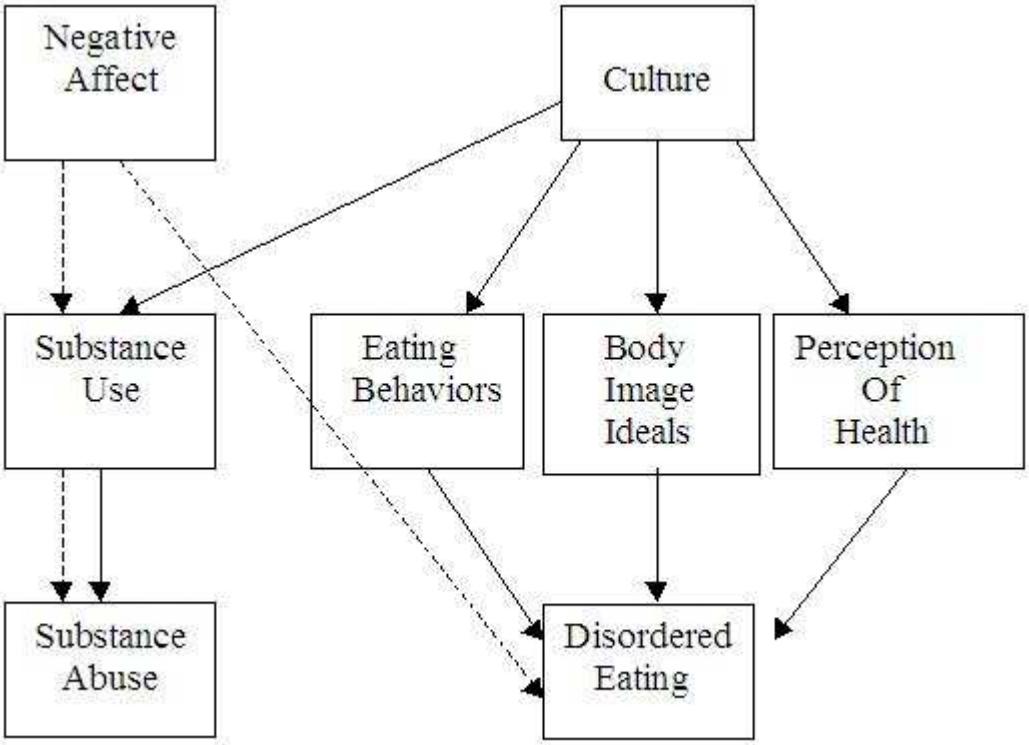

Figure 3. The illustration of the addition of negative affect and how it affects substance abuse and disordered eating. This is the final model that will be referred to throughout the literature review section.

Cultural Influences on Substance Use

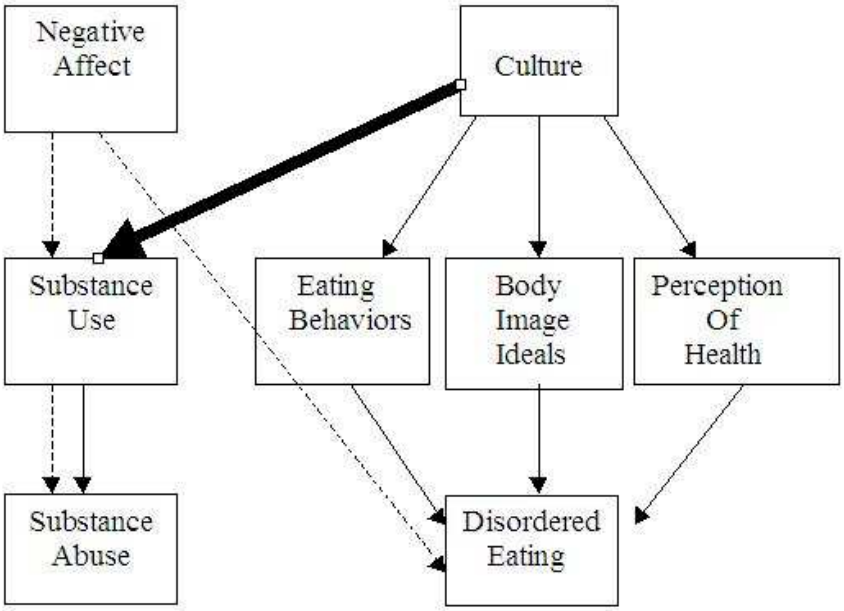

Figure 4. Cultural influences on substance use in the context of the final model.

Some writers have discussed alcohol and drug use as influenced by cultural factors such as social gatherings (family and peers) and attitudes regarding medicine and medical practices (Charles & Britto, 2001; Gonet, 1994; Marsh & Dale, 2005; Mateos et al., 2002; Walsh, 1992; Wray & Young, 1992). For instance, Charles and Britto (2001) discuss the diverse cultures in India which encourage the use of mind-altering substances for social and medical purposes. Spain's deeply rooted consumption of alcohol use and its connection with rituals, festivals, social customs, medicinal purposes, and as a source of nourishment for children as a result of traditional social and religious influences have also been addressed (Mateos, Paramo, Carrera, & Rodriguez-Lopez, 2002). Marsh and Dale (2005) assert that even individuals who use drugs to manage negative affect are also likely to use them in enjoyable social situations.

Family and peer influences on substance use have also been addressed. Marsh and Dale (2005) suggest that family factors such as early experiences with parents, severe family disturbance (e.g., childhood physical and sexual abuse), family disputation or dysfunction, severely disturbed parents, and consistent parental drug use play a crucial role in the transition from controlled to excessive drug use. Another writer discusses the factors that increase the likelihood of drug abuse in Mexico including low contact with family, early initiation to street work and culture, use of drugs by siblings and friends, and rural-urban immigration (Wray & Young, 1992). Wray and Young (1992) also describe adolescents in general being influenced to use substances by peer pressure and fear of not belonging if peer pressure is dismissed. Similarly, Gonet (1994) focuses on the influences of a peer group on adolescent drug use, and discusses the importance of such a reference group as adolescents learn, grow, and investigate new identities during the transition into adulthood. However, Gonet (1994) describes how adolescents rely on their peer group for a sense of belonging and acceptance. Gonet (1994) explains that if the peer group is using drugs, the expectation for drug use for all group members increases. Thus, cultural influences such as social gatherings, attitudes regarding medicine and medical practices, family, and peers predict the likelihood that one will engage in substance use, and in some instances, the transition from controlled to excessive substance use.

Cultural Influences on Eating Behaviors

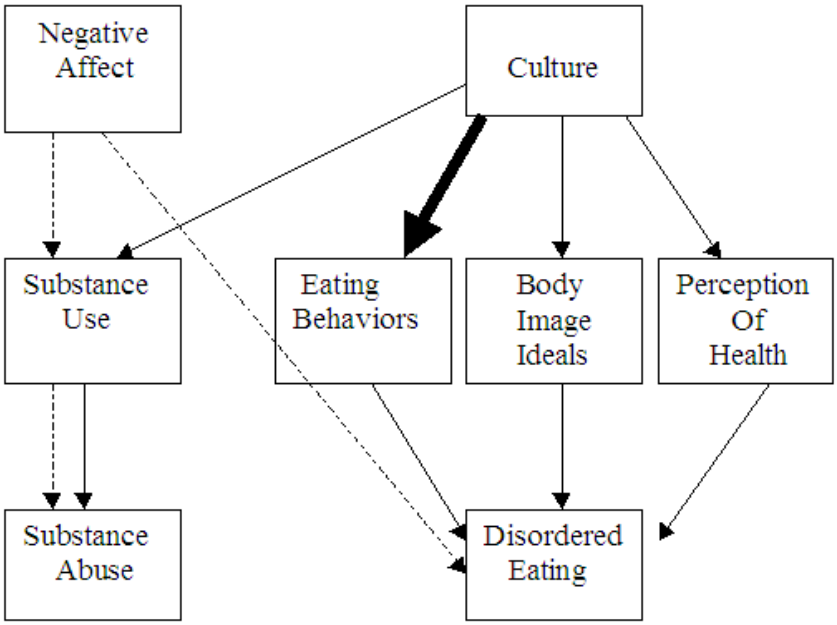

Figure 5. Cultural influences on eating behaviors in the context of the final model.

There is also research suggesting an association between cultural influences (e.g., historical time period and related events, ethnic group identity, attitudes, and tradition, family preferences) and eating behavior, as well as preferences and attitudes regarding food. For instance, dieting and eating disorders were rare during times of food scarcity in the United States such as during the Great Depression (Brumberg, 2000). In other research examining food preferences and traditions among immigrant women in Sweden from Bosnia-Herzegovina, focus groups found that these women had traumatic experiences from the war and the opportunity to talk to other women in their home country about food tradition was a safe and relaxing discussion topic (Jonsson, Walin, Hallberg & Gustafsson, 2002).

Attitudes within ethnic groups also affect eating behavior and food preferences. In one study, 10% to 24% of the variance accounted for by eating behaviors (i.e., intention to reduce dietary fat, behaviors related to the selection of reduced-fat diets, and the consumption of high-

fat foods) among Chinese immigrants living in New York City was explained by psychosocial and demographic factors (Liou, 2000). In the study addressed previously conducted by Jonsson et al. (2002), the women described the inclusion of common food preferences (e.g., bread) in order to feel satisfied, which they related to a sense cultural identity. In another study addressing food preferences, six focus groups conducted with African Americans of various socioeconomic groups in Florida suggested that this ethnic group perceived "healthy eating" as giving up part of their cultural heritage (e.g., high intake of sodium and high fat/calorie foods, low intake of fruits, vegetables, fiber, and grains) and conforming to the dominant culture (James, 2004). In contrast to African Americans, The Shipibo is a population known for maintaining a balanced diet and general nutritional health. This Panoan-speaking group residing in eastern Peru describe a diet consisting of a variety of foods from all primary food groups and do not prefer any type of food over another (Behrens, 1986).

Family influences on eating behavior have also been described. One study conducted a survey of food choice in the 15 member states of the European Union (n=14,331) and found that 29% of the participants reported family preferences as influencing their food choices (Lennarnas, Fjellstrom, Giachetti, Schmitt, Remaut de Winter & Kearney, 1997). Birch, Marlin and Rotter (1984) found that pressuring children to consume healthy foods decreased preferences for these foods. Similarly, Birch, Zimmerman and Hind (1980) found that parental restriction increased children's intake of restricted foods when parental monitoring was removed. In a study described previously, James (2004) also found that some of the participants in his focus groups remarked that their mothers and grandmothers taught them how to cook traditional ethnic foods and it was a tradition they hoped to pass on to their children. These writers suggest that targeting the extended family may be useful in changing eating patterns and the high prevalence of diet-

related diseases among African Americans. Thus, historical time period and related events, ethnic group identity, attitudes, and tradition, and familial socialization influence food attitudes/preferences and eating behavior.

Religion and Consumption Behavior

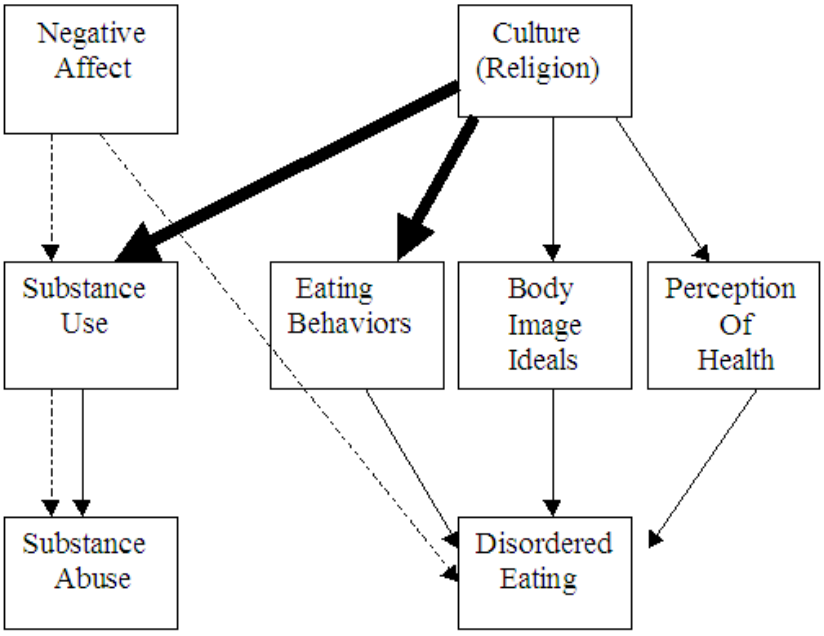

Figure 6. Religious influences on substance use and eating behaviors in the context of the final model.

