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A comparison of beliefs and attitudes about body image, eating and weight between incarcerated and non~incarcerated females

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A COMPARISON OF BELIEFS AND ATTITUDES ABOUT BODY IMAGE, EATING AND
WEIGHT BETWEEN INCARCERATED AND NON-INCARCERATED FEMALES

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Abstract

Incarceration and substance abuse are two of the largest public health issues in America. While the U.S. makes up only 5% of the world's population, it accounts for 25% of its prisoners. Incarceration affects more than 2.2 million individuals who will eventually return to their families and communities with ongoing family, social and health issues. Women in prison are a particularly vulnerable and underserved population, generally of low education and socio-economic status and although they account for a small percent of the prison population, many are mothers of young children who are likely to become incarcerated themselves. Substance abuse is prevalent (80%) among imprisoned women, particularly stimulants (e.g. methamphetamine, cocaine, etc.) due to their appealing side effects including increased energy and weight loss. Newly abstinent from these drugs, metabolic activity and appetite suppression are removed and women tend to gain significant weight. Failure to address physical health, body dissatisfaction, eating pathologies and weight concerns can result in co-morbid and often life-threatening eating disorders and other compensatory behaviors (laxative use, vomiting or extreme caloric restriction). While several public health approaches address the more common mental health issues found in prisons such as anger, depression and domestic violence, few address behavioral health associated with weight concerns, body image, obesity and eating pathologies. Left untreated, these may serve as triggers for relapse. This study observed differences in beliefs and attitudes about body image, eating and weight between incarcerated females and a non-incarcerated community sample. Results demonstrated a significantly ($p > 0.05$) higher rate of severe eating pathologies and binge eating among incarcerated females and greater body dissatisfaction and preoccupation with body shape. Additionally, unhealthy dieting practices and illicit drug use for weight loss was found to be significantly higher in prisoners. Gender-

responsive programs addressing these issues and environmental approaches to promote healthy lifestyle behaviors are warranted in this population.

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Chapter 1 – Introduction

Incarceration and substance abuse are two of the largest public health issues in America. While the United States makes up only 5% of the world's population, it accounts for 25% of its prisoners (Cloud, Parsons, & Delany-Brumsey, 2014). These 2.2 million individuals who enter America's jail or prison system will eventually return to their families and communities with ongoing family, social and health issues (both mental and physical). Without treatment, such issues may contribute to their eventual return to prison. Incarceration costs the U.S. nearly \$40 billion annually, roughly \$35,950 per inmate (Vera, 2012). Similarly, substance abuse costs the U.S. nearly \$500 billion each year (NIDA, 2014a) and contributes to other costly public health issues, such as unwanted pregnancies, HIV/AIDS, sexually transmitted diseases (STDs), and domestic violence (DHHS, 2014). Ironically, substance abuse plays a role in the incarceration of 80% of the individuals imprisoned in the United States (USDOJ, 2005).

Of those incarcerated with substance abuse issues, women in prison are a particularly vulnerable and underserved group. Although they account for only 7% of the whole prison population, female prisoners are generally of low education and socio-economic status (Houle, 2014; Wakefield & Uggen, 2010) and many are mothers of young children who are likely to become incarcerated themselves (Dallaire 2007). Many of these women are also often victims of sexual abuse by parents/caregivers, family and strangers during childhood. Research suggests that women in prison use drugs and alcohol to escape these harmful situations and hurtful memories (Harner & Riley, 2013).

Most women in the United States are incarcerated for non-violent, drug-related crimes (USDOJ, 2014). Stimulants, which are increasingly popular for women, include methamphetamine, cocaine, nicotine, ecstasy, and some prescription drugs used to treat various health problems, including Adderall and Ritalin. Stimulants are appealing to women because of their effects such as increased energy, elevated mood, elevated metabolic functioning, and loss of appetite (Brecht, O'Brien, von Mayrhauser, & Anglin, 2004; Greenfield, Back, Lawson, & Brady, 2010; Joe, 1995, 1996; Parkes, Saewyc, Cox, & MacKay, 2008). In fact, research shows that women increasingly report weight loss as a primary reason to use legal and illegal drugs (Brecht, et al., 2004; Greenfield, et al., 2010; Joe, 1995, 1996; Parkes, et al., 2008).

Consequently, weight-related issues are likely to be a core problem for women in prison arrested for drug-related offenses and particularly significant for women “newly abstinent from stimulants, such as methamphetamine, who tend to gain significant weight once the drugs metabolic activity and appetite suppression are removed” (Henry, Minassian, & Perry, 2012). . Other than gender-neutral substance abuse treatment, very little research and programming exists addressing these drug-related offenses for women.

For many women with a history of substance abuse, food consumption and appetite also become impaired following substance abuse cessation. This is because healthy eating requires awareness of one’s internal satiety cues (i.e., listening to the body’s hunger and fullness cues). As such, many women recovering from substance abuse engage in overeating, binge eating, compensatory behaviors, and eating disturbances, which can present themselves as unhealthy dieting (e.g. laxatives, vomiting or extreme food restriction), poor eating practices (e.g. binge eating), or as full-blown eating disorders (Hilbert, 2012; J. I. Hudson, Hiripi, Pope, & Kessler,

2007; Jacobi et al., 2004). These behaviors can be life threatening and are often strongly comorbid with alcohol or drug abuse (Grilo C. M., 1995; J. I. Hudson, Weiss, R. D., Pope, H. G. Jr, McElroy, S. K. & Mirin, S. M., 1992; Piran & Gadalla, 2007; Zweben, 1987). Eating pathologies, such as these, are relatively common among female substance abusers (Cohen, Greenberg, Uri, Halpin, & Zweben, 2007; Greenfield, et al., 2010; Holderness, 1994; Warren, Lindsay, White, Claudat, & Velasquez, 2013). In one study, female offenders were found to be 18 times more likely to have an eating disorder than their male counterparts (Zlotnick et al., 2008).

One major contributor to eating pathologies and weight concerns is the perception of how one views them self and their body, leading to an overall body dissatisfaction. Body dissatisfaction, defined as disliking one's physical appearance, is one of the strongest predictors of eating pathology and can precipitate extreme measures to decrease body weight (Parkes, et al., 2008; Stice & Shaw, 2003). It is often associated with low self-esteem, depressive symptoms, increased anxiety, and poor sexual functioning (Paxton, Neumark-Sztainer, Hannan, & Eisenberg, 2006). Decreasing unrealistic weight and appearance ideals tied to body dissatisfaction and adopting more reasonable, healthy body size ideals may assist women in eliminating unhealthy weight-control behaviors (e.g., using drugs to lose weight) and eating pathologies.

Many females enter prison not only addicted to alcohol and drugs, but already in poor health, and suffering from numerous chronic physical, mental, and behavioral health challenges (USA, 2012). While several public health approaches address the more common mental health issues found in prisons, such as anger, depression, sexual diseases, sexual victimization, and

domestic violence, few exist that address lifestyle behavioral health associated with weight concerns, such as nutrition, physical activity, obesity and eating pathologies. Other confounding factors contributing to weight-related issues in women in prison include the prison environment, which promotes sedentary lifestyles and unhealthy eating. Left untreated, eating and body image issues may serve as triggers for relapse to using drugs and alcohol, developing a more severe eating disorder, or engaging in behaviors that increase the likelihood they will return to prison (e.g., selling drugs, using illegal drugs, petty theft to support drug habits).

The overarching purpose of this project is determine whether incarcerated females exhibit similar beliefs and attitudes about body image, eating, and weight as non-incarcerated females. While some concerns about weight, body shape, and food are common in women (Neumark-Sztainer, Sherwood, French, & Jeffery, 1999), it is hypothesized that incarcerated females may exhibit a greater number, as well as more extreme negative beliefs and attitudes about food, weight and body image than their non-incarcerated counterparts.

To date, few studies have conducted psychometric analyses using validated instruments to measure these constructs in incarcerated populations. While some studies show negative attitudes and beliefs among female substance abusers in recovery (A. Lindsay, Warren, Velasquez, & Lu, 2012; Warren, et al., 2013), no studies have measured the degree to which these unhealthy thoughts and behaviors exist in incarcerated females in comparison to non-incarcerated females. Consequently, this study utilized several validated clinical instruments to measure these constructs, including body dissatisfaction, eating pathologies, media internalization, intuitive eating (related to satiety cues) and quality of life.

Chapter 2 - Literature Review

Incarceration

Incarceration is a public health issue in the United States affecting individuals, families and communities. Currently there are 2.2 million people in jails and prisons, an increase of 500% in the past 40 years (Cloud, et al., 2014). Many will return to their communities with ongoing family issues, social issues and health issues (both mental and physical) that can lead to recidivism. While many public health approaches address mental health issues observed in prisons, such as substance abuse, anger, depression, sexual diseases, sexual victimization, and domestic violence, few exist that address lifestyle behavioral health related to nutrition, physical activity, obesity, and eating pathology.

The proportion of incarcerated women to men in the United States is slowly on the rise (L. E. Glaze, 2010). Currently, there are 1,574,700 prisoners under state and federal jurisdiction and while men are more likely to be incarcerated than women, women have experienced a greater increase in the rate of incarceration than their counterparts. Between 2000 and 2010, the numbers of state and federal prisoners increased 13.6 percent for women while only 4.3 percent for men (USA, 2012). Female state prisoners increased from 108,800 in 2012 to 111,300 in 2013, and increase of 2.3% in one year (BOJ, 2014)

Nevada is not immune to high incarceration rates. Except for the year 2008, by percent, Nevada has incarcerated a higher proportion of citizens than the United States, an additional 26 offenders more per 100,000 inhabitants (USA, 2012). There are currently 13,318 inmates in Nevada, 1,161 (8.72%) of which are female (NDOC, 2015). Incarcerated Nevada females increased from 1,038 in 2012 to 1,085 in 2013 (nearly 85 offenders in one year), an increase of

4.4% (BOJ, 2014). Female incarceration rates vary with age, peaking among women aged 30–34 years at 175 per 100,000 (USA, 2012). In April of 2015, Nevada females at intake were a median age of 35, and a mean age of 37.26 (NDOC, 2015).

Demographically Vulnerable and Underserved Population

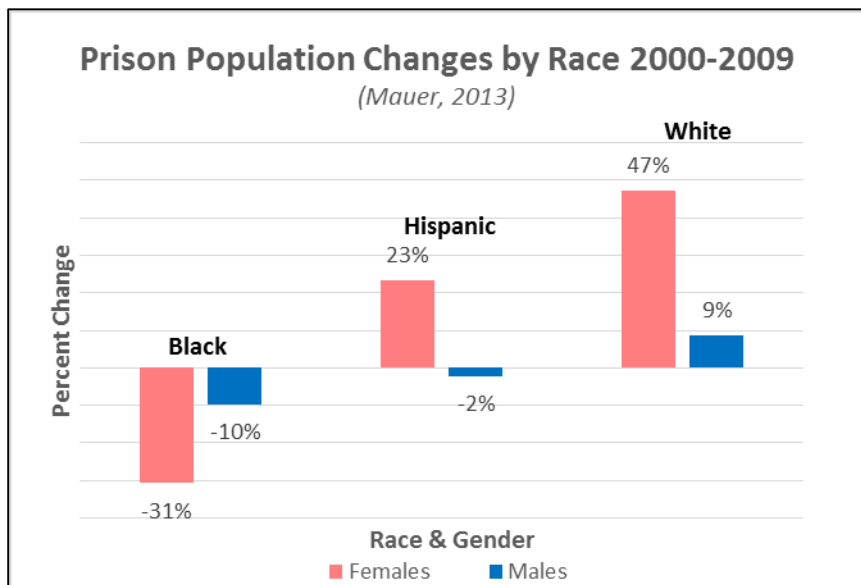
Women in prison are a vulnerable and underserved population, generally of low educational attainment and socio-economic status (Houle, 2014; Wakefield & Uggen, 2010). The World Health Organization states that “women are a special group within prisons because of their sex” based on biological and gender-based differences likely due to victimization (mostly sexual) by parents/caregivers, family, and strangers during childhood. Use of drugs, alcohol and running away help them escape the abuse, often leading to criminal activity, prostitution and more (Harner & Riley, 2013).

While the U.S. Department of Justice (2013) reported that non-Hispanic blacks comprised the largest portion of male inmates (37%) under state or federal jurisdiction compared to non-Hispanic whites (32%) and Hispanics (22%), white females comprised 49% of the prison population compared to 22% black females. The highest race/ethnicity for females in Nevada is also white (62%), even higher than the national average, followed by blacks (22%) and Hispanic (9%). This may be explained, in part, by the Nevada census population which is 59% White, 26% Hispanic and 7% African-American (NDOC, 2012).

Although African-American females are more likely to be incarcerated than their white and Hispanic counterparts (Carson, 2014), white females still make up the majority of prisons female

population. Moreover, the rate of incarceration for black women in prisons (state and federal) declined 30% from 2000-2009 yet increased 47% for white females and increased 23% for Hispanics. This is considerably different than the male prison population which has changed very little (Figure 1).

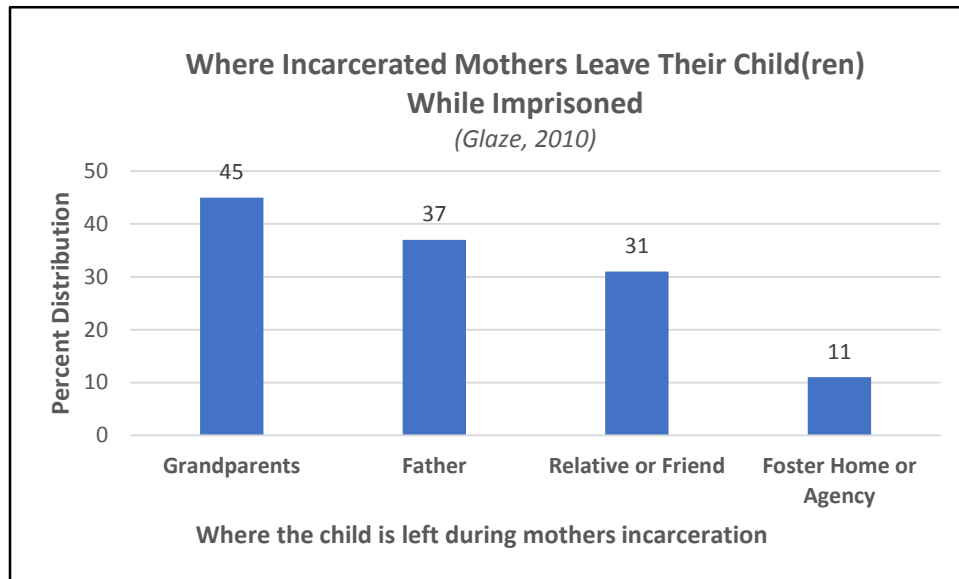
Figure 1. Prison Population Changes by race 2000-2009



The fastest growing population in the nation's jails and prisons are mothers (L. E. Glaze, Maruschak, L.M., 2010). The number of mothers held in state and federal prisons (up 122%) grew at a faster rate compared to the number of fathers (up 76%) between 1991 and midyear 2007 (L. E. Glaze, Maruschak, L.M., 2010). In the month before their arrest, more than 55% of women lived with their minor children providing daily care; 42% were living in a single-parent household (L. E. Glaze, Maruschak, L.M., 2010). Convicted mainly for drug offenses with lengthy sentences (Poehlmann, 2005), their children are left to the social welfare system or more often, family members. As seen in Figure 2, the family member that incarcerated women mostly

leave their children with is the grandparents (42% of the 45% is with the grandmother). Few are placed in foster care or other suitable agencies (L. E. Glaze, Maruschak, L.M., 2010).

Figure 2. Where Incarcerated Mothers Leave Their Child(ren) While Imprisoned



Since 58% of mothers in state prisons reported having a family member who had also been incarcerated (L. E. Glaze, Maruschak, L.M., 2010), leaving children in the care of families can be a cyclic problem. Children of incarcerated parents tend to have an increased chance of incarceration themselves (Dallaire, 2007).

There are differences in criminal offenses for which women are incarcerated as compared to men (Kubiak, 2004). Although for both men and women, drug-related offenses are the most frequent reasons for entering prison, male offenses are generally associated with distribution, while females are more often charged with possession (Swopes, 2012). Additionally, most women are incarcerated for non-violent crimes, whether drug, property or public offenses. In 2011, 36% of females were incarcerated for violent crimes as opposed to 54% for their male

counterparts; property crimes for females were 30% and 18.4% for males; and drug crimes for women were 26% and 17% for males (Guerino, December 2011).

The Bureau of Justice (Durose, 2003) reported the mean length of sentences for felons sentenced in State prison was almost 4 years and 7 months; the median term was 3 years. In Nevada, nearly 40% of all females have a sentence term between 2-10 years (with more than half of those having a 2-5 year sentence) (NDOC, 2014b).

Substance Abuse and Incarceration

Incarcerated or not, substance abuse is also an enormous public health problem in the United States, including Nevada. Approximately 9% of Nevada residents reported past-month use of illicit drugs (above the national average which is 8%). Nevada's rate was one of the 10 highest among the states (President, 2014). Substance abuse affects every community and every family in some way and costs our nation approximately \$484 billion per year (NIDA, 2014a). The effects of substance abuse are cumulative, significantly contributing to costly social, physical, mental, and public health problems including teenage pregnancy, HIV/AIDS, sexually transmitted diseases (STDs), domestic violence, child abuse, crime and homicide. One of the Healthy People 2020 goals is to reduce substance abuse to protect the health, safety, and quality of life for all, especially children (DHHS, 2014).

While substance abuse continues to be a growing problem in America, it is even more prevalent among incarcerated females. For example, in a study of 109 women entering a state prison, about 95% (n = 103) reported regular drug use or dependence, and 72% specifically

reported regular use of methamphetamines (VIK & Ross, 2003). The National Center of Addiction and Substance Abuse at Columbia University reports that drug and alcohol abuse play a role in the incarceration of 80% of the individuals imprisoned in U.S. jails and prisons (USDOJ, 2005). Substance abuse, especially methamphetamine, is a problem in Nevada's prisons as well. Sanders et al (1997) conducted a needs assessment on 203 incarcerated women housed in Nevada's correctional center located in Carson City. Between 64-75% of women surveyed rated substance dependence programs as "very important and 67% identified substance abuse as a problem (Sanders & McNeill, 1997).

