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# The Correlation Between the Eating Attitudes Test and Body Shape Questionnaire

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A CORRELATION BETWEEN THE EATING ATTITUDES TEST  
AND BODY SHAPE QUESTIONNAIRE

by

Maren L. Kanekoa

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

Brigham Young University

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BRIGHAM YOUNG UNIVERSITY

GRADUATE COMMITTEE APPROVAL

of a thesis submitted by

Maren Kanekoa

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

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

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## ABSTRACT

### A CORRELATION BETWEEN THE EATING ATTITUDES TEST AND BODY SHAPE QUESTIONNAIRE

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This research examined the relationship between eating attitudes and body image dissatisfaction using the Eating Attitudes Test (EAT) and the Body Shape Questionnaire (BSQ). Three cohorts of almost 2,000 undergraduate females from Brigham Young University were given the EAT and BSQ twice a year for two to four years, depending upon their year of entrance to BYU. The data collected were analyzed using correlational statistics. Results indicated that a high positive correlation between the EAT and BSQ existed across semesters and cohorts.

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## INTRODUCTION

Eating disorders have plagued our society throughout history and continue to do so today. Although eating disorders afflict both males and females, females are almost 10 times as likely to be diagnosed as males. More specifically, almost 1 million males are diagnosed with disordered eating in comparison to 10 million females diagnosed with disordered eating (National Eating Disorders Association [NEDA], 2005). Based on these statistics, one can deduce that women are more likely to develop an eating disorder than men (Mental Health Screening [MHS], 2005). About 0.5% to 3.7% of females suffer from anorexia nervosa and about 1.1% to 4.2% suffer from bulimia nervosa in their lifetime (National Institute of Mental Health, 2001). However, these statistics are based on reported and diagnosed eating disorders. Professionals estimate that in addition to diagnosed eating disorders, as many as 25 million more struggle with a binge eating disorder or disordered eating behaviors that remain sub-clinical or unreported (NEDA).

The sheer amount of reported and unreported individuals with disordered eating behavior is a cause of great concern. Although the onset of an eating disorder can occur at any age (Anorexia Nervosa and Related Eating Disorders, Inc., 2005), they typically begin during adolescence and young adulthood, between the ages of 12 and 25.8 (MHS, 2005). Of those suffering from an eating disorder, 86% reported onset by the age of 20 (MHS, 2005). About 10% of female college students suffer from an eating disorder (Anne Collins, 2005) and 25% of college-aged women engage in bingeing and purging as a way to manage their weight (MHS, 2005). Anorexia nervosa is one of the most common psychiatric diagnoses in young women (Students Against Driving Drunk [SADD], 2005) and is the third most chronic illness among adolescents (MHS, 2005;

SADD, 2005). For those who do suffer from an eating disorder or from eating disturbance (those engaged in bingeing and purging), it can have grave effects upon their lives. The mortality rate associated with eating disorders is “twelve times higher than the death rate associated with all causes of death for females 15-24 years old” (MHS, 2005, p. 1).

Eating disorders often remain unreported, which may put the lives of individuals suffering from them at risk. To decrease this risk, researchers have developed various methods of assessing individuals for an eating disturbance. Such assessments come in the form of interviews, questionnaires, and surveys. Interviews require a rather long period of time to complete as well as a trained professional who can differentiate slight eating disturbance behaviors from more severe, clinical ones. Questionnaires and surveys, on the other hand, usually take a short period of time to complete and are based on self-report, eliminating the necessity of a trained professional to administer it. Many researchers have used a variety of questionnaires to measure eating disturbances in their samples. A few of the questionnaires used include the Eating Disorder Inventory (EDI), the Eating Attitudes Test (EAT), and the Eating Disorder Examination Questionnaire (EDE-Q) (Engelsen & Laberg, 2001).

In order to accurately assess an individual for an eating disorder using questionnaires and surveys, researchers and counselors must know what characterizes an eating disorder. The term *eating disorders* is a general category of eating disturbance. Eating disorders, in fact, can be separated into at least three different types: *anorexia nervosa*, *bulimia nervosa*, and *eating disorder not otherwise specified*. *Anorexia nervosa* is characterized by refusal to maintain a minimally normal body weight, an intense fear

of gaining weight, and “a significant disturbance in the perception of the shape or size of his or her body” (American Psychological Association [APA], 1994, p. 583). Those suffering from anorexia nervosa usually experience weight loss by reducing their food intake.

*Bulimia nervosa* is slightly different from anorexia nervosa. Bulimia is characterized by *binge eating*, inappropriate compensatory methods to prevent weight gain, and an excessive influence of body shape and weight on self-evaluation (APA, 1994). According to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), a *binge* is defined as “eating in a discrete period of time an amount of food that is definitely larger than most individuals would eat under similar circumstances” (APA, 1994, p. 589). Some inappropriate methods of compensating for a binge is vomiting, misusing laxatives, diuretics, and enemas, and excessive fasting or exercise. Of all these methods, 80%-90% of individuals with bulimia engage in vomiting (APA, 1994).