Religion is a particular cultural factor that has been linked to a tendency to either participate in and/or abstain from consumption behaviors (Bazargan, Sherkat & Bazargan, 2004; Benson, 1983; Charles & Britto, 2001; Drug Cult, 2005; Hart, Tinker, Bowen, Satia-Abouta & McLerran, 2004; Meteos et al., 2002; Simons, Simons & Conger, 2004; Walsh, 1992). For instance, the Scythians used Cannibis for religious ceremonies during the 5th to 2nd Century BC and the ancient Greeks used wine and hallucinogens in their solemn, religious ceremonies (Drug Cult, 2005) and Walsh (1992) points to psychedelics used in ritual sacred contexts, which the

Native American Church regards as sacramental and therapeutic. Bazargan, Sherkat and Bazargan (2004) found that among inner-city African American and Hispanic adults, religious participation and Catholic affiliation increased the odds of abstaining from alcohol. Other research suggests that religious youths are more likely than non-religious youth to report that acts such as drinking alcohol are morally wrong, and consequently, such perceptions were found to be related to a decreased probability of alcohol use (Simons, Simons & Conger, 2004).

Similarly, research regarding eating behaviors has found effects of religious involvement. Hart et al. (2004) report that higher extrinsic, or socially motivated, religious orientation is positively associated with low-fat dietary behaviors, but no association was found for dietary behaviors and intrinsic, or life based on religious beliefs, religious orientation. Similarly, Baxter (2001) posits that religious themes such as asceticism and abstinence are theoretically related to anorexia nervosa and claims that some eating disorder patients have been found to use religious concepts to try to explain some of their behaviors. Baxter (2001) suggests that if religious ideas are never inquired about, then important aspects of patients' conflicts regarding their eating disorders could be missed. Thus, it appears that religion influences the tendency to increase and decrease consumption behaviors. However, what is less known is if religious groups substitute more acceptable consumption behaviors (i.e., eating) for less acceptable consumption behaviors (i.e., substance use).

Latter-Day Saints and Consumption Behaviors

The LDS population is a particular religious group and within this subculture, religious beliefs may influence consumption behaviors. An LDS concept that likely plays a role in willingness to engage in certain types of such consumption behaviors includes the Word of Wisdom, a revelation given to the Prophet of the LDS church. In 1851, President Brigham

Young of the LDS church "proposed" to LDS church members "to formally covenant to keep the Word of Wisdom." At the time, "the proposal was unanimously upheld by the membership of the Church. Since that day, the revelation has been binding commandment on all Church members" (Benson, 1983).

Ezra Taft Benson (1983), former president of the LDS church, stated:

> "The Word of Wisdom…[requires that] members in good standing abstain from tobacco, coffee, tea, and all alcoholic beverages. The revelation defines and admonishes abstinence from harmful substances and beverages in these words:
>
> Strong drinks [or in other words, alcoholic or harmful beverages] are not for the belly (D&C 89:7).
>
> Tobacco is not for the body…and is not good for man (D&C 89:8).
>
> Hot drinks [defined as tea and coffee] are not for the body (D&C 89:9).
>
> The Word of Wisdom also briefly outlines the appropriate use of herbs and fruit when they are in season, as well as the use of grain, and states that meat should be 'used sparingly' (D&C 89:10, 11, 12, 14)."

The impact of the Word of Wisdom on LDS members is evident in several studies. Dyer and Kunz (1986) researched how 200 LDS highly effective families live, think, and act. A question posed to each family included, "what are the things your children *must* do?" Eighty-two percent of families named "live the word of wisdom" as the third most important things that their children *must* do. According to another study, where attitudes regarding the sinfulness of specific consumption behaviors by religious orientation was explored, the "Very active LDS" group identified "smoking tobacco," "drinking alcohol," and "drinking coffee" as more "wrong" than the "Non-LDS" group (Zick & Mayer, 1996). Moreover, Hawks and Bahr (1999) found

that LDS survey respondents used alcohol less frequently than other religion and no religion subgroups. Nelson (2003) also found that LDS participants were less likely than their peers to engage in risk behaviors common in emerging adulthood such as drugs and alcohol use (95% and 96% of participants attending BYU endorsed "very true" in regard to the tendency to avoid becoming drunk and avoid illegal drugs). Nelson (2003) suggests that these findings reflect "the teachings of the LDS culture, which strictly prohibits alcohol, tobacco, [and] illegal drugs" (47).

Utah's population is 60-90% LDS, with the highest percentage of LDS residents than any other state (Gaustad & Barlow, 2001; Lamb, 2004). Consistent with LDS teaching regarding substance use, Utah ranks last among the fifty states in current use as percentage of the total population for illicit drugs, cigarettes, and binge alcohol (binge alcohol being defined as drinking five or more drinks on the same occasion on at least one day in the past 30 days; U.S. Census Bureau, Statistical Abstract of the United States, 2003). Such statistics suggest that the LDS population refrains from using illicit drugs, cigarettes, and binge alcohol to a greater extent than the general population.

In the LDS literature, there is more guidance, and more detailed guidance, on substance use, when compared to eating behaviors. When eating behaviors are mentioned, such statements are rather vague, and much less clear than the LDS church's stance on substance use. For instance, statements such as "be careful of your bodies" (Young) do not provide as much guidance as the strictly stated Word of Wisdom. Furthermore, Harold Frost (1990), an LDS therapist, notes that, "neither anorexia nervosa or bulimia is mentioned or implied in the scriptures."

Although prominent LDS leaders have made statements such as "The Word of Wisdom allows us to know that the Lord is vitally concerned about the [physical] health of His Saints"

(Benson, 1983), it is less clear how the LDS church leadership specifically advises members regarding physical health. Benson (1983) further claims, "scientific studies have confirmed that Latter-day Saints have less incidence of heart problems, all forms of cancer, and other diseases because of their adherence to the Word of Wisdom." However, no such statements regarding the specific benefits of refraining from binge eating and restricting eating behaviors have been put forth by church leadership. Strict guidelines regarding substance use such as "…the use of tobacco, tea, coffee, and alcoholic beverages of any kind is not only displeasing to the Lord, but also destructive of your body and mind" (Burton, 1976) provide precise guidelines when compared to the limited specifications regarding binge eating and restricting behaviors. Further, it is important to note that the time, environment, and culture have changed since the Word of Wisdom was presented. Thus, the need for specific guidelines outlining substance use may have been more prominent in 1851 than the need for specific guidelines outlining eating and restricting behaviors.

A more detailed search in the LDS literature yielded a statement that directly applies to eating disordered type behaviors. Harold Frost (1990), an LDS psychologist stated, "Individuals who struggle with eating disorders appear to go through addictive cycles similar to those suffered by alcohol and drug abusers. The obsession with food and dieting often becomes a way to alleviate inner distress." However, LDS church leaders have not offered specific LDS-based proscriptions regarding such behaviors.

Thus, although there is clear evidence that the LDS religious subculture influences alcohol and drug consumption, there is little evidence addressing whether or not the LDS subculture influences food consumption or particular eating behaviors. The single study that was found suggests that adult LDS members residing in Utah have higher weight and body mass

index (BMI) than other Utah adults affiliated with other religions including Protestants, Catholics, those of other religious preference, and those with no religious preference. This study utilized data collected from telephone interviews for the Utah Health Status Survey sponsored by the Utah Department of Health conducted in 1996, 2001, and 2003-2004. The mean weight for the LDS population was 5.7 lbs. heavier than the non-LDS population in 1996, 6.1 lbs. heavier than the non-LDS population in 2001, and 4.6 lbs. heavier than the non-LDS population in 2003-2004. This study offers possible explanations for findings: 1) acceptance of overweight individuals being common among the LDS religion and religion in general, and 2) food being used as a substitute for other discouraged behaviors such as use of tobacco, alcohol, coffee or tea, and sexual promiscuity as "overeating is not emphasized as a sin" (p. 13) (Merrill & Hillam, in press). Of particular interest in the current study is the second explanation, that food may be substituted for the other discouraged behaviors (e.g., substance use) within the LDS religion.

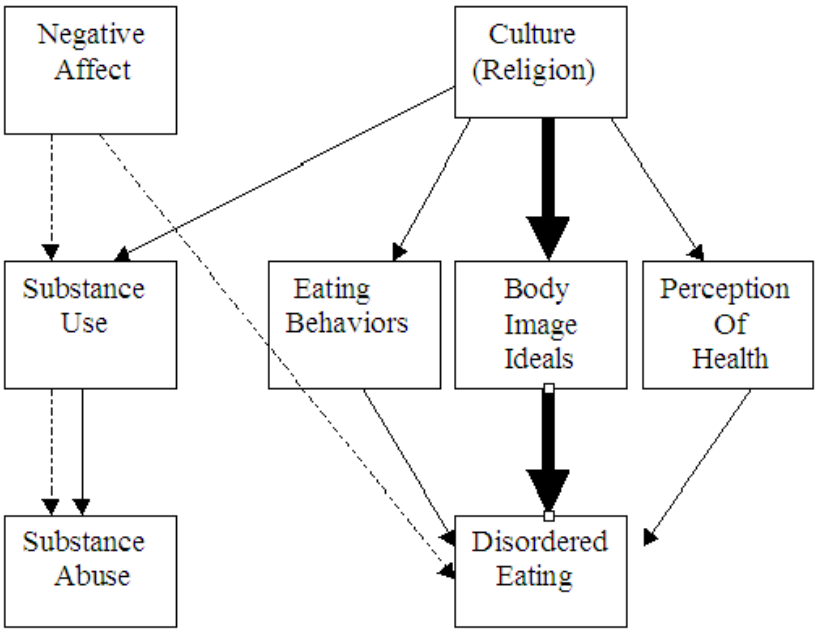

Figure 7. Religious influences on body image ideals and disordered eating in the context of the final model.

Cultural influences on attitudes and preferences regarding body weight and shape, as well as eating behavior, have been consistently found (Apter & Shah, 1994; Becker, 2004; Edward-Hewitt & Gray, 1993; Gerber, 2005; Gibbs, 1986; Gunewardene, Huon & Zheng, 2001; Hepworth, 1999; Katzman, Hermans, Van Hoeken & Hoek, 2004; Keel & Klump, 2003; Lake, Staiger & Glowinski, 2000; McCarthy, 1990; Powell & Kahn, 1995; Raphael & Lacey, 1994; Rubio-Kuhnert, 1999; Rucker & Cash, 1992; Ruggiero, 2003; Sim & Zeman, 2005; Stice, 1994; Stice, 2001; Tiggemann, Verri & Scaravaggi, 2005; Waller & Matoba, 1999; Wardle & Watters, 2004). In a review of sociocultural influences of bulimia, Stice (1994) presents a model of bulimia proposing family influences, peer influences, media influences, internalization of pressures, and body dissatisfaction as mediators of bulimia, and self-esteem, identity confusion,

weight, and family, peer, and media modeling as a moderator of bulimia. A follow-up study investigating the mediating effects of dieting found that initial pressure to be thin and internalization of the thin-ideal predicted subsequent growth in body dissatisfaction, initial body dissatisfaction predicated growth in dieting, and initial dieting predicted growth in bulimic symptoms, demonstrating the contribution of initial cultural pressures to be thin in dieting and bulimic behaviors (Stice, 2001).

Cross-cultural and ethnicity studies of perceived body weight and shape and sociocultural influences, particular Westernized influences, have also been conducted. In a study evaluating eating attitudes and body image in five distinct residential groups of Israeli Jewish high school females, results found that the highest scores for eating pathology were found for the ethnic subpopulation most exposed to Western values and body ideals. This sub-population was defined as having the highest degree of internal conflict between the traditional and modern female roles. These researchers also found that the ethnic group with the least exposure and minimal female role stress had the lowest overall eating pathology scores, suggesting the importance of the role of exposure to Western values and body ideals in the development in eating pathology. Furthermore, findings suggested that all healthy adolescents in the study wished to lose weight, which researchers attributed to the increasing influence of Western values of thin body ideals and female independence (Apter & Shah, 1994). A study investigating anorexia in Curacao, a Caribbean island in economic transition, found that six of the nine cases of anorexia identified consisted of females of mixed race, although Curacao majority population is black. The females identified were from high-education, high-income sectors of the society, and the majority had spent time overseas, suggesting that these women experienced more

exposure to a traditional white Westernized female ideal and female role than other women on the island (Katzman, Hermans, Van Hoeken & Hoek, 2004).

An interesting qualitative study investigated the impact of the introduction of television to adolescents residing in a rural community in Western Fiji in a setting of rapid social and economic change. Interviews conducted three years after the introduction of television suggested that media imagery is used in destructive ways by Fijiian girls to navigate opportunities and conflicts posed by the rapidly changing social environment. Participants in this study demonstrated their modeling of the perceived positive attributes of characters presented in television dramas and also the beginnings of a preoccupation with body weight and shape, purging behavior to control weight, and body disparagement. More specifically, interviews suggest that traditional sources of information about self-presentation and public comportment had been supplanted by captivating and convincing role models depicted in televised programming and commercials. Becker (2004) comments that a shift in the aesthetic body ideals and individualistic attitudes is remarkable given the numerous social mechanisms that have long supported the preference for large bodies and collectivistic culture in Fiji. Futhermore, it was concluded that disordered eating among the participants appeared to be primarily a means of reshaping the body and identity in an attempt to enhance social and economic opportunities (Becker, 2004).

A study comparing Australian and Italian college females found that Australian women scored higher than the Italian women on disordered eating, Australian women rated clothing as more important than Italian women, and fashion magazine use predicted body dissatisfaction and disordered eating for Australian women, but not for Italian women. Since both countries have similar thin media ideals for women, researchers conclude that other cultural differences such as

the roles of family, meals, and fashion between cultures may contribute to differences between body dissatisfaction and disordered eating among these cultures (Tiggemann, Verri & Scaravaggi, 2005).