Women and Stimulant Use

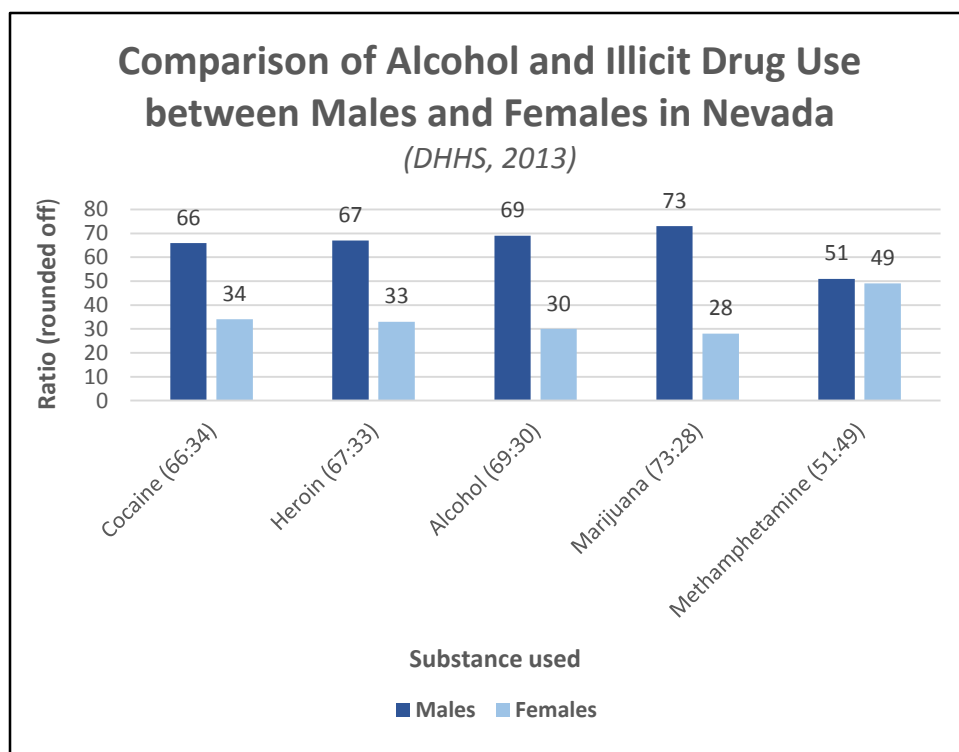
Stimulants include methamphetamine, cocaine, nicotine, ecstasy, and a number of prescription drugs used to treat various health problems (e.g., dextroamphetamine, also known as Adderall; methylphenidate, also known as Ritalin; National Institute on Drug Abuse [NIDA], 2009). According to Nevada law enforcement, methamphetamines remain the biggest drug problem in Nevada, mostly coming in from Mexico through Arizona and California. This is consistent with national treatment admissions data that shows stimulants, including methamphetamine, are the most commonly cited drugs among primary drug treatment admissions in Nevada (DHHS, 2013; President, 2014).

Common side effects of stimulants include increased energy, elevated mood, elevated metabolic functioning, and loss of appetite (Brecht, et al., 2004; Greenfield, et al., 2010; Joe, 1995, 1996; Parkes, et al., 2008). Like amphetamine, methamphetamine increases activity, decreases appetite and causes a general sense of well-being. Amphetamine has been used for

weight control, for athletic performance and endurance, for treating mild depression, and to help truckers complete their long hauls without falling asleep (DPA, 2014).

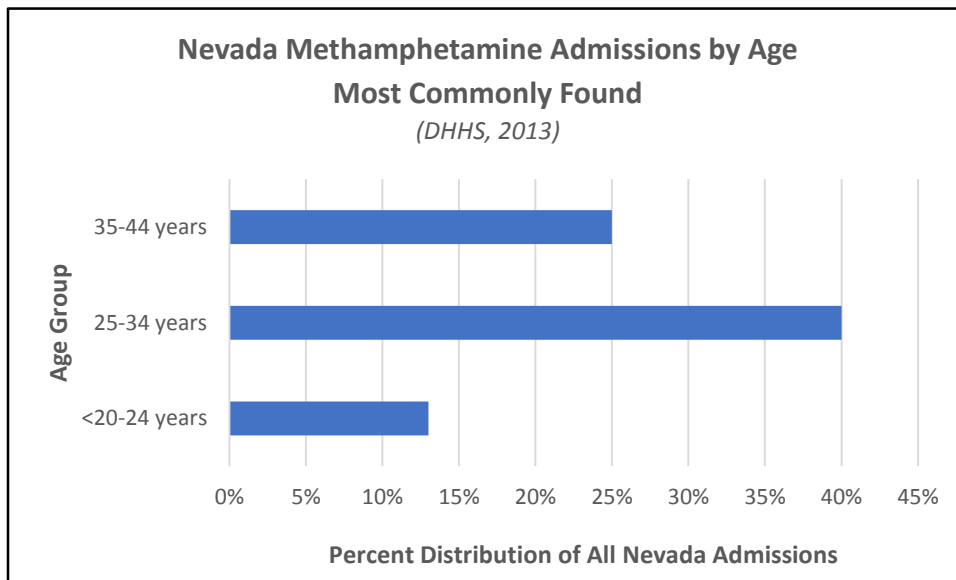
The distinctive drug effects of stimulants, such as methamphetamines, attract unique user characteristics related to gender, age and race. According to the Treatment Episode Data Sheets (treatment admissions across the United States), overall, men generally abuse drugs at a much higher rate than women for most substances (DHHS, 2013). As shown in Figure 3, the only illegal substance used in nearly equal or greater amounts by women was methamphetamine as well as some prescription drugs (sedatives 51:49 and tranquilizers 54:46) which are used in far lesser amounts (DHHS, 2013).

Figure 3. Comparison of Alcohol and Illicit Drug Use between Males and Females in Nevada



The most common methamphetamine admissions in Nevada by race were white (71%). Figure 4 shows 25-34 year olds (40%) were the most commonly found admissions by age (DHHS, 2013), which is consistent with the highest category for female age of admission to incarceration, 30-34 (USA, 2012).

Figure 4. Nevada Methamphetamine Admissions by Age Most Commonly Found



Given that weight loss appears to be a highly motivating and reinforcing side effect of drug use for women (Joe, 1996) women are abusing stimulants at increasingly high rates, particularly methamphetamine (Brecht, et al., 2004; DHHS, 2013; Gonzales, Mooney, & Rawson, 2010). Studies show that women report weight loss as a primary reason to use both legal and illegal stimulants (Brecht, et al., 2004; Greenfield, et al., 2010; Joe, 1995, 1996; Parkes, et al., 2008). This is not surprising since amphetamines have been widely marketed and prescribed to women for weight loss and to treat depression for many years by physicians (DPA, 2014).

One study examined methamphetamine use in a sample of 350 adults and found that women were five times as likely to attribute initial drug use to a desire to lose weight (36% of women) compared with men (7%) (Brecht, et al., 2004). Adolescent girls are more likely to use methamphetamine than boys (Gonzales, Ang, McCann, & Rawson, 2008; Rawson, Gonzales, Obert, McCann, & Brethen, 2005) and in Nevada more than 12% of adolescent girls reported a history of methamphetamine use (Parkes, et al., 2008). Similarly, in a sample of 3,305 high school seniors, female cigarette smokers reported significantly greater use of diet pills and amphetamines to lose weight than nonsmoking females (Gritz & Crane, 1991). Given this body of evidence, it is essential that body image and weight are targeted as core issues for treatment and intervention to prevent relapse. Developing interventions that assist women in feeling comfortable with their physical appearance and other aspects of their personhood not related to their appearance (e.g., personality, intelligence, occupation, education, family relationships) may reduce substance use and prevent relapse (A. Lindsay, et al., 2012).

Physical Health and Incarceration

The World Health Organization (WHO) contends that “health is a fundamental human right, especially for individuals held in the custody of the state” (WHO, 2014). Many females enter prison not only addicted to alcohol and drugs, but are also in poor health, and suffering from chronic physical, mental, and behavioral health challenges, such as sexually transmitted diseases, sexual victimization, bi-polar, depression and other co-occurring disorders (USA, 2012). While there are differences between men and women regarding physical health concerns in prison (Kubiak, 2004), arthritis (state 15%; federal 12%) and hypertension (state 14%; federal 13%)

were the two most commonly reported medical problems. (Maruschak, 2008). In a 2004 Survey of Inmates in State and Federal Correctional Facilities (Maruschak, 2008) more than half (57%) of women incarcerated in state prisons reported a current medical problem. Arthritis was the number one problem for the females at 25%, asthma followed at 19% and hypertension fell at number three with 17%. Nearly all had dental issues. Reviere and Young (2004) also stated that the health needs of older incarcerated women “challenge the traditional prison health care system designed for young, healthy men” (Reviere & Young, 2004).

The U.S. Department of Health and Human Services Office of Women's Health (OWH) has supported initiatives that address some of the significant health issues affecting female offenders. Established in 1991, the OWH "provides leadership to promote health equity for women and girls through sex/gender-specific approaches" (Buell, 2009). Although the health problems in prison are no different than those observed by the general public, they are far more concentrated because of the added influence of addiction, physical and sexual violence, and lack of proper nutrition and housing (Buell, 2009). Cardiovascular disease and lung cancer are the top causes of death. Other common diagnosis are gynecological, breast and other cancers, osteoporosis, eating disorders, STD's, HIV/AIDS, and complications related to both pre- and postpartum pregnancy (Buell, 2009).

Prison is a window of opportunity to address health concerns in women. The WHO, in their Declaration on Women's Health in Prison, stated that “some of the specific needs of women in prison should be tackled by taking advantage of the time they are in prison to provide education about preventing illness and maintaining good health. As a result of the chaotic lifestyles of many of the women who enter prison, their time in prison may be the first time in their life they

have access to health care, social support and counseling” (WHO, 2009). The OWH offers targeted programs for women offenders, some of which include pregnancy delivery, caregivers and mothers, trauma victimization, etc. However, few, if any, have addressed weight concerns, eating pathologies or body dissatisfaction and its prevalence on incarcerated females.

Weight-Related Concerns and Incarceration

It is well known in the literature that the prevalence of obesity and overweight is higher in vulnerable populations such as women, certain racial and/or ethnic minorities and those with lower socioeconomic status. While many studies in the literature have identified specific factors that affect obesity risk, only a few have examined the impact of incarceration on obesity, particularly for those prisoners with a substance abuse history.

In one study, the effects of incarceration on adult male body mass index (BMI) were assessed while including race/ethnicity and education as cofounders. Researchers found that being incarcerated increased BMI, but the effect varied by race/ethnicity and education. Incarceration exposure increased BMI for all groups; blacks had the greatest increase, while education (higher than a high school diploma) was observed to have an inverse association (Houle, 2014).

A recent study on the impact of incarceration on obesity conducted in the eastern United States over a seven year period found that female prisoners were more likely to gain weight and be overweight or obese compared to male prisoners (Gates & Bradford, 2015). Another study found that female prisoners in the United States were 18% more likely to be obese than the

general population of female non-prisoners while males were less likely than the general population of male non-prisoner males to be obese (Herbert, Plugge, Foster, & Doll, 2012)

Being overweight or obese is especially common for prisoners incarcerated shortly after abstinence from stimulants and other substances. Individuals “newly abstinent from methamphetamine tend to gain significant weight, especially fat mass, once the effects of methamphetamine on appetite suppression and metabolism are removed” (Henry, et al., 2012). In one study, weight gain was exhibited by control participants (not receiving the exercise regimen) during an eight week study conducted in a residential substance abuse treatment program who gained, on average, 1.7 kg (4.3 lbs) in body weight, with increases in percentage body fat up to 3% and fat mass up to 5% (Dolezal et al., 2013).

One of the significant issues and concerns related to the rapid, significant weight loss achieved by using some drugs (e.g., stimulants) is that it is highly reinforcing to women with weight-related concerns, thereby serving as a primary motivator for continued legal and illicit drug use and treatment relapse (Brecht, et al., 2004; Greenfield, et al., 2010; Joe, 1995, 1996; Parkes, et al., 2008). Other studies found that women gained a significant amount of weight from drug cessation to substance abuse treatment programming (Emerson, Glovsky, Amaro, & Nieves, 2009; A. Lindsay, et al., 2012).

While substance abuse recovery contributes significantly to weight gain during incarceration, other confounding factors may include the prison environment itself. In a study by Harner & Riley (2013), incarcerated females asserted that poor nutrition consisting of processed meats, low dairy and little to no fresh vegetables contributed to their poor health and premature aging. These nutrient low and deficient options were not limited to culinary meals but also

included the commissary menu where inmates may purchase food items, such as Ramen noodles, soda, pastries, crackers, etc. Exacerbated by sedentary lifestyles and lack of physical activity in prison, participants noted consequences of unhealthy eating including weight gain, decreased energy, and chronic medical conditions. This was also reported in a study by (Douglas, Plugge, & Fitzpatrick, 2009) who found physical inactivity as one of the top two key environmental issues that incarcerated women experienced (the other being cleanliness). Women reported that the lack of exercise left them feeling “bored and aimless,” which resulted in eating, smoking, and medication seeking. For inmates with a history of substance abuse, food consumption and appetite, which rely on intuitive satiety cues, become impaired following substance abuse cessation. This can result in overeating, binge eating, compensatory behaviors and other eating disorders (Douglas, et al., 2009).

Eating Pathology

Eating disturbances are associated with increased psychopathology, health problems, and impairment in quality of life (Jacobi, et al., 2004). Often thought to be limited to a clinical diagnosis of Anorexia Nervosa (AN), eating disturbances include a host of eating pathologies and related conditions and are associated with the highest rate of mortality among all mental disorders (Arcelus, Mitchell, Wales, & Nielsen, 2011; Harris & Barraclough, 1998). Though found predominantly in young females, it is a common health condition in adults, and affects men and women of all ages and weights (Hay, Mond, Buttner, & Darby, 2008). Eating disturbances can persist as unhealthy dieting and eating practices or present themselves as full-blown eating disorders (J. I. Hudson, et al., 2007; Jacobi, et al., 2004). Although symptoms have

been reported in both sexes and in those of higher age and body weight (Hay, et al., 2008), research on eating disturbances across ages, sex, and weight status remains limited (McCabe & Ricciardelli, 2004).

Anorexia Nervosa, the most recognized of the clinically diagnosed eating disturbances, is characterized by restrictive eating and inability to maintain a normal body weight (DSM-5, 2013). However, there are other eating disturbances that often occur in normal and overweight individuals, including Bulimia Nervosa (BN). BN is recognized by its compensatory behaviors aimed at preventing weight gain such as restrictive dieting, self-induced vomiting, over-exercising, use of over-the-counter supplements or laxatives and illicit drug use. These may often follow a binge eating episode (DSM-5, 2013). Recently added to the DSM-V as yet another clinical diagnosis is Binge Eating Disorder (BED) which is characterized by eating a large amount of food accompanied by a sense of loss of control over eating (DSM-5, 2013).

Additionally there are other eating pathologies defined in the DSM-V which include OSFED (Other Specified Feeding or Eating Disorder) which mimics many of the eating disorder behaviors but does not meet the criteria for a BN, AN or BED clinical diagnosis. Examples include, anorexic features without low weight, bulimic or binge eating symptoms of low frequency and/or limited duration, purging disorder, night eating syndrome, etc. Finally, if clients do not fit any of the OSFED categories they now fall in the Unspecified Feeding or Eating Disorder (UFED) category also established by the DSM-V.

Eating disturbances, or general eating pathology, include a range of abnormal eating or weight-related symptoms typical of the clinical diagnoses and are frequently motivated by concerns about eating, shape, or weight (DSM-5, 2013). While eating disorders are revealed in

nearly 6% of women, they are five times more likely to report them than men (Hilbert, 2012). Women also endorse key behaviors, laxative misuse, and extreme dietary restriction more frequently, but report binge eating, vomiting, and driven exercising at similar rates to men (Hilbert, 2012). The prevalence of eating disturbances also decreases with age in women and is significantly higher in obese than in normal-weight individuals (Hilbert, 2012).

Co-Morbidity of Eating Pathology and Substance Abuse

Throughout history, abuse of bodily functions has been an outlet in which psychiatric feelings and conflicts are expressed (Fenichel, 1945; Zweben, 1987). Examples include restrictive eating, self-elimination and self-infliction. Both AN and BN are associated with elevated rates of psychiatric comorbidity (O'Brien & Vincent, 2003). Some of the similarities found in drug and alcohol addiction, such as feelings of shame, secrecy, and compulsivity have led to “speculations of an underlying common dynamic, and possibly to common organic predisposing factors.” (Zweben, 1987) Furthermore, “eating disorders are health threatening, sometimes life threatening and are frequently closely connected with the alcohol or other drug abuse pattern” (Zweben, 1987). Some researchers suspect that compulsive or dysfunctional eating may be related to addictive personalities since eating disorders often precede substance abuse addictions (Jonas, Gold, Sweeney, & Pottash, 1987). As the chemical dependency develops, the eating disorder may go into remission only to resurface during the recovery period.

While clinically diagnosed eating disorders are more uncommon in the general population (J. I. Hudson, et al., 2007), eating pathology is relatively common among female substance users (Cohen, et al., 2007; Greenfield, et al., 2010; Holderness, 1994; Warren, et al., 2013). For example Von Ranson, Iacono, & McGue (2002) reported that 13.2% of adult women

with eating disorders had definite illicit drug abuse or dependence. Significant associations were also found between risk for an eating disorder and the life-time abuse of and dependence on illicit drugs (Piran & Gadalla, 2007). Epidemiological data suggest that about 35% of female substance abusers have had an eating disorder or strong subclinical symptoms of eating pathology (CASA, 2003). Women with eating disorders have been found to have a high rate of substance use (Bulik, Sullivan, Carter, & Joyce, 1997; Bushnell et al., 1994) and women with substance use diagnoses have been found to have a high rate of disordered eating patterns (Grilo C. M., 1995; J. I. Hudson, Weiss, R. D., Pope, H. G. Jr, McElroy, S. K. & Mirin, S. M., 1992; Piran & Gadalla, 2007).

Studies have demonstrated comorbidity between substance abuse and disordered eating behaviors. Lifetime prevalence of substance use disorders are reported in up to 55% of BN patients and in up to 23% of AN patients, with alcohol and stimulants being the most commonly abused substances (Franko et al., 2008; Holderness, 1994). This rate of co-occurrence between eating disorders and substance abuse also has a high risk for mortality (Conason, Klomek, & Sher, 2006; Franko, et al., 2008; Holderness, 1994).

