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QUANTITATIVE ANALYSIS OF AN EATING DISORDER PREVENTION PROGRAM

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A thesis submitted to the faculty of

Brigham Young University

in partial fulfillment of the requirements for the degree of

Educational Specialist

Department of Counseling Psychology and Special Education

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2011

## ABSTRACT

### Quantitative Analysis of an Eating Disorder Prevention Program

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The purpose of this study was to test the effectiveness of a preventative curriculum entitled *Eating Disorders: Physical, Social, and Emotional Consequences, A High School Curriculum about Anorexia, Bulimia, and Compulsive Eating* (EDPSEC), a preventative curriculum for eating disorders. Participants included an experimental group of 72 students enrolled in a ninth grade health class and a control group of 39 ninth grade students enrolled in a physical education class. The research examined the administration integrity of the curriculum and participating students' change in eating attitudes and behaviors according to group membership. The Eating Attitudes Test (EAT-26) and the Eating Survey (ES) were utilized in a pre-post test design to determine the participants' change. There was a high correlation between the students' scores on the ES and the EAT-26 ( $r = .873$ ). Results indicated low treatment integrity and no significant change on students' EAT-26 or ES scores according to group. However due to low treatment integrity this study was unable to determine the effectiveness of this EDPSEC curriculum. There was a high correlation between the students' scores on the ES and the EAT-26 ( $r = .873$ ).

Keywords: eating disorder, preventative, curriculum, quantitative research, adolescent

## ACKNOWLEDGEMENTS

There are several people I would like to thank who made this research project possible. I would like to say thank you to the supportive and enthusiastic health teacher that spent many hours preparing and teaching students from the curriculum as part of this research. I am grateful for a supportive thesis committee, Lane Fischer, Scott Richards, and Dianne Nielson for their advice and encouragement. I would like to give a special thanks to my chair, Lane Fischer, for the many hours he spent proofreading, analyzing statistical data, for his patience, words of comfort, and particularly for his confidence in my own abilities to complete this daunting task. A great deal of credit goes to a wonderful research team of friends that helped to encourage me in this process and give support when needed. What a pleasure it was to be a part of the Fantastic 4 with Jill Smedley, Jenna Murray, and Janine Stickney. I would like to thank my husband for his help in formatting this document and in creating charts and tables. I am grateful for his support and love through this long process and his assistance that helped me to power through the final and most tedious portions of this project. Additionally I would like to thank my loving, supportive family for their prayers and words of encouragement. Thank you, I could not have completed this without all of your help.

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## Introduction

Eating disorders are an increasing problem among our youth. Eating disorders are the third most common chronic condition among adolescent girls ages 15-19 years old (Fisher, Golden, Katzman, Kreipe, Rees, et.al. 1995). Preventing the onset of disordered eating behaviors is becoming an imperative topic among researchers, communities, schools and families in our nation. Resources are combining to protect our youth from falling victim to this disease. Some of the research done in recent years focuses on preventative measures that can be used in school settings.

Individuals clinically diagnosed with an eating disorder must meet all requirements of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR)* (APA, 2000). Included in the DSM-IV-TR are strict criteria of the symptoms an individual must have to constitute an eating disorder. However many individuals with disordered eating do not have all of these symptoms and are therefore not treated. When individuals do not receive treatment until they display all of these symptoms their prognosis for recovery is often bleak (Fisher, Golden, Katzman, & Kreipe, et. al. 1995; Herzog, Sacks, Keller, & Lavori, et al. 1993).

The National Eating Disorder Association (2008) has estimated that 11 million people in the United States alone suffer from an eating disorder. Many individuals with eating disorders began by dieting, a socially accepted form of weight loss, at a young age. Research has shown that dieting is a main predictor of new eating disorders in young adolescent girls (Patton, Seizer, Coffey, & Carlin, et al., 1999). Individuals with disordered eating often face a lifetime of struggling with the physical and social damages brought by this destructive behavior.

Eating disorders are affecting individuals at younger and younger ages. Many prevention programs are implemented too late to be very effective. Children as young as 8-10 years old are

reporting body dissatisfaction and dieting. By the time they reach high school many adolescents suffer from an eating disorder (Heatherton & Polivy, 1992; Skemp-Arlt, 2006). The climax age range for the onset of eating disorders is 15-19 years old and begins to decrease around the freshman year of college (Reijonen et al., 2003; Wiechmann, 2007; Winters, 2005). Evidence gathered regarding preventive curriculum has shown that when implemented during high school these preventative measures can reduce the rate of eating disorders incidences (Favaro, Zanetti, Huon, & Santonastaso, 2005). This gives hope that preventative programs can help to reduce the number of individuals struggling with eating disorders.

The purpose of this study was to assess the effectiveness of a prevention curriculum designed for adolescents by the Center for Change. The Center for Change is a specialized treatment center located in Utah for individuals diagnosed with eating disorders. The curriculum developed by the Center for Change is *Eating Disorders: Physical, Social, and Emotional Consequences, A High School curriculum about Anorexia, Bulimia, and Compulsive Eating* (EDPSEC). It was specifically designed to be used in school settings prior to the onset of eating disorders.

### **Statement of Problem**

Eating disorders are a growing problem among adolescents. With the numerous physical and emotional risks involved in eating disorders, school districts across America are trying to prevent this disease by teaching their students about these risks in their health classes during 9<sup>th</sup> or 10<sup>th</sup> grade. The curriculums that are used are not always researched for effectiveness prior to implementing them in the classrooms. One curriculum that has been made available to Utah school districts is *Eating Disorders: Physical, Social, and Emotional Consequences, A High School Curriculum about Anorexia, Bulimia, and Compulsive Eating* (EDPSEC). Although the

curriculum was developed by mental health experts and reviewed by state and district health curriculum experts, it needs to be empirically validated. There is a need to research the effectiveness of this curriculum to ensure it will be beneficial to the students who receive it.

### **Statement of Purpose**

The purpose of this study was to analyze the effectiveness of an eating disorders prevention curriculum, *Eating Disorders: Physical, Social, and Emotional Consequences, A High School Curriculum about Anorexia, Bulimia, and Compulsive Eating* (EDPSEC) in ninth grade public school health classes.

## **Review of literature**

As part of this review the symptoms outlined by the DSM-IV-TR for diagnosing an eating disorder will be discussed. Next the base rate and epidemiology of eating disorders will be presented. Then the physical and emotional damages will be reviewed that can occur as a result of an eating disorder. Following the review of damages the longitudinal course of eating disorders will be discussed including what ages individuals are at the greatest risk for developing an eating disorder and when that risk begins to decline. Finally previous research studies on preventative programs and their success rates will be discussed.

### **Diagnosis of Eating Disorder**

The *DSM-IV-TR* (APA, 2000) gives a thorough list of symptoms used in diagnosing individuals with eating disorders. Included in the DSM-IV-TR are such eating disorders as Anorexia Nervosa, Bulimia Nervosa, and Eating Disorders Not Otherwise Specified. Each of these eating disorders has diagnostic criteria that the individual must meet to be clinically diagnosed with an eating disorder.

When using the DSM-IV-TR to diagnose individuals with Anorexia Nervosa it is important that the following diagnostic criteria are met:

1. Refusal to maintain body weight at or above a minimally normal weight for age and height.
2. Intense fear of gaining weight or becoming fat, even though underweight.
3. Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight.
4. In postmenarcheal females, amenorrhea, i.e., the absence of at least three consecutive menstrual cycles.

There are two subtype categories of Anorexia Nervosa identified in the DSM-IV-TR, the *restricting type* and the *binge eating/purging type*. An individual with the restrictive type of Anorexia Nervosa uses dieting, fasting, and/or excessive exercise for weight loss. This is different from the binge eating/purging type in that excessive eating (binge eating) occurs followed by vomiting, misuse of laxatives, or other purging methods.