Some will not meet all the criteria for either anorexia nervosa or bulimia nervosa, despite the presence of a clinically significant eating disturbance. Those individuals who meet all but one symptom of the criteria for either anorexia nervosa or bulimia nervosa are diagnosed as suffering from an *eating disorder not otherwise specified* (APA, 1994).

Although the two main types of eating disorders, anorexia nervosa and bulimia nervosa, have different characteristics overall, they both are characterized by a disturbance in perception of body shape (Stice, 2002). Many blame societal pressure to conform to the prevalent “thin ideal” for this body shape disturbance. Media portrayals of female models that are thin and tall are not the reality that most women face. According

to NEDA (2005), “the average American model is 5’11” tall and weighs 117 pounds” whereas “the average American woman is 5’4” tall and weighs 140 pounds” (p. 2). The discrepancy between the “ideal” body shape and the body shape of the average woman can create a disturbance in body shape perception. Studies have shown that the greater the internalization of the “thin ideal,” the greater the likelihood that an individual will engage in disordered eating (Rucker & Cash, 1992; Thompson-Leonardelli, 2002).

Since negative body shape and image have been found to be a risk factor for eating disorders, researchers have developed various measurements and questionnaires that measure an individual’s body shape perceptions. These measurements include self-report questionnaires, projective tests, silhouette choices, and interview assessments (Ben-Tovim & Walker, 1991). The most widely used type of assessment is the self-report questionnaire (Ben-Tovim & Walker, 1991). Some examples of self-report questionnaires are the Multidimensional Body-Shape Relations Questionnaire (MBSRQ), the Body-Image Avoidance Questionnaire (BIAQ), and the Body Shape Questionnaire (BSQ).

It has been shown that body shape perceptions often times influence an individual’s attitude toward eating. Thus, a questionnaire that measures eating attitudes or patterns would most likely correlate with a questionnaire that measures body shape perception. Few studies have investigated whether there is a correlation between these two types of measures (Cooper, Taylor, Cooper, & Fairburn, 1987; Mumford & Choudry, 2000). When a correlation between such questionnaires has been found in a study, it was typically positive in nature and moderately significant. However, the studies that have examined this relationship were conducted many years ago (Cooper et al., 2000) or were conducted outside of the United States (Mumford & Choudry, 2000). No studies have

recently addressed this question of correlation in the United States. With the growing increase of eating disorders in our country, the results of the past may prove different from the results of the present.

#### *Statement of Problem*

With so many studies looking at the correlation between body shape perception and eating disorders, a natural inquiry would be to see how measures for each variable correlate. Though some studies have looked at this correlation, very little research on the subject has been done recently.

#### *Statement of Purpose*

The purpose of this study is to examine correlations between scores on the Eating Attitudes Test (EAT), a measure of eating disorder behavior, and the Body Shape Questionnaire (BSQ), a measure of body shape perception.

#### *Research Question*

What is the correlation between EAT and BSQ scores?

#### *Importance of Study*

If, in fact, a significant correlation between EAT and BSQ scores is found, it would give further evidence to the correlation between eating disorders and body shape perception and would also help solidify the BSQ as a supplementary measure for an eating disorder diagnosis. The large sample size that Brigham Young University (BYU) offers and the longitudinal nature of the study provide an opportunity to not only strengthen the validity and reliability of any correlational finding between the two given measures for a non-clinical population, but also to monitor that correlation over a period of four years.

## LITERATURE REVIEW

### *College Students and Eating Disorders*

An individual may develop an eating disorder at any point in his or her life. The onset of an eating disorder, however, tends to occur sometime during adolescence through the early to mid-twenties. At this point in life, most individuals start preparing for and attending college. During the transition from high school to college, students face a variety of new challenges and difficulties in their academic, social, and personal arenas of life. Some difficulties may include academic adjustments, determining career choice, and social adjustments and relationships. Freshmen in college, when adjusting to college-level academics, tend to “set unrealistically high expectations” of themselves, which causes distress when they are not successfully attained (Schwitzer & Rodriquez, 2002, p.51). In order to increase the likelihood of attaining success in school and in their social aspects of life, many young girls believe that they must fit the thin ideal (Smolak & Levine, 1994). This belief may, in turn, motivate them to engage in disordered eating.

Not only do incoming freshmen experience academic pressure, the pressure of “fitting in” with the crowd and with society can weigh on them as well. Grassi (2001) commented on the pressures that students might face when entering college,

owing to the anonymity of the college setting, the body, not the intellect, is the measure of self-value and social worth; many students seek thinness as a way of being accepted. The emotions students face as they adjust to college life can have a major impact on eating behaviors and attitudes that set the stage for further eating problems. (p. 40)



The many pressures associated with the transition to college can place students on a precarious foundation and searching for ways to gain acceptance in their lives. One way students believe will help them attain the acceptance they long for is to fit the thin ideal. College students have reported a high incidence of subthreshold problems with body dissatisfaction and weight preoccupation (Schwitzer, Berghol, Dore, & Salimi, 1998). All of these issues, when compounded, can place college students at a high risk for developing an eating disorder (Schwitzer & Rodriguez, 2002; Smolak & Levine, 1994).