Waller and Matoba (1999) compared three groups of non-clinical women (Japanese living in Japan, Japanese living in the United Kingdom, and British living in the United Kingdom) and found different relationships between emotional eating (defined as using eating to cope with negative mood) and eating attitudes in the three groups. These authors found that the British women tended to have less healthy eating attitudes and were heavier than either of the Japanese groups. The Japanese women living in the United Kingdom reported emotional eating being related to bulimic attitudes, similar to the British women. No reliable correlations were found for the Japanese women living in Japan. Thus, there appears to be an acculturation process that links emotional eating and eating psychopathology. Furthermore, emotional eating appears to be less of an indication of eating psychopathology in non-Western cultures. Another study comparing Hong Kong-born and Australian-born women from two Australian universities found that Australian-born women reported greater body dissatisfaction than Hong Kong-born women, suggesting that the Hong Kong-born women have not embraced Western body figure preferences (Lake, Staiger & Glowinski, 2000). Other researchers comparing Australian females, Chinese females, and Chinese Australian females found that exposure to Westernization was a significant predictor of dieting status, even when body mass index, parental conformity, parental compliance, peer modeling, and peer competitiveness was taken into account (Gunewardene, Huon & Zheng, 2001).

A study conducted in the United States at both public and private universities in the same large city found that white female Americans were more likely to exhibit bulimia and

significantly more likely to binge eat than black female Americans. Furthermore, white female Americans scored significantly higher than black female Americans on body dissatisfaction. This study found that participants exhibiting behaviors and attitudes of subclinical eating disorders were more likely to know friends with eating disorders and participants with the behaviors and attitudes of bulimia and subclinical eating disorders read significantly more articles in magazines about eating disorders. Researchers conclude that it would be useful to study cultures with lower eating disorders for protective factors (Edward-Hewitt & Gray, 1993). Another study found that white women chose a significantly thinner ideal body size than did black women and reported more concern than black women with weight and dieting. White women also reported greater social pressure to be thin than black women. Interestingly, white and black men were also included in this study to determine possible male influence on women's desires to be thin. White men reported less desire than black men to date a woman with a heavier than ideal body size and white men felt they would be more likely to be ridiculed than did black men if they did date a woman who was larger than the ideal. Researchers conclude that black culture appears to protect black women from eating disorders by providing an environment in which extreme thinness is not as valued as it is in white culture (Powell & Kahn, 1995). It was also found that black females held more favorable body-image attitudes and body-size ideals that were less thin and more congruent with their perceived size than white females. Findings further suggest that black women held less strict criteria for perceiving body fatness than did white women. These researchers conclude that black females experience less internalization of a thin standard of beauty, which lowers their predisposition to eating disorders (Rucker & Cash, 1992).

In a review article outlining the etiology of eating disorders, authors suggest that in developing societies the particular cultural forces that act on women concerning reproductivity (e.g., social influences, the representation of women in the arts and media, etc) can act in a way that creates gender role confusion for women. These authors suggest that some women attempt to resolve such conflicts through manipulation of their body shape, which increases the rate of eating disorders in these cultures (Raphael & Lacey, 1994). This view is shared in a book by Ruggiero (2003), who suggests that the cultural clash due to the modification of old vertical social and gender roles in traditional societies, such as those of the Mediterranean area, is often traumatic and generates insecurity. As she states, "Eating disorders can be thought of as a sort of internal emotional experience of the cultural transformation…." (25).

Peer contact may also be a sociocultural factor related to body ideals and eating disorder behaviors. In an article addressing sociocultural factors and eating disorders, the frequency of contact with peers concerning dieting and involvement in activities associated with a specific body type predicted attitudes and behaviors associated with eating disorders (Gibbs, 1986). More recent research found that for girls attending schools in England, those attending a school with more older females in the environment reported a thinner body ideal, feeling more overweight, having more friends who had dieted, and having lower self-esteem than girls attending a school with less older females in the environment. These researchers conclude that exposure to older girls in school may accelerate the development of negative attitudes to weight and eating (Wardle & Watters, 2004). Sim and Zeman (2005) suggest that in a culture valuing thinness, girls who are dissatisfied with their bodies may binge eat and restrict as a way to manage emotion associated with this dissatisfaction.

Given its impact on cultural norms and acceptable/ideal body images, media can also be viewed as a cultural risk factor affecting body image ideals and disordered eating. Gerber (2005) found that use of fitness magazines was related to disordered eating and was related to endorsement of the "superwoman" ideal. Furthermore, endorsement of the "superwoman" ideal was related to eating disorders symptoms. A study involving girls in fourth, seventh, and tenth grades found that reading magazines for information about thinness and beauty was a significant predictor of body dissatisfaction and dieting. Researchers suggest their results indicate that body dissatisfaction and weight concerns demonstrate the internalization of the cultural influence of valuing female thinness (Rubio-Kuhnert, 1999).

A comprehensive historical review article outlines an argument for bulimia being a culture-bound disorder while anorexia is not a culture-bound disorder. These authors argue that although cultural influences (which include media influences) affect rates of anorexia, symptoms of anorexia existed during numerous historical periods, whereas symptoms of bulimia have increased significantly during the latter half of the twentieth century. Although the conclusion that anorexia is not a culture-bound syndrome may be debatable, these researchers acknowledge that cultural influences that increase idealization of thinness influence rates of anorexia (Keel & Klump, 2003).

In her book, *The social construction of anorexia nervosa,* Hepworth (1999) addresses how the changing cultural trends in female body shape explain, in part, why women strive for thinness. She also states, "A vast multi-million dollar 'slimming industry' reinforced the culture of thinness by encouraging practices of 'calorie counting,' 'weight-watching,' and 'dieting,' so that women could regulate their body size" (p. 52). Thus, it can be concluded that not only has culture suggested a particular body weight and shape, but also cultural influences such as media

have suggested and encouraged particular ways to obtain and maintain such a body image. In terms of prevention, it has been suggested that decreasing the prevalence of eating disorders involves altering the thin ideal to a more realistic ideal (McCarthy, 1990).

Thus, numerous studies document the effect of culture (e.g., family, peer, and media) on body ideals and eating behaviors in response to body ideals. However, less information is available on the specific effects of religion as a cultural variable on body ideals and eating behaviors in response to those ideals. The one study that was found described the sociocultural pressure to get married and the related tendency to maintain attention to appearance in the LDS population, particularly in Utah at BYU. Carroll and Spanger (2001) found that LDS women living inside Utah reported being more preoccupied with their weight, spent more time and effort on their appearance and grooming, and were more likely to believe that their happiness, worth, and interpersonal and work success were dependent upon their physical appearance than LDS women living outside of Utah. Although these researchers did not find differences between LDS and non-LDS females regarding beliefs that positive feelings, self-worth, and interpersonal and work successes are dependent on appearance, overall satisfaction with their bodies, investment in appearance, or preoccupation with becoming overweight, it has been suggested that the LDS directive for perfection and self-discipline may be misapplied within the LDS population, and the pressures particularly on the BYU campus to marry and mate, influence those in the LDS population to be overly critical of their bodies (Carroll & Spangler, 2001) despite LDS doctrine encouraging the appreciation of the body (Pinborough, 2003).

Given the documented strong influence of cultural factors on both body image and eating behaviors, it is somewhat surprising that there are so few studies that examine the potential effect of religion on body image and eating behaviors. Others (Markey, 2004; Obesity, 2004; Polivy &

Herman, 2004) have also emphasized the need for more studies in this area and specifically request clarification of how such cultural factors influence individual body image and eating behaviors.

Negative Affect and Disordered Eating

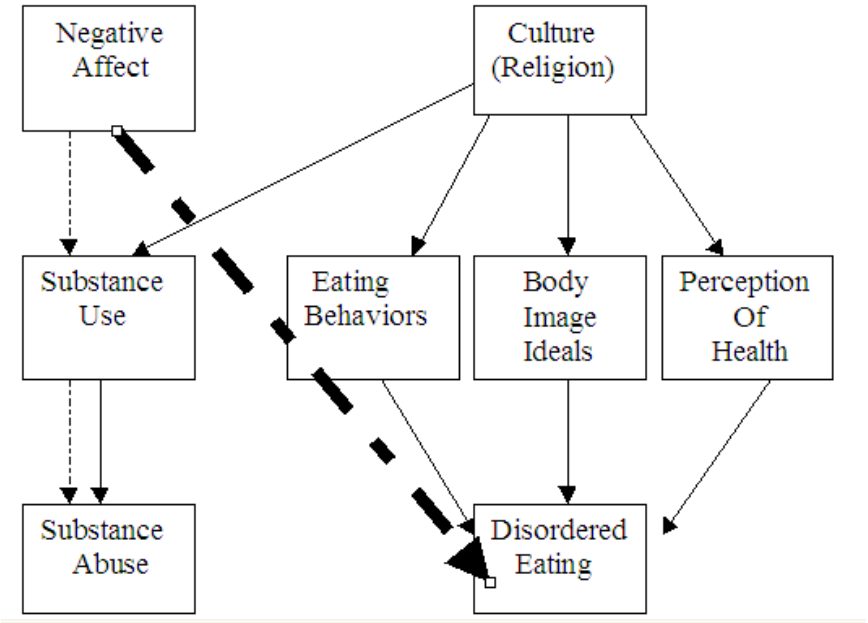

Figure 8. The influence of negative affect on disordered eating in the context of the final model.

Disordered eating has also been associated with negative affect, by both binge eating and restricting behaviors.[2] However, most of the research conducted has been in regards to binge eating. A recently introduced cognitive model of bulimia nervosa outlines the role that emotions play in triggering binge eating (Cooper, Wells & Todd, 2004) and Holhlstein, Smith and Atlas (1998) found that bulimics expected eating to help manage negative emotion as compared to anorexics. This is consistent with claims that negative mood has been cited as one of the most

frequent precipitants of binge eating and bulimics report more negative mood in the hour prior to a binge episode, compared with their moods prior to consuming a snack or meal (Davis, Freeman & Garner, 1988; Polivy & Herman, 1993). Arnow, Kenardy and Agras (1995) also describe a relationship between negative affect such as anger, depression, and anxiety and binge eating. Furthermore, in a study examining moderating variables of eating disorders, Stice, Akutagawa, Gagger and Agras (2000) found that negative affect was positively related to dieting and binge eating in cross-sectional analyses, suggesting that caloric deprivation and negative emotion may be risk factors for binge eating.

More specifically, Dobmeyer and Stein (2003) found that changes in depressed mood scores over time had a statistically significant relationship with the subsequent severity of bulimic, but not anorexic symptoms, and Cooper and Bowskill (1986) found that bulimic patients were significantly more depressed, anxious, lonely, and bored in the three hours before a binge episode compared to a baseline rating. Psychological distress, particularly depression, was also found to predict increases in bulimic tendencies, although it was suggested that its influence may be mediated by other variables (Wertheim, Koerner & Paxton, 2001). The role of affect regulation in binge eating and purging episodes was also examined by Jeppson, Richards, Hardman & Granley (2003) through semi-structured interviews with bulimic. One of the themes that emerged during these interviews was "attempts to regulate emotion." These researchers found that unpleasant emotion preceded binge/purge episodes for many participants. Emotions cited most often in this study were shame, guilt, anger, depression, and loneliness, but stress, anxiety, boredom, and rejection were also mentioned. Half of the participants in this study stated that bingeing regularly made them feel comforted, soothed, or nurtured.

Certain dysphoric feelings, such as anxiety, frustration, and boredom have been found to decrease following a binge episode, demonstrating that a binge episode serves to regulate affect (Hsu, 1990). Similarly, emotional eating was found to predict binge eating onset, suggesting that people may overeat to improve mood (Stice, Presnell & Spangler, 2002). In another study, elevated negative affect predicted the onset of binge eating and compensatory behaviors, suggesting that individuals attempt to regulate negative affect with binge eating and compensatory behaviors (Stice & Agras, 1998). This finding was later replicated and this investigator concluded that affective disturbance is a risk factor for future bulimic pathology and he suggests that individuals engage in binge eating in an effort to distract themselves from their emotional distress or to provide comfort (Stice, 2001). When bingeing occurred in another study, hunger and fullness ratings were relatively low, but anxiety was relatively high and bingeing resulting in reduced anxiety. Furthermore, prebout anxiety was correlated with the reported amount eaten in the binge and was in turn significantly correlated with the reduction in anxiety following the binge (Elmore & de Castro, 1989). Other researchers found a correlation between emotional states and loss of control, as well as the labeling of an eating episode as a binge (Telch & Agras, 1996). These researchers also found that for self-defined binges, negative mood, but not caloric deprivation, more frequently led to binge eating than did a neutral mood (Agras & Telch, 1998).

Others investigators have examined the role of anger in eating disorders. Milligan and Waller (2000) found that bulimic attitudes and behaviors were correlated with state anger (anger that varies in intensity, in contrast to a relatively stable personality characteristic labeled trait anger) and anger suppression. In particular, binge eating was linked with higher levels of anger suppression, whereas the presence of vomiting was associated with higher levels of state anger.