When diagnosing individuals with Bulimia Nervosa the DSM-IV-TR (2000) requires the following diagnostic criteria to be met:

1. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following: eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances, and, a sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating).
2. Recurrent inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercising.
3. The binge eating and inappropriate compensatory behaviors both occur, on average, at least twice a week for 3 months.
4. Self-evaluation is unduly influenced by body shape and weight.
5. The disturbance does not occur exclusively during episodes of Anorexia Nervosa.

The DSM-IV-TR classifies Bulimia Nervosa into two subtype categories: the *purging type* and the *nonpurging type*. Characteristics of the purging type include behaviors such as self-

induced vomiting or the misuse of laxatives, diuretics, and or enemas. The nonpurging type replaces purging behaviors with fasting or excessive exercising to try and avert weight gain.

Instances of *Eating Disorders Not Otherwise Specified* given by the DSM-IV-TR include

1. For females, all of the criteria for Anorexia Nervosa are met except that the individual has regular menses.
2. All of the criteria for Anorexia Nervosa are met except that, despite significant weight loss, the individual's current weight is in the normal range.
3. All of the criteria for Bulimia Nervosa are met except that the binge eating and inappropriate compensatory mechanisms occur at a frequency less than twice a week or for a duration of less than 3 months.
4. The regular use of inappropriate compensatory behavior by an individual of normal body weight after eating small amounts of food (e.g., self induced vomiting after eating a small slice of pizza).
5. Repeatedly chewing and spitting out, but not swallowing, large amounts of food.

The strict criteria required by the DSM-IV-TR for diagnosing eating disorders can make it difficult for individuals to receive treatment when they do not display all the necessary symptoms. A study conducted by Bunnell, Shenker, Nussbaum, and Jacobson et al. (1990) reported that adolescents in a subclinical group, who did not satisfy all clinical criteria, had no significant psychological differences from those clinically diagnosed with Anorexia Nervosa. Participants included 60 adolescents with a mean age of 16.6 years old that were referred to an adolescent medicine outpatient clinic to received treatment for an eating disorder. Each referral received a diagnostic interview with a clinical psychologist and completed several self-report questionnaires that included the Eating Attitudes Test (EAT). Of the 60 referrals, 12 (20%) met

clinical criteria for Anorexia Nervosa, 14 (23%) met clinical criteria for Bulimia Nervosa, and 21 (35%) were categorized as subclinical Anorexia Nervosa. Participants were also assessed on their general psychological functioning through such questionnaires as the Beck Depression Inventory and the Borderline Syndrome Index. Bunnell et al. (1990) reported that those clinically diagnosed with Anorexia Nervosa and the subclinical group had comparable levels of body image dissatisfaction and drive for thinness. Subclinical adolescents appear to be as depressed as those with clinical Anorexia Nervosa. Both groups responded similarly to questions regarding feelings of ineffectiveness, perfectionism, self-demands, and fears of maturity. These findings suggest that adolescents with clinical and subclinical Anorexia Nervosa show similar levels of psychological disturbance, and are at risk for further disturbance.

### **Base Rate/Epidemiology**

Eating disorders affect millions of people throughout the United States. It is estimated that 11 million people in the United States alone suffer from an eating disorder and an estimated 3% of young women suffer from an eating disorder (Becker, Grinspoon, Klibanski, & Herzog, 1999; NEDA, 2008). A meta-analysis found that in the general population there are at least eight new cases of extreme Anorexia Nervosa and twelve new cases of Bulimia Nervosa per 100,000 people per year (Hoek & van Hoeken, 2003). These numbers are likely a gross underestimate since many individuals with disordered eating are not clinically diagnosed because of the secretive nature of these disorders or they do not satisfy all required symptoms in the DSM-IV-TR (Fisher, et. al., 1995).

There is convincing evidence that eating disorders are highly prevalent in adolescent girls and incidence rates have been increasing over time. Incidence rates are highest for Anorexia Nervosa in girls ages 10-19 years old (Hoek & Hoeken, 2003; Lewinsohn, Striegel-Moore, &

Seeley 2000). Fisher et al. (1995) cited research that found a prevalence rate for Anorexia Nervosa of 0.48% for adolescent girls ages 15-19 years old making it the third most common chronic condition among adolescent girls in the United States. They further cited that studies during the 1980s reported approximately 1-5% of adolescent girls met diagnostic criteria for Bulimia Nervosa and 10-15% of adolescent girls reported occasional behaviors of self-induced vomiting or binge eating. Lucas, Crowson, O'Tallon, & Melton (1999) found in a retrospective study that incidence rates of Anorexia Nervosa among females ages 15-24 years old significantly increased each year from 1935 to 1989. They estimated the increase each year was at a rate of 1.03 per 100,000 people per year.

### **Physical and Emotional Damages**

Eating disorders can dramatically influence and negatively alter the lives of those afflicted. Adolescents diagnosed with eating disorders confront a lifelong challenge of managing their eating problems (Kruger, McVey, & Kennedy, 1998). Steinhausen (2002) conducted a meta-analysis of 10 cohort studies of patients with Anorexia Nervosa. It was reported that of the patients that survived the disorder only 46.9% fully recovered, 33.5% improved, and 20.8% remained chronically ill with Anorexia Nervosa. Reflecting on this study, conclusions can be drawn that the damages and behaviors acquired from eating disorders are long lasting and difficult to overcome. The damages derived from eating disorders can affect all areas of the individual's life including physical health, mental health, and education.

There are numerous examples of the physical damages individuals can face when they are victims of disordered eating. Many damages continue to affect the individual's body long after the behaviors no longer occur. Repeated purging characterized in Bulimia Nervosa can cause chemical, endocrine, and hematological problems that can include dental enamel erosion,

anemia, and seizures. Damages to the gastrointestinal system often associated with Anorexia Nervosa include: starvation, constipation, bloody diarrhea, delayed, and mild elevations of liver enzymes. Other physical effects associated with eating disorders are reduction in heart mass due to lower blood pressure and pulse rate, a decrease in white blood cells leaving the body susceptible to infections and bacteria, amenorrhea, dry skin, hair loss, easily fatigued, metabolic rate reduced approximately by 50%, cold intolerance, stunted growth, pubertal delay or interruption, and bone loss (Becker, Grinspoon, & Klibanski, 1999; Fisher et al., 1995).

Many of the physical damages caused by an eating disorder can have lasting effects long after the symptoms have been removed. One of the more serious effects is osteopenia, which is a decrease in bones density due to bone loss during adolescence when bone mass is at its peak. Becker et al. (1999) found that 50% of women with a history of Anorexia Nervosa, even for as short a period as six months, had significantly lower bone density (-2 SD) for an average woman their age. A decrease in bone density dramatically increases their long-term risk for fractures.

Mental and psychological well-being is another area that eating disorders can have a significant impact on the individual's well-being. Research shows that adolescents who participate in bingeing and purging behaviors are more likely to have impulse control problems, abuse alcohol or other drugs, display mood instability, and are more sexually active than adolescents with other disorders (Reijonen, et al., 2003). Some of the mood instabilities associated with eating disorders are depression, anxiety, phobias, and obsessive-compulsive disorder (OCD) (Steinhausen, 2002; Vander Stoep, Collett, Garrison, & Toth, 2007). However, further research found that there is a strong link between the characteristics of depression and the state of starvation. Those who suffer with Anorexia Nervosa often can have depression symptoms, but when they return to a normal body weight the mood disorder usually no

longer exists (Willcox & Sattler, 1996). All of these physical and mental damages further affect individuals suffering from eating disorders by taking a toll on their school and social life.

A specific area where eating disorders can have a dramatic harmful affect is in the school setting. Harper, Ford, Berrett, and Hardman et al. (2001) stated that adolescents suffering with an eating disorder will be unable to "...successfully engage in school work...their ability to think and concentrate on school subjects is decreased and distorted, and sometimes completely destroyed as a result of their eating disorders"(p. 95). These findings are consistent with reports of impaired attention and concentration, reduced problem solving, poor planning, and lack of insight (Fisher et al., 1995). The individual's inability to focus on their school work can also have negative effects on the student's self-esteem and possibly lead to dropping out of high school. Though inconclusive, a meta-analysis estimated that 12.3% of adolescents suffering from an eating disorder dropped out of high school (Steinhausen, 2002).