While stimulants are commonly associated with co-occurring eating disturbances, caloric restriction is associated with amphetamine use and binge eating is associated with tranquilizer use. Patients with BN are more likely to use amphetamines, barbiturates, marijuana, tranquilizers, and cocaine than patients with AN. The severity of purging was predictive of having used alcohol, cocaine, and cigarettes (Franko, et al., 2008).

Animal studies have linked cocaine use to weight loss, eating disorders and food deprivation. Studies on humans have confirmed a higher incidence of eating disorders among

users (Jonas, et al., 1987). Cocaine abusers appear to eat less balanced meals per day and consume more caffeinated beverages and alcohol than non-users (Castro, Newcomb, & Cadish, 1987). For cocaine abusers, the drug alters normal digestion and appetite which may contribute to the subsequent development of an eating disorder during treatment (Roe & Moragne, 1987). Alcohol dependence is also associated significantly with the risk for an eating disorder (Piran & Gadalla, 2007; Zweben, 1987).

Few studies have been conducted on eating disorder risk or diagnoses found in female offenders. In one study on gender-specific disorders associated with male and female offenders in a substance abuse program, women were found to be 18 times more likely to have an eating disorder than their male counterparts (Zlotnick, et al., 2008). In another study by Olson et al (2005) female offenders scored significantly worse than their non-incarcerated comparisons on an eating attitudes test. Rettinger and Andrews (2009) observed eating disorders in their population at a rate of 21% (Rettinger & Andrews, 2009).

Body Dissatisfaction

While eating disorders are the most apparent and diagnosed method of measurement associated with substance abuse and eating pathologies affecting one's quality of life, there are associated unhealthy practices that may play a role in this co-morbidity. These include the perception of how one views themselves and their body exhibited through unhealthy behaviors centered on weight, body image, body shape and overall body dissatisfaction.

In a sample of 290 incarcerated adult women in Nevada's prison, body image disturbance and preoccupation with thinness were associated with a history of substance abuse (Olson,

2005). This use of drugs among women desiring to be thin and lose weight is understandable when considered in the cultural context of the United States. The majority culture in the United States, often referred to as the Western culture, places considerable value on physical appearance as a central determinant of social standing, desirability, and personal worth for women (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). The ideal physical appearance is a very thin yet curvaceous, feminine body with flowing hair, a narrow waist, light eyes, large breasts, and long legs (Harrison, 2003; Thompson, et al., 1999). Eating disorder researchers argue that these cultural characteristics predispose women to engage in numerous unhealthy behaviors in an attempt to attain the thin-ideal appearance, including drug use (Linehan et al., 1999; Nichter, Ritenbaugh, Nichter, Vuckovic, & Aickin, 1995; Stice, Ng, & Shaw, 2010; Thompson, et al., 1999).

One consideration is the role of internalization of societal ideals of attractiveness (thin-ideal internalization) in the development of these problems. Thin-ideal internalization refers to the “extent to which an individual cognitively buys into socially defined ideals of attractiveness and engages in behaviors designed to produce an approximation of these ideals” which can foster body image disturbances (Thompson, et al., 1999). In other words, the extent to which an individual personally strives to look like thin fashion models and media icons predicts increased eating pathology in women (Stice, 2002; Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004; Warren, Gleaves, Cepeda-Benito, Fernandez, & Rodriguez-Ruiz, 2005). Risk factors for eating pathology include thin-ideal internalization combined with body dissatisfaction, dieting and weight concerns.

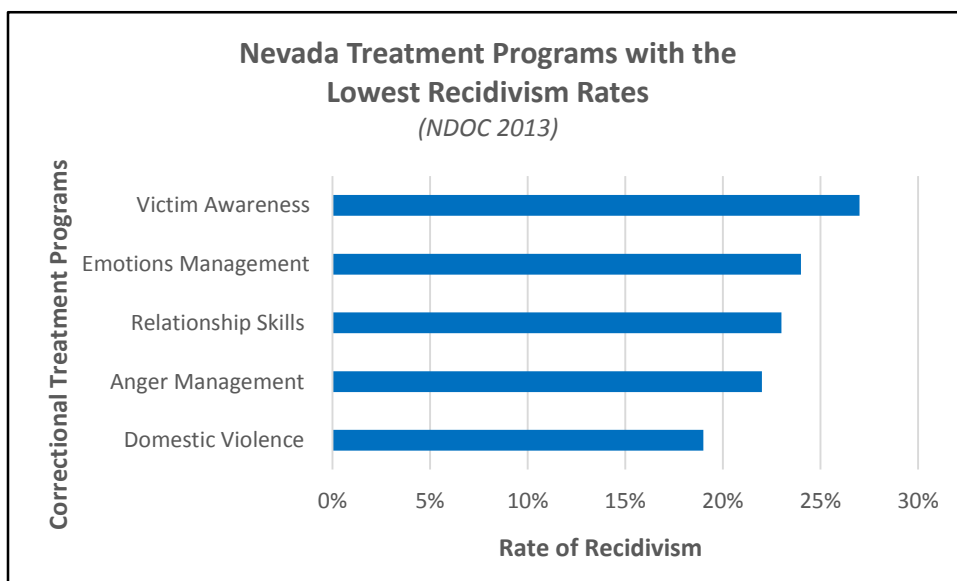
Theoretically, decreasing the degree to which unrealistic weight and appearance ideals are personally internalized and adopting more reasonable, healthy body size ideals may assist women in eliminating unhealthy weight-control behaviors (e.g., using drugs to lose weight). Body dissatisfaction, defined as disliking one's physical appearance, is one of the strongest predictors of eating pathology and can motivate extreme measures to decrease body weight (Parkes, et al., 2008; Stice & Shaw, 2003). For example, body dissatisfaction has been found to predict dieting, binge eating, purging, excessive laxative use, and severe caloric restriction (Stice, 2002). In addition, body dissatisfaction is often associated with low self-esteem, depressive symptoms, increased anxiety, and poor sexual functioning (Paxton, et al., 2006).

Gender-Responsive Treatment Programs and Recidivism

While drug and alcohol abuse can result in many known harmful physiological conditions such as obesity, liver disease, digestive complications, and brain changes, it can also cause impairments related to food consumption, hunger and appetite satiety cues preventing nutrient absorption leading to nutritional deficiencies (Daniel, 2008). Substance abuse treatment programs should focus not only on the physical aspects but also the psychological concerns which include food cravings, eating disorders, binge eating and intuitive eating practices related to hunger and fullness cues, especially for women (Daniel, 2008; Roe & Moragne, 1987). It is critical to begin these treatment programs while individuals are still incarcerated to prevent recidivism or rearrest.

Recidivism, which is re-arrest after being discharged or paroled, is an enormous problem. In Nevada (2009), the return rate for females discharged (within 36 months) was 25% and for those paroled was 30%. Property crimes had the highest recidivism at 33%, followed by drug offenses at 28% (NDOC, 2013). Those with a lower education returned at slightly higher rates 28% (General Education Degree (GED) or HS) than those with a higher education (26%). Figure 5 demonstrates how correctional treatment programs have been found to reduce recidivism.

Figure 5. Nevada Treatment Programs with the Lowest Recidivism Rates



Treatment of substance use is an important priority during incarceration because it is so prevalent. A study funded by the U.S. Department of Justice's National Institute of Justice found that substance abusing inmates who completed treatment were less likely to be rearrested after release, particularly if residential treatment was followed with aftercare (USDOJ, 2005). Principles of treatment recommended by the National Institute of Drug Abuse (NIDA), suggest that drug treatment during and after imprisonment not only increases the number of people who

are drug-free, but also increases the number of people who are arrest-free. No single treatment, however, is appropriate for all individuals (NIDA, 2014c).

Mandatory and gender-neutral sentencing has contributed to recidivism in women. To better address gender-based differences, many researchers are now addressing the unique needs of women using gender-responsive approaches. Swopes (2012) examined prisoners in Oklahoma suggesting that treatment is often disrupted for women due to their higher rate of non-violent crimes which result in shorter sentence lengths. When combined with the high proportion of drug-related arrests, a large majority of women (94% in FY 2010) would eventually be released. The author also noted that without successful substance abuse treatment they are likely to return to the same lifestyle prior to arrest (Swopes, 2012).

Conclusion

While incarcerated females are known to suffer from substance abuse disorders, chronic medical illnesses, depression and other psychiatric disorders (Rettinger & Andrews, 2009), little is known about behaviors that may contribute to many of these known conditions including body dissatisfaction, eating pathologies, weight concerns and thin-ideals. Potentially these may also serve as triggers for relapse. And while many programs focus on treating substance abuse, anger, depression, relationships, etc., programs need to expand and focus on the more specific needs unique to women. Identifying those needs is the first step in expanding the treatment options for women in prison.

This study will look not only at the gender-specific pathologies related to eating, body dissatisfaction and weight, but compare them against a community sample to determine if these are exacerbated in an incarcerated sample. Sharing the outcomes of this study with correctional institutions and related agencies could be helpful in treating female prisoners and ultimately reducing recidivism. Few, if any studies have conducted psychometric analyses using validated instruments to measure these constructs.

Chapter 3 - Methodology

Introduction

The primary goal of this study was to determine whether incarcerated females exhibit similar beliefs and attitudes about weight, body image and eating as non-incarcerated females. While some level of concern about weight, body shape, and food are common to most women (Neumark-Sztainer, Sherwood, French, & Jeffery, 1999), it is hypothesized that incarcerated females may exhibit a higher rate and more extreme negative beliefs and attitudes than their non-incarcerated counterparts.

Population and Sampling

Data for the study group were obtained as a secondary data set of survey responses collected on incarcerated females at the Florence McClure Women's Correction Center (FMWCC). FMWCC is a female housing facility of the Nevada Department of Corrections (NDOC) located in the northeast area of Las Vegas, NV. Designed and built by Corrections Corporation of America in 1997, it is currently operated by 171 NDOC personnel. The women's facility has a total capacity of 950 inmates. The facility offers a wide range of programs for the inmate population, such as addiction and substance abuse treatment, domestic violence, victim awareness, and basic health and hygiene. Education, which includes computer, vocational, trade, high school education (offered by the Clark County School District) and associate college level courses (offered by the College of Southern Nevada) is also available to the inmates (NDOC,

2014a). In 2015, the University of Nevada Reno, Cooperative Extension located in Las Vegas, Nevada implemented the *Healthy Steps to Freedom* program (A. Lindsay, Velasquez, S., 2009), a health and body image curriculum for women in treatment for substance abuse.

Prior to implementation of this intervention, surveys were completed by inmates enrolled in the program as well as offered (via a flyer) to any inmate within the population (n=855) desiring to also complete the survey. Questions addressed health issues related to eating attitudes, body image, weight, substance abuse, criminal history, nutrition and physical activity lifestyle behaviors and knowledge. This collection was used as a secondary data set in this study to compare attitudes and beliefs about food, weight and body image with non-incarcerated comparison. Data used were limited to English speaking females ages 18-44. Those who were non-English speaking, or pregnant, were excluded from the study.

The comparison group was comprised of females within the surrounding community of Las Vegas who were not currently incarcerated and matched by age (18-44) and gender (female). Subjects were recruited to include a diverse sample of Caucasian, Hispanic and African American participants and educational variances (e.g. below high school, high school or GED, college, etc.). Exclusion criteria applied to the secondary data recruitment was also applied to the comparison group as well.

A power analysis was conducted based on the results of a previously piloted study conducted at the women's correctional center in Nevada (Olson, 2005). The researchers utilized the EAT-26 survey to study eating attitudes of incarcerated females as compared to a comparison group (n=290). Because the current study would include the EAT-26 questionnaire, data reported in the Olson study served as a comparable power analysis calculation. The EAT-26 has a cut off

score of 20. While scores range from 0-76, scores below 20 are not considered to be descriptive of pronounced concern. A score at or above 20 (76 being the highest) indicates marked concern about dieting, body weight or problematic eating behaviors. Using only those scores at or above the cut off score of 20, the investigators were interested in detecting a difference of 5 points or more on the EAT-26 scale between the two groups using a 2-tailed test ($\alpha .05$) at a power of 0.8 (β). Based on this power analysis, an estimated sample size of at least 100 subjects was determined to be the minimum n in this study, specifically 50 for each of the two groups (study, comparison).

Study Design, Recruitment and Data Collection

Protection of Human Subjects was adhered to using a standard protocol approved by the UNLV Institutional Review Board (Appendix 1). Using a cross-sectional research design, comparisons were made between incarcerated females obtained as secondary data from the University of Nevada, Reno Cooperative Extension and non-incarcerated females collected through recruitment of a comparison group by the researchers. Flyers (Appendix 2), containing information about the study, were posted in local churches, around college campuses, casinos and other places of employment.

The survey packet used in this study (Appendix 3) is comprised of several measures, including body image, body shape and body appearance (the BSQ - 16 Body Shape Questionnaire and the SATAQ-3 Socio-cultural Attitudes Towards Appearance Scale), eating pathologies (the IES-2 - Intuitive Eating Survey, the BES Binge Eating Scale and the Eat-26 -

Eating Pathology Questionnaire), quality of life (the BIQLI - Body Image Quality of Life Inventory) and a weight and dieting history using select questions from the existing PIS - Participant Information Survey). Actual height and weight were also assessed.

Once the participant expressed interest in participating in the study, a time was arranged to administer the survey at a location that was convenient, quiet, and confidential as agreed upon by both the participant and the researcher. Prior to the survey administration, participants completed an informed consent (Appendix 4) allowing permission for the investigator to use the unidentifiable data for research purposes. The only record linking the subject and the research was the consent document which is stored in a separate location from the survey. After participants completed the survey packet and collection of the anthropometric measurements were completed, the data forms were placed in an envelope and sealed by the participant for provision to the investigator.

Collection of anthropometric data included height, weight and converted to Body Mass Index (BMI). Participants were weighed on a laboratory scale (without shoes) to the nearest 0.5 lb, and height was measured to the nearest 0.25 in. using a stadiometer. BMI was calculated from height and weight ($\text{lb} / [\text{in.}^2 \times 703]$).

Measurement Tools

There is a continuum of scores reflected in most measurement scales that represent all women. For women to be somewhat dissatisfied with their bodies is not necessarily unusual or considered to be a disordered behavior (Cash & Fleming, 2002). Scales of these nature generally

have a cut off score which defines the point at which the dissatisfaction, concern or specified behavior poses a more serious risk to the individual (generally a higher score is indicative of a more severe pathology). Six clinically validated, self-report measures were used in this study, including two related to body image (perception of body shape; thin-ideal related to media); three related to eating behaviors (restrictive eating; satiety; binge eating) and a quality of life measure:

- *BSQ-16* Body Shape Questionnaire (preoccupation with body weight and shape subscale)
- *SATAQ-3* Socio-Cultural Attitudes Towards Appearance Questionnaire (thin-ideal subscale)
- *Eat-26* Eating Attitudes Test (restrictive eating)
- *IES-2* Intuitive Eating Survey (satiety such as hunger and fullness cues subscale)
- *BES* Binge Eating Survey (severity of binge eating)
- *BIQLI* Body Image Quality of Life Inventory (impact of body image on life experiences)

Additionally, covariates were considered, including, substance abuse history, BMI (measured), dieting habits and weight history. While all surveys were scored and analyzed as part of this research, the primary purpose of the study was to determine:

1. Whether there were significant differences between the self-reported *scores* of incarcerated and non-incarcerated females on outcome measures;
2. Whether there were significant differences between the *number* of incarcerated females that exceeded the cut off scores (where appropriate) as compared to the comparison group (i.e. measure of prevalence);

3. How *extreme the scores* were in the incarcerated females that exceeded the cut off scores (where appropriate) as compared to the comparison group (i.e. measure of symptom severity).

The *Body Shape Questionnaire* (BSQ-16) is a measurement of body dissatisfaction. The scale is a 16-item, shortened version of the original 34-item Body Shape Questionnaire (BSQ-34) (Cooper, Taylor, Cooper, & Fairbum, 1987) which measures general body dissatisfaction and preoccupation with body shape and weight. Comparisons between the full version and the shorter subscale are highly correlated (Evans & Dolan, 1993) with BSQ having strong internal consistency ($\alpha=0.93-0.95$) (Dowson & Henderson, 2001). The BSQ-16 has also demonstrated strong test-retest reliability ($\alpha=0.88$) and concurrent validity ($\alpha=0.96$) against other body dissatisfaction measures (Rosen, Jones, Ramirez, & Waxman, 1996). Participants rate how they feel about their body such as “Have you been afraid that you might become fat (or fatter)” or “Have you avoided situations where people could see your body?” Scales are based on a six-point Likert scale from never to always.

The *Socio-Cultural Attitudes Towards Appearance Questionnaire-3* (SATAQ-3) (Thompson, et al., 2004) 30-item assessment measures an individual’s desires and behavioral attempts to attain the thin-ideal appearance, in other words, the degree to which women accept societal standards of appearance (Cash & Fleming, 2002). The SATAQ-3 has demonstrated strong internal consistency in various populations including undergraduate females ($\alpha=0.92-0.96$) (Forbes, Jobe, & Revak, 2006; Thompson, et al., 2004) and patients with eating disorders ($\alpha=0.93-0.97$) (Calogero, Davis, & Thompson, 2004). There are two commonly used subscales from the SATAQ-3 (Thompson, et al., 2004) estimated endorsement of Western values and

ideals of appearance promoted in the media. One is perceived pressure to meet cultural ideals of beauty (known as PRESS) and the other is internalization-general (INT-GEN) which is a desire and behavioral attempt to attain the thin-ideal appearance. This study employs the 9-item, INT-GEN subscale (items 3, 4, 7, 8, 11, 12, 15, 16, 27). Using a five-point Likert scale ranging from definitely disagree to definitely agree, participants indicate their level of agreement about statements such as “I compare my body to the bodies of people who are on TV”.

The *Eating Attitudes Test* (Eat-26) (Garner, Olmsted, Bohr, & Garfinkel, 1982) is a measure of eating pathology, primarily eating disorder symptom. Measures include dieting, restrictive eating, extreme weight loss, self-control, binge eating and purging. Participants respond to statements such as “I avoid eating when I am hungry”, “I vomit after I have eaten” or “I feel that food controls my life”. The 26-item measure is based on a six-point Likert scale ranging from never to always. The scale has demonstrated strong validation (Garner, et al., 1982; Koslowsky et al., 1992) and adequate internal consistency ($\alpha=0.73$) (Ocker, Lam, Jensen, & Zhang, 2007). The EAT-26 items form three subscales computed by summing all items in that particular scale. Thirteen items comprise the Dieting subscale, the Bulimia & Food Preoccupation subscale includes six items and the Oral Control subscale is comprised of an additional seven items.