These researchers found that bulimic behaviors reduced immediate anger states, particularly when the individual has a strong tendency to avoid expressing anger. In a related study, women diagnosed with anorexia (restrictive subtype and bulimic subtype), bulimia, and binge eating disorder had higher levels of state anger and anger suppression, particularly if the diagnosis included bulimic symptoms, than a comparison group (Waller, Babbs, Milligan, Meyer, Ohanian & Leung, 2003).

On a final note, it has been suggested that individuals using food as a response to negative emotion, whether binge eating or restricting, are more similar than would be expected. That is, overeating and undereating appear to be responses to the same demands (Wooley & Wooley, 1981). Moreover, Oliver and Wardle (1999) found that most participants reported that stress influenced the overall amount of food that they consumed with approximately equal numbers reporting eating more versus less. Thus, evidence suggests that there is a relationship between negative affect and eating, particularly binge eating, but also restricting.

Negative Affect and Substance Use

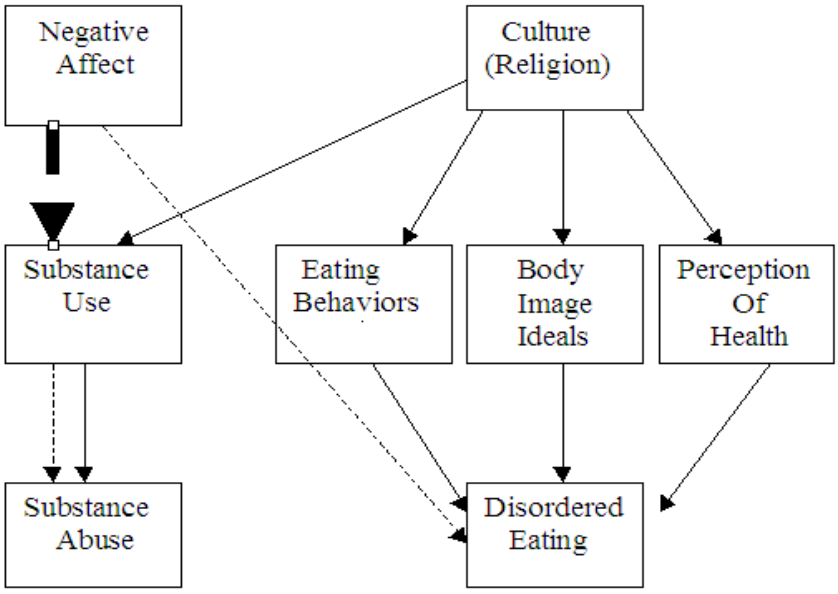

Figure 9. The influence of negative affect on substance use in the context of the final model.

In addition to cultural variables, negative affect has been shown to influence consumption behaviors. For instance, researchers have found that substance use is associated with negative emotion (Caldwell at al., 2002; Chassin et al. 1993; Cox & Klinger, 2004; Goldstein, 2001; Hunt, 2005; Kelder, Murray, Orpinas, Prokhorov, et al., 2001; Marsh & Dale, 2005; Newcomb & Harlow, 1986; Nunes & Levin, 2004; Pabon, 2004; Pardini, Lochman & Wells, 2004; Shoal, Castaneda & Giancola, 2005; Simons, Gaher, Correia, Hansen & Christopher, 2005; Swaim, Oetting, Edwards & Beauvais, 1989; Unger, Kipke, Simon, Johnson, Montgomery & Iverson, 1998; Simons, Gaher, Oliver, Bush & Palmer, 2005; Stevens, Colwell, Smith, Robinson & McMillan, 2005; Wills, Sandy, Shinar & Yaeger, 1999; Windle & Scheidt, 2004; Zack, Poulos, Fragopoulos, Woodford & MacLeod, 2006).

In their book, *Handbook of motivational counseling: Concepts, approaches and assessment,* Cox and Klinger (2004) present a model that explains the formulation of alcohol use. The model describes a possible pathway to alcohol consumption being high incentive value such as decreasing negative affect and/or increasing positive affect. A study also investigating the roles of positive and negative affect on alcohol consumption found that although higher levels of both positive and negative affect during the day was associated with higher rates of alcohol consumption at night, negative affect, but not positive affect, was associated with alcohol-related problems after controlling for alcohol consumption (Simons et al., 2005).

Negative affect also appears to be related to the maintenance and consequences of substance use. In one study. participants with lower levels of negative affect were less likely to progress in a pattern toward smoking (Hunt, 2005). Higher levels of negative affect intensity have also been shown to predict the addiction severity of psychoactive substances (Pabon, 2004). Stevens et al. (2005) found that adolescents who reported that they smoke tobacco due to negative affect were significantly more likely to have future smoking intentions and had significantly less self-efficacy to quit smoking than adolescents who reported other reasons for smoking. Other researchers found a relationship between negative affect and initial levels of substance use, as well as negative affect and greater increase in substance use over a three year period (Wills et al., 1999).

Research investigating affect-laden words found that negative affect words (e.g., anxious) significantly increased beer consumption relative to neutral control words (e.g., frequent). Furthermore, positive affect words (e.g., happy) did not reliably prime beer consumption. These researchers suggest that automatic activation of alcohol concepts may be one process that

mediates the link between negative affect drinking and alcohol problem severity (Zack et al., 2006).

Specific negative emotion has been linked with substance use and the most widely studied negative emotion linked to substance use has been depression. For instance, it has been proposed that depression predicts substance use among girls in the juvenile justice system (Goldstein, 2001) and symptoms of depression are strongly and positively related to substance use in middle school students (Kelder et al., 2001). Pardini, Lochman and Wells (2004) found that depressed mood predicted alcohol use initiation for boys with good inhibitory control. Furthermore, it has been suggested that stressful life events are significantly associated with symptoms of depression and substance-use disorders (Unger et al., 1998). This view was supported in a study examining the substance use patterns of adolescents where higher levels of perceived stress and depression were associated with greater substance use at baseline (Hunt, 2005). Newcomb (1989) found that for adolescents, a sense of meaninglessness, experienced as distressful and uncomfortable, is related to the solace such adolescents seek from the use of alcohol and other drugs. In fact, depression and substance use is found to co-occur so often that a meta-analysis was conducted to determine the efficacy of antidepressant medication for treatment of their comorbidity (Lunes & Nevin, 2004). However, there are also reports of worry/anxiety, delinquent attitudes, and anger being related to substance use (Castaneda & Giancola, 2005; Swaim, 2003; Windle & Scheidt, 2004). Thus, negative affect (particularly depression, anxiety, delinquent attitudes, and anger) is related to substance use, and has been found to effect the maintenance and consequences of substance use.

Consequences of Maladaptive Consumption Behaviors

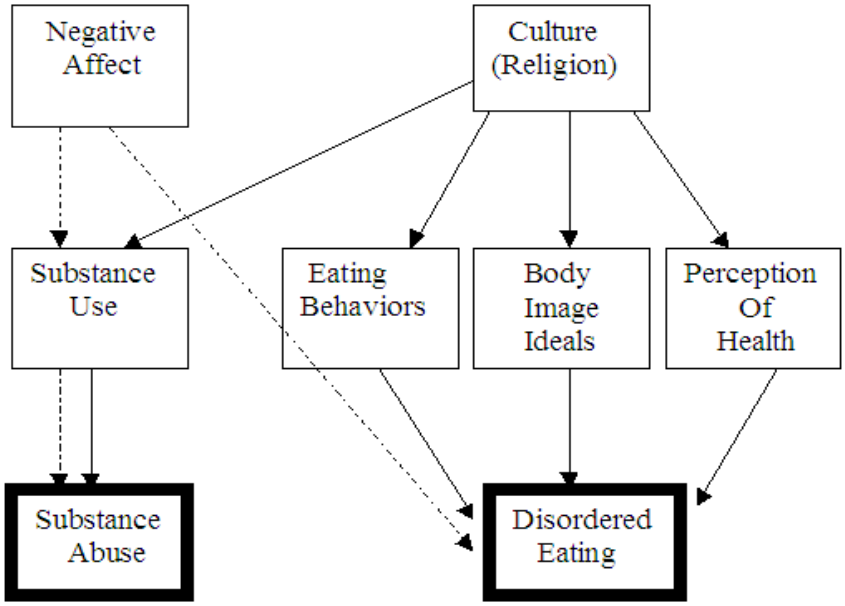

Figure 10. The consequences of substance abuse and disordered eating.

When considering the cultural effects and negative affect relationships with eating and substance use behaviors, it is important to note that eating disorders and substance abuse disorders both have significant, and interestingly, similar, consequences. Relating this to the LDS population is particularly beneficial as these consumption behaviors have similar consequences, but guidelines regarding substance use are addressed in greater detail than are guidelines regarding eating behaviors. Consequences of both types of consumption behaviors identified in the mental health literature and the LDS literature will briefly be reviewed.

Substance Abuse:

> According to the DSM-IV-TR, some consequences of substance abuse include: Deterioration in general health, malnutrition, decreased cardiac functioning such as arrhythmias, myocardial infarction, and respiratory arrest, viruses such as HIV, hepatitus, and tetanus, injury due to aggressive behavior, gastrointestinal effects such as ulcers, many types of cancers such as lung, stomach, and liver, cognitive and memory deficits, degenerative changes to the cerebellum, cerebral atrophy, hemorrhoids, suicidal ideation, and respiratory difficulties such as pulmonary hypertension and pulmonary disease.

It has also been suggested that substance abuse has adverse medical, psychiatric, and legal consequences as well as disruptive effects on the organization and implementation of adaptive behaviors (Troisi, 2001). Wray, Sc and Young (1992) claim that large doses of amphetamine and cocaine are known to produce psychosis, and cocaine use is associated with violent acts and crimes committed. Further, Gonet (1994) suggests that drugs interfere with independence and maturity growth. Other sources suggest that drugs affect emotions, thinking and perception, as well as memory (Schonberg & Schnoll, 1986), and can result in pneumonia, stroke, and seizures (Stein, 1999). Theodore M. Burton (1976), an LDS leader stated, "The problem with [alcohol and tobacco] is that their effects are…gradual. Because the destruction is not immediately apparent, young and old alike do not realize their harmful effects until the damage has already been done." Another LDS leader, claims, "now medical doctors have come to recognize that tobacco, in addition to be addictive, also kills those who use it" (Ayala, 1990).

Eating Disorders:

> According to the DSM-IV-TR, consequences of eating disorders include: Luekopenia, anemia, dehydration, numerous bio-chemistry effects such as hypercholesterolemia and low estrogen for women or low testosterone for men, sinus bradycardia, abdominal pain, lethargy, hypercarotenemia, hypertrophy of the salivary glands, enamal erosion, hand scars or calluses, electrolyte abnormalities, cognitive deficits, metabolic alkalosis/acidosis, esophageal tears, gastric rupture, and decreased cardiac functioning such as arrhythmias and hypotension.

Keys' landmark study (1950) in World War II found that starving soldiers experienced extreme effects such as edema, vertigo, blackouts, visual disturbances, general weakness, muscle soreness and muscle cramps, irritability, apathy, difficulty concentrating marked reduction in sex drive. Others have suggested consequences of binge eating and restricting eating behaviors include changes in medical instability, permanent disability, loss of consciousness, decreased cardiac functioning, bone loss, stunted growth, pubertal delay, and sudden death (Sanders, 1996). Further, Agras (2001) claims, "Men and women with anorexia experience fertility rates of approximately 1/3 of those expected for comparable individuals without the disorder." Sullivan (1995) sums up the severe consequences of eating disorders by reporting mortality rates of 5.6% per decade for anorexia, "greater than that reported for female psychiatric inpatients and for the general population."

Harold Frost (1990), an LDS psychologist, states, "serious medical complications have been noted in connection with anorexia nervosa and bulimia. Victims almost always suffer from

malnutrition-which causes low blood pressure, circulatory disturbances, irregular heartbeat, impaired ability to fight disease and infection…and electrolyte disturbance…sore throats, tooth decay, gum disease, and swelling of the cheeks." No further comment within the LDS literature was found regarding the consequences of eating disorders.

Summary and Rationale for Present Study

As illustrated above, culture, specifically religion, and negative affect, influence the consumption behaviors of substance use and eating. Furthermore, substance use and eating behaviors increase the risk of future psychopathology (substance abuse and eating disorders), psychopathology that has similar damaging consequences. However, there is little research addressing religious subcultural influences on urges to engage in consumption behaviors (alcohol, tobacco, drugs, binge eating, and restricting behaviors) in response to negative affect in a single study. Furthermore, there is no evidence that these behaviors have been studied together as a response to negative affect within the LDS population.

To address this gap, the present study compared LDS females' and non-LDS females' attitudes regarding urges to engage in particular consumption behaviors in response to negative affect (culture→eating behaviors and culture→substance use). These comparisons have implications for Markey's secondary pathways from eating behaviors→disordered eating and substance use→substance abuse. 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 (culture→body image ideals) were investigated. These comparisons of body attitudes have implications for Markey's (2004) secondary pathway to disordered eating.

Primary Hypotheses

1) It is hypothesized that LDS females will report greater urges to engage in binge eating and restricting eating behaviors in response to negative emotion than non-LDS females.