The mortality rate for individuals with eating disorders is greater than any other mental health disorder (Herzog et al., 2000). Individuals treated for eating disorders in university hospitals have a long-term mortality rate greater than 10% (APA, 1994). Sullivan (1995) found that the mortality rate for Anorexia Nervosa is 12 times higher than the mortality rate among the general population of young women and suicide rates among the suffers of anorexia is 200 times greater than the general population. Crude mortality rates for all causes of death of Americans diagnosed with Anorexia Nervosa ranged from to 5.9% to 7.4% and for Bulimia Nervosa 2.4% to 3.0% (Crow, Praus, & Thuras, 1999; Keel & Mitchell, 1997).

## **Longitudinal Course**

Evidence shows that the onset of eating disordered behaviors is happening at younger and younger ages. Elementary school age children are showing signs of eating disorders (Steiner, Kwan, Shaffer, Walker, Miller, et.al., 2003). Skemp-Arlt (2006) reported that in a sample of 200 elementary aged children (8-10 years old) 55% of girls and 35% of boys reported being dissatisfied with their weight and some had begun dieting. Koff and Rierdan (1991) reported the results of a study of 206 sixth grade girls who responded to questions regarding their weight, body image, and attitudes towards dieting and eating. They observed that most young girls wished to weigh less. Many had assumed a dieting mentality to avoid gaining weight. Dieting included avoiding fat, counting calories, and exercising.

Schur, Sanders, and Steiner (2000) carried out research regarding children's understanding and beliefs regarding dieting and body dissatisfaction. Subjects included 62 children in the San Francisco Bay area enrolled in elementary grades third through sixth (ages 8-13 years old). They administered the Children's Eating Attitudes Test (ChEAT) and conducted interviews to assess eating disturbances and students' beliefs regarding dieting. Researchers found that 50% of children wanted to weigh less, 16% had actually attempted weight loss, and 20% of girls and 8% of boys at the age of 12 had eating habits related to fasting and dietary restraint. It appears that a considerable number of children begin dieting prior to adolescence and by high school many have become chronic dieters (Heatherton & Polivy, 1992). Dieting and similar behaviors in youth increase the risk of developing eating disorders during adolescence or in young adulthood.

Adolescence is a time of physiological changes and overvaluing others' opinions which often increase the likelihood of developing eating disorders. Research suggests that adolescence

is an illness-specific risk period because of the physiological and ideological changes that occur. When adolescents' bodies begin to change they may become dissatisfied with their body by comparing it to society's views of the perfect body. This dissatisfaction, compounded with the psychosocial changes that occur during puberty, can cause a substantial risk of developing an eating disorder (Steiner, et. al., 2003). Young girls who enter puberty at an early age are particularly vulnerable to body dissatisfaction and are at risk for serious eating problems in young adulthood (Ohring, Graber, Brooks-Gunn, 2002). Neumark-Sztainer, Paxton, Hannan, Haines, and Story (2006) found that lower body satisfaction among adolescents was predictive of higher levels of dieting and binge eating activities, substantially increasing the risk of developing disordered eating behaviors.

Research suggests that the risk for eating disorders begins to escalate around the ninth grade of high school. Adolescents between the ages 15-19 years old represent the climax for the onset of eating disorders (Reijonen et al., 2003). Fisher, Pastore, Schneider, Pegler, and Napolitano (1994) tested students from both an urban and a suburban high school in their junior and senior year (mean age of 16.2 years old). Students were asked to fill out several surveys including the EAT-40. The results showed that 7.5% of suburban females, 15% of urban females and 6% of urban males scored 21 or higher, suggesting a possible eating disorder.

Duncan (2005) performed a study with adolescents using the Eating Survey (ES) and found eating disorder risks increased between the ages 14-16 years old. Participants were 2,610 students, in the Utah and Nevada area, ages 14-17 years old. Data collected from the ES showed an increase in the mean scores of females between the ages of 14-16 years old and then a decline at 17 years of age. This data suggests that the risk of eating disorders increases around

the ninth grade year of high school. The ninth grade or earlier would seem to be the most effective time for a preventative intervention.

Vohs, Heatherton, and Herrin (2001) performed an observational study with incoming freshman at Dartmouth College to monitor whether incident rates of eating disorders increased during the transition from high school and college. Confidential surveys were sent to 342 incoming college freshman women, with the mean age of 17.6 years old, during their senior year of high school. Included in the surveys were questions regarding disordered eating behaviors and frequency of such behaviors, as well as 26 items from the Eating Disorders Inventory (EDI). Questions used from the EDI included subcategories as follows: Drive for Thinness, Maturity fears, Perfectionism, Bulimia and Interpersonal Distrust. A follow up survey, identical to the initial survey, was sent during the participants first semester of college. Data collected from the surveys showed no statistically significant difference in the eating patterns or rates of eating disorders among participants during this transitional period. This finding suggests that eating disorders begin during high school and the freshman year of college is not necessarily a risk period. Further research provides evidence that eating disorders and body dissatisfaction decreases after adolescence (Wiechmann, 2007; Winters, 2005).

Research showed that during the mid to late twenties body dissatisfaction and eating disorder risk decrease substantially (Bushnell, Wells, Hornblow, Oakley-Brown, & Joyce, 1990). Costello (1999) carried out a longitudinal study to observe how eating attitudes change with college students over the course of three years. Participants included 102 female undergraduate college students at the midwestern state university. Each woman was contacted by survey from their freshman to their junior year of college. The surveys assessed their eating attitudes through the Eating Disorder Inventory-2 (EDI-2). The survey was administered three times to each

participant; once a year for three years. The findings suggest that women experience the most eating pathology during their freshman year. The decrease in symptoms indicates that disordered eating lessens as the women matured into upperclassman.

Winters (2005) and Wiechmann (2007) used data from a longitudinal study of undergraduate women at Brigham Young University (BYU) and also found that eating disorder symptoms decrease over the college years. Participants included 997 female women that were recruited in three cohorts during their freshman year at BYU. Each participant was give the EAT-40 and Body Shape Questionnaire (BSQ) twice a year for 2-4 years. The amount of time depended on the year they were recruited for the study. The BSQ showed a longitudinal decrease in mean body dissatisfaction scores as women progressed through their junior and senior years of school. The EAT-40 showed a significant decrease in the percentage of women who fell in the “at-risk range” for eating disorders as participants continued through their college years. Participants were analyzed on both the EAT-40 and EAT-26 which both highlighted freshman women as having the highest risk for disordered eating behaviors. The EAT-40 and the EAT-26 showed that the percentage of freshman undergraduates in the “at-risk range” was approximately 12% and by senior year had decreased to approximately 7.5%.

A 10-year longitudinal study conducted by Heatherton, Mahamedi, Striepe, Field, and Keel (1997) gives evidence that disordered eating and body dissatisfaction continues to decrease after college years. This study surveyed more than 500 undergraduate college women with 26 items from the EDI; the five subscales used by the EDI were: Drive for Thinness, Bulimia, Maturity Fears, Perfectionism, and interpersonal Distrust. Results from the initial survey found that most participants believed they were overweight (although few were actually overweight) and many wanted to lose 10 pounds or more. In a follow up survey ten years later of those

participants who felt they were overweight, few reported a desire to lose weight and over half viewed themselves as average weight. Heatherton et al. (1997) suggested from these findings that maturing into adulthood, leaving a society emphasizing thinness, and entering into long-term committed relationships with supportive partners are possible causes for the decrease in body dissatisfaction after college years.

### **Prevention**

Early detection and implementation of preventative measures is essential and recognition of symptoms early on seems to reduce the development of eating disorders (Fisher, et al., 1995). Research suggests that preventative programs are most effective when the intervention occurs while the risk of an eating disorder is low and beginning to increase (Reijonen, et al., 2003). According to Duncan (2005) and Wiechmann (2007) the most effective time to implement a prevention program is around the ninth grade. This is inferred through their longitudinal studies where the risk of developing an eating disorder increased dramatically around ninth grade and began to decrease after the freshman year of college.