The *Binge-Eating Scale* (BES) (Gormally, Black, Daston, & Rardin, 1982; Hawkins Li & Clement, 1980) is a self-report measure used to screen, as a first pass, the severity of binge eating (Greeno, Marcus, & Wing, 1995). It has demonstrated strong test-retest reliability ($r=.87, p < .001$) and moderate correlation ($r=.20-.40, p < .05$) as compared with food records (Timmerman, 1999). Another study by Grupski (2004) demonstrated excellent internal consistency ($\alpha=.87$)

(Grupski et al., 2013). The 16-item scale examines behavioral signs such as eating large amounts of food, and feelings such as loss of control or fear of being unable to stop eating. Sample items include “About once a month I eat so much that I felt uncomfortably full” or “I have a habit of eating too much at night. Usually I’m not hungry in the morning and at night I eat too much.” Scores are weighted and range from 0 to 46 with higher scores indicating more severe binge eating symptoms.

Intuitive eating is characterized by “eating based on physiological hunger and satiety cues rather than situational and emotional cues and is associated with psychological well-being.” (Tribble, 1995, 2nd ed. 2003; Tylka, 2006) The *Intuitive Eating Survey* (IES-2) is a measure of the physical cues for the initiation (hunger) and discontinuation (fullness) of feeding. It is a 23-item measure with a 5-point Likert ranging from strongly agree to strongly disagree. The tool has been validated for internal consistency, reliability and convergent validity (Hawks, Merrill, & Madanat, 2004; Tylka, 2006; Tylka & Kroon Van Diest, 2013). In a recent study by Tylka et al (2013), Cronbach’s coefficient alphas were .87 for the total 23-item IES-2 and .81 and .88 for the 2 subscales used in this study (Tylka & Kroon Van Diest, 2013). While the IES-2 has 4 subscale measures including eating for physical rather than emotional reasons (8), the extent to which individuals match their food choices with their bodies’ needs, which was a newly added subscale in the latest version (3) (Tylka & Kroon Van Diest, 2013), unconditional permission to eat (6), and reliance on internal hunger/satiety cues (6), only the latter two were used for this study (items 1, 3, 4, 9, 16, 17 and 6, 7, 8, 21, 22 and 23, respectively). Sample items include “I rely on my fullness (satiety) signals to tell me when to stop eating” and “I trust my body to tell me when to eat.”

Body Image Quality of Life Inventory (BIQLI) was used to measure the effects of one's perception of body image on various self-experiences and life contexts. It is a 19-item instrument that quantifies the impact of body image on different aspects of the individuals life in domains found to be consequential (Cash & Fleming, 2002). Participants rate how each area affects their quality of life using a 7-point scale from very negative effect (-3) to very positive effect (+3), 2 is moderate, 1 is slight and 0 is no impact. It has shown strong reliability (test-retest reliability = 0.79) and validity (correlations, 0.45–0.86) as well as high internal consistency (Cronbach's alpha, 0.95). The domains include emotional state, same and other-sex relations, eating and exercise, grooming activities, sexual experiences and family and work/school contexts. Sample items include "How confident I feel in my everyday life" and "My experiences when I meet new people."

Analytic Strategy

To determine whether there were significant differences between the incarcerated females and the comparison group, data were prepared, cleaned and analyzed by the research investigator for analysis in Statistical Package for the Social Sciences (SPSS). Although the total sample size was 125 for the prisoners and 94 for the comparison group, participants were missing some responses. In the results section, the exact *n* for each analysis is provided. Additionally, if participants did not provide a response to one question on the primary measures, a total score was unable to be obtained.

Standard frequencies, t-tests and chi square methodologies were used for determining differences in education, race, ethnicity, age and status of children. Maximum sentence lengths were averaged based on frequency of reported sentences including <1 year (1), 1-2 years (2), 2-5

years (5), 5-10 years (10), 10-15 years (15) and 15-20 years (20). If the option “other” was indicated the maximum sentence listed was manually determined based on the longest sentence term. Median sentence terms were calculated based on the median of the sentence reported (e.g. a sentence of 2-5 years had a median sentence of 3.5 years. Total time served was calculated by combining time spent in jail on the current offense with time spent in prison on the current offense. Violent crimes were calculated using the frequency which participants indicated they were currently in prison for a violent crime. All other offenses including drug, property, sex, weapon or none were calculated using frequencies (total is greater than 100% since participants were instructed to ‘check all that apply’). The number of participants who responded to “what offense(s) have you previously been arrested for” with “none, this is my first offense”, were subtracted from the total *n* and the remainder were classified as repeat offenders.

Scores for the *BSQ-16*, *SATAQ-3*, *Eat-26*, *IES-2* and *BES* scales and subscales were calculated per the tool author’s methodology using reverse coding where required. Simple independent *t*-tests were used to analyze significant differences between study and comparison samples. For the *BSQ-16*, *SATAQ-3*, *BES* and *EAT-26* instruments, a higher score indicates a more negative effect. For *IES-2* and *BIQLI*, a lower score indicates a more negative effect.

While all instruments indicate a more negative effect as having greater pathology, cut-off scores have only been cited in the literature for *EAT-26* and *BES* which indicate cut-off points for more severe conditions. To determine the *number* of incarcerated females that exceed the cut off scores between non-prisoners as compared to the comparison group, frequencies were calculated for those individuals with an *EAT-26* score greater than or equal to 20. For *BES* the cut-offs used were 18-26 (called binge eaters) and greater than 26 (called severe binge eaters).

To determine how *extreme* the scores were in the incarcerated females that exceed the cut off scores as compared to the comparison group, *t*-tests were used to compare means for those individuals who had scores above the cut-off scores (IES-2 and BES only) described in the literature.

For weight-related concerns and dieting, standard *t*-tests were used to analyze differences in means between prisoner and non-prisoner weight and BMI, while Pearson chi square methods were employed to assess weight and BMI scores by category (i.e. obese, overweight). Methods used for weight loss including exercise, diet pills, laxatives, starvation, diuretics, vomiting, decreased food diet, energy supplements, smoke tobacco, energy drinks, prescription pills and enemas were analyzed using Pearson chi square based on a Likert scale where 1=never, 2=rarely were classified as “No” and 3=sometimes, 4=often and 5=very often were classified as “yes”. Comparisons for “street drugs” utilized the same Likert scale, however non-prisoners simply rated their use of general “street drugs”, while prisoners rated their use of “methamphetamine”, “cocaine”, “heroin” and “ecstasy”. For prisoners, the drug reported with the highest rating was compared to the non-prisoners singular response to use of “street drugs”. Although prescription pills and alcohol are reported in the study, they were not used for the street drug analysis.

Chapter 4 - Results

Study Sample

Incarcerated sample. In February and March, 2015, data were collected by the University of Nevada Cooperative Extension's *Healthy Steps to Freedom* program staff as part of an ongoing intervention program at the Florence McClure Women's Correctional Center. All women were housed in a maximum security facility serving minimum custody, medium custody and maximum life sentences. Of the 855 inmates which were housed there, 475 inmates volunteered to complete the survey. The UNLV Institutional Review Board approved the study in July of 2015 and requested additional consent from inmates permitting to use of their data as part of this dissertation. Only 255 remained as many had been released, moved to another facility, or were not eligible for the study (not pregnant, 18-44 years old). Of that 255, 125 inmates returned the form to consent for use of their data.

Control sample. A comparison group consisted of 94 eligible females in the Las Vegas community. Volunteers were recruited to complete the survey from places of work, college campuses, faith-based organizations and word-of-mouth. No incentives or reimbursements were provided to study volunteers. No participants withdrew from the study.

Demographics and Descriptive Information

Incarcerated sample. Participants ($n=125$) were between 21-45 years old ($M=33.78$ years, $SD=6.27$). Excluding 10 life sentences, the mean maximum sentence length was 10.13 years ($SD=8.655$, range 1-50) and the mean median sentence term was 7.01 years ($SD=5.984$,

range 1-35). Prisoners reported a mean of 10.07 arrests ($SD=14.58$, range 0-100) and have served a mean of 44.05 months (3.67 years) on their current charge(s) ($SD=49.1$, range 2 months to 20 years). Figure 6 shows 61% were sentenced for non-violent crimes (all charges other than violent) and 39% for violent crimes. Seventy-three percent ($n=123$) were repeat offenders.

Figure 6. Nevada Female Prisoner Offenses

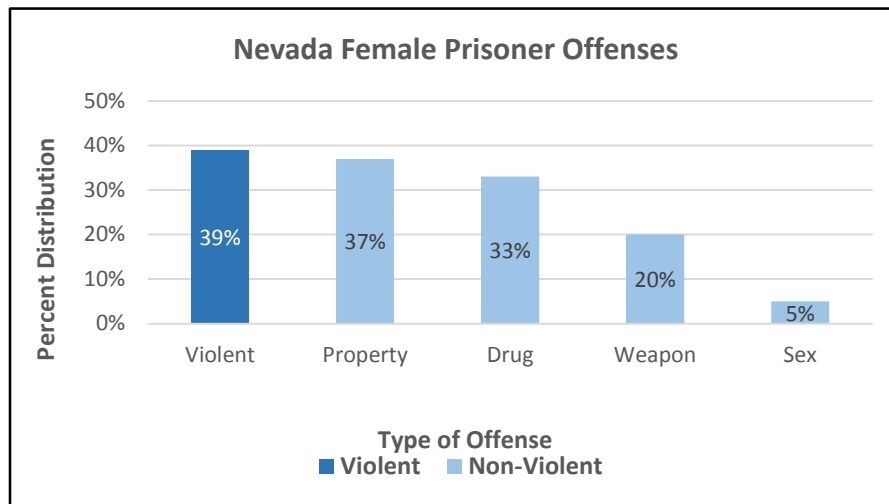


Table 1 shows demographic information related to age, race, ethnicity, education and children. Prisoners were predominantly Caucasian (70%) race, ethnicity was non-Hispanic/Latina (61%), had completed a high school degree or General Education Degree (66%) as their highest level of education, most (77%) were mothers of one to eight children ($M=2.16$, $SD=1.9$) and 86% of those mothers had at least one child under the age of 18.

Control sample. The comparison sample included 94 non-incarcerated females between 18-44 years old ($M=30.2$ years, $SD=8.06$) recruited from local college campuses, places of work, faith-based organizations and word-of-mouth. Table 1 shows that non-prisoners were predominantly Caucasian race (85%) and ethnicity was non-Hispanic/Latina (55%). Most of the non-prisoners highest level of educational attainment was completion of *at least* a college degree

(55%) followed by a high school degree or GED (38%). Forty-one percent were mothers of one to seven children ($M=.98$, $SD=1.47$) and 95% of those mothers had at least one child under the age of 18.

Comparison Prison sample to Control sample. An independent samples t-test indicated prisoners were significantly older than non-prisoners, $t(217) = 3.732$, $p=0.001$. A Chi Square test indicated there were no differences between prisoners and non-prisoners relative to race, $X^2(5, N=219) = 9.91$, $p=0.078$ however, with regards to ethnicity the prison population had significantly fewer Hispanic/Latinas than the non-prison population, $X^2(1, N=219) = 16.545$, $p < 0.001$. A Pearson chi square test also indicated a significantly higher educational attainment in the non-prison population than the prison population $X^2(4, N=219) = 58.817$, $p < 0.001$.

Table 1 - Demographics of Study Samples

Demographic Information		Prisoners	Non-Prisoners
Age (Mean, SD)		33.78 (6.27)	30.2 (8.06)
Race			
	Caucasian (%)	70	85
	African American (%)	14	7
	Multi-Racial (%)	9	3
	Asian, Am Indian, Alaskan Native, Hawaiian Native or Pac Island (%)	<7	5
Ethnicity			
	Hisp/Latina (%)	19	45
	Non-Hisp/Latina (%)	81	55
Education (highest level)			
	Post Graduate (%)	<1	20
	College (%)	9	35
	HS or GED (%)	66	38
	Trade or Tech (%)	12	3
	Less than HS (%)	13	3
Children			
	Have at Least 1 child (%)	77	41
	Mothers w/at least 1 child <18 (%)	86	95

Primary Research Questions

More Severe Eating Pathology.

EAT-26. As shown on Table 2, mean levels of eating pathology were higher in the prison sample than the control sample. An independent *t*-test indicated significant differences in eating symptomologies between prisoners and non-prisoners such that the prison group reported significantly more extreme weight loss and restrictive eating behaviors than the control group, *EAT-26* total score $t(217) = 2.985, p < 0.001$. More specifically, all three subscales measurements demonstrated significantly higher scores (negative behaviors) including the *EAT-26* Oral Control (*EAT-CONTROL*) subscale $t(214) = 2.421, p < 0.001$ indicating negative self-control around food; the *EAT-26* Bulimia (*EAT-BN*) subscale $t(217) = 2.62, p < 0.001$ indicating binge-eating and purging behaviors; and *EAT-26* Dieting (*EAT-DIET*) subscale $t(217) = 2.985, p < 0.001$ indicating avoidance of certain foods. A greater severity of eating pathology indicated by a cut-off score of 20 or greater on the *EAT-26* included 19.8% of prisoners ($M=36.39, SD=14.914$) and 5.3% of non-prisoners ($M=28.40, SD=6.804$). A Pearson chi square test of independence showed this difference was statistically significant $X^2(1, N=210) = 9.458, p = 0.002$ although the difference in means for those above the cut-off score were not significant $t(26)=1.159, p=0.164$.

In addition to the *EAT-26* scores, participants also self-reported their symptoms and professional diagnosis of an eating disorder. Thirty-five percent ($n=125$) of the prison sample reported having symptoms of an eating disorder compared to only 16% ($n=94$) of the comparison group reported symptoms. A Pearson chi square test of independence showed this difference was statistically significant $X^2(1, N=219) = 10.093, p < 0.001$. Similarly a greater number of

participants in the prison sample (8%) indicated they had been diagnosed with an eating disorder by a professional compared to non-prisoners (3%), statistically significantly different using McNemar (due to small incidences of eating disorders in a given population) $\chi^2(1, N=218) = 2.264, p < 0.001$.

IES-2. With regard to intuitive eating, Table 2 shows lower means (indicating more negative behaviors) in the prison sample than the control. The independent *t*-test results for the Intuitive Eating Scale-2 (IES-2) subscales include IES-2 Unconditional Permission to Eat (IES-2 Permission) subscale $t(217) = -1.930, p < 0.001$ and Reliance on Hunger/Satiety Cues (IES-2 Hunger/Satiety) subscale $t(213) = -3.052, p < 0.001$. In both subscales the significantly lower score is reflective of negative behaviors, specifically reliance on situational and emotional cues rather than physiological hunger and satiety cues.

BES. Similarly, using an independent *t*-test, scores on the Binge Eating Scale (BES), were significantly higher in the incarcerated population than the comparison $t(201) = 3.364, p < 0.001$ indicating greater severity of binge eating behaviors. The frequency of cut-off score for those having a BES score >17 (“binge eaters”) was 39.4% for prisoners ($M=25.72, SD=6.497$) and 15.9% for non-prisoners ($M=23.6, SD=4.626$). Pearson chi square test of independence showed this difference was statistically significant $\chi^2(1, N=203) = 13.649, p < 0.001$ although the differences in those mean scores >17 were not significant $t(56) = 1.162, p = 0.310$. The frequency of cut-off scores for those in that group having a BES score >26 (“severe binge eaters”) was 15.6% for prisoners ($M=32.12, SD=5.085$) and 5.3% for non-prisoners ($M=29.60, SD=1.817$). A Pearson chi square test of independence showed this difference was statistically significant $\chi^2(1, N=203) = 5.517, p = 0.019$ although the means were also not significant $t(20) = 1.071, p = 0.245$.

Body Dissatisfaction.

SATAQ-3. Table 2 shows significantly higher means for body dissatisfaction in the prison group for both thin-ideal appearance and body shape preoccupation. An independent t-test used to measure *Socio-Cultural Attitudes Towards Appearance Questionnaire-3* (SATAQ-3) Internalization General subscale was statistically significant $t(215) = .867, p=0.003$, demonstrating the prison samples increased desire and behavioral attempts to attain the thin-ideal appearance based on societal standards.

BSQ. Similarly, the Body Shape Questionnaire (BSQ) also demonstrated a significantly higher score $t(212) = 2.435, p < 0.001$ in the prison sample indicating greater body dissatisfaction and preoccupation with body shape and weight than their non-incarcerated comparisons.

BIQLI. Finally, while the Body Image Quality of Life Inventory (BIQLI) did demonstrate a lower score (more negative effect) of prisoners perception of body image on various self-experiences and life contexts than non-prisoners, it was not statistically significantly different $t(198) = -2.024, p=0.550$.

Table 2. Means and Std Dev for Eating Pathology and Body Dissatisfaction

Measure	Prisoners <i>M</i> (<i>SD</i>)	Non-prisoners <i>M</i> (<i>SD</i>)
EAT-TOTAL	12.16 (14.52)**	6.34 (7.31)
EAT-CONTROL	2.27 (4.17)**	1.18 (1.31)
EAT-BN	2.03 (3.65)**	.91 (2.23)
EAT-DIET	7.68 (8.93)**	4.59 (5.32)
IES-2 PERMISSION*	3.038 (1.48)**	3.3547 (.682)
IES-2 HUNGER/SATIETY*	3.07 (1.51)**	3.5837 (.642)
BES	13.95 (11.07)**	9.41 (7.50)
SATAQ-3 INT-GEN	26.5 (7.08) ($p<0.01$)	25.74 (5.36)
BSQ	49.89 (23.38)**	42.76 (17.95)
BIQLI*	12.12 (25.53) ^{NS} ($p<0.05$)	19.29 (24.13)

* Lower score indicates a more negative effect
** Significant <0.001 (except where specified)

Weight-Related Concerns. Differences in mean body weight and body mass index (BMI) between prisoners and non-prisoners was observed. Using an independent *t*-test for measured heights and weights, the prisoners demonstrated a significantly ($t(216) = 1.032$, $p=0.044$) higher body weight ($M=170.2$, $SD= 38.92$) than non-prisoners ($M=164.1$, $SD 48.03$). BMI was also significantly higher ($t(216) = 1.036$, $p=0.016$) in prisoners ($M=28.87$, $SD=6.05$) than non-prisoners ($M=27.88$, $SD 7.93$). A Pearson chi square test of independence demonstrated a significantly higher number of prisoners (74%) were classified in the “overweight” or “obese” category than non-prisoners (52%) $X^2(1, N=213) = 10.789$, $p < 0.001$.