2) It is hypothesized that LDS females will report decreased urges to engage in substance use behaviors in response to negative emotion than non-LDS females.

Secondary Hypotheses

3) It is hypothesized that LDS females endorse more beliefs that positive feelings, self-worth, and interpersonal and work successes are dependent on appearance, less overall satisfaction with their bodies, greater investment in appearance, greater preoccupation with becoming overweight and a greater perception of being overweight, greater respect for the body, greater attention to body shape, and less satisfaction with body shape than non-LDS females.

4) It is hypothesized that LDS females residing inside Utah endorse greater preoccupation with becoming overweight and a greater perception of being overweight, greater investment in appearance, less satisfaction with their bodies, and are more likely to believe that their happiness, worth, and interpersonal and work success are dependent upon their physical appearance than LDS females living outside of Utah.

Methods

Participants

A sample of LDS and non-LDS female college students were recruited from six universities: Brigham Young University-Idaho (BYU-Idaho), Brigham Young University-Utah (BYU-Utah), Utah Valley State College (UVSC), University of Utah (U of U), the University of Idaho (UI), and the University of Washington (UW). Both low tier and high tier universities were included in order to enhance generalizability of results across socioeconomic status as socioeconomic status has been associated with consumption behaviors and body image (Goodman & Huang, 2002; O'Dea & Caputi, 2001). All institutions are located on the West Coast with similar climates, located within 900 miles of one another, which allows for minimization of any differences which may appear due to geographic location. According to the 2006 Edition of U.S. News and World Report, UW was ranked number 45, BYU-Utah was ranked number 71, and U of U was ranked 120 for overall "best colleges" under "National Universities." UI and UVSC were specified as the "3rd tier." BYU-Idaho was not ranked. However, UI, UVSC, and BYI-Idaho can be classified a "low tier" schools, while UW, BYU-Utah, and U of U can be classified as "high tier" schools based on overall rankings, average incoming grade point average (GPA), and average incoming American College Test (ACT) scores. According to institution websites, as well as email reports from institution admissions departments, UI has an average incoming freshman GPA of 3.44, and average ACT score of 23.36. UVSC has an average incoming freshman GPA of 2.74 and an average incoming freshman ACT score of 20.17. BYU-Idaho has an average incoming freshman and average newly admitted student GPA of 3.42-3.5, and average ACT score of 24. UW has an average incoming freshman GPA of 3.67 and an average incoming freshman ACT score of 25. BYU-

Utah has an average incoming freshman and average newly admitted student GPA of 3.7-3.75, and average ACT score of 27. U of U has an average incoming freshman GPA of 3.5 and an average incoming freshman ACT score of 24.

Participants were recruited from general education classes on the respective campuses. 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 to be completed at the participant's convenience. Measures took about 20-30 minutes to complete. Subjects received either extra credit or monetary compensation for their participation ($10).

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). Further, greater body image dissatisfaction and perceptual body-size distortions are associated with eating disordered behaviors (Cash & Deagle, 1997), behaviors targeted in the current study. Also, the current study was a first attempt at a study of this nature; thus, gender is not a variable that will be targeted.

Power analyses were computed to determine appropriate sample sizes when power was set to .80 and alpha is .01. Alpha was set at .01 as it was the closet alpha level to .0083, the Bonferroni correction for the primary comparisons (.05/6=.0083). A more conservative level of alpha was used to control for family-wise error since multiple comparisons will be made (Howell, 2002). Sample sizes of 19 and 47 were determined to yield an 80% chance of rejecting

the null hypothesis (power=.80) when effect sizes equaled .80 (large effect size) and .50 (moderate effect size), respectively (Howell, 2002).

A total of 153 participants were included in the current analysis. All participants who completed the survey were included in the analysis. All descriptive statistics were self-reported. Of this sample, 5.9% were Catholic, 2.6% were Baptist, 5.9% were Protestant, 68.6% were Latter-Day Saint, 1.3% were Jewish, 5.9% were Agnostic, 0.7% were Atheist, 7.8% were Other Christian, and 1.3% were not of these religious affiliations or Islamic, Buddhist, or Hindu.

Of this sample, 8.5% were from The University of Utah, 27.5% were from Brigham Young University-Utah, 7.8% were from Utah Valley State College, 27.5% were from Brigham Young University-Idaho, 16.3% were from University of Idaho, and 12.4% were from University of Washington. 52.3% were freshman, 24.4% were sophomore, 16.3% were junior, 6.5% were senior, and 0.7% were grad students. In terms of marital status, 83% were single, 10.5% were married, 0.7% were divorced, and 5.9% were cohabitating.

Of this sample, 64.7% were between the ages of 18-19, 17% were between the ages of 20-21, 4.6% were between the ages of 22-23, 7.2% were between the ages of 24-25, 2% were between the ages of 26-27, 0.7% were between the ages of 28-29, 1.3% were between the ages of 30-39, and 2.6% were ages 40 and over. In terms of ethnicity, 5.9% were Hispanic, 1.3% were African American, 82.4% were Caucasian, 4.6% were Asian, 0.7% were East Indian, 1.3% were Native American, and 3.9 % were not of these ethnicities or Pacific Islander.

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 disordered eating. Items

are scored on a five-point Likert scale ("no desire to eat" to "an overwhelming desire to eat"). However, this instrument was slightly altered to adequately address hypotheses. The five-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) as 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 binge and restricting behaviors. For instance, directions for the EES read:

> We all respond to different emotions in different ways. Some types of feelings lead people to experience an urge to eat *or a decreased urge to eat*. Please put a check to indicate the extent to which the following feelings lead you to feel an urge to eat *or a decreased urge to eat* by placing a check next to the most appropriate box for each item (Arnow, Kenardy & Agras, 1995, emphasis added).

Further, the EES was modified to explore substance use, in addition to binge and restricting eating behaviors (EES-R). The EES-R substituted substance use for all instances of "an urge to eat or decreased urge to eat." Thus, the directions for the EES-R read:

> We all respond to different emotions in different ways. Some types of feelings lead people to experience an urge to use substances *or a decreased urge to use substances*

(alcohol, tobacco, other drugs, etc). Please indicate the extent to which the following feelings lead you to feel an urge to engage in substance use *or a decreased urge to use substances* by placing a check next to the most appropriate box for each item (Arnow, Kenardy & Agras, 1995, emphasis added).

Thus, the scale ranged from "an overwhelming decreased desire to use substances" (-2) to "an overwhelming desire to use substances" (+2). Internal reliabilities for the EES-R ranged from .89-.97.

The Dutch Eating Behavior Questionnaire and the Dutch Eating Behavior Questionnaire-Revised for Substance Use (DEBQ and DEBQ-R): Seven items of the nine-item Emotional Eating subscale of the DEBQ (van Strien, Frijters, Bergers, Defares, 1986) were used as a measure of eating in response to negative emotion. This scale was chosen because it appears to target similar emotional eating behaviors as the EES, and thus provides an appropriate supplement measure of emotional eating. DEBQ items are measured on a five-point, Likert-type (1=*never*, 5=*very often*) format. Van Strien, Frijeters, Bergers & Detares (1986) reported that the nine-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…?." The DEBQ-R will read "Do you have a desire to use substances (alcohol, tobacco, drugs) when…?." Internal reliabilities on the DEBQ-R ranged from .89-.91.

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 Balanced Inventory of Desirable Responding (BIDR): The BIDR (Paulhus, 1988) is a 40-item inventory that is scored on a seven-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 Multidimensional Body-Self Relations Questionnaire (MBSRQ): The MBSRQ 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:

(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 a Cronbach's alpha (internal consistency) of .88, and a 1-month test-retest reliability of .86 for females.

(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 was .85 and the 1-month test-retest reliability for was .90 for females.

(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 .73 and the 1-month test-retest reliability was .74 for females.

(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 .76 and the 1-month test-retest reliability was .89 for females.

(5) The *Self-Classified Weight scale* (WTCLASS) consists 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 .89 and the 1-month test-retest reliability was .74 for females.

The Body Appreciation Respect Scale (BARS): The BARS (Spangler, 2007) is a 30-item self-report 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.

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) reports internal consistency reliability measures of .70-.83 in three separate studies for females and test-retest reliability correlations of .76 for females.

The 'Age Universal' I-E Scale-12: The 'Age Universal' I-E Scale-12 (Maltby, 1999) is an amended version of the Age Universal I-E Scale (Gorsuch & Venable, 1983). This 12-item self-report scale assesses intrinsic and extrinsic religious orientations and was included as a measure of religious commitment. Respondents rate their degree of agreement to statements along a three point scale (1=yes, 2=not certain, 3=no). For the original Age Universal I-E Scale, Gorsuch and Venable (1953) report internal consistency reliability measures of .73 for intrinsic religiosity and .66 for extrinsic religiosity in an adult sample. The revised version (Maltby & Lewis, 1996) report a range of internal consistency reliability measures of .82 to .91 across six samples including 17-year-olds, younger and older adults, as well as university students in the U.S., England, and Ireland, indicating improved reliability estimates from the original version.

The Body Shape Questionnaire (BSQ): The BSQ (Cooper, Taylor, Cooper & Fairburn, 1987) is a 34-item self-report 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).

Data Analysis

Preliminary Analyses: Social Desirability Bias

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. These analyses tested the presence and extent of potential social desirability bias as well as potential group differences in social desirability.

Findings suggested significant differences between LDS and non-LDS females on the BIDR total (TOT), $t(151)=2.46$, $p=<.05$. More specifically, there were significant differences between LDS and non-LDS females on one of the subscales of the BIDR, Impression Management (IM), $t(151)=4.70$, $p<.01$. Since differences in religious and non-religious populations were to be expected given previous findings that religious populations tend to score higher on this scale (Paulhus, 1988), correlations between the BIDR and other measures were also examined to determine if the BIDR should be used as a covariate in analyses. As shown in Table 2, the BIDR TOT and subscales were also significantly correlated with most measures.

Table 1

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

Scale		mean (sd)	t	p
BIDR_TOTAL	LDS	12.41 (5.47)	2.46	.015
	non-LDS	10.22 (4.13)		
BIDR_IM	LDS	7.98 (3.53)	4.70	.000
	non-LDS	5.35 (2.33)		
BIDR_SD	LDS	4.43 (2.89)	-0.89	.375
	non-LDS	4.88 (2.86)		

Note. BIDR_TOT=The Balanced Inventory of Desirable Responding-Total Scale; BIDR_IM=The Balanced Inventory of Desirable Responding-Impression Management Subscale; BIDR_SD=The Balanced Inventory of Desirable Responding-Self-Deception Subscale.

Table 2

Social Desirability: Correlations Between the BIDR and All Other Measures

	BIDR_SD	BIDR_IM	BIDR_TOT
RELIGION	.07	-.36**	-.20*
LOCATION	-.02	.15	.00
ABS	-.18*	-.18*	-.22**
BSQ	-.29**	-.35**	-.39**
BAAS	-.37**	-.22**	-.35**
DEBQ	-.26**	-.10	-.21*
DEBQ_R	-.20*	-.47**	-.42**
APPEVF	.31**	.22**	.32**
APPORF	-.17*	-.18*	-.22**
WTCLASS	-.05	-.17*	-.14
BARS_POS	.30**	.36**	.41**
BARS_NEG	-.19*	-.29**	-.30**
BIDR_SD	1.00	.34**	.78**
BIDR_IM	.34**	1.00	.85**
BIDR_TOT	.78**	.85**	1.00
EES_DEC	.24**	.06	.17**
EES_INC	.02	.05	.05
EESR_DEC	.14	.34**	.30**
EESR_INC	-.07	-.20*	-.17*
AUIE_INT	.10	.51**	.39**

Table 2 (continued).

	BIDR_SD	BIDR_IM	BIDR_TOT
AUIE_EXT	.00	.08	.05
BASS	.28**	.27**	.34**
OWPR	-.20*	-.24**	-.26**

Note. RELIGION=LDS or Non-LDS; LOCATION=Inside Utah or Outside Utah; ABS=The Attention to Body Shape Scale; BSQ=The Body Shape Questionnaire; BAAS=The Beliefs About Appearance Scale; DEBQ=Dutch Eating Behaviors Questionnaire; DEBQ_R=Dutch Eating Behaviors Questionnaire-Revised for Substance Use; APPEVF=The Appearance Evaluation Scale; APPORF=The Appearance Orientation Scale; WTCLASS=The Self-Classified Weight Scale; BARS_POS=The Body Appreciation and Respect Scale-Positive Feelings Subscale; BARS_NEG=The Body Appreciation and Respect Scale-Negative Feelings Subscale; BIDR_SD=The Balanced Inventory of Desirable Responding-Self-Deception Subscale; BIDR_IM=The Balanced Inventory of Desirable Responding-Impression Management Subscale; BIDR_TOT=The Balanced Inventory of Desirable Responding-Total Scale; EES_DEC=The Emotional Eating Scale-Decreased Subscale; EES_INC= Emotional Eating Scale-Increased Subscale; EESR_DEC=The Emotional Eating Scale-Revised for Substance Use-Decreased Subscale; EESR_INC=The Emotional Eating Scale-Revised for Substance Use-Increased Subscale; AUIE_INT=The 'Age Universal' I-E Scale-12-Intrinsic Subscale; AUIE_EXT=The 'Age Universal' I-E Scale-12-Extrinsic Subscale; BASS=The Body Areas Satisfaction Scale; OWPR=The Overweight Preoccupation Scale.
*p<.05, two-tailed. **p<.01, two-tailed.