There are several research studies that support the theory that prevention programs are most effective when implemented prior to the climax for the onset of eating disorders. McVey, Tweed, and Blackmore (2007) evaluated a universal eating disorder prevention program with students in 5<sup>th</sup> and 6<sup>th</sup> grade. Their findings show that a universal preventative program can increase resilience against body dissatisfaction, particularly with students classified as a high-risk potential. Favaro, Zanetti, Huon, and Santonastaso (2005) researched the effectiveness of an eating disorder preventive curriculum in a vocational high school. Participants included 129 female students between 16-18 years old. The study incorporated an experimental group, who received instruction from a six-week preventive curriculum, and a control group that received no

instruction. Prior to implementing the program students eating attitudes were assessed through the EAT-40. A follow survey was administered one year later. Results showed that the preventative curriculum reduced the incidence rate of eating disorders in the experimental group when compared to the control group.

Educators are trying to prevent the onset of eating disorders in our adolescents through preventative curriculum instructed in health class. However, the curriculums our educators are using in their classrooms are not always researched for effectiveness prior to implementation. One of the curriculums that is available to Utah school districts is *Eating Disorders: Physical, Social, and Emotional Consequences, A High School Curriculum about Anorexia, Bulimia, and Compulsive Eating* (EDPSEC). Although the curriculum was developed by mental health experts and reviewed by state and district health curriculum experts, it needs to be empirically validated. The purpose of this study was to analyze the effectiveness of the EDPSEC in ninth grade public school health classes.

## Method

In this research study participants were selected from the high-risk group identified in the review of literature. Two groups of participants were used for this study; a control group and an experimental group. A pre-post assessment was given in conjunction with the curriculum to assess change over time according to group membership. The instruments used for this assessment were the Eating Attitudes Test-26 and the Eating Survey. The Eating Survey is included in the curriculum. A split plot ANOVA was used to assess the change over time according to group membership.

### Participants

Participants included 118 ninth grade students from a Junior High in Utah County, Utah. The experimental group included 72 students enrolled in a ninth grade health classes during fourth quarter. There were 39 females (54%) and 33 males (45%) in the experimental group. The control group consisted of two ninth grade PE classes. The chosen Junior High School segregates their PE classes by sex therefore a female and male class was surveyed. The female PE class had 20 students surveyed, and the male class had 25 students surveyed.

### Instruments

The two instruments used in this study were the Eating Survey (ES) and the Eating Attitudes Test (EAT-26). Both instruments were designed as screening measures for eating disturbances. These measures were administered as pre-post tests.

**Eating Survey.** The Eating Survey (ES) was specifically designed as a screening instrument for adolescent eating disturbances and was included as part of the *Eating Disorders: Physical, Social, and Emotional Consequences, A High School Curriculum about Anorexia, Bulimia, and Compulsive Eating* (EDPSEC) curriculum. Unlike other screening instruments for eating disturbances the ES was specifically designed to be used with an adolescent population in

combination with the EDPSEC curriculum. The ES consists of 20 questions regarding adolescents' eating behaviors and their feelings about their weight, appearance, or characteristics. Some of the questions listed in the ES are: "I worry about food and what I will or will not eat in a day"; "I diet to lose weight"; "I feel fat"; "I believe there is something wrong with how I look". Participants are to rate, on a 4-point Likert-type scale, their attitudes and behaviors from 1 (Never) to 4 (Often) (Hardman & Richards, 2000).

Cloyd's (2005) research findings suggest the Eating Survey (ES) is a reliable and valid instrument with adolescent females. His study conducted a factor analysis and computed a Cronbach's alpha for the ES using responses from 1,828 non-clinical adolescent female participants ages 14-18 (mean age of 15.9 years old). There were four factors identified in the factor analysis and all were found to be consistent with other studies. Research conducted by Williamson, Anderson, and Gleaves (2001) stated that there were four dimensions central to the assessment of bulimia and anorexia nervosa. Cloyd identified three factors from the ES that corresponded with those suggested by Williamson et.al. The three factors were as follows: preoccupation with thinness, dieting, and disordered eating behavior and ritualistic eating behavior. Cloyd found that internal consistency reliability (cronbach's alpha) for the ES was .89 and that four factors of the ES were moderately correlated.

A study was conducted by Duncan (2005) to determine the effectiveness of the ES when assessing adolescents. Using a robust sample of high school students the ES was found to effectively assess eating disorder risks in adolescents. The study included 2,569 non-clinical male and female adolescents and 41 inpatient adolescents, ages 14-17 year old. The finding suggest that the ES identified a 14% at-risk rate (when the cut of score was 51), which is consistent with both research literature and other screening instruments (Fisher et al. 1994;

Graber, Brooks-Gunn, Paikoff, & Warren, 1994; Shisslak, Crago, & Estes, 1995; Stice, Killen, Hayward, & Taylor, 1998).

**Eating Attitudes Test (EAT-26).** In 1982 the EAT-26 was created from the EAT, one of the most widely used self-report inventories for eating disorders. These instruments use a 6-point Likert-type scale in which the respondents are asked to rate their attitudes and behavior from 1 (Never) to 6 (Always). A factor analysis of the EAT found seven factors: food preoccupation, body image for thinness, vomiting and laxative abuse, dieting, slow eating, clandestine eating, and perceived social pressure. From the factor analysis 26 items were chosen to create the EAT-26. The EAT and the EAT-26 are highly correlated ( $r=.98$ ). The questionnaire has an internal consistency coefficient of .79 for anorexic patients and .94 for control subjects. The test-retest reliability for over a two-three week period was .84 (Garner & Garfinkel, 1979; Garner, Olmsted, Bohr & Garfinkel, 1982; Carter & Moss, 1984). Scores for the EAT-26 can range from 0 to 78. Total scores of 20 or more are considered “at-risk” for eating disordered behaviors and indicate the need for referral and diagnostic interview (Mintz & O’Halloran, 2000).

The EAT-26 is often favored because of its ease in administration and its accuracy in screening for eating disorders. No training is required to administer the EAT-26 and it involves a time commitment of less than 15 minutes (Cloyd, 2005). Research shows that the EAT-26 appears to measure the likelihood of having a diagnosable eating disorder with an accuracy rating of at least 90% (Mintz et.al. 2000).

## Procedures

**The curriculum.** The Center for Change has created a new prevention curriculum entitled “Eating Disorders: Physical, Social, & Emotional Consequences (EDPSEC).” It was specifically designed for classroom use in junior and senior high schools. The curriculum includes multiple teaching options. The teaching option selected for this study included five 75-minute sessions. However, due to scheduling conflicts, sessions were broken up into nine 45-minute sessions.

The EDPSEC aligns well with the Utah State Curriculum for junior high health, which provides guidelines that should be met by secondary health education. For ninth grade the Nutrition and Fitness Core Standard includes objective three: *Analyze the relationship between a healthy sense of self and eating patterns*. The guidelines for this objective to

- Identify characteristics of a healthy self and body
- Compare body image and body acceptance and the influence of one on the other
- Predict how external and internal factors impact body image and acceptance; e.g., media, fashion, trauma, abuse, perfectionism, control, lack of self-worth
- Explain the potential impact of negative body image and acceptance; e.g., fad dieting, starvation, compulsive eating and/or exercising, bulimia, anorexia, other disordered eating
- Develop strategies for improving body image and acceptance,
- Identify warning signs and short- and long-term effects of disordered eating
- Identify ways to help someone who is experiencing disordered eating (Harrington, Greenwood, Moulding, & Wojtech, 1999).

Included in each of the EDPSEC session's topics for instruction there are handouts, DVD segments, and homework assignments as seen in Table 1 (Harper et.al., 2001).