Unhealthy Dieting and Substance Abuse. Likert scales were recoded where; 1=never, 2=rarely were coded as “No” and 3=sometimes, 4=often and 5=very often were coded as “yes”. Table 3 shows Pearson chi square significant values for weight loss methods used by prisoners

and non-prisoners. Weight loss methods used significantly more by prisoners than non-prisoners (from greatest to least) include energy drinks (49%), illicit drugs (48%), smoking tobacco (44%), diet pills (36%), starvation 30%, laxatives (14%), vomiting (14%) and enemas (5%). Prescription pills (11%) and diuretics (13%) were also used more than non-prisoners though not significant. While exercise (80%) and energy supplements (42%) were both used less than non-prisoners, decreased food diet (57%) was the only weight loss method prisoners used significantly less than non-prisoners.

Table 3. Chi Square Values for Methods Used for Weight Loss

Method of Weight Loss Reported	X^2	<i>n</i>	<i>p</i> value
Smoke Tobacco	42.465	215	<i>p</i> >0.001
Energy Drinks	28.980	215	<i>p</i> >0.001
Energy Supplements**	.170	215	<i>p</i> =0.680
Diet Pills	4.582	217	<i>p</i> =0.032
Starvation	14.617	219	<i>p</i> >0.001
Laxatives	4.582	217	<i>p</i> =0.030
Vomiting	4.707	219	<i>p</i> =0.030
Diuretics	3.514	216	<i>p</i> =0.061
Enemas	4.795	209	<i>p</i> =0.029
Decrease Food Diet**	3.938	215	<i>p</i> =0.047
Exercise**	.631	218	<i>p</i> =0.427
Prescription Pills	3.000	216	<i>p</i> =0.083
Street Drugs	51.530	216	<i>p</i> >0.001
Prisoners had higher use scores (except where indicated) Prisoners had lower scores**			

Similarly, using the Likert scale recoding, the Pearson chi square values in Table 3 demonstrate significant differences in illicit drug use between prisoners (48%) and non-prisoners (3%). The highest score prisoners reported using drugs for weight loss including meth, cocaine, heroin or ecstasy were compared to non-prisoners use of “street drugs” for weight loss. The primary drug of choice (response= “sometimes”, “often” or “very often”) for weight loss by prisoners who used drugs was methamphetamine (51%), followed by prescription pills (11%), cocaine (8%), heroin (4%), alcohol (3%) and ecstasy (3%).

Chapter 5 - Discussion

Summary

This study yielded important and meaningful information about body image, eating, and weight in a sample of 125 incarcerated females in comparison to 94 women in a nearby community. First and foremost, these data suggest that female prisoners endorse substantial concerns and negative beliefs and attitudes related to body image, eating pathologies, weight, dieting and drug use for the purpose of weight loss. Statistical analysis demonstrated these issues were not only significantly greater in the prison population compared to non-prisoners but also demonstrated a significantly greater *number* of prisoners with more *severe* eating pathologies, though not significantly higher than those in the non-prison population also deemed as severe.

Compared to non-prisoners, prisoners had increased body dissatisfaction and preoccupation with shape, more severe eating pathologies, decreased ability to employ healthy satiety cues, higher rates of binge eating, higher body weights and BMI, more weight-related concerns and use more unhealthy dieting practices and illicit drugs for losing weight. Few prisons address these core issues associated with obesity, eating pathologies and weight concerns. Left untreated may be a trigger for relapse.

Of the six major measures used, all demonstrated a significantly greater ($p < .001$) pathology in the prison population except one. Scores are also compared to other samples evaluated in the literature. These will be discussed categorically as body dissatisfaction, eating pathology, weight-related concerns, unhealthy dieting and substance abuse.

Body Dissatisfaction

Comparison of body shape disturbances or body dissatisfaction among incarcerated females showed that prisoners had a significantly greater body dissatisfaction and preoccupation with body shape and weight than their non-incarcerated comparisons ($p < 0.001$). Mean scores on the BSQ-16 in this prison sample ($M = 49.89$, $SD = 23.38$) were also slightly higher than a college sample of white, Euro-American women ($M = 49.55$, $SD = 18.98$) (Warren et al., 2008) and lower than a substance abuse treatment sample of women ($M = 54.47$, $SD = 23.11$) assessed prior to an intervention program (A. Lindsay, et al., 2012).

Prisoners also showed a significantly higher body shape preoccupation for thin-ideal appearance, specifically, their increased desire and behavioral attempts to attain the thin-ideal appearance based on societal standards of attractiveness than non-prisoners ($p < 0.001$). The prison sample mean value ($M = 26.5$, $SD = 7.08$) of thin-ideal internalization, based on the SATAQ-INT subscale are similar (even slightly higher) to a substance abuse treatment sample ($M = 25.85$, $SD = 6.09$) (A. Lindsay, et al., 2012) but lower than a research sample of adult patients with eating disorders ($M = 34.67$, $SD = 9.15$) (Calogero, et al., 2004) as one might expect. The prison mean is also comparable to a female college sample ($M = 28.67$, $SD = 9.83$) (Thompson, et al., 2004).

Prisoners demonstrated a more negative perception of body image on various self-experiences and life contexts than non-prisoners, though it was not statistically significant as observed using the BIQLI measure ($p < 0.05$). In retrospect, the scale may not have been well suited for this population as 9 of the 19 questions include situations not commonly associated with prison. Questions are based on how their feelings about their appearance affect certain

aspects of their life including “interactions with people of the opposite sex” which is limited to correction officers or administrative staff; “relationships with friends” which are limited to other inmates or cell mates; “relationships with family members” which are limited to occasional visits; “acceptability” and “enjoyment” as a “sexual partner” (2 questions) which is not permitted in prison; “experiences at work or school” which are limited options and unlikely scenarios for non-incarcerated individuals; “experiences when meeting new people” which happens at a lesser rate than in non-incarcerated individuals; “daily grooming activities” which are limited to prison attire and limited cosmetics; and “ability to control what and how much I eat” is limited to prison culinary experience and canteen purchases if the inmate is not indigent. For incarcerated populations, future studies should utilize a more appropriate tool.

More Severe Eating Pathology

Prisoners also showed a significantly decreased ability to employ internal or physical cues for hunger and fullness satiety during feeding than non-prisoners (IES-2 HUNGER/SATIETY subscale ($p < 0.001$)). This indicates that prisoners are more likely to rely on situational and emotional cues rather than physiological hunger. Additionally, prisoners demonstrated a decreased willingness to eat when they’re hungry (not try to ignore hunger) and a refusal to label certain foods as “forbidden” (IES-2 PERMISSION subscale ($p < 0.001$)). According to Polivy (1999) people who allow themselves to eat unconditionally are less likely to overindulge in food, engage in binge eating, and experience guilt while eating (Polivy & Herman, 1999). There are limited normative data for these subscales since the tool’s revision (IES-2) in 2013 (Tylka & Kroon Van Diest, 2013).

The prison sample also demonstrated a significantly greater severity of binge eating behaviors ($p < 0.001$). Analyses showed 39% of prisoners were considered “binge eaters” (score > 17) compared to 16% of non-prisoners. Of that group, using a more extreme cut off score > 26 , it was determined that nearly 16% of prisoners were classified as “severe binge eaters” compared to 5% of non-prisoners ($p < .05$).

Finally, severe eating pathology was also significantly more prevalent in prisoners compared to non-prisoners, such that prisoners reported more extreme weight loss measures and restrictive eating behaviors. Some of these measures included a greater degree of binge-eating and purging behaviors (EAT-BN subscale $p < 0.001$) which will be discussed further in weight loss methods reported by prisoners. Additionally prisoners reported having a more negative self-control around food (EAT-CONTROL subscale $p < 0.001$) than non-prisoners as well as avoidance of certain foods (EAT-DIET subscale $p < 0.001$). With regard to more severe eating pathology, total scores of 20 or more on the EAT-26 are indicative of being at risk for an eating disorder (Garner et al., 1982), though not commonly used as a clinical diagnosis measure. Nearly 20% of prisoners demonstrated severe eating pathology (score > 20) as compared to 5% of non-prisoners ($p < 0.01$).

Comparatively, the overall mean score for prisoners ($M = 7.68$ $SD = 8.93$) was lower than a substance abuse treatment group ($M = 9.92$, $SD = 8.36$) (Warren, et al., 2013). This is consistent with previous research that eating pathology is relatively common among female substance users (Cohen, et al., 2007; Greenfield, et al., 2010; Holderness, 1994; Warren, et al., 2013) since 100% of the women in the treatment group had a history of substance abuse compared to 87% in the prison sample. However, it should be noted that the prison sample had a greater number of participants classified as severe eating pathology, 20% compared to the substance abuse

treatment group which had 14%. This might suggest a prevalence of more extreme measures is endorsed by incarcerated females.

Clinically diagnosed eating disorders are relatively more uncommon in the general population as lifetime prevalence estimates of diagnosed anorexia nervosa, bulimia nervosa, and binge eating disorder in women are .9%, 1.5%, and 3.5% (J. I. Hudson, et al., 2007). Based on self-report, in this study 8% of prisoners indicated they had been professionally diagnosed with an eating disorder compared to 3% of non-prisoners ($p=0.132$). However, epidemiological data suggest that about 35% of female substance abusers have had an eating disorder, disordered eating or strong subclinical symptoms of eating pathology (CASA, 2003; Grilo C. M., 1995; J. I. Hudson, Weiss, R. D., Pope, H. G. Jr, McElroy, S. K. & Mirin, S. M., 1992; Piran & Gadalla, 2007). In the current study, 35% of prisoners reported having symptoms of an eating disorder compared to only 16% of the comparison group ($p<0.001$).

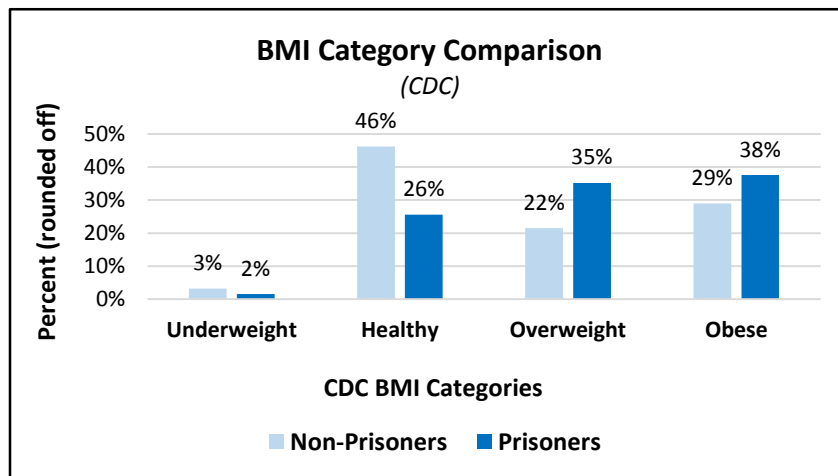
Weight-Related Concerns

It should be noted that while prisoners demonstrate higher pathologies related to eating and body dissatisfaction than their non-incarcerated counterparts, they also possess significantly higher mean body weights (170 lbs) compared to non-prisoners (164 lbs). While the community comparison is slightly less (2 lbs) than the average U.S adult woman over 20 of 166 lbs (CDC, 2012), the prison population is higher (4lbs). Similarly, prisoners possess a significantly higher BMI (28.9) than non-prisoners (27.9). According to the Centers for Disease Control and Prevention a BMI lower than 18.5 kg/m² is classified as “underweight”, between 18.5 and 24.9

kg/m² is classified as “normal” or “healthy weight”, between 25 and 29.9 kg/m² is “overweight” and a BMI greater than or equal to 30 kg/m² is considered as “obese” status (CDC, 2012).

This is consistent with the research which shows that although males are less likely to be obese than their non-incarcerated male counterparts, females are more likely to be obese than females in the general (non-incarcerated) population (Herbert, et al., 2012). Seventy-four percent of females were classified as overweight or obese (Figure 7) in the current study, which is significantly ($p < 0.001$) more than 52% for non-prisoners.

Figure 7. BMI Category Comparisons



A higher weight and BMI is explained in part by the amount of weight gained in prison. While weights were not measured or reported by prisoners when they were initially incarcerated, women were asked to report their last weight when they stopped using drugs (which is prior to incarceration and often close to their last arrest date). Reported weights ($M = 152.8$ $SD = 40.68$) compared to their current measured weight ($M = 171.28$ $SD = 39.0$) show a significant $t(105) = -6.433$ $p < 0.001$) mean increase of 18.5 pounds (with the highest weight gained in prison reported at 98.5 pounds after 42 months) consistent with the research which shows women gain more weight during incarceration than men (Gates & Bradford, 2015). It should be noted that a

previous study by Warren (2013) demonstrated 45% of women in recovery for substance abuse indicated weight gain as a trigger for relapse (Warren, et al., 2013).

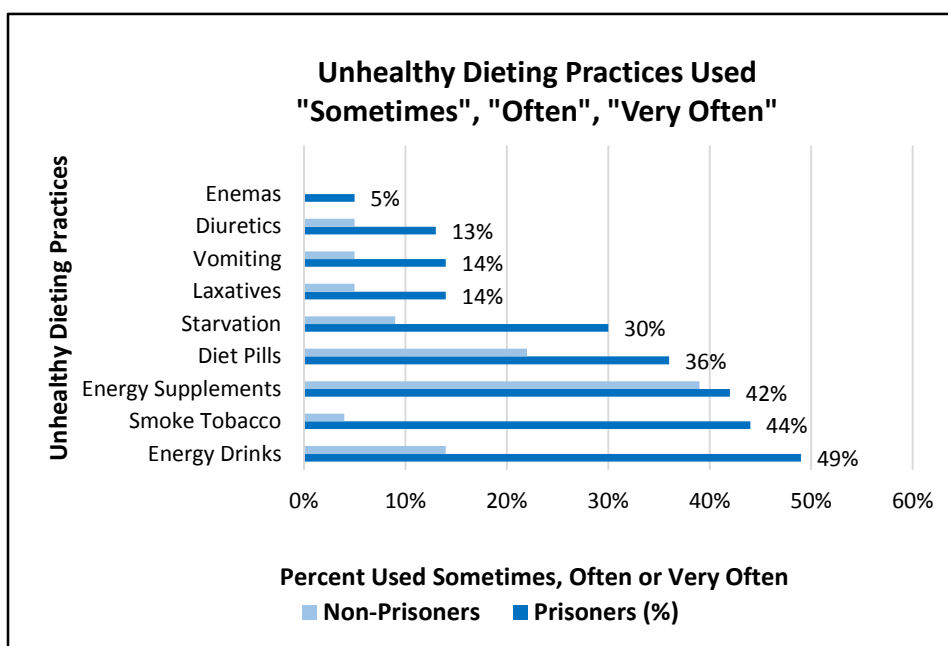
Unhealthy Dieting

Since women report weight loss as a primary reason to use both legal and illegal stimulants (Brecht, et al., 2004; Greenfield, et al., 2010; Joe, 1995, 1996; Parkes, et al., 2008) it is not surprising that unhealthy dieting practices are observed in prisoners during recovery. Dieting to lose weight may seem harmless by many health professionals but it can be extremely dangerous, particularly for those with a history of addiction. A moderate diet and increased activity is generally not part of the addict's lifestyle. Dieting measures are taken in extreme, such as dietary restriction, misuse of over-the-counter supplements, medications or prescription drugs, illegal drugs and self-destructive behaviors, such as vomiting. Mental health disorders such as eating pathologies can persist as unhealthy dieting (Jacobi, et al., 2004) and compensatory behaviors (restrictive dieting, self-induced vomiting, over-exercising, laxatives and illicit drug use) which are recognized as symptoms of Bulimia Nervosa (DSM-5, 2013). Body dissatisfaction has been found to predict dieting, binge eating, purging, excessive laxative use, and severe caloric restriction (Stice, 2002).

While decreased food in the diet and exercise were reported as the top methods of weight loss by both groups, non-prisoners reported a higher use of these behavioral methods while prisoners reported higher incidence of unhealthy dieting practices. In Figure 8, the methods used for weight loss reported as “sometimes”, “often” or “very often” by prisoners was energy drinks followed by smoking tobacco, energy supplements, and diet pills all of which have stimulant

producing effects. In fact, research shows that the stimulant effects of energy drinks far exceed that of regular caffeine products and can serve as a gateway to relapse for stimulant use (Reissig, Strain, & Griffiths, 2009).

Figure 8. Unhealthy Dieting Practices Use “Sometimes”, “Often” or “Very Often”



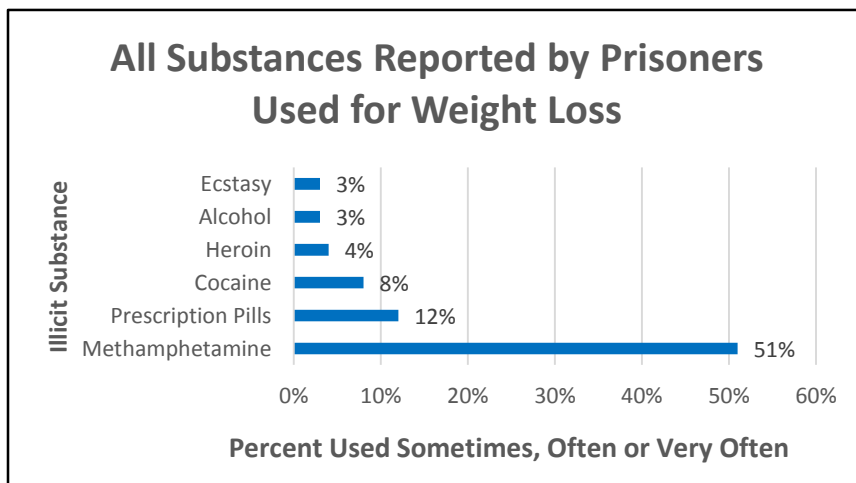
Some studies show that caffeine dependence is positively associated with various mental health disorders including major depression, generalized anxiety disorder, panic disorder, antisocial personality disorder, alcohol dependence, and cannabis and cocaine abuse/dependence (Kendler, Myers, & O. Gardner, 2006). One study suggest that the co-occurrence of substance use among drug abusers and dependence on caffeine, nicotine and alcohol were governed by the same factors (Kozlowski et al., 1993). The evidence still needs further research but it might be suggested by some studies that caffeine and caffeine products may serve as a gateway to other forms of drug dependence (Reissig, et al., 2009). One study reported that energy drink consumption in a college sample of 1060 students significantly predicted subsequent nonmedical prescription stimulant use, illicit drug use and alcohol (Arria et al., 2010). While no studies have

evaluated energy product consumption following incarceration, it is very likely that energy products consumed as an alternative to substance abuse in many women, may actually peak interest or play a significant role in relapse to drug use and ultimately recidivism.