Since scores on the BIDR TOT and IM subscale were significantly different between LDS and non-LDS groups and the BIDR appeared to correlate significantly with most measures, 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 (contributing more than SD subscale to the significantly different means found between LDS and non-LDS populations for the BIDR 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, $t(103)=-1.57$, $p>.05$, the BIDR SD, $t(103)=0.23$, $p>.05$, or the BIDR TOT, $t(103)=-0.88$, $p>.05$, no covariate was used in location analyses.

Table 3

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

Scale		mean (sd)	t	p
BIDR_TOTAL	Inside UT	12.02 (5.12)	-0.88	.379
	Outside UT	12.98 (5.95)		
BIDR_IM	Inside UT	7.53 (3.40)	-1.57	.119
	Outside UT	8.63 (3.67)		
BIDR_SD	Inside UT	4.48 (2.84)	0.23	.815
	Outside UT	4.35 (2.98)		

Note. BIDR_TOT=The Balanced Inventory of Desirable Responding-Total Scale; BIDR_IM=The Balanced Inventory of Desirable Responding-Impression Management Subscale; BIDR_SD=The Balanced Inventory of Desirable Responding-Self-Deception Subscale.

Primary 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 (EES-Increase, EES-Decrease, EES-R-Increase, EESR-Decrease, DEBQ, DEBQ-R) 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).

Secondary 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 ANCOVAs and ANOVAs, pairwise comparisons, to determine where the differences resided.

Regression Analyses/T-tests

Regression analyses were conducted to determine if intrinsic/extrinsic religiosity predicts substance use or eating behaviors. The regression analyses were conducted to determine if religiosity could predict patterns of substance use or eating behaviors in an attempt to differentiate responses primarily influenced by intrinsic religiosity from responses primarily influenced by extrinsic religiosity and the Honor Code at BYU-Idaho and BYU-Utah. T-tests were also performed to determine if religious group membership was associated with intrinsic and/or extrinsic religiosity.

Results

Frequency Count

In order to illustrate that participants endorsed increased and decreased urges to eat/use substances in response to negative emotion, frequency counts of the number of LDS and non-LDS females who endorsed increased and decreased urges, as well as no change in urge, to eat/use substances in response to negative emotion are provided in Table 4 and Table 5.

Table 4

EES Frequency Counts: Increased and Decreased Urge to Eat in Response to Negative Emotion

	LDS	Non-LDS
Increased Urge	105	48
No Change	0	0
Decreased Urge	102	45

Table 5

EES-R Frequency Counts: Increased and Decreased Urge to Use Substances in Response to Negative Emotion

	LDS	Non-LDS
Increased Urge	43	36
No Change	56	10
Decreased Urge	34	25

Primary 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, $F(2,150)= 21.78$, $p<.001$ and $F(2,150)=24.02$, $p<.001$. 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 6.

Table 6

Primary Hypotheses: ANCOVA Analyses

Scale		mean (sd)	F	df (b,w)	p
EES_DEC	LDS	11.99 (6.86)	0.72	(2,150)	.490
	non-LDS	11.65 (8.30)			
BIDR_IM			*1.36*	*(1,150)*	*.246*
EES_INC	LDS	11.60 (6.84)	0.07	(2,150)	.931
	non-LDS	12.02 (7.30)			
BIDR_IM			*0.02*	*(1,150)*	*.876*
EESR_DEC	LDS	5.13 (12.56)	0.41	(2,150)	.663
	non-LDS	5.79 (10.83)			
BIDR_IM			*0.73*	*(1,150)*	*.396*
EESR_INC	LDS	3.70 (6.51)	21.78	(2,150)	.000
	non-LDS	9.48 (10.21)			
BIDR_IM			*23.08*	*(1,150)*	*.000*
DEBQ	LDS	17.97 (4.97)	0.80	(2,150)	.452
	non-LDS	18.00 (6.00)			
BIDR_IM			*1.60*	*(1,150)*	*.208*
DEBQ_R	LDS	9.90 (5.24)	24.02	(2,150)	.000
	non-LDS	14.29 (7.79)			
BIDR_IM			*28.18*	*(1,150)*	*.000*

Note. EES_DEC=The Emotional Eating Scale-Decreased Subscale; EES_INC= The Emotional Eating Scale-Increased Subscale; EESR_DEC=The Emotional Eating Scale-Revised for Substance Use-Decreased Subscale; EESR_INC=The Emotional Eating Scale-Revised for Substance Use-Increased Subscale; DEBQ=Dutch Eating Behaviors Questionnaire; DEBQ_R=Dutch Eating Behaviors Questionnaire-Revised for Substance Use; BIDR_IM=The Balanced Inventory of Desirable Responding-Impression Management Subscale.

Manipulation Check

Intrinsic and extrinsic scores were examined in regression analyses to determine if such scores were accounting for any variance in the primary analyses that religious membership did not take into account. T-tests were also performed to determine if there were significant differences between LDS and non-LDS females on measures of intrinsic and extrinsic religiosity. Regression and t-test analyses were conducted with the purpose of determining if group

membership (LDS and non-LDS) is the most accurate representation of religion or if religious commitment (intrinsic and 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.

Six separate regression analyses were conducted for each of the six measures used to explore primary hypotheses. Predictors were religion (LDS vs. non-LDS), intrinsic religiosity, and extrinsic religiosity. As shown in Table 7, four of the six models were found to be significant. For three of the significant models, intrinsic religiosity predicted scores on the three substance-related scales, suggesting that for the substance-related measures, intrinsic religiosity explained more variance than religious membership or extrinsic religiosity. These three models suggest that having higher intrinsic religiosity scores was associated with decreased urges to participate in substance use in response to negative emotion. The fourth significant model demonstrates that extrinsic religiosity predicted scores on the decreased portion of the emotional eating scale. This model suggests that having higher extrinsic religiosity was associated with decreased urges to participate in eating behaviors in response to negative emotion.

T-test analyses found that LDS females scored significantly higher than non-LDS females on both intrinsic and extrinsic religiosity measures $t(151)=11.49$, $p<.001$ and $t(151)=6.86$, $p<.001$. Given that LDS females were found to be more intrinsically and extrinsically religious than non-LDS females, intrinsic and extrinsic religiosity did not appear to provide different information than religious groups analyses. Thus, religious group membership (LDS and non-LDS) appeared to be the best differentiation of religious groups in this study. Means and standard deviations are provided in Table 8.

Table 7

Manipulation Check: Regression Analyses

Model	Predictor	Beta	t	p
EES_INCREASE	RELIGION AUIE_INTRINSIC AUIE_EXTRINSIC	No variables entered the model.		
EES_DECREASE F (1, 152)=4.266, P<.05 R2=.027	AUIE_EXTRINSIC	.17	2.07	.041
EESR_INCREASE F (1,152)=6.145, P<.02 R2=.039	AUIE_INTRINSIC	-.20	-2.48	.014
EESR_DECREASE F (1,152)=32.919 P<.001 R2=.179	AUIE_INTRINSIC	.42	5.74	.000 .
DEBQ	RELIGION AUIE_INTRINSIC AUIE_EXTRINSIC	No variables entered the model.		
DEBQR F(1,152)=55.273 P<.001 R2=.268	AUIE_INTRINSIC	-.52	-7.44	.000

Note. EES_INC=The Emotional Eating Scale-Increased Subscale; EES_DEC=The Emotional Eating Scale-Decreased Subscale; EESR_INC=The Emotional Eating Scale-Revised for Substance Use-Increased Subscale; EESR_DEC=The Emotional Eating Scale-Revised for Substance Use-Decreased Subscale; DEBQ=Dutch Eating Behaviors Questionnaire; DEBQ_R=Dutch Eating Behaviors Questionnaire-Revised for Substance Use; RELIGION=LDS or Non-LDS; AUIE-INTRINSIC=The 'Age Universal' I-E Scale-12-Intrinsic Subscale; AUIE-EXTRINSIC=The 'Age Universal' I-E Scale-12-Extrinsic Subscale.

Table 8

Manipulation Check: T-tests

Scale		mean (sd)	t	p
AUIE_INTRINSIC	LDS	10.73 (2.60)	11.49	.000
	non-LDS	4.79 (3.65)		
AUIE_EXTRINSIC	LDS	6.83 (2.51)	6.86	.000
	non-LDS	3.56 (3.18)		

Note. AUIE-INTRINSIC=The 'Age Universal' I-E Scale-12-Intrinsic Subscale; AUIE-EXTRINSIC=The 'Age Universal' I-E Scale-12-Extrinsic Subscale.

Secondary Analyses

The overall MANCOVA for all body-related measures across religious groups was significant, $F(2,150)=1.94$, $p<.05$. As shown in Table 9, eight of the ten body-related measures were found to be significant using the BIDR IM as a covariate: BSQ, $F(2,150)=10.44$, $p<.001$, BAAS, $F(2,150)=4.76$, $p<.05$, APPEVF, $F(2,150)=3.85$, $p<.05$, APPORF, $F(2,150)=3.68$, $p<.05$, BASS, $F(2,150)=6.12$, $p<.01$, OWPR, $F(2,150)=4.48$, $p<.05$, BARS (Positive Feelings), $F(2,150)=12.78$, $p<.001$, and BARS (Negative Feelings), $F(2,150)=8.43$, $p<.001$. 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 9.

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. Means and standard deviations are provided in Table 10.

The overall MANOVA for all body-related measures across location (inside Utah and outside Utah) for the LDS sample was significant, $F(1,103)=3.65$, $p<.01$. As shown in Table 10, two of the ten body-related measures were found to be significant: BSQ, $F(1,103)=4.94$, $p<.05$ and OWPR, $F(1,103)=5.87$, $p<.05$. 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 11.

Table 9

Secondary Hypotheses: MANCOVA Analyses for Religion

Scale		mean (sd)	F	df (b,w)	p
OVERALL	LDS		1.94	(2,150)	.044
	non-LDS				
BIDR_IM			*3.29*	*(1,150)*	*.001*
ABS	LDS	23.89 (5.39)	2.47	(2,150)	.088
	non-LDS	24.90 (5.20)			
BIDR_IM			*3.73*	*(1,150)*	*.055*
BSQ	LDS	96.73 (37.72)	10.44	(2,150)	.000
	non-LDS	106.40 (44.13)			
BIDR_IM			*18.71*	*(1,150)*	*.000*
BAAS	LDS	50.09 (17.30)	4.76	(2,150)	.010
	non-LDS	49.10 (18.20)			
BIDR_IM			*9.41*	*(1,150)*	*.003*
APPEVF	LDS	3.12 (.84)	3.85	(2,150)	.024
	non-LDS	2.94 (.95)			
BIDR_IM			*6.15*	*(1,150)*	*.014*
APPORF	LDS	3.58 (.60)	3.68	(2,150)	.027
	non-LDS	3.52 (.70)			
BIDR_IM			*7.05*	*(1,150)*	*.009*
BASS	LDS	3.19 (.72)	6.12	(2,150)	.003
	non-LDS	3.01 (.77)			
BIDR_IM			*10.18*	*(1,150)*	*.002*
OWPR	LDS	2.88 (1.13)	4.47	(2,150)	.013
	non-LDS	3.15 (1.14)			
BIDR_IM			*6.92*	*(1,150)*	*.009*
WTCLASS	LDS	3.30 (.66)	2.52	(2,150)	.084
	non-LDS	3.49 (.83)			
BIDR_IM			*2.59*	*(1,150)*	*.110*
BARS_POS	LDS	49.47 (12.73)	12.78	(2,150)	.000
	non-LDS	42.63 (12.39)			
BIDR_IM			*14.98*	*(1,150)*	*.000*
BARS_NEG	LDS	25.92 (11.09)	8.43	(2,150)	.000
	non-LDS	32.08 (15.62)			
BIDR_IM			*8.68*	*(1,150)*	*.004*

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; BARS_POS=The Body Appreciation Respect Scale-Positive Feelings Subscale; BARS_NEG=The Body Appreciation Respect Scale-Negative Feelings Subscale; BIDR_IM=The Balanced Inventory of Desirable Responding-Impression Management Subscale.

Table 10

Primary Hypothesis Measures: T-test Analyses for Location (LDS Sample Only)

Scale		mean (sd)	t	p
EES_DEC	Inside UT	11.79 (7.07)	-0.36	.722
	Outside UT	12.28 (6.63)		
EES_INC	Inside UT	11.82 (7.29)	0.43	.670
	Outside UT	11.26 (6.20)		
EESR_DEC	Inside UT	5.03 (13.09)	-0.10	.922
	Outside UT	5.28 (11.90)		
EESR_INC	Inside UT	3.71 (5.97)	0.03	.978
	Outside UT	3.67 (7.30)		
DEBQ	Inside UT	18.58 (5.16)	1.52	.132
	Outside UT	17.09 (4.60)		
DEBQ_R	Inside UT	10.24 (5.20)	0.81	.419
	Outside UT	9.40 (5.32)		

Note. EES_DEC=The Emotional Eating Scale-Decreased Subscale; EES_INC= The Emotional Eating Scale-Increased Subscale; EESR_DEC=The Emotional Eating Scale-Revised for Substance Use-Decreased Subscale; EESR_INC=The Emotional Eating Scale-Revised for Substance Use-Increased Subscale; DEBQ=Dutch Eating Behaviors Questionnaire; DEBQ_R=Dutch Eating Behaviors Questionnaire-Revised for Substance Use.