**Table 1**

*EDPSEC Curriculum*

Session	Objectives	Topics	DVD Sections	Handouts/ Homework
Session 1	<p>1- Introduce students to the subject of eating disorders.</p> <p>2- Help students understand and explore the use of coping mechanisms in their own and other people's lives.</p> <p>3- To help them recognize that eating disorders are an especially destructive coping mechanisms.</p>	<p>1- Introduction</p> <p>2- Coping with Stress</p> <p>3- Turn-About Experiences</p> <p>4- Professional Perspective on Eating Disorders</p>	<p>1- "Professional Perspectives" Health care professionals giving information about eating disorders and how they impact lives of their victims.</p>	<p>1- Eating Survey (ES)</p> <p>2- "Dealing with Developmental Blocks"</p> <p>3- "My Personal Developmental History"</p> <p>4- Homework: Interview of Relative or Friend regarding a painful experience.</p>
Session 2	<p>1- To help students recognize the subtle process of becoming trapped by a negative coping mechanism and to give students a model of the process by examining the development of an eating disorder.</p> <p>2- To introduce students to the danger of an eating disorder as a coping mechanism by examining the physical consequences of an eating disorder.</p>	<p>1- Recognizing the Signs of an Eating Disorder.</p> <p>2- Developing an Eating Disorder</p> <p>3- The Physical Consequences of Eating Disorders</p>	<p>1- "Entrapment" Helping students recognize subtle ways disordered eating comes into people's lives.</p> <p>2- "Physical Consequences" Shows people with eating disorders and informs them of physical consequences to help them avoid the consequences of eating disorders.</p>	<p>1- "Eating Disorder Criteria"</p> <p>2- "What Eating Disorders Are and Are Not"</p> <p>3- "Eating Disorder Statistics"</p> <p>4- "Eating Disorder Characteristics"</p> <p>5- "Physical Consequences of Anorexia and Bulimia Nervosa"</p> <p>Homework: Interview peers about eating habits.</p>

Session 3	1- Continue to educate students about the negative impact of an eating disorder by examining emotional and social consequences	1- Eating Disorders as an Emotional Shut-off Valve 2- The Emotional and Social Consequences of Eating Disorders 3- The Social Impact of Eating Disorders	1- “Emotional Consequences” Shows people with eating disorders and informs them of emotional consequences to help them avoid the consequences of eating disorders. 2- “Social Consequences” Shows people who have had an eating disorder and the social impact it has on their lives.	1- “Emotional Consequences of an Eating Disorder and other Coping Mechanisms” 2- “Social Consequences of an Eating Disorder” 3- Homework: Observe negative messages from the media and discuss potential impact of these messages.
Session 4	1- To give students an awareness of the importance of accurate beliefs about life, food, and food use and to examine how inaccurate beliefs lead one to the use of coping mechanisms like an eating disorder. 2- To teach students to recognize the signs and symptoms that reveal that someone is already trapped by an eating disorder, and 3- To utilize proper techniques for helping the sufferer.	1- Getting Trapped and Getting Free 2- Personal Beliefs that can Trap 3- Signs and Symptoms of an Eating Disorder 4- How to Help Someone with an Eating Disorder	No DVD Sections	1- “Common Myths about Life and Eating Disorders” 2- “Myths I Am Dealing With in My Life” 3- Eating Disorders: Signs & Symptoms” 4- “How to Help” 5- Homework: Formulate a plan of how to help a friend displaying behaviors of an eating disorder.
Session 5	1- To introduce students to characteristics of a healthy life by examining these characteristics in recovered eating disorder sufferers.	1- Conclusion 2- Advice on living healthy lives and having healthy thoughts 3- Participating in	1- “Freedom from Eating Disorders” Discusses recovery from disordered	1- “What About Me? A Personal Look at My Course in Life” 2- “Getting Help, Procedures and

2- To guide students in determining how to implement characteristics in their lives.	healthy behaviors	eating and unhealthy coping mechanisms.	Sources” 3- Eating Survey (ES)
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**Implementation of curriculum.** The curriculum was administered to the ninth grade health classes in a Junior High School by the health teacher. The curriculum was approved by the School District prior to the program’s commencement and informed consent was obtained from students’ parents for permission to use the collected data. Only eight sessions were actually taught, rather than the nine planned, in the health class over a two and half week period due to some scheduling conflicts with the health teacher. The original design called for the administration of the ES, as outlined by the curriculum, and the EAT-26 prior to the first session and following the final session to determine the effect, if any, of the curriculum on the students’ eating behaviors and attitudes. However the health teacher did not follow the original design and the ES and EAT-26 were administered during the second (of eight) sessions. Additionally the post-tests were administered three school days following the completion of the curriculum. For a comparison a control group of ninth grade students enrolled in a PE class were also given the ES and the EAT-26 as pre-post tests with a two-week period between the tests.

Two researchers were present during instruction to observe and complete a treatment integrity checklist. The checklist was designed by the researchers to ensure integrity was maintained in the administration of the curriculum. Although each teacher may have their own style and may emphasize some areas more than others in the curriculum, the treatment integrity checklist was implemented to quantify how much of the curriculum was being taught. Each integrity checklist included first, a question on the number of handouts used according to how many handouts were provided in the curriculum, if they were explained adequately, if the

discussions before/after the handouts were properly facilitated, and if the students seemed to be engaged and participating. Second, a question regarding whether DVD segments were properly introduced, viewed, and discussed for each session. Third, there was a question of how much of the homework was passed out and explained. Fourth, an additional question was used to ask for any extra information or observations from the session that day. Finally it was observed whether screening measures were implemented according to the original research design.

### **Research Questions**

This study addresses these specific research questions:

- 1) Was there differential change over time in terms of Eating Survey total score according to group membership?
- 2) Was there differential change over time in terms of Eating Attitudes Test-26 total score according to group membership?
- 3) Was there a correlation between the ES and the EAT-26?

### **Data Analysis**

Split plot ANOVA tests differential change over time according to group membership (control vs. experimental). Separate split plots ANOVA were conducted on the ES and EAT-26. Pearson Product Correlation was calculated to estimate the concordance between the ES and the EAT-26.

## **Results**

In the results section the treatment integrity of this study as assessed by the two separate researchers will be presented. Next the descriptive statistics that were analyzed as part of this research will be discussed. Finally the findings of the split plot ANOVA will be discussed in regards to whether there was statistically significant change over time according to group membership.

### **Treatment Integrity**

The curriculum was initially split into nine 45-minute sessions (from its original five 75-minute sessions) to fit into the Junior High School's schedule, but the health teacher only taught eight 45-minute sessions using the curriculum. Observations were made that only parts of session four were discussed by the health teacher, and session five was completely eliminated from the lessons taught in this class. It was the opinion of both researchers observing this class that the students did not receive the entire curriculum.

The original research design utilized the measures designed by the Center for Change to accompany the curriculum, the Eating Survey (ES), as a pre-post test to measure change overtime. Additionally for this research the Eating Attitudes Test (EAT-26) was also administered as a pre-post test for an extra measure. However the health teacher did not follow the original design in administering the ES or the EAT-26 prior to beginning the curriculum and following the final session. The pre tests were administered part way through the second session (of eight sessions). Prior to administering the pre tests the health teacher discussed stress, discussed ways of coping (positive and negative), gave the "Dealing with Developmental Blocks" handout, performed a class activity where a student eat a candy bar in front of the class, discussed why students may not want to eat a candy bar in front of the class, gave definitions of anorexia and bulimia nervosa, and discussed how eating disorders are dangerous. It was also

observed that the post test measures were not administered until three school days following the final session taught out of the EDPSEC curriculum. It was therefore the opinion of both researchers that the pre-post tests were not administered appropriately since students were given portions of the curriculum prior to completing the ES and EAT-26 and post tests were not administered directly following the conclusion of the curriculum. All pre-post measures were consequently found to be inappropriately administered.

While teaching the EDSPEC curriculum the health teacher instructed students using materials not included in the curriculum. On one of the days students were asked to read out of their class health book regarding eating disorders. They were instructed to take notes on the definitions of eating disorders, signs and symptoms, and treatments for anorexia nervosa, bulimia nervosa, and eating disorders not otherwise specified. Another addition to the curriculum was a quiz given regarding eating disorders. Response demands were as follows:

- Name two physical signs of an eating disorder.
- Describe two social signs of a person with an eating disorder.
- What are two emotional signs of an eating disorder?
- What type of effects do compliments regarding weight have on a person with eating disorder?
- What do you do if you find stashed food in friend's bedroom and suspect eating disorder?
- How much pressure is on you as a person to succeed and how does that affect an eating disorder?