Substance Abuse

The National Center of Addiction and Substance Abuse at Columbia University reports that drug and alcohol abuse play a role in the incarceration of 80% of the individuals imprisoned in U.S. jails and prisons (USDOD, 2005). While 87% of prisoners in this study had used drugs in the past, 53% of prisoners reported using drugs (“rarely”, “some”, “often”, “very often”) for weight loss including “methamphetamine”, “cocaine”, “heroin” or “ecstasy”. Prisoner’s report of drug use (based on the highest response provided) was significantly higher compared to non-prisoners (4%) use of “street drugs”. Figure 9 shows drug prevalence reported by prisoners. Not surprising, methamphetamine is the most widespread drug used for weight loss by prisoners.

Figure 9. All Substances Reported by Prisoners Used for Weight Loss



While prisoners also reported a greater use of prescription pills than non-prisoners (though not significant), the data need to be observed with caution as the survey did not ask respondents whether the prescription pills were prescribed and to whom were they prescribed. Although notably, prescription drugs used to treat various health problems such as Adderall and Ritalin are commonly used illicitly for weight loss (NIDA, 2014b).

Limitations

It is important to note that while study groups were similar in race, they differed in ethnicity, specifically, prisoners had fewer Hispanic/Latinas than the community comparison. This would be expected because the census for the nearby community (Clark County) indicates a Hispanic population of 30% (28% in the state) (Nevada, 2014); whereas, the Hispanic population census for the Florence McClure Women's Correctional Center is only 9% (NDOC, 2012).

The study samples also differed in age and education as community participants were 3 years younger and had a higher educational attainment. However, it should be noted that studies show eating pathologies and body image issues are highly prevalent in college students who are both younger and have higher education attainment (Hoerr, Bokram, Lugo, Bivins, & Keast, 2002; Nevonen & Norring, 2004). Additionally, because the study aim was to compare incarcerated with non-incarcerated samples, a difference in age, race, ethnicity and educational attainment would be expected and viewed as a minor limitation in this study. However, future studies could analyze a sub-sample of the larger sample of inmates ($n=475$) who completed the survey that are comparable to the community sample.

It is necessary to highlight initially one major limitation of this study prior to discussion of the results. Because all data was collected via self-report and self-selecting (volunteered to participate in the study), it may influence the validity of the findings. Despite these limitations, overall findings can have important implications for future research and program efforts related to reentry and substance abuse treatment for incarcerated females.

Future Implications

While this study focused primarily on the comparison between incarcerated and non-incarcerated females relative to specific parameters discussed, there are many opportunities for future studies based on this data. There are many relationships which might be further explored using a subset from the larger sample collected but not used in this study. Relationships of interest based on current study outcomes might include crosstab analysis by drug of choice, demographics, inmate offenses, time spent incarcerated, sentence structures (terms) and differences in outcomes among obese, overweight or normal weight prisoners.

Future studies should also address the impact of gender-responsive programs delivered in female prisons addressing specific pathologies identified in this study including changes in body dissatisfaction, eating pathologies and weight concerns following the intervention. Since research shows that these issues are related to relapse, longitudinal studies should also be considered to address recidivism among these program participants or those prisoners in treatment or counseling for identified eating pathologies, body dissatisfaction or weight concerns.

Additionally, studies might be conducted that evaluate behavioral differences between male and female prisoners such as meal plan provisions, recreation and exercise opportunities and usage, commissary options and purchases, etc. to determine gender differences in weight gain.

Conclusion

Eating pathology, body dissatisfaction and weight-related concerns occur in various cultural and ethnic groups in the United States and around the world, however few studies have evaluated these in incarcerated populations. Particularly common in female prisoners, eating pathology and body image disturbances should be treated as a public health concern as they are frequently associated with other psychopathology and mental health disorders. And while 77% of prisoners in this study are mothers of many children under the age of 18, treatment programs addressing these issues may minimize generational decisions that could harm families for years.

Results from this study demonstrate greater body dissatisfaction and preoccupation with body shape among incarcerated females than community comparisons. Prisoners also showed more severe eating pathologies, decreased ability to employ satiety cues and higher rates of binge eating. Prisoners in this study had higher body weights and BMI and consequently an increase in weight-related concerns. They also utilized unhealthy dieting practices at a higher rate than community comparisons as well as illicit drugs for losing weight.

While gender-responsive programs aimed at targeting these issues in substance abuse treatment for women (A. Lindsay, et al., 2012) might also benefit female prisoners, it is important for prisons and jails to take a harsher look at food and physical activity within their

facilities as well. Poor nutrition options in the culinary and canteen, sedentary lifestyles and decreased opportunities for physical activity can lead to weight gain, decreased energy and chronic medical conditions (Douglas, et al., 2009). In an attempt to minimize or self-medicate these issues with dieting and other unhealthy practices, prisoners may develop eating pathologies and other mental health problems that will increase recidivism upon their release back into local communities.

Appendix 1 – IRB Approval



UNLV Biomedical IRB - Full Committee Review Approval Notice

DATE: June 23, 2015

TO: Tim Bungum
FROM: UNLV Biomedical IRB

PROTOCOL TITLE: [710855-6] A Comparison of Beliefs and Attitudes about Eating, Body Image and Weight Between Apparently Healthy Incarcerated Females and Apparently Healthy Non-Incarcerated Females

SUBMISSION TYPE: Revision

ACTION: APPROVED
APPROVAL DATE: June 23, 2015
EXPIRATION DATE: June 22, 2016
REVIEW TYPE: Full Committee Review

Thank you for submission of Revision materials for this protocol. The UNLV Biomedical IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a protocol design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

PLEASE NOTE:

Upon approval, the research team is responsible for conducting the research as stated in the protocol most recently reviewed and approved by the IRB, which shall include using the most recently submitted Informed Consent/Assent forms and recruitment materials. The official versions of these forms are indicated by footer which contains approval and expiration dates.

Should there be *any* change to the protocol, it will be necessary to submit a **Modification Form** through ORI - Human Subjects. No changes may be made to the existing protocol until modifications have been approved.

ALL UNANTICIPATED PROBLEMS involving risk to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

ALL NONCOMPLIANCE issues or COMPLAINTS regarding this protocol must be reported promptly to this office.

This protocol has been determined to be a Minimal Risk protocol. Based on the risks, this protocol requires continuing review by this committee on an annual basis. Submission of the **Continuing Review Request Form** must be received with sufficient time for review and continued approval before the expiration date of June 22, 2016.

Generated on IRBNet

If you have questions, please contact the Office of Research Integrity - Human Subjects at IRB@unlv.edu or call 702-895-2794. Please include your protocol title and IRBNet ID in all correspondence.

Office of Research Integrity - Human Subjects
4505 Maryland Parkway . Box 451047 . Las Vegas, Nevada 89154-1047
(702) 895-2794 . FAX: (702) 895-0805 . IRB@unlv.edu

Generated on IRBNet

What do YOU think?



We want to know YOUR beliefs and attitudes
about eating, weight and body-image

**Women! → are you between
the ages of 18 & 44?**

YOU may be eligible to participate in a UNLV research project!

**The School of Community Health Sciences
Department of Environmental and Occupational Health**
presents an opportunity to share YOUR thoughts

- The survey will take approximately 30 minutes to complete
- You will not be paid to participate in the study

For more information or to participate
in the research study, please contact
Annie Lindsay 702.940.5434



Appendix 3 – Survey Packet



20715



HSF

Group ☒ CC

Date / /

General Information Sheet

1. Birthday / /

2. Select the ethnicity you identify with:

☐ Hispanic/Latina ☐ Non-Hispanic/Non-Latina

3. Select the race category you identify with (you may check more than one):

☐ Black or African American

☐ Amer. Indian or Alaskan Native

☐ Asian

☐ White or Caucasian

☐ Native Hawaiian or Pac. Islander

☐ Other

4. Select the highest level of education that you completed (Mark ONE)

☐ Less than high school

☐ Trade/Tech school

☐ Post Graduate degree

☐ High school or GED

☐ College degree

5. How many kids do you have?

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

6. How old is your youngest child? (Leave blank if no kids)

Years (OR months)

Weight History

7. What is your LIGHTEST weight? pounds (lbs)

8. What is your HIGHEST (non-pregnancy) weight? lbs

9. What is your weight MOST COMFORTABLE? lbs

Turn Page Over





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Have you ever used any of the following methods for weight loss?

	Never	Rarely	Some-times	Often	Very Often
10. Exercise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Diet Pills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Laxatives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Starvation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Diuretics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Vomiting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Decreased food diet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Energy Supplements (pills, powders, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Smoking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Energy Drinks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Enemas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Street drugs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Prescription pills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. Do you believe you have or have had symptoms of an eating disorder?

☐ Yes ☐ No

24. Has a professional ever diagnosed you with an eating disorder?

☐ Yes ☐ No

If YES, which one?

☐ Anorexia ☐ Bulimia ☐ Binge Eating ☐ ED NOS



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● Pre ○ Post

**BSQ**

We would like to know how you have been feeling about your appearance over the **PAST FOUR WEEKS**. Please read each question and select the appropriate response. Please answer **ALL** of the questions.

OVER THE PAST <u>FOUR WEEKS</u>:	Never	Rarely	Some- times	Often	Very Often	Always
1. Have you been so worried about your shape that you have been feeling you ought to diet?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Have you been afraid that you might become fat (or fatter)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Has feeling full (e.g., after eating a large meal) made you feel fat?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Have you noticed the shape of other women and felt that your own shape compared unfavorably?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Has thinking about your shape interfered with your ability to concentrate (e.g., watching TV, reading, listening to conversations)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Has being naked, such as when taking a bath, made you feel fat?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Have you imagined cutting off fleshy areas of your body?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Have you not gone out to social occasions (e.g., parties) because you have felt bad about your shape?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Have you felt excessively large and rounded?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Have you thought that you are in the shape you are because you lack self-control?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Have you worried about other people seeing rolls of fat around your waist or stomach?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. When in company, have you worried about taking up too much room (e.g., sitting on a sofa, or a bus seat)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Has seeing your reflection (e.g., in a mirror or shop window) made you feel bad about your shape?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Have you pinched areas of your body to see how much fat there is?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Have you avoided situations where people could see your body (e.g., communal changing rooms or swimming baths)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Have you been particularly self-conscious about your shape when in the company of other people?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





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EAT-26

● Pre ○ Post



Please select a response for each of the following statements:	Always	Usually	Often	Some-times	Rarely	Never	
1. Am terrified about being overweight.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
2. Avoid eating when I am hungry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
3. Find myself preoccupied with food.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
4. Have gone on eating binges where I feel that I may not be able to stop.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
5. Cut my food into small pieces.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
6. Aware of the calorie content of foods I eat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
7. Particularly avoid food with a high carbohydrate content (i.e., bread, rice, potatoes, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
8. Feel that others would prefer if I ate more.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
9. Vomit after I have eaten.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
10. Feel extremely guilty after eating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
11. Am preoccupied with a desire to be thinner.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
12. Think about burning up calories when I exercise.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
13. Other people think that I am too thin.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
14. Am preoccupied with the thought of having fat on my body.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
15. Take longer than others to eat my meals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
16. Avoid foods with sugar in them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
17. Eat diet foods.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
18. Feel that food controls my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
19. Display self-control around food.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
20. Feel that others pressure me to eat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
21. Give too much time and thought to food.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
22. Feel uncomfortable after eating sweets.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
23. Engage in dieting behavior.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
24. Like my stomach to be empty.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
25. Have the impulse to vomit after meals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
26. Enjoy trying new rich foods.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	





● Pre ○ Post

HSF

BIQLI Questionnaire

Instructions: Different people have different feelings about their physical appearance. These feelings are called "body image." Some people are generally satisfied with their looks, while others are dissatisfied. At the same time, people differ in terms of how their body-image experiences affect other aspects of their lives. Body image may have positive effects, negative effects, or no effect at all. Listed below are various ways that your own body image may or may not influence your life. For each item, circle how and how much your feelings about your appearance affect that aspect of your life. Before answering each item, think carefully about the answer that most accurately reflects how your body image usually affects you.

	-3	-2	-1	0	+1	+2	+3
	Very Negative Effect	Moderate Negative Effect	Slight Negative Effect	No Effect	Slight Positive Effect	Moderate Positive Effect	Very Positive Effect
1. My basic feelings about myself—feelings of personal adequacy and self-worth.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
2. My feelings about my adequacy as a woman—feelings of femininity.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
3. My interactions with people of my own sex.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
4. My interactions with people of the other sex.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
5. My experiences when I meet new people.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
6. My experiences at work or at school.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
7. My relationships with friends.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
8. My relationships with family members.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
9. My day-to-day emotions.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
10. My satisfaction with my life in general.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3

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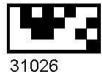


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-3	-2	-1	0	+1	+2	+3
Very Negative Effect	Moderate Negative Effect	Slight Negative Effect	No Effect	Slight Positive Effect	Moderate Positive Effect	Very Positive Effect

11. My feelings of acceptability as a sexual partner.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
12. My enjoyment of my sex life.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
13. My ability to control what and how much I eat.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
14. My ability to control my weight.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
15. My activities for physical exercise.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
16. My willingness to do things that might call attention to my appearance.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
17. My daily "grooming" activities (i.e., getting dressed and physically ready for the day).	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
18. How confident I feel in my everyday life.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3
19. How happy I feel in my everyday life.	<input type="radio"/> -3	<input type="radio"/> -2	<input type="radio"/> -1	<input type="radio"/> 0	<input type="radio"/> +1	<input type="radio"/> +2	<input type="radio"/> +3

(©Thomas F. Cash, PhD, 2002)



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● Pre ○ Post

BES

Instructions: Below are groups of statements. Read all of the statements in each group and mark the one that best describes the way you feel about the problems you have controlling your eating behavior.

#1

- ☐ I do not think about my weight or size when I'm around other people.
- ☐ I worry about my appearance, but it does not make me unhappy.
- ☐ I think about my appearance or weight and I feel disappointed in myself.
- ☐ I frequently think about my weight and feel great shame and disgust.

#2

- ☐ I have no difficulty eating slowly.
- ☐ I may eat quickly, but I never feel too full.
- ☐ Sometimes after I eat fast, I feel too full.
- ☐ Usually I swallow my food almost without chewing, then feel as if I ate too much.

#3

- ☐ I can control my impulses toward food.
- ☐ I think I have less control over food than the average person.
- ☐ I feel totally unable to control my impulses toward food.
- ☐ I feel totally unable to control my relationship with food and I try desperately to fight my impulses toward food.

#4

- ☐ I do not have a habit of eating when I am bored.
- ☐ Sometimes I eat when I am bored, but I can often distract myself and not think about food.
- ☐ I often eat when I am bored, but I can sometimes distract myself and not think about food.
- ☐ I have a habit of eating when I am bored and nothing can stop me.

#5

- ☐ Usually when I eat it is because I am hungry.
- ☐ Sometimes I eat on impulse without really being hungry.
- ☐ I often eat to satisfy hunger even when I know I've already eaten enough. On these occasions I can't enjoy what I eat.
- ☐ Although I am not physically hungry, I feel the need to put something in my mouth and I feel satisfied only when I can fill my mouth (for example, with a piece of bread).





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#6

- ☐ After eating too much, I do not feel guilty or regretful.
- ☐ After eating too much, I sometimes feel guilty or regretful.
- ☐ After eating too much, I almost always feel a strong sense of guilt or regret.

#7

- ☐ When I'm on a diet, I never completely lose control of food, even at times when I eat too much.
- ☐ When I eat a forbidden food on a diet, I think I've failed and eat even more.
- ☐ When I'm on a diet and I eat too much, I think I've failed and eat even more.
- ☐ I am always either binge eating or fasting.

#8

- ☐ It is rare that I eat so much that I've felt uncomfortably full.
- ☐ About once a month I eat so much that I felt uncomfortably full.
- ☐ There are regular periods during the month when I eat large amounts of food at meals or between meals.
- ☐ I eat so much that usually, after eating, I feel pretty bad and I have nausea.

#9

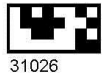
- ☐ The amount of calories that I consume is fairly constant over time.
- ☐ Sometimes after I eat too much, I try to consume fewer calories to make up for the previous meal.
- ☐ I have a habit of eating too much at night. Usually I'm not hungry in the morning and at night I eat too much.
- ☐ I have periods of about a week in which I impose starvation diets, following periods of when I eat too much.
My life is made up of binges and fasts.

#10

- ☐ I can usually stop eating when I decide I've had enough.
- ☐ Sometimes I feel an urge to eat that I cannot control.
- ☐ I often feel impulses to eat so strong that I cannot win, but sometimes I can control myself.
- ☐ I feel totally unable to control my impulses to eat.

#11

- ☐ I have no problem stopping eating when I am full.
- ☐ I can usually stop eating when I feel full, but sometimes I eat so much it feels unpleasant.
- ☐ It is hard for me to stop eating once I start, I usually end up feeling too full.
- ☐ It is a real problem for me to stop eating and sometimes I vomit because I feel so full.



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#12

- ☐ I eat the same around friends and family as I do when I am alone.
- ☐ Sometimes I don't eat what I want around others because I am aware of my problems with food.
- ☐ I often eat only small amounts around other people because I feel embarrassed about my eating.
- ☐ I'm so ashamed of overeating, I only eat at times when no one sees me. I eat in secret.

#13

- ☐ I eat three meals a day and occasionally a snack.
- ☐ I eat three meals a day and I usually snack as well.
- ☐ When I snack a lot, I skip meals regularly.
- ☐ There are times when I seem to eat continuously without regular meals.