Table 11

Secondary Hypotheses: MANOVA Analyses for Location (LDS Sample Only)

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

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; BARS_POS=The Body Appreciation Respect Scale-Positive Feelings Subscale; BARS_NEG=The Body Appreciation Respect Scale-Negative Feelings Subscale.

Discussion

Primary Hypotheses: Differences in Urges to Participate in Eating and Substance Use

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. Thus, support was found for the culture→substance use pathway in Markey's (2004) expanded model, which has implications for the pathway from substance use→substance abuse. 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 et al., 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, Statistical Abstract of the United States, 2003) 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 emotion were not found; rather LDS and non-LDS females did not report significant differences in urges to eat in response to negative emotion. Thus, overall findings failed to support the culture (defined as religion)→eating behaviors pathway in Markey's (2004) model. It is important to note that frequency counts of increased and decreased urges to eat and use substances in response to negative emotion suggested that both groups (LDS

and non-LDS) endorsed both increased and decreased urges to eat and use substances in response to negative affect to some extent, consistent with previous links between negative affect and eating behaviors/substance use (Agras & Telch, 1998; Arnow, Kenardy & Agras, 1995; Chassin et al. 1993; Cooper & Bowskill, 1986; Davis, Freeman & Garner, 1988; Goldstein, 2001; Holhlstein, Smith & Atlas, 1998; Hsu, 1990; Marsh & Dale, 2005; Oliver & Wardle, 1999; Polivy & Herman, 1993; Stice, 2001; Stice & Agras, 1998; Stice, Akutagawa, Gagger & Agras, 2000; Stice, Presnall & Spangler, 2002; Telch & Agras, 1996; Unger, Kipke, Wills, Sandy, Shinar & Yaeger, 1999; Windle & Scheidt, 2004; Wooley & Wooley, 1981)

These findings are inconsistent with a hypothesis offered by Merrill and Hilliam (in press) 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 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 (in press) 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 relative 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, Statistical Abstract of the United States, 2003). 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, which has implications for the pathway between substance use→substance abuse in Markey's (2004) expanded model.

Secondary Hypotheses: Differences in Body Weight and Shape

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 bodies and body shape, greater preoccupation with being overweight, and greater attention to body shape than LDS females. Thus, findings support the link between culture (defined as religion)→body image ideals in Markey's (2004) model and consistent findings regarding cultural influences on attitudes regarding body weight, shape, and eating

behaviors (Apter & Shah, 1994; Becker, 2004; Edward-Hewitt & Gray, 1993; Gerber, 2005; Gibbs, 1986; Hepworth, 1999; Keel & Klump, 2003; Lake, Staiger & Glowinski, 2000; Powell & Kahn, 1995; Raphael & Lacey, 1994; Rucker & Cash, 1992; Ruggiero, 2003; Sim & Zeman, 2005; Stice, 1994; Stice, 2001; Tiggemann, Verri & Scaravaggi, 2005; Waller & Matoba, 1999; Wardle & Watters, 2004). This is the first study that has found differences between LDS and non-LDS females regarding body image, which is important given the link between body image and eating disorders (body image ideals→disordered eating, Markey, 2004). One possible explanation for these findings is that LDS doctrine encourages appreciation of the body (Pinborough, 2003) and thus, LDS females view their body with more appreciation than non-LDS females.

Location Analyses

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 previous findings suggest 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 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. Findings suggest that LDS females residing outside Utah may be impacted more by the pro-body LDS doctrine than LDS females residing inside Utah. This is now two studies that have 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 although 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 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, particularly given evidence that suggests additional contributors to less positive body image for LDS females residing inside Utah than pressures to marry and mate. Future exploration in this regard is important given the link between body image and eating disorder behaviors (body image ideals→disordered eating, Markey, 2004).

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 weight classification. 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, despite 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,

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).

The BYU Honor Code and Religious Membership

Researchers were mindful of the possible influence of The BYU Honor Code at BYU-Utah and BYU-Idaho in participants' responses. 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. In order to address this potential confound, all surveys were anonymous and great care was taken to ensure anonymity. Participants were assigned passwords and identification numbers in order to complete the measures to make it clear to them that their responses are anonymous. Names and identification numbers/passwords were kept separate from questionnaire responses. In addition, survey directions clearly outlined participants' anonymity and the website was secure. Directions also stated that The BYU Honor Code would not be informed of any of the results. Directions are provided in Appendix A. Furthermore, the BIDR was added to detect any systematic difference in social desirability between LDS and non-LDS participants and was used to evaluate the presence and extent of this possible confound in this study. The BIDR IM subscale was added as a covariate in analyses between religious groups given the significant difference found in this subscale between LDS and non-LDS populations, as well as its high correlation with many other measures used in this study. Finally, the 'Age Universal' I-E Scale was used to evaluate intrinsic and extrinsic religiosity as an additional measure to determine motivation behind response patterns.

Regression analyses demonstrated that intrinsic religiosity accounted for more variance in urges to engage in substance use in response to negative emotion than religious membership (LDS and non-LDS) or extrinsic religiosity. Analyses also demonstrated that extrinsic religiosity accounted for more variance in decreased urges to engage in eating in response to negative emotion than religious membership (LDS vs. non-LDS) or intrinsic religiosity. The only regression model that the extrinsic religiosity subscale entered was the one predicting responses regarding decreased urges to eat in response to negative emotion, rather than the models predicting increased and decreased urges to use substances in response to negative emotion (as would be expected if The BYU Honor Code was significantly influencing responding). Since extrinsic religiosity only predicted responses regarding decreased urges to eat in response to negative emotion, and there were no significant differences between religious groups regarding the Emotional Eating Scale, it seems that the BYU Honor Code did not significantly affect results. Although results from regression analyses demonstrate that intrinsic and extrinsic religiosity were better predictors of scores on some primary hypothesis measures than religious group (LDS and non-LDS), results from t-tests demonstrated that intrinsic and extrinsic religiosity were significantly higher in the LDS group compared to the non-LDS group. Thus, the distinction between extrinsic and intrinsic religiosity did not appreciably affect the pattern of results.

Limitations

It should be noted that two of the measures used in the current study were modified so urges to use substances could be determined in the same format as questions regarding urges to eat in response to negative emotion. Changing some of the Likert scale choice options and modifying these measures appeared to be the best option for the purposes of this research, but

could have affected results. Despite this potential limitation, these scales were chosen for use as they appear to provide the best fit for the current study and hypotheses posed given that scales needed to be consistent across all consumption behaviors. However, there is indication that the high psychometric properties of the original versions held for the revised measures as internal reliability estimates ranged from .89 to .97 for the amended versions. Further, it is possible that adding a small amount of information to the directions of the original EES may change the psychometrics of the scale. However, it is presumed that the small difference in directions to participants ("or decreased urge to eat/use substances") will not alter the strong psychometric properties of the scale.

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, behaviors that have received less specific guidance by LDS leaders, in place of substance use. This has important indications 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 than can aid in the mitigation of body image distress, another step toward answering the call for more specificity regarding culture's

role in the development of eating disorders (Markey, 2004; Obesity, 2004; Polivy & Herman, 2004).

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Footnotes

[1]A directional relationship between body dissatisfaction, negative affect, and disordered eating has also been found (body image ideals→negative affect→disordered eating, Sim & Zeman, 2005), but will not be addressed here as this is not the direction of interest in this dissertation.

[2]Oftentimes, it is difficult to separate stress from negative emotion, as they tend to occur together (Jarvis, 2002; Oliver & Wardle, 1999; Polivy & Herman, 1993; Williams, Hagerty, Yousha, Hoyle & Oe, 2002; Wolff, Crosby, Roberts & Wittrocks, 2000). Consequently, much of the literature reviewed addresses both stress and negative emotion. However, the current study will evaluate the way that substances and food are used in response to negative emotion, which can be directly related to stress.

Appendix A

Thank you for your participation in the current study. You will be asked a series of questions regarding the way you respond to various emotions, as well as how you perceive your body weight and shape and how you behave. This information will eventually be compiled, analyzed, and reported. Please answer all questions. For all items, you are asked to indicate the extent to which each statement pertains to you personally.

Your answers are anonymous. All answers will be held strictly confidential and will only be used for the benefit of the current study. We have no way of identifying you and The Honor Code office will not be involved in any way. There are no right or wrong answers. Just give the answer that is most accurate for you.

Your participation is strictly voluntary and you may withdraw from the study at any time. Remember, your answers are anonymous, so please be completely honest and answer all items.

Your participation is greatly appreciated!

Appendix B

Journal Article

Running head: EATING, SUBSTANCE USE, AND BODY IMAGE

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

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Author note: This research was supported by research grants from Brigham Young University (Psychology Department and The Women's Research Institute).

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Abstract

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, as has previously been suggested by other researchers. 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.

Key Words: Eating, eating behaviors, eating disorders, substances, substance use, substance abuse, females, body image, Latter-Day Saints, LDS; religion

Eating, Substance Use, and Body Image: A Comparison Of

Latter-Day Saint and Non-Latter-Day Saint College Age Females

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 eating behaviors. For instance, some religions such as the Latter-Day Saint religion 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 (Hawks & Bahr, 1999; Nelson, 2003; Gaustad & Barlow, 2001; U.S. Census Bureau, Statistical Abstract of the United States, 2003). 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, in press).

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 leads to disordered eating (Rucker & Cash, 1992; Stice, 1994; Waller & Matoba, 1999). Previous research suggests that there are particular 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 related link to eating disorder behaviors.

Although prior research suggests no differences between LDS and non-LDS females regarding beliefs about the body, it has been suggested that the LDS directive for perfection and self-discipline may be misapplied within the LDS population. Such claims identify the pressures, particularly on the BYU campus, to marry and mate as influencing 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 this gap, 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, 2004, Polivy & Herman, 2004).

Methods

Participants

A sample of LDS and non-LDS female college students were recruited from 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. Students were taken from different universities to compare LDS students and non-LDS students regarding their desire to engage in eating and substance use in response to negative emotion, to compare LDS students' perceptions of body image to non-LDS students, and to compare students in Utah to those outside of Utah. All institutions are located on the West Coast, located within 900 miles of one another, which allows for minimization of any differences which may

appear due to geographic location. Participants were recruited from general education classes on the respective campuses. 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 for the participation ($10).

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, Latter-Day Saint, 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 five-point Likert scale ("no desire to eat" to "an overwhelming desire to eat"). However, this instrument was modified to adequately address hypotheses. The five-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) as 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. Further, the EES was modified to explore substance use, in addition to binge and restricting eating behaviors (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." Internal reliabilities ranged from .89-.97 for the EES-R.

The Dutch Eating Behavior Questionnaire and the Dutch Eating Behavior Questionnaire-Revised for Substance Use (DEBQ and DEBQ-R): Seven items of the nine-item Emotional Eating subscale of the DEBQ (van Strien, Frijters, Bergers, 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 five-point, Likert-type (1=*never,* 5=*very often*) format. van Strien et al. (1986) reported that the nine-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 read "Do you have a desire to use substances (alcohol, tobacco, drugs) when…?." Internal reliabilities for the DEBQ-R ranged from .89-.91.

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 Balanced Inventory of Desirable Responding (BIDR): The BIDR (Paulhus, 1988) is a 40-item inventory that is scored on a seven-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 Multidimensional Body-Self Relations Questionnaire (MBSRQ): The MBSRQ 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:

(6) 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 a Cronbach's alpha (internal consistency) of .88, and a 1-month test-retest reliability of .86 for females.

(7) 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 was .85 and the 1-month test-retest reliability for was .90 for females.

(8) The *Body-Areas Satisfaction scale* (BASS) consists of nine items that measure satisfaction or dissatisfaction with discrete aspect 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 .73 and the 1-month test-retest reliability was .74 for females.

(9) 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 .76 and the 1-month test-retest reliability was .89 for females.

(10) The *Self-Classified Weight scale* (WTCLASS) consists 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 .89 and the 1-month test-retest reliability was .74 for females.

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.

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) report internal consistency reliability measures of .70-.83 in three separate studies for females, and test-retest reliability correlations of .76 for females.

The Body Shape Questionnaire (BSQ): The BSQ (Cooper, Taylor, Cooper & Fairburn, 1987) is a 34-item self-report 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).

Data Analysis [3]

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),[$t(151)=7.53$, $p=<.01$.], and the BIDR impression management subscale (IM), [$t(151)=9.61$, $p<.01$]. 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 (contributing more than SD subscale to the significantly different means found between LDS and non-LDS populations for the BIDR 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, $t(103)=-1.57$, $p>.05$, the BIDR SD, $t(103)=.23$, $p>.05$, or the BIDR TOT, $t(103)=-.88$, $p>.05$, 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 (EES-Increase, EES-Decrease, EES-R-Increase, EESR-Decrease, DEBQ, DEBQ-R) 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.