Students in this health class have journals where they record their feelings. The health teacher had students record their feelings and experiences in their journal in addition to class discussions

as outlined in the curriculum. Finally although section four does discuss how to look for signs of eating disorders in friends, the health teacher made this a focus throughout most of the sessions.

Observations were made by both researchers that the health teacher taught most of the core principles in the curriculum, but eliminated most of session four and all of session five. Sessions one through three were taught in the health teacher's own style, but both researchers agreed that all learning objectives were generally met. The objective in sessions one and two of recognizing negative coping mechanisms was neglected in the instruction. It was observed that the objectives for session four were only partially fulfilled in regards to being aware of signs and symptoms in other. The teacher did not go as in-depth with this topic as the curriculum requires. Finally, none of session five's objectives were met, and students were not exposed to the materials from this session.

It was observed by both researchers that 0% of the homework was given from the curriculum. The suggested homework assignments were neither assigned nor discussed by the health teacher. There were four homework assignments included in the EDPSEC curriculum (see Table 1). It was also observed that the end exam was not given to the students at the completion of the curriculum.

Researchers observed that nine out of seventeen handouts were given, so 53% of handouts were given and discussed with students. Some of the handouts were not given to students in a paper form but were put on the overhead projector and then discussed as a class. All nine of the handouts that the students received or saw were discussed at length and the majority of the class was involved in the discussions. Eight handouts were not given to the students including one from session three ("Social Consequences of an Eating Disorder") and all handouts contained in sessions four and five (see Table 1). Two of these handouts from session

five were not given but were partially discussed in class. These handouts were “Eating Disorders: Signs and Symptoms” and “What to do to Help and What not to do Help.” Neither discussion that covered these topics went into enough detail to constitute having covered the handout. However some of the negative symptoms and signs of an eating disorder and how to help your friends if they have an eating disorder were discussed in class.

In regards to viewing DVD segments that were included in the curriculum, it was observed by both researches that 83%, or 5 out of 6, DVD segments were shown to the class. Of those DVD segments viewed only 60%, or three out of five, were discussed as a class after viewing the segment. The segment that was not viewed by the class was “Freedom from Eating Disorders.” This segment discussed recovery from eating disorders and healthy ways to think about one’s body and life. The two segments not discussed where shown back to back and finished after the bell rang for the end of the period, so there was no time for the class discuss what they saw and their feelings. These two segments were “Emotional Consequences” and “Social Consequences.” In these segments students observed individuals who have had eating disorders and helping professionals discuss social and emotional consequences of eating disorders.

Overall it was determined by the researchers the health teacher that administered the EDPSEC curriculum did not maintain treatment integrity. After observing all sessions it was found that 9/17 handouts were used, 5/6 DVD segments were viewed, 0/4 homework assignments were assigned, and 0/4 pre-post instruments were administered appropriately. Additionally objectives from sessions four and five were incomplete and portions of sessions one and two were also missing. It was observed that additional information was introduced not included in the curriculum, and some DVD segments were not adequately discussed. Further it

was found that neither the pre or post tests were administered in an appropriate manner for the research design. The handouts, DVD segments, and topics that were discussed appeared to be presented in an effective manner. It was observed that the health teacher is a skilled instructor, but he did make several alterations to the curriculum affecting the integrity of this study. Overall treatment integrity was 45%, which is considered low.

### **Descriptive Statistics**

Means, standard deviations, and sample sizes were computed for each variable. The results are presented in Table 2.

**Table 2**

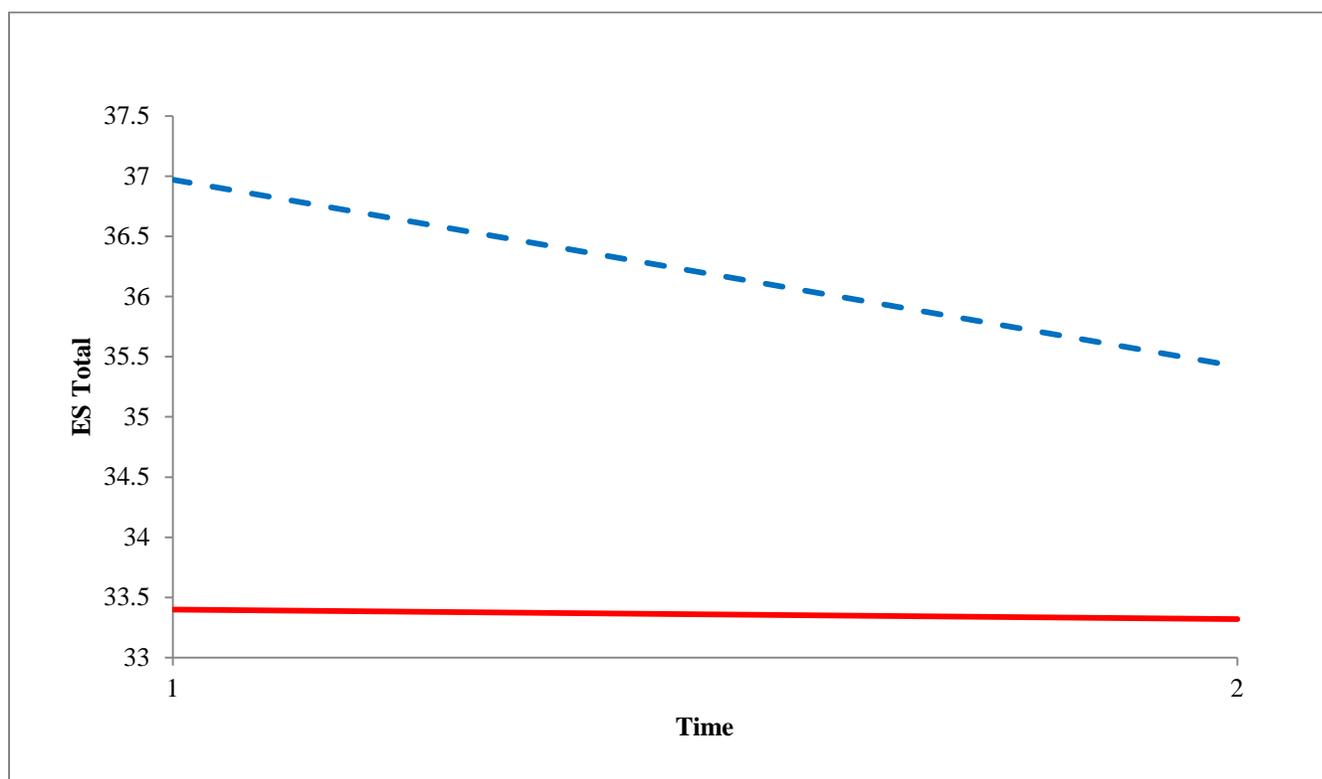
*Descriptive Statistics*

	N	Min	Max	Mean	Median	Std. Deviation
ES pre total	118	20	60	35.5847	34.00	9.34370
ES post total	118	21	59	34.6017	34.00	9.06202
EAT pre total	118	27	91	49.2083	46.00	14.60112
EAT post total	118	26	91	45.9517	45.60	13.38653

### **Inferential Statistics**

Research questions 1 and 2 were tested using split plot ANOVA. Research question 3 was tested using the Pearson Product Moment Correlation Coefficient.