#14

- ☐ I don't think about impulses to eat very much.
- ☐ Sometimes my mind is occupied with thoughts of how to control the urge to eat.
- ☐ I often spend much time thinking about what I ate or how not to eat.
- ☐ My mind is busy most of the time with thoughts about eating or not eating.

#15

- ☐ I don't think about food any more than most people.
- ☐ I have strong desires for food, but only for short periods.
- ☐ There are some days when I think of nothing but food.
- ☐ Most of my days are filled with thoughts of food. I feel like I live to eat.

#16

- ☐ I usually know if I am hungry or not. I know what portion sizes are appropriate.
- ☐ Sometimes I don't know if I am hungry or not. At these times, it's hard to know how much food is appropriate for me.
- ☐ Even if I knew how many calories I should eat, I don't have a clear idea of what is a normal amount of food for me.





● Pre ○ Post

HSF

SATAQ-3

Please read each of the following items carefully and indicate which best reflects your agreement with the statement.

	Definitely Disagree	Mostly Disagree	Neither Agree nor Disagree	Mostly Agree	Definitely Agree
1. I do not care if my body looks like the body of people who are on TV.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I compare my body to the bodies of TV and movie stars.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I would like my body to look like the models who appear in magazines.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I compare my appearance to the appearance of TV and movie stars.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I would like my body to look like the people who are in movies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I do not compare my body to the bodies of people who appear in magazines.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I wish I looked like the models in music videos.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I compare my appearance to the appearance of people in magazines.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I do not try to look like the people on TV.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



● Pre ○ Post

HSF

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IES-2

For each item, please select the answer that best characterizes your attitudes or behaviors:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I try to avoid certain foods high in fat, carbohydrates, or calories.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. If I am craving a certain food, I allow myself to have it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I get mad at myself for eating something unhealthy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I trust my body to tell me when to eat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I trust my body to tell me what to eat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I trust my body to tell me how much to eat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I have forbidden foods that I don't allow myself to eat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I allow myself to eat what food I desire at the moment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I do NOT follow eating rules or dieting plans that dictate what, when, and/or how much to eat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I rely on my hunger signals to tell me when to eat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I rely on my fullness (satiety) signals to tell me when to stop eating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I trust my body to tell me when to stop eating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



11192



HSF

☒ Pre ☐ Post

Body Assessment

Date / /

Age

Are you Pregnant? ☐ Yes ☐ No

Height (in) . (nearest 1/4 inch)

Weight (lbs) . (nearest 1/2 pound)



Appendix 4 – Consent Forms



School of Community Health Sciences

TITLE OF STUDY: A comparison of beliefs and attitudes about eating, body image and weight between apparently healthy incarcerated females and apparently healthy non-incarcerated females
INVESTIGATOR(S): Timothy Bungum, Dr.PH (702) 895-4986; Anne R. Lindsay, M.S. (702) 940-5434

Purpose of the Study

You are invited to participate in a research study. The purpose of this study is to determine if apparently healthy incarcerated females exhibit similar beliefs and attitudes about body image, eating and weight as non-incarcerated, apparently healthy females.

Participants

You are being asked to participate in the study because you are a female, not pregnant, between the ages of 18-44.

Procedures

If you volunteer to participate in this study, you will be asked to complete a number of questionnaires about your attitudes concerning body image, weight concerns, media, eating behaviors, quality of life and some other general information and participate in a body assessment (measure height and weight). This assessment process will take approximately 30 minutes. Participation in this study is confidential. Your name will only appear on this consent form and will not be on the questionnaires. An ID number will be assigned to your survey that will not be connected in any way with your name. Research members providing this survey to you do not have access to any written responses to these questionnaires. You will place your completed survey into a sealed envelope and sign across the seal. The researcher will give the sealed envelope and your signed consent to the Principal Investigator.

Benefits of Participation

There may be no direct benefits to you as a participant in this study. However, benefits of this research project include the potential for more accurate information about general prevalence rates of eating disorders, body image, weight concerns and health behaviors in women. This will not only help us understand the experiences of women more comprehensively, but also help to create programs to treat and encourage behavioral change.

Risks of Participation

There are risks involved in all research studies, however, this study may include only minimal risks. There is a possibility that you may feel some degree of psychological distress or discomfort when answering questions about your body image, eating behaviors and exercise habits or during collection of your height, weight. However, such distresses are likely to be minimal and experienced primarily in participants for whom these areas caused psychological distress prior to study participation.

Protocol #710855-6, Expiration: 06-22-16

TITLE OF STUDY: A comparison of beliefs and attitudes about eating, body image and weight between apparently healthy incarcerated females and apparently healthy non-incarcerated females

Contact Information

If you have any questions or concerns about this study, you may contact the researchers directly. If participation in the present study raises concern over personal issues related to psychological health, you can contact UNLV's The Practice counseling services (702) 895-1532 for a professional evaluation or consultation. A fee will be incurred based on a sliding scale. For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted, you may contact the UNLV Office of Research Integrity–Human Subjects at 702-895-2794.

Cost /Compensation

There will be no financial cost to you to participate in this study. Other than knowledge gained, there will be no compensation given to you.

Voluntary Participation

Your participation in this study is voluntary. You may refuse to participate in this study or any part of this study. You may withdraw at any time without prejudice to your relations with the university. You are encouraged to ask questions about this study at the beginning or any time during the study.

Confidentiality

All information gathered in this study will be kept completely confidential. No reference will be made in written or oral materials that could link you to this study. All paper copies of surveys (including consent forms) will be stored in a locked facility for 7 years after completion of the study and will then be destroyed. After 7 years, all data will remain archived in computer files and used for future reference and research.

Participant Consent:

I have read the above information and agree to participate in this study. I am at least 18 years of age. A copy of this form has been given to me.

Signature of Participant

Date

Participant Name (Please Print)



INFORMED CONSENT

School of Community Health Sciences

TITLE OF STUDY: A comparison of beliefs and attitudes about eating, body image and weight between apparently healthy incarcerated females and apparently healthy non-incarcerated females
INVESTIGATOR(S): Timothy Bungum, Dr.PH (702) 895-4986; Anne R. Lindsay, M.S. (702) 940-5434

Purpose of the Study

You are invited to participate in a research study. The purpose of this study is to determine if apparently healthy incarcerated females exhibit similar beliefs and attitudes about body image, eating and weight as do non-incarcerated, apparently healthy females.

Participants

You are being asked to participate in the study because you are a female, not pregnant, and between the ages of 18-44.

Procedures

Earlier this year (February or March of 2015) you completed questionnaires that assessed your attitudes and beliefs about body image, body weight, media portrayals of obese and overweight people, your eating behaviors, quality of life as it relates to overweight and obesity and other general information. You also had your height and weight measured. I am asking you for your permission for the DOC to release that data to me so that I can use it in my dissertation research at the University of Nevada, Las Vegas. If you agree to allow me to use your data, I will not know which survey is yours. Your name only appears only on this consent form. The DOC will provide me with your survey that will be labelled with a specific ID number, so that your responses will be kept secret.

Benefits of Participation

There may be no direct benefits to you as a participant in this study. However, benefits of this research project include the potential for more accurate information about the frequency of eating disorders, body image, weight concerns and health behaviors among imprisoned women. This will not only help us understand the experiences of women more completely, but also help to create programs to treat and encourage behavioral change.

Risks of Participation

There are risks involved in all research studies. It is possible that this research data could be traced to you, but because of the procedures explained in this document that is very unlikely to occur.

Protocol #710855-6, Expiration: 06-22-16

TITLE OF STUDY: A comparison of beliefs and attitudes about eating, body image and weight between apparently healthy incarcerated females and apparently healthy non-incarcerated females

Contact Information

If you have any questions or concerns about this study, you may contact the researchers. Contact information is provided above. For questions about the rights of research subjects, any complaints or comments about the manner in which the study was conducted, you may contact the UNLV Office of Research Integrity–Human Subjects at 702-895-2794.

Cost /Compensation

There will be no cost to you to participate in this study other than your time and effort. You will not be paid money or rewarded in any way for participating in this study.

Voluntary Participation

Your participation in this study is voluntary. You may refuse to allow the use of your data for this study by not signing this form. You are encouraged to ask questions about this research.

Confidentiality

All information gathered in this study will be kept completely confidential. No mention will be made in written or spoken materials that could link you to this study. All paper copies of surveys (including consent forms) will be stored in a locked facility for 7 years after completion of the study, and will then be destroyed.

Participant Consent:

I have read the above information and agree to allow the survey data that I completed earlier this year in this dissertation study. I am at least 18 years of age. A copy of this form has been given to me.

Signature of Participant

Date

Participant Name (Please Print)

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- Warren, C. S., Lindsay, A. R., White, E. K., Claudat, K., & Velasquez, S. C. (2013). Weight-related concerns related to drug use for women in substance abuse treatment: Prevalence and relationships with eating pathology. *Journal of Substance Abuse Treatment*, 44(5), 494-501. doi: <http://dx.doi.org/10.1016/j.jsat.2012.08.222>
- WHO (2009). Women's health in prison: urgent need for improvement in gender equity and social justice. *Bulletin of the World Health Organization*, 87, 406. doi: 10.2471/BLT.09.066928
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- Zlotnick, C., Clarke, J. G., Friedmann, P. D., Roberts, M. B., Sacks, S., & Melnick, G. (2008). Gender differences in comorbid disorders among offenders in prison substance abuse treatment programs. *Behavioral sciences & the law*, 26(4), 403-412. doi: 10.1002/bsl.831
- Zweben, J. E. (1987). Eating disorders and substance abuse. *Journal of psychoactive drugs*, 19(2), 181-192. doi: 10.1080/02791072.1987.10472402

Curriculum Vitae
Anne R. Lindsay
University Nevada Cooperative Extension
8050 Paradise Road, Suite 100, Las Vegas, Nevada 89123
Ph: (702) 940-5434 email: lindsaya@unce.unr.edu

EMPLOYMENT

Associate Professor, Exercise Physiologist, Extension Specialist <i>University Nevada, Reno; Cooperative Extension (Assistant 2006-2012)</i>	2006 – Present
Owner/President <i>HealthWorks; Corporate Wellness Consultants, Inc.</i>	1997 – 2006
Health Promotion Director <i>Dept of Energy/Nevada Test Site</i>	1989 – 1997
Senior Physical Director, Youth and Adult Program Leader <i>Pasadena YMCA, Santa Monica YMCA, Santa Barbara YMCA</i>	1978 – 1989

EDUCATION

University of Nevada, Las Vegas
January 2012 – Sept 2015
Degree: PhD, Public Health

University of Nevada, Las Vegas
September 1986 – August 1988
Degree: Master of Science, Exercise Physiology

University of California, Santa Barbara
September 1978 – June 1982
Degree: Bachelor of Arts, Ergonomics & Physical Education w/ Coaching Minor

EXPERIENCE

Currently responsible for promotion of physical activity and exercise to help reduce the incidence of obesity and other health related issues through education and research within University Extension; conduct research, program development, implementation and evaluation in physical activity and health with emphasis in childhood obesity and health for women in substance abuse and correctional settings; oversight of external program funds through grants and other sources; provision of professional expertise and educational materials in exercise physiology and physical activity to other Extension educators and specialists in the University as well as the national and local community.

Previous experience included development and oversight of a multi-employer health promotion program with over 13,000 employees including laborers, administrators, firefighters, security forces, culinary and medical staff; implementation of additional worksite health promotion programs for corporations, small business, other government and non-profit agencies, hospitals and casinos; development and implementation of a health and body image program designed to augment existing broad-based drug prevention and community education programs for women and girls under correctional supervision, particularly those with children and families; and oversight of a large YMCA adult fitness center in the Los Angeles area including sports, aquatics, youth camps and school fitness programs; and collection and publication of the National YMCA Fitness Battery norms (used widely today, these norms are the largest fitness database ever to be published).

GRANT RELATED ACTIVITIES

Lindsay, A., Sigman-Grant, M. & Byington, T. (2014-15). *All 4 Kids®: Healthy, Happy, Active, Fit*. Funded by USDA, FNS, Supplemental Nutrition Assistance Program-Education (SNAP-Ed) **\$194,053**

Lindsay, A. (2014-15). *Healthy Steps to Freedom*. Funded by USDA, FNS, SNAP-Ed **\$84,020**.

Lindsay, A., Sigman-Grant, M. & Byington, T. (2013-14). *All 4 Kids®: Healthy, Happy, Active, Fit*. Funded by USDA, FNS, Supplemental Nutrition Assistance Program-Education (SNAP-Ed) **\$162,019**.

Lindsay, A. (2013-14). *Healthy Steps to Freedom*. Funded by USDA, FNS, SNAP-Ed **\$122,513**.

Lindsay, A. (2013-14). *SNAP-Ed Administration*. Funded by USDA, FNS, SNAP-Ed **\$9,133**.

Lindsay, A. & Byington, T. (2013-14). *All 4 Kids*. Funded by Acelero Head Start Learning **\$10,000**.

Lindsay, A., Sigman-Grant, M. & Byington, T. (2012-13). *All 4 Kids®: Healthy, Happy, Active, Fit*. Funded by USDA, FNS, Supplemental Nutrition Assistance Program-Education (SNAP-Ed) **\$157,497**.

Lindsay, A. (2012-13). *Healthy Steps to Freedom*. Funded by USDA, FNS, SNAP-Ed **\$112,559**.

Lindsay, A. & Byington, T. (2012-13). *All 4 Kids*. Funded by Acelero Head Start Learning **\$5,000**.

Sigman-Grant, M., **Lindsay, A.**, Byington, T. (2009-13). *Resiliency in an Obesogenic Environment*. Funded by USDA, NIFA, AFRI, **\$1,100,000** (additional enhancement grant from Clark county: **\$50,000**).

Lindsay, A., Sigman-Grant, M., Byington, T. (2011-12). *Child Care Physical Activity and Nutrition Modules*. Funded by State of Nevada, ARRA **\$10,930**.

John, D. (PD), Gunter, K. (PD), Manore, M., Etuk, L., Langelotto, G., Rennekamp, R. Nevada Partner: **Lindsay, A.**, Project Advisory Team Member (2011-16) *GROW Generating Rural Options for Weight-Healthy Kids and Communities*. Funded by USDA, NIFA to Oregon State University \$4,878,865 UNCE Subaward **\$30,000**.

Lindsay, A., Sigman-Grant, M., Byington, T. (2011-12). *All 4 Kids: Healthy, Happy, Active, Fit*. Funded by USDA, FNS, Supplemental Nutrition Assistance Program-Education **\$185,895**.

Lindsay, A. (2011-12). *Healthy Steps to Freedom*. Funded by USDA, FNS, Supplemental Nutrition Assistance Program-Education **\$115,416**.

Lindsay, A., Sigman-Grant, M., Byington, T. (2010-11). *All 4 Kids: Healthy, Happy, Active, Fit*. Funded by USDA, FNS, Supplemental Nutrition Assistance Program-Education (SNAP-Ed) **\$147,765**.

Lindsay, A. (2010-11). *Healthy Steps to Freedom*. Funded by USDA, FNS, SNAP-Ed **\$106,499**.

Byington, T., Sigman-Grant, M., **Lindsay, A.** (2009-11) *Models of Supplemental Nutrition Assistance Program Education (SNAP-Ed) and Evaluation Demonstration Project*. Funded by USDA, FNS **\$100,000**.

Lindsay, A., Sigman-Grant, M., Byington, T. (2009-10). *All 4 Kids: Healthy, Happy, Active, Fit*. Funded by USDA, FNS, SNAP-Ed **\$135,164** (additional enhancement grant from Clark county: **\$50,000**).

Sigman-Grant, M., **Lindsay, A.**, Byington, T. (2008-09). *All 4 Kids: Healthy, Happy, Active, Fit*. Funded by USDA, FNS, SNAP-Ed **\$81,988**.

Sigman-Grant, M., **Lindsay, A.**, Byington, T. (2007-08). *All 4 Kids: Healthy, Happy, Active, Fit*. Funded by USDA, FNS, SNAP-Ed **\$67,893**.