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, $F(2,150)= 21.78$, $p<.001$ and $F(2,150)=24.02$, $p<.001$. 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 5.

Body Image Analyses

The overall MANCOVA for all body-related measures across religious groups was significant, $F(2,150)=1.94$, $p<.05$. As shown in Table 6, eight of the ten body-related measures were found to differ significantly between groups using the BIDR IM as a covariate: BSQ, $F(2,150)=10.44$, $p<.001$, BAAS, $F(2,150)=4.76$, $p<.05$, APPEVF, $F(2,150)=3.85$, $p<.05$, APPORF, $F(2,150)=3.68$, $p<.05$, BASS, $F(2,150)=6.12$, $p<.01$, OWPR, $F(2,150)=4.48$, $p<.05$,

BARS (Positive Feelings), $F(2,150)=12.78$, $p<.001$, and BARS (Negative Feelings), $F(2,150)=8.43$, $p<.001$. 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 6.

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. Means and standard deviations are provided in Table 7.

The overall MANOVA for all body-related measures across location (inside Utah and outside Utah) for the LDS sample was significant, $F(1,103)=3.65$, $p<.01$. As shown in Table 8, two of the ten body-related measures were found to be significant: BSQ, $F(1,103)=4.94$, $p<.05$ and OWPR, $F(1,103)=5.87$, $p<.05$. 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 8.

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, Statistical Abstract of the United States, 2003) 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 (in press) 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 (in press) 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 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, Statistical Abstract of the United States, 2003). 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 bodies and body shape, greater preoccupation with being overweight, and greater attention to body shape than LDS females. Thus, results support consistent findings

regarding cultural influences 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). This is the first study that has found differences between LDS and non-LDS groups regarding body image, which is important given the link between 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 females view their body with more appreciation than non-LDS females.

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 previous findings suggest 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 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. Given that LDS females residing inside Utah also endorsed fewer beliefs that positive feelings, self-worth, and interpersonal and work successes are dependent on appearance than LDS females residing outside of Utah, the current study does not lend support to the conception that LDS females

residing inside Utah are more dissatisfied with their bodies than LDS females residing outside of Utah due to pressures to marry and mate as previously suggested (Carroll & Spangler, 2001). Future research could continue to investigate this relationship. This is now two studies that have 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, particularly given evidence that suggests additional contributors to less positive body image for LDS females residing inside Utah than pressures to marry and mate. Future exploration in this regard is important given the link between body image and eating disorder behaviors (body image ideals→disordered eating, Markey, 2004).

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, 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, behaviors that have received less specific guidance by LDS leaders, 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 than can aid in the mitigation of body image distress, another step toward answering the call for more specificity

regarding culture's role in the development of eating disorders (Markey, 2004; Obesity, 2004; Polivy & Herman, 2004).

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Footnotes

[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. 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.

Table 1

Participant Characteristics (n=153)

	n	% of total sample
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%

Table 1 (continued).

	n	% of total sample
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%

Table 1 (continued).

	n	% of total sample
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%

Table 2

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

Scale		mean (sd)	t	p
BIDR_TOTAL	LDS	12.41 (5.47)	7.53	.007
	non-LDS	10.22 (4.13)		
BIDR_IM	LDS	7.98 (3.53)	9.61	.002
	non-LDS	5.35 (2.33)		
BIDR_SD	LDS	4.43 (2.89)	0.00	.991
	non-LDS	4.88 (2.86)		

Note. BIDR_TOT=The Balanced Inventory of Desirable Responding-Total Scale; BIDR_IM=The Balanced Inventory of Desirable Responding-Impression Management Subscale; BIDR_SD=The Balanced Inventory of Desirable Responding-Self-Deception Subscale.

Table 3

Social Desirability: Correlations Between the BIDR and All Other Measures

	BIDR_SD	BIDR_IM	BIDR_TOT
RELIGION	.07	-.36**	-.20*
LOCATION	-.02	.15	.00
ABS	-.18*	-.18*	-.22**
BSQ	-.29**	-.35**	-.39**
BAAS	-.37**	-.22**	-.35**
DEBQ	-.26**	-.10	-.21*
DEBQ_R	-.20*	-.47**	-.42**
APPEVF	.31**	.22**	.32**
APPORF	-.17*	-.18*	-.22**
WTCLASS	-.05	-.17*	-.14
BARS_POS	.30**	.36**	.41**
BARS_NEG	-.19*	-.29**	-.30**
BIDR_SD	1.00	.34**	.78**
BIDR_IM	.34**	1.00	.85**
BIDR_TOT	.78**	.85**	1.00
EES_DEC	.24**	.06	.17**
EES_INC	.02	.05	.05
EESR_DEC	.14	.34**	.30**

Table 3 (continued).

	BIDR_SD	BIDR_IM	BIDR_TOT
EESR_INC	-.07	-.20*	-.17*
AUIE_INT	.10	.51**	.39**
AUIE_EXT	.00	.08	.05
BASS	.28**	.27**	.34**
OWPR	-.20*	-.24**	-.26**

Note. RELIGION=LDS or Non-LDS; LOCATION=Inside Utah or Outside Utah; ABS=The Attention to Body Shape Scale; BSQ=The Body Shape Questionnaire; BAAS=The Beliefs About Appearance Scale; DEBQ=Dutch Eating Behaviors Questionnaire; DEBQ_R=Dutch Eating Behaviors Questionnaire-Revised for Substance Use; APPEVF=The Appearance Evaluation Scale; APPORF=The Appearance Orientation Scale; WTCLASS=The Self-Classified Weight Scale; BARS_POS=The Body Appreciation and Respect Scale-Positive Feelings Subscale; BARS_NEG=The Body Appreciation and Respect Scale-Negative Feelings Subscale; BIDR_SD=The Balanced Inventory of Desirable Responding-Self-Deception Subscale; BIDR_IM=The Balanced Inventory of Desirable Responding-Impression Management Subscale; BIDR_TOT=The Balanced Inventory of Desirable Responding-Total Scale; EES_DEC=The Emotional Eating Scale-Decreased Subscale; EES_INC= Emotional Eating Scale-Increased Subscale; EESR_DEC=The Emotional Eating Scale-Revised for Substance Use-Decreased Subscale; EESR_INC=The Emotional Eating Scale-Revised for Substance Use-Increased Subscale; AUIE_INT=The 'Age Universal' I-E Scale-12-Intrinsic Subscale; AUIE_EXT=The 'Age Universal' I-E Scale-12-Extrinsic Subscale; BASS=The Body Areas Satisfaction Scale; OWPR=The Overweight Preoccupation Scale.
*p<.05, two-tailed. **p<.01, two-tailed.

Table 4

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

Scale		mean (sd)	t	p
BIDR_TOTAL	Inside UT	12.02 (5.12)	-0.88	.379
	Outside UT	12.98 (5.95)		
BIDR_IM	Inside UT	7.53 (3.40)	-1.57	.119
	Outside UT	8.63 (3.67)		
BIDR_SD	Inside UT	4.48 (2.84)	0.23	.815
	Outside UT	4.35 (2.98)		

Note. BIDR_TOT=The Balanced Inventory of Desirable Responding-Total Scale; BIDR_IM=The Balanced Inventory of Desirable Responding-Impression Management Subscale; BIDR_SD=The Balanced Inventory of Desirable Responding-Self-Deception Subscale.

Table 5

Consumption Analyses

Scale		mean (sd)	F	df (b,w)	p
EES_DEC	LDS	36.41 (11.83)	0.31	(2,150)	.736
	non-LDS	36.67 (12.20)			
BIDR_IM			*0.60*	*(1,150)*	*.440*
EES_INC	LDS	59.60 (17.55)	1.07	(2,150)	.346
	non-LDS	62.83 (19.36)			
BIDR_IM			*1.09*	*(1,150)*	*.298*
EESR_DEC	LDS	60.64 (19.79)	12.92	(2,150)	.000
	non-LDS	47.27 (23.23)			
BIDR_IM			*11.46*	*(1,150)*	*.001*
EESR_INC	LDS	69.47 (21.07)	2.99	(2,150)	.053
	non-LDS	73.48 (20.51)			
BIDR_IM			*4.73*	*(1,150)*	*.031*
DEBQ	LDS	17.97 (4.97)	0.80	(2,150)	.452
	non-LDS	18.00 (6.00)			
BIDR_IM			*1.60*	*(1,150)*	*.208*
DEBQ_R	LDS	9.90 (5.24)	24.02	(2,150)	.000
	non-LDS	14.29 (7.79)			
BIDR_IM			*28.18*	*(1,150)*	*.000*

Note. EES_DEC=The Emotional Eating Scale-Decreased Subscale; EES_INC= The Emotional Eating Scale-Increased Subscale; EESR_DEC=The Emotional Eating Scale-Revised for Substance Use-Decreased Subscale; EESR_INC=The Emotional Eating Scale-Revised for Substance Use-Increased Subscale; DEBQ=Dutch Eating Behaviors Questionnaire; DEBQ_R=Dutch Eating Behaviors Questionnaire-Revised for Substance Use; BIDR_IM=The Balanced Inventory of Desirable Responding-Impression Management Subscale.

Table 6

Body Image Analyses

Scale		mean (sd)	F	df (b,w)	p
OVERALL	LDS		1.94	(2,150)	.044
	non-LDS				
BIDR_IM			*3.29*	*(1,150)*	*.001*
ABS	LDS	23.89 (5.39)	2.47	(2,150)	.088
	non-LDS	24.90 (5.20)			
BIDR_IM			*3.73*	*(1,150)*	*.055*
BSQ	LDS	96.73 (37.72)	10.44	(2,150)	.000
	non-LDS	106.40 (44.13)			
BIDR_IM			*18.71*	*(1,150)*	*.000*
BAAS	LDS	50.09 (17.30)	4.76	(2,150)	.010
	non-LDS	49.10 (18.20)			
BIDR_IM			*9.41*	*(1,150)*	*.003*
APPEVF	LDS	3.12 (.84)	3.85	(2,150)	.024
	non-LDS	2.94 (.95)			
BIDR_IM			*6.15*	*(1,150)*	*.014*
APPORF	LDS	3.58 (.60)	3.68	(2,150)	.027
	non-LDS	3.52 (.70)			
BIDR_IM			*7.05*	*(1,150)*	*.009*
BASS	LDS	3.19 (.72)	6.12	(2,150)	.003
	non-LDS	3.01 (.77)			
BIDR_IM			*10.18*	*(1,150)*	*.002*
OWPR	LDS	2.88 (1.13)	4.48	(2,150)	.013
	non-LDS	3.15 (1.14)			
BIDR_IM			*6.92*	*(1,150)*	*.009*
WTCLASS	LDS	3.30 (.66)	2.52	(2,150)	.084
	non-LDS	3.49 (.83)			
BIDR_IM			*2.59*	*(1,150)*	*.110*
BARS_POS	LDS	49.47 (12.73)	12.78	(2,150)	.000
	non-LDS	42.63 (12.39)			
BIDR_IM			*14.98*	*(1,150)*	*.000*
BARS_NEG	LDS	25.92 (11.09)	8.43	(2,150)	.000
	non-LDS	32.08 (15.62)			
BIDR_IM			*8.68*	*(1,150)*	*.004*

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; BARS_POS=The Body Appreciation Respect Scale-Positive Feelings Subscale; BARS_NEG=The Body Appreciation Respect Scale-Negative Feelings Subscale; BIDR_IM=The Balanced Inventory of Desirable Responding-Impression Management Subscale.

Table 7

Consumption Analyses: Location (LDS Sample Only)

Scale		mean (sd)	t	p
EES_DEC	Inside UT	11.79 (7.07)	-0.36	.722
	Outside UT	12.28 (6.63)		
EES_INC	Inside UT	11.82 (7.29)	0.43	.670
	Outside UT	11.26 (6.20)		
EESR_DEC	Inside UT	5.03 (13.09)	-0.10	.922
	Outside UT	5.28 (11.90)		
EESR_INC	Inside UT	3.71 (5.97)	0.03	.978
	Outside UT	3.67 (7.30)		
DEBQ	Inside UT	18.58 (5.16)	1.52	.132
	Outside UT	17.09 (4.60)		
DEBQ_R	Inside UT	10.24 (5.20)	0.81	.419
	Outside UT	9.40 (5.32)		

Note. EES_DEC=The Emotional Eating Scale-Decreased Subscale; EES_INC= The Emotional Eating Scale-Increased Subscale; EESR_DEC=The Emotional Eating Scale-Revised for Substance Use-Decreased Subscale; EESR_INC=The Emotional Eating Scale-Revised for Substance Use-Increased Subscale; DEBQ=Dutch Eating Behaviors Questionnaire; DEBQ_R=Dutch Eating Behaviors Questionnaire-Revised for Substance Use.

Table 8

Body Image Analyses: Location (LDS Sample Only)

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

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; BARS_POS=The Body Appreciation Respect Scale-Positive Feelings Subscale; BARS_NEG=The Body Appreciation Respect Scale-Negative Feelings Subscale.