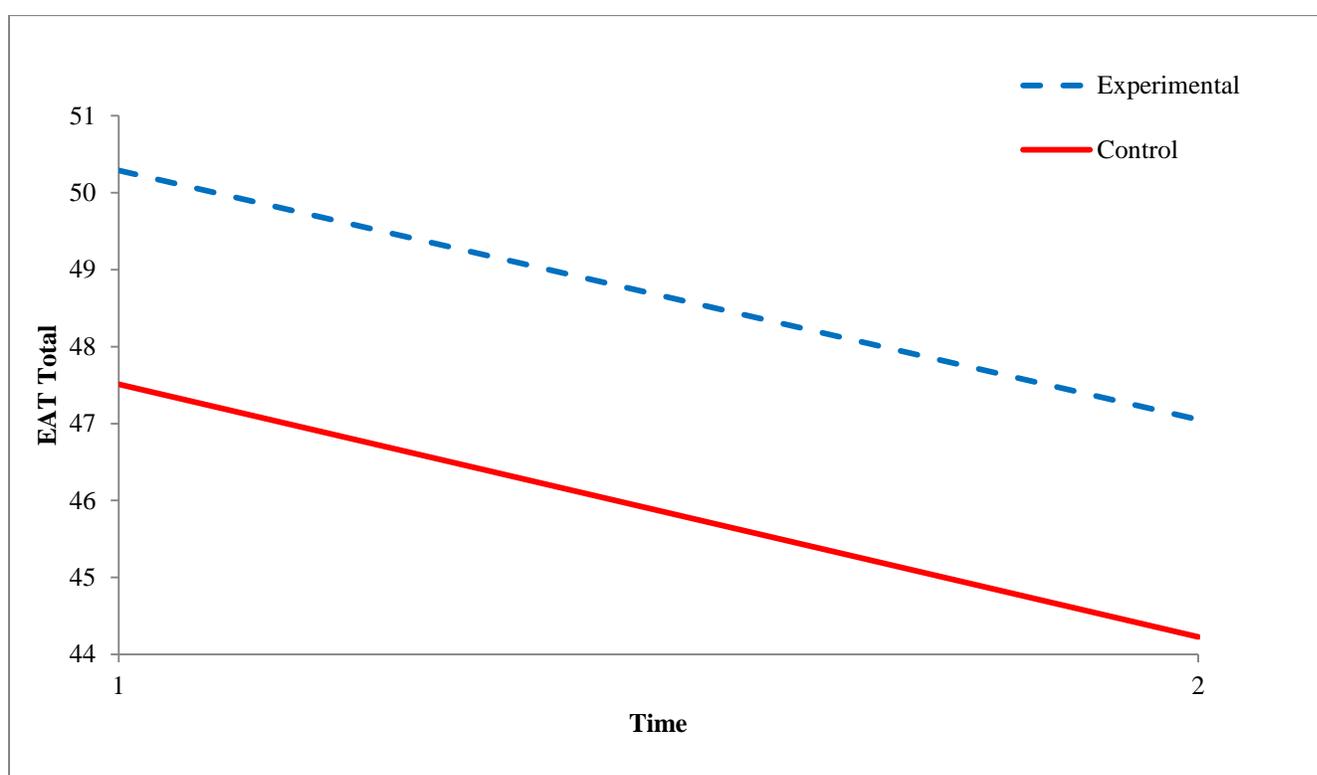
**Question 1: Was there differential change over time in terms of Eating Survey (ES) total score according to group membership?** A 2 x 2 split plot ANOVA was calculated to examine the effects of group membership (control vs. experimental) and time (pretest vs. posttest) on ES scores. No significant main effects or interactions were found. The time x group interaction ( $F(1,116) = 2.506, p > .05$ ), the main effect for time ( $F(1,116) = 3.208, p > .05$ ), and the main effect for group ( $F(1,116) = 2.9, p > .05$ ) were not significant. Participants' ES scores were not influenced by time or group membership (receiving the curriculum). Figure 1 illustrates the plot of differential change in ES overtime according to group membership.



**Figure 1: Differential change in ES overtime according to group.**

**Question 2: Was there differential change over time in terms of Eating Attitudes Test-26 (EAT-26) total score according to group membership?** A 2 x 2 split plot ANOVA was calculated to examine the effects of group membership (control vs. experimental) and time

(pretest vs. posttest) on EAT-26 scores. No significant interactions were found or main effect for group membership. The time x group interaction ( $F(1,116) = 0.0, p > .05$ ) and main effect for group ( $F(1,116) = 1.22, p > .05$ ). However the main effect for time was statistically significant ( $F(1,116) = 17.739, p < .01$ ). It was found that over time EAT-26 mean total scores in both groups increased; collectively participants' EAT-26 scores were influenced by time, but not by group. Figure 2 illustrates the plot of differential change in EAT-26 overtime according to group membership.



**Figure 2: Differential change in EAT-26 overtime according to group membership.**

**Question 3: Was there a correlation between EAT-26 and ES scores?** A Pearson Product Correlation coefficient was calculated to estimate the relationship between the ES total pre-test scores and the EAT-26 total pre-test scores. A strong positive correlation was found between the ES total pre-test scores and the EAT-26 total pre-test scores ( $r(118) = .873, p < .01$ ).

A strong positive correlation was also found between the ES total post-test scores and the EAT-26 total post-test scores ( $r(118) = .864, p < .01$ ).

## Discussion

The primary purpose of this study was to evaluate the effectiveness of a high school preventative curriculum for eating disorders. The curriculum was developed by the Center for Change, a treatment facility for individuals with eating disorders, and is called *Eating Disorders: Physical, Social, and Emotional Consequences, A High School Curriculum about Anorexia, Bulimia, and Compulsive Eating* (EDPSEC). The method used to estimate the effectiveness of the EDPSEC was to administer pre-post measures to 9<sup>th</sup> grade students enrolled in health class who received the EDPSEC curriculum and a class of 9<sup>th</sup> grade students who did not receive the curriculum as a control group. There were two different measures administered to these students to estimate differential change over time according to group: the Eating Survey (ES), developed to accompany the EDPSEC curriculum, and the Eating Attitudes Test (EAT-26), which is commonly used measurement in screening individuals for disordered eating behaviors.

### Reflection on Results

**Pre-test sensitization.** Overall, the results of this study did not provide evidence that the EDPSEC curriculum was an effective measure in preventing eating disorders. The results show that there was no statistically significant differential change over time between the experimental and control group in terms of either the ES or the EAT-26. However, there was a main effect for time in terms of the EAT-26 regardless of group membership. This may indicate that it did not matter whether the participants received the preventative curriculum or not. The control group appeared to have changed just as much as the experimental group just by receiving the EAT-26. Since time, and not group membership, was the main effect, the change could have been caused by pre-test sensitization from the EAT-26. Therefore it could be concluded that merely exposing students to the EAT-26 could be a preventative measure.

**Treatment integrity.** The reason these findings lack evidence of effectiveness in regards to the EDPSEC curriculum could be the result of not maintaining treatment integrity. It was decided by the researchers that the curriculum would be administered by the 9th grade health teacher without the interference of the researchers. This was to create an environment where the administration of the curriculum could be observed in a “real world” scenario. Often teachers are given curriculum to use in their classrooms, but are allowed to modify and teach the curriculum according to their style. However, the two researchers attended every class to note what deviations were made to the curriculum and if the treatment integrity was maintained. Both researchers observed that not only were modifications made to the curriculum but key elements of the curriculum were eliminated. The items excluded from the EDPSEC curriculum were an entire session, crucial objectives of a session, and homework assignments. Although this was a “real world” scenario the low level of treatment integrity could have narrowed the effect of the treatment.

It was concluded by the two researchers who observed the 9<sup>th</sup> grade health class throughout the administration of the EDPSEC curriculum that there were key elements of the curriculum eliminated by the instructor which could account for the ineffectiveness of the curriculum. The two researchers agreed that the first three of the five 75 minute sessions in the curriculum were adequately covered by the health teacher, however homework and some class discussions were eliminated from these sessions. Session four’s objective was only partially addressed by the health teacher. The objective for session four that was neglected was helping students to become aware of the importance of accurate beliefs and to examine how inaccurate beliefs can lead to the use of coping mechanisms like an eating disorder. All of session five was omitted from class instruction. Objectives for session five were to illustrate characteristics of a

healthy life through examining characteristics in recovered eating disorder sufferers and to help students determine how to implement these characteristics in their own lives. This session included a DVD segment, handouts and class work that helped students reflect on their own life course, how they can have a healthy lifestyle, and where and how to get help. It would seem that these aspects of the EDPSEC curriculum are essential to its integrity. Without these key components of the curriculum being administered, it is difficult to determine the effectiveness of the curriculum.