AWARDS & HONORS

2012 University of Nevada Cooperative Extension 2012 Faculty Award of Excellence

2012 USDA, National Institute of Food and Agriculture Partnership Award for Mission Integration of Research, Education and Extension (All 4 Kids Program)

2012 Western Extension Directors' Award of Excellence (All 4 Kids Program Award)

2012 Florence Hall Award, 3rd Place Regional Award, National Extension Association of Family and Consumer Sciences (*All 4 Kids* Program Award)

2012 Family Health & Wellness Award, 3rd Place National Award, National Extension Association of Family and Consumer Sciences (*All 4 Kids* Program Award)

2012 Family Health & Wellness Award, 2nd Place Western Regional Award, National Extension Association of Family and Consumer Sciences (*All 4 Kids* Program Award)

2012 USDA/Priester Health Award (All 4 Kids Program Award)

2010 Television, 3rd Place National Award, National Extension Association of Family and Consumer Sciences (for the *All 4 Kids* CD/DVD Media Project)

2010 Television, 1st Place Award, Western Region, National Extension Association of Family and Consumer Sciences (for the *All 4 Kids* CD/DVD Media Project)

2009 Trophy award by Clark County School District for support of school PE programs

2008 Healthy Hero award by the Southern Nevada Health District

PROFESSIONAL SERVICE

2014 Extension Public Values Development, Western Extension Directors Association (WEDA), San Diego.

2013-Present American College of Sports Medicine (ACSM) Exercise is Medicine® – Community Health Committee, Co-Chair

2013-Present USDA Nutrition and Health Committee for Planning and Guidance (member by invitation); Chair Subcommittees: *Nutrition and Physical Activity*

2013-2014 W-2005 Multi-State Research Project (Officer, Secretary)

2013 Nevada Early Childhood Education (ECE) Obesity Prevention Workgroup

2013 Nevada Department of Education Food and Nutrition Standards Revision Team

2013-Present SNAP-Ed (RJWF) Western Region Outcomes & Evaluation Framework Committee

2011-2012 Child and Adult Care Food Program Wellness Policy Committee (member by invitation)

2011-2012 National eXtension Initiative – Family, Food and Fitness Community of Practice (CoP) Behavior, Move Every Day (Co-Chair)

2008 MyPyramid for Preschoolers – Advised the HHS and USDA’s Center for Nutrition Policy and Promotion MyPyramid for Preschoolers content (by invitation)

2006-Present State Coordinator for the President’s Council on Fitness, Sports and Nutrition

2006-Present Partners for a Healthy Nevada Coalition

2006-2008 America on the Move/NIFA – Committee Member (by invitation)

AFFILIATIONS

American College of Sports Medicine (ACSM) & Southwest Affiliate - Member

National Association of the Education of Young Children & NV affiliate - Member

National Extension Association of Family and Consumer Sciences & SW Affiliate – Member

American Public Health Association - Member

REFEREED JOURNAL ARTICLES AND PUBLICATIONS

- Byington, T. A., **Lindsay, A. R.**, Sigman-Grant, M. J. (2014). Healthy choices start early. *The Journal of the National Association for the Education of Young Children*, 69(5), 14-21.
- Lindsay, A.**, Hongu, K., Spears, K., Dyrek, A. & Manore, M. (2014) Field assessment for obesity prevention in children and parents: Physical activity, fitness and body composition. *Journal of Nutrition Education Behavior* 46 (1):43-53. doi: 10.1016/j.jneb.2013.03.013
- Sigman-Grant, M. J., **Lindsay, A. R.**, Byington, T. A. (2014). *Children Are What They Eat* (AV-14-02). University of Nevada Cooperative Extension. <http://campus.extension.org/enrol/index.php?id=661>
- Lindsay, A. R.**, Sigman-Grant, M. J., Byington, T. A. (2014). *Growth, Obesity and Energy Balance*. (AV-14-01). University of Nevada Cooperative Extension. <http://campus.extension.org/enrol/index.php?id=657>
- Byington, T. **A.**, **Lindsay, A. R.**, Loesch-Griffin, D., Brumett, S., & Sigman-Grant, M. (2013). Head Start families thoughts and beliefs about health, nutrition, and physical activity. (National Head Start Association) *NHSA Dialog*, 16(3), 64-76.
- Byington, T. **A.**, **Lindsay, A. R.**, Loesch-Griffin, D., Brumett, S., & Sigman-Grant, M. (2013). Influencing Head Start families thoughts and beliefs about health, nutrition, and physical activity. *NHSA Dialog*, 16(3), 160-164.
- Sigman-Grant, M., Byington, T., **Lindsay, A.**, Lu, M., Mobley, A., Fitzgerald, N. & Hildebrand, D. (2013). Preschoolers can distinguish between healthy and unhealthy foods: The All 4 Kids Study. *Journal of nutrition education and behavior*, 03/2014, Volume 46, Issue 2 <http://www.ncbi.nlm.nih.gov/pubmed/24246710>)
- Sigman-Grant, M, Van Brackel, A., Byington, T. and **Lindsay, A.** (2013) Teacher and Family Connections Curriculum: A Supplement to the All 4 Kids: Healthy, Happy, Active, Fit Obesity Prevention Program. UNCE Publication CM-13-01. Available on <http://campus.extension.org>
- Lindsay, A.** & Velasquez, S. (2012). *Nevada Substance Abuse Treatment Providers – Assessing the Needs & Characteristics of Female Clients in Recovery*. UNCE Special Publication SP-12-09, 23 pp.
- Warren, C., **Lindsay, A.**, White, E., Claudat, K., & Velasquez, S. (2012). Weight-related Concerns Related to Drug Use for Women in Substance Abuse Treatment: Prevalence and Relationships with Eating Pathology. *Journal of Substance Abuse Treatment* 44(5), 494. doi:10.1016/j.jsat.2012.08.222
- Lindsay, A.**, Warren, C., Velasquez S., & Lu, M. (2012). A Gender-Specific Approach to Improving Substance Abuse Treatment for Women: The Healthy Steps to Freedom (HSF) Program. *Journal of Substance Abuse Treatment*, 43(1), 61-69.
- Lindsay, A.** (2010). A media effort addressing preschool inactivity through family, community, and Extension collaboration. *Journal of National Extension Association of Family and Consumer Sciences*, 5 (11).
- Lindsay, A.**, Byington, T., & Sigman-Grant, M. (2010). *All 4 Kids: Healthy, Happy, Active, Fit Classroom Education for Young Children*. UNCE Curriculum Material 10-06, 311 pp.

- Lindsay, A.**, & Constantino, N. (2010). *Get Up, Get Out!* Univ of Nevada Cooperative Extension (UNCE) Fact Sheet (FS) 10-80; **Lindsay, A.** & Constantino, N. (2010). *Get Moving!* UNCE FS 10-76;
- Lindsay, A.** & Constantino, N. (2010). *Get Active!* UNCE FS 10-81; **Lindsay, A.** & Constantino, N. (2010). *Get Fit!* UNCE FS 10-73; **Lindsay, A.** & Constantino, N. (2010). *Get Regular!* UNCE FS 10-79.
- Lindsay, A.** (2009). *All 4 Kids: Healthy, Happy, Active, Fit CD®* UNCE Audio Visual 09-01, Copyright American Society of Composers, Authors and Publishers (ASCAP).
- Lindsay, A.** (2009). *All 4 Kids: Healthy, Happy, Active, Fit DVD®* UNCE Audio Visual 09-02 <http://www.unce.unr.edu/publications/files/hn/2009/av0902.asp>.
- Seymour, K., Spears, K., **Lindsay, A.**, Collins, C., Leontos, C., Sigman-Grant, M., Wilson, M. & Woodson, J. (2009). *Nevada's health and nutrition needs – Preferred methods of health information delivery*. UNCE Special Publication 09-18, 82 pp.
- Lindsay, A.** & Velasquez, S. (2009). *Healthy Steps to Freedom: A Health and Body Image Curriculum*. UNCE Curriculum Material 09-02, 556 pp.
- Lindsay, A.** & Velasquez, S. (2008). *Using a Pedometer, A Guide to Help Step it Up*. UNCE Fact Sheet 08-32.
- Lindsay, A.** & Velasquez, S. (2008). *Weighing in on Fat*. UNCE Fact Sheet 08-49.
- Lindsay, A.** & Constantino, N. (2008). *Get Ready, Get Set, Let's Go!* UNCE Fact Sheet 08-35
- Lindsay, A.** & Velasquez, S. (2008). *Buying and Using a Pedometer: Quick Tips to Step it Up*. UNCE Fact Sheet 08-32.
- Lindsay, A.** & Velasquez, S. (2007). *What a Girl Wants! What a Girl Needs! Living Healthy without Methamphetamine*. UNCE Fact Sheet 07-45.
- Lindsay, A.**, Wilson, M., & Velasquez, S. (2007). *Have it Your Weigh! Portion Sizes & Dining Out*. UNCE Fact Sheet 07-46.
- Lindsay, A.** & Velasquez, S. (2007). *Dying to Be Thin, How Far Will You Go? Body Image and Cultural Standards of Beauty*. UNCE Fact Sheet 07-47.
- Lindsay, A.** (1993) Wellness Program Modules for Nutrition, Weight Reduction, Back Care, and Exercise; Anthem Health Systems, Indianapolis,
- Golding, Myers & Sinning (2000). Y's Way to Physical Fitness, The Complete Guide to Fitness Testing and Instruction (4th edition). Human Kinetics Publishers Inc., pp. 113-136. (norm revisions by **Anne R. Lindsay**)
- Golding, L. & **Lindsay, A.** (1989). Measuring Body Composition with Attention to Age and Sex Trends. *Perspective*. 15(4), pp. 30-36.
- Golding, L. & **Lindsay, A.** (1989). Y's Way Revised: Testing Strength and Muscular Endurance. *Perspective* 15(5), pp. 30-35.
- Golding, L. & **Lindsay, A.** (1989). Y's Way Revised: Stretching the Limits of Age, Sex and Flexibility. *Perspective* 15(6), pp. 26-29.
- Golding, L. & **Lindsay, A.** (1989). Y's Way Revised: Cardio-Respiratory Fitness Tested Using PWC Max. *Perspective* 15(7), pp. 11-18.
- Golding, L. & **Lindsay, A.** (1989). Y's Way Revised: Step-Up to Cardio-Respiratory Fitness Test. *Perspective* 15(8), pp. 39-41.

Golding, L. & **Lindsay, A.** (1989). Y's Way Revised: Interpreting Tests for the Benefit of Your Members. *Perspective* 15(9), pp. 34-37.

REFEREED JOURNAL ABSTRACTS

Lindsay, A., Velasquez, S., Warren, C. & Lu, Minggen (2012). Weight-related Concerns and Characteristics of a Female Substance Abuse Population. *Medicine & Science in Sports & Exercise*, 44(5), S596.

Dyrek, A., **Lindsay, A.**, Byington, T., Sigman-Grant, M., Lu, Minggen, & Campbell, B. (2012, June). Improved Movement Skill Competency in a Preschooler Physical Activity Intervention. *Medicine & Science in Sports & Exercise*, 44(5), S331.

Lindsay, A., Velasquez, S., & Warren, C. (2011). Healthy Steps to Freedom: A Health & Body Image Program for Women in Substance Abuse Recovery. *Medicine & Science in Sports & Exercise*, 43(5), S491.

Sigman-Grant, M., Byington, T., **Lindsay, A.**, Spann, T., & Black, D. (2011). Preschoolers distinguish between healthy and unhealthy snack foods. *The Federation of American Societies for Experimental Biology Journal*, 25(30), 2.

Olson, M., **Lindsay, A.**, Williford, H., Golding, L., Reilly, E., Esco, M., Ford, III, T. (2005). Body Image, Exercise and Substance Use in a Large Sample of Incarcerated Women. *Medicine & Science in Sports & Exercise*, 37(5), S407.

ORAL PRESENTATIONS AT PROFESSIONAL MEETINGS (past 5 years)

Lindsay, A. (2015, Apr). "Beyond the Playground: Top 10 Things Every Teacher Should Know to Create Intentional Opportunities for Physical Activity." *Child Adult Care Food Program (CACFP) National Conference*, Las Vegas, NV.

Lindsay, A., O'Callaghan, A. "Gardening as You Mature" (2015, Mar, Apr, May) *Master Gardeners Health Series*, Las Vegas, NV.

Lindsay, A., Coughenour, C. (2015, Feb), "Generating Rural Options for Weight-Healthy Kids and Communities", *Active Living Research National Conference*, San Diego, CA

Lindsay, A. R. (2014, Dec), "We Got Your Back on the Rig or in the Office", *National Ground Water Association*. Las Vegas, NV

Velasquez, S. Borden, G., Packham, J., **Lindsay, A. R.**, Wilson, M. P. (2014, Sept). "Clark County Community Assessment and Education to Promote Behavioral Health Planning and Evaluation (CAPE) Project", *Nevada Public Health Association Annual Conference*, Las Vegas, NV

Lindsay, A. R., Robinson, L., Blitstein, J. (2014, May) "How to Deliver and Evaluate Effective Movement Programs in Head Start Centers", *Global Summit on the Physical Activity of Children*, *Active Healthy Kids Canada*.

Lindsay, A. (2013, Nov) Weight Concerns, Body Dissatisfaction and Illicit Drug Use in Women and Girls. *American Public Health Association Annual Meeting*, Boston, MA

Lindsay, A. (2013, Sept). Physical Activity, Body Composition, and Energy Balance. *USDA Western Region Nutrition Symposium*, Oakland, CA

Lindsay, A. (2013, Sept) Dying to be Thin: The Obesity Paradox in Certain Populations. *Washoe Obesity Forum*, Reno, NV

- Lindsay, A.** (2013, Sept) Keeping Fit Kids in a Fat World. *Washoe County Obesity Forum*, Reno, NV
- Lindsay, A.** (2013, Sept) Get Ready! Get Set! Let's Go! *University of Oklahoma (faculty and staff presentation by invitation)*, Stillwater, OK
- Lindsay, A. & Coker, L.** (2013, June). Early Childhood: The Glory Days for Physical Activity. *Southwest American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD)*, Red Rock Casino, Las Vegas, NV
- Lindsay, A. & Coker, L.** (2013, June). All 4 Kids Childhood Obesity Round Table, *Childhood Obesity Conference*, Long Beach, CA
- Williams, J., Houtkooper, L., **Lindsay, A.** & Gunter, K. (2013, May) Exercise is Medicine® for Community Health: Promoting Energy Balance and Health through Linking Providers, Patients and Communities. *American College of Sports Medicine Annual Meeting*, Indianapolis, IN.
- Lindsay, A.** (2013, Mar) Get Ready! Get Set! Let's Go! *ACSM Health & Fitness Summit*, Las Vegas, NV
- Lindsay, A.**, White, E., Rothaker, E., Coker, L., & (Moderator) Velasquez, S. (2013, Jan). Are Our Kids Dying to Be Thin? *Clark County School District Staff Development Day*, Spring Valley HS Las Vegas, NV
- Lindsay, A.**, Velasquez, S. & Warren, C. (2012, October). *Weight-Related Concerns & Characteristics of Females in Nevada Substance Abuse Facilities*. Nevada Public Health Association, Las Vegas, NV
- Lindsay, A.**, Oehlke, S. & Brinkman, P. (2012, July). *Building Healthy Families and Preschoolers: A Systems Approach for Lifelong Health*. Society for Nutrition Education & Behavior, Washington, D.C.
- Sigman-Grant, M., **Lindsay, A.**, Byington, T., Gabor, V. & Cates, S. (2012, July). *Contrasting Designs of a SNAP-Ed Evaluation: Lessons Learned from the All 4 Kids Program*. Society for Nutrition Education & Behavior, Washington, D.C.
- Lindsay, A.** (2012, June) *The Relationship Between Eating Disorders and Substance Abuse in Women and Core Intervention Targets to Prevent Relapse*. Orange County Women's Association for Addiction Treatment, Costa Mesa, CA
- Lindsay, A.** (2012, April) *Why Weight? Preventing Childhood Obesity Begins in Your Classroom* Nevada Association for the Education of Young Children, Las Vegas, NV
- Lindsay, A.** (Presenter) & Sigman-Grant, M. (Aug 2011, Las Vegas; Sept 2011, Reno NV). *Childhood Obesity Prevention: NAFCC Accreditation, Real Life Application: Bridging the Gap*. Food for Kids CACFP.
- Lindsay, A.** & Byington, T. (2011, July) *Beyond the Playground: Top 10 Things You Should Know to Create Intentional Opportunities for Physical Activity*. National Association Family Child Care, Las Vegas, NV
- Thomssen, G. & **Lindsay, A.** (2011, April). *Good Fuel = Go Power*. Nevada Association for the Education of Young Children, Reno, NV
- Sigman-Grant, M., **Lindsay, A.**, & Byington, T. (2011, Feb). *Preschoolers and Obesity, Developmentally Appropriate Strategies*. Clark County School District Early Childhood Professional Conference, Henderson, NV

- Lindsay, A.** (2010, November). *Beyond the playground....Top 10 things EVERY preschool teacher should know*. National Association for the Education of Young Children, Anaheim CA
- Sigman-Grant, M., Byington, T., & **Lindsay, A.** (2010, October). *All 4 Kids: Healthy, Happy, Active, Fit: Lessons you can use to deliver a preschool nutrition and activity program*. The Child Care Food Program Roundtable, San Francisco, CA
- Lindsay, A.** (2010, October). *Lites, Camera, Action! A Multi-disciplinary Approach to Childhood Obesity*. American Association for Family and Consumer Sciences, Nevada Annual Meeting, Las Vegas, NV
- Sigman-Grant, M., **Lindsay, A.**, Byington, T., & Spann, T. (2010, July). *Preschoolers and Obesity: What are developmentally appropriate strategies?* Society for Nutrition Education, Reno, NV
- Byington, T., **Lindsay, A.**, & Spann, T. (2010, July). *Incorporating Physical Activity Throughout the Preschool Day*. General Services Administration (GSA) Child Care National, Las Vegas, NV
- Lindsay, A.** (2010, April). *Lites, Camera, Action! A Multi-disciplinary Approach to Childhood Obesity*. NV Dietetic Association, Las Vegas NV

REFEREED POSTER PRESENTATIONS (past 5 years)

- Velasquez, S., **Lindsay, A.** & Warren-Fishkin, C. (2013, Sept). Do Stimulant Drug Users (SU) Exhibit Similar Eating Pathology Characteristics as Non-Stimulant Drug Users (NSU)? *Nevada Public Health Association Annual Meeting*, Reno, NV
- Coker, L., **Lindsay, A.** & Coughenour, C. (2013, Sept). Healthy Kids Festival: Low cost, small steps that make a big fat difference. *Nevada Public Health Association*, Reno, NV
- Coker, L., Jones, C., Coughenour, C., Taylor, S. & **Lindsay, A.** (2013, Nov). Healthy Kids Festival: Low cost, small steps that make a big fat difference. *American Public Health Association (APHA)*, Boston, MA
- Lindsay, A.**, Velasquez, S., Warren, C., & Lu, M. (2012, May). *Weight-Related Concerns & Characteristics of a Female Substance Abuse Population*. American College of Sports Medicine, San Francisco, CA
- Dyrek, A., **Lindsay, A.**, Byington, T., Sigman-Grant, M. & Lu, M. (2012, May). *Improved Movement Skill Competency in a Preschooler Physical Activity Intervention*. American College of Sports Medicine, San Francisco, CA
- Lindsay, A.**, Hite, A., Byington, T., Lu, M. & Sigman-Grant, M. (2012, April). *Incongruence Between Mother Perceptions and Preschoolers' Actual Weight Status Using BMI Categories*. Experimental Biology, San Diego, CA.
- Lindsay, A.** & Velasquez, S. (2011, Sept). *Weight, BMI & Body Fat Characteristics of Women in Treatment for Substance Abuse*. Nevada Public Health Association, Reno, NV
- White, E., Claudat, K., Warren, C., **Lindsay, A.**, & Velasquez, S. (2011, Sept). *Weight concerns, thin-ideal internalization, and eating pathology in treatment-seeking female substance abusers*. Eating Disorders Research Society, Edinburgh, Scotland
- Lindsay, A.** & Velasquez, S. (2011, June). *Healthy Steps to Freedom: A Health & Body Image Program for Women in Substance Abuse Recovery*. Abstract #2056 American College of Sports Medicine, Denver, CO

Lindsay, A., Warren, C., Velasquez, S., & Schafer, K. (2010, Nov). *Healthy Steps to Freedom (HSF): Evaluation of a Health and Body Image Curriculum for Women in Substance Abuse Treatment*. Association for Behavioral and Cognitive Therapies, San Francisco, CA

Lindsay, A. (2010, Oct). *Healthy Steps to Freedom (HSF): Evaluation of a Health and Body Image Curriculum for Women in Substance Abuse Treatment*. Nevada Public Health Association, Las Vegas, NV