Another aspect of the curriculum that was omitted from instruction in the health class was the homework assignments. These tasks were an opportunity for students to ponder on the lessons outside of the classroom and to receive more information and insight from friends and family. It would seem that the homework would help the curriculum to have further meaning in the students' lives by facilitating them in making connections with their own experiences and those of their families. By excluding these activities the participants did not receive this curriculum as the authors intended it to be used and therefore we cannot conclude that the curriculum was ineffective.

**Measurement integrity.** Measurement integrity was also compromised due to the fact that the ES and the EAT-26 were administered to the health class on the second lesson rather than prior to beginning the curriculum. This affects the credibility of the pre-post tests' change over time. In the first lesson the health teacher focused on stressful situations and how they affect students' lives. Positive and negative coping mechanisms were also discussed during this first lesson, and eating disorders were used as an example of a negative coping mechanism. Prior to administering the ES and the EAT-26 in the second lesson the teacher did a class activity where he asked students to come and eat a candy bar in front of the class. Several students

refused to participate. The health teacher then explained how this related to eating disorders and gave the definitions of Anorexia Nervosa and Bulimia Nervosa to the students informing them that they are “killers”. Following this, pre tests for the ES and the EAT-26 were handed out to the students. This could have compromised the sensitivity of the measurement, considering students were exposed to the curriculum prior to receiving their pre-test, thereby diminishing the ability to measure the effects of the curriculum overtime.

During the administration of the curriculum there was a space of three school days that a different topic was addressed in the class prior to the concluding lesson which could have affected the post-test results. The health teacher went out of town and did not want a substitute teacher to administer the curriculum, so he had the topic of drugs and alcohol taught during a three day period prior to finishing the EDPSEC. On the return of the health teacher a concluding lesson was taught and the ES and the EAT-26 were administered. Therefore the lack of effectiveness could have been due to the lag in treatment prior to administration of the post-test. Furthermore, by withholding the post-test the students’ peak of change was not measured. In withholding the administration of the post-tests, in combination with administering the pre-tests after change had possibly begun, the researchers were unable to measure the peak of the students’ change in the experimental group.

Due to the lack of treatment integrity and measurement integrity it cannot be determined whether the EDPSEC curriculum is effective. At this time the effectiveness of the EDPSEC cannot be determined because of crucial portions of the curriculum being eliminated. It was determined by the researchers that not only were modification made, but essential elements of the curriculum were eliminated from the instruction given to the 9<sup>th</sup> grade health classes. Additionally measurement integrity was not maintained possibly further narrowing the effect of

the curriculum. The ability to measure the change overtime according to group was diminished given that the pre-tests were administered after change had possibly begun to occur and then allowing a lag in treatment before administering the post-tests. Considering these major concerns effectiveness of the EDPSEC curriculum cannot be determined based on this study.

Although the effectiveness of the EDPSEC curriculum could not be determined in this study, a high correlation was found between the ES and EAT-26 pre tests and the ES and EAT-26 post tests. The pre tests were found to correlate at a .873 and the post tests correlated at a .864. It could be concluded from this that both the EAT-26 and the ES measure the same eating attitudes and beliefs. The ES is a newly developed instrument that appears to have good concurrent validity with the existing EAT-26.

### **Suggestions for Future Research**

Future research is needed to conclude the effectiveness of the EDPSEC curriculum. Findings from this study may suggest that when essential elements of the curriculum are omitted the curriculum is less effective in preventing eating disorders. Future research should be conducted to confirm EDPSEC effectiveness when all elements are presented to the subjects. Such research could establish whether this curriculum has similar or differential effects on young men and women. Establishing that the EDPSEC is a successful curriculum in preventing disordered eating could facilitate the decline in adolescents with eating disorders. With the numerous health, emotional and social related consequence caused by that eating disorders, it is imperative that individuals between the ages of 15-19 years old receive an effective preventative curriculum for eating disorders.

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## Appendix

### Eating Survey (ES; Hardman & Richards, 2001)

Answer the following questions honestly. Write the number of your answer in the space at the left. Use the following scale to respond to each question:

**1= OFTEN 2=SOMETIMES 3=RARELY 4=NEVER**

- \_\_\_ 1. My eating habits are different from those of my friends.
- \_\_\_ 2. I diet to lose weight.
- \_\_\_ 3. I feel fat.
- \_\_\_ 4. I weigh myself on the scale.
- \_\_\_ 5. I worry about food and about what I will or will not eat in a day.
- \_\_\_ 6. I want to eat alone so no one can watch me.
- \_\_\_ 7. I compare myself to other people.
- \_\_\_ 8. I eat large amounts of food and I make myself vomit.
- \_\_\_ 9. I use laxatives to control my weight.
- \_\_\_ 10. I believe there is something wrong with how I look.
- \_\_\_ 11. I want to be thinner than my friends.
- \_\_\_ 12. I feel I have to do things perfectly.
- \_\_\_ 13. I play games with food (e.g. lie about what I eat, hide food, cut food in small pieces, etc.).
- \_\_\_ 14. My acceptance from the opposite sex is based on how thin I am.
- \_\_\_ 15. People worry about my eating habits.
- \_\_\_ 16. I dislike myself.
- \_\_\_ 17. I feel I must exercise every day.
- \_\_\_ 18. I miss meals to control my weight.
- \_\_\_ 19. I eat the same foods every day.
- \_\_\_ 20. My greatest fear is becoming fat.



26. Have the impulse to vomit after meals                    O   O   O   O   O   O

### **Treatment Integrity Checklists**

#### Treatment Integrity check list SECTION 1

\_\_\_ / 3 Handouts. Were all the handouts for this section passed out and adequately explained?

Were the discussions before/after the handouts properly facilitated by the teacher?

How did the students participate overall? Were they engaged?

\_\_\_ / 1 DVD segment. Was the segment introduced/explained adequately?

Was there any discussion after the DVD? Explain.

\_\_\_ / 1 Homework. Was the homework explained adequately?

Any other information from this EDPSEC section?

Treatment Integrity check list  
SECTION 2

Was the homework collected from the last section? YES NO

\_\_\_ / 5 Handouts. Were all the handouts for this section passed out and adequately explained?

Were the discussions before/after the handouts properly facilitated by the teacher?

How did the students participate overall? Were they engaged?

\_\_\_ / 2 DVD segment. Was the segment introduced/explained adequately?

Was there any discussion after the DVD? Explain.

\_\_\_ / 1 Homework. Was the homework explained adequately?

Any other information from this EDPSEC section?

Treatment Integrity check list  
SECTION 3

Was the homework collected from the last section? YES NO

\_\_\_ / 2 Handouts. Were all the handouts for this section passed out and adequately explained?

Were the discussions before/after the handouts properly facilitated by the teacher?

How did the students participate overall? Were they engaged?

\_\_\_ / 2 DVD segment. Was the segment introduced/explained adequately?

Was there any discussion after the DVD? Explain.

\_\_\_ / 1 Homework. Was the homework explained adequately?

Any other information from this EDPSEC section?

Treatment Integrity check list  
SECTION 4

Was the homework collected from the last section? YES NO

\_\_\_ / 4 Handouts. Were all the handouts for this section passed out and adequately explained?

Were the discussions before/after the handouts properly facilitated by the teacher?

How did the students participate overall? Were they engaged?

\_\_\_ / 1 Homework. Was the homework explained adequately?

Any other information from this EDPSEC section?

Treatment Integrity check list  
SECTION 5

Was the homework collected from the last section? YES NO

\_\_\_ / 3 Handouts. Were all the handouts for this section passed out and adequately explained?

Were the discussions before/after the handouts properly facilitated by the teacher?

How did the students participate overall? Were they engaged?

\_\_\_ / 1 DVD segment. Was the segment introduced/explained adequately?

Was there any discussion after the DVD? Explain.

\_\_\_ / 1 Final Exam.

Any other information from this EDPSEC section?