Some may wonder how a typical college student with an eating disorder can be identified. Nelson, Hughes, Katz, and Searight (1999) conducted a study about the anorexic eating attitudes and behaviors of male and female college students. Using those data, they constructed a picture of a typical female problem eater:

She has low physical and personal self-esteem and current psychological distress. Low physical self-esteem involves a negative perception of one's appearance, physical competence, and sexuality, while low personal self-esteem involves a diminished view of one's self-worth and personal competence. (p. 630)

This description, however, does not give us any physical attributes of an eating disordered female. Instead, it gives us some clues to what she is feeling and thinking. We therefore must access that inner self in order to diagnose an eating disorder. One way to access this inner self is through assessments and interviews.

### *Eating Disorder Assessments*

If we are to assess females for an eating disorder, the next question is what is the best method to do so? Engelsen and Laberg (2001) conducted a study to find out whether

three questionnaires, the Eating Attitudes Test (EAT-12), the Eating Disorder Inventory (EDI), and the Eating Disorder Examination Questionnaire (EDE-Q), truly measure and detect eating disorders. They found that most anorexia nervosa patients score higher than non-anorexia nervosa patients on the EAT-12, EDI, and EDE-Q. These instruments were also able to correctly identify females in the sample who were at a low risk for eating disorders. One note of caution that the researchers have made, however, is that the sensitivity of these assessments in correctly identifying all females at risk for eating disorders is debatable. This provides evidence that although questionnaires are beneficial in the screening process, they can only function as supplemental information for a diagnosis.

The eating disorder screening questionnaire, EAT, was created in 1979 by Garner and Garfinkel. It is an “objective, self-report measure of the symptoms of anorexia nervosa” and has been used as a screening instrument for “detecting previously undiagnosed cases of anorexia nervosa in populations at high risk for the disorder” (Garner, Olmsted, Bohr, & Garfinkel, 1982, p. 871). A study by Button and Whitehouse in 1981 and a study by Thompson and Schwartz in 1982 both found the EAT useful in identifying college students with abnormal eating concerns (Garner et al., 1982). The EAT has been validated for both clinical and non-clinical students (Garner et al., 1982).

A study by Mintz and O’Halloran (2000) investigated the criterion validity of the Eating Attitudes Test with the DSM-IV. When the EAT was created in 1979, the latest DSM was the second edition. Shortly thereafter, the third edition came out in which eating disorders, namely anorexia nervosa, were first included. Now the DSM is in its fourth edition and has separated anorexia and bulimia into two separate eating disorders.

Through their study, Mintz and O'Halloran (2000) found that the EAT had a rather high accuracy rate (91% for the EAT-40 and 90% for the EAT-26) and could be “conceptualized as a validated measure of undifferentiated DSM-IV eating disorders” (p. 499).

### *Eating Disorders and Body Image*

According to the DSM-IV, anorexia nervosa and bulimia nervosa both share the common characteristic of a disturbance in an individual's perception of body shape. Showers and Larson (1999) gave a reason for this connection between eating disorders and body shape perception. They conducted a study in which they looked at the relationship between self-knowledge about physical appearance and disordered eating. In their study, they found that women with disordered eating had the tendency to compartmentalize their negative beliefs of their physical appearance and link them with other negative attributes (Showers & Larson, 1999). Thus, their negative beliefs about themselves may be exacerbated, giving them more reasons to resort to disordered eating.

One negative belief that is often exacerbated is body image. Many females have a negative body image, which place them at risk for an eating disorder. Stice (2002) completed a meta-analysis of the literature on risk and maintenance factors in eating pathology to find out what the most influential factors on eating disorders were. Through his work, it was found that body dissatisfaction is a risk factor for dieting, negative affect, and eating pathology, as well as a maintenance factor for bulimic pathology. Stice (2002) also concluded that body dissatisfaction is “one of the most consistent and robust risk and maintenance factors for eating pathology” (pp. 832-833).

Cash and Deagle (1996) also conducted a meta-analysis on the relationship between body-image disturbances and eating disorders. In their research, they came to the conclusion that body dissatisfaction in eating disordered patients exceeds that of controls by 87%. In addition, eating disordered patients also experience a perceptual body-size distortion that is greater than 73% of that of the controls. This provides further evidence that body image disturbance is a risk factor for an eating disorder.

As shown, studies have been done linking eating disorders to a negative or distorted body image. In past years, a debate over the definition of *body image* has gone on. Garner and Garfinkel (1981) were the first to delineate two ways body-image disturbance could be manifested, as quoted by Keeton, Cash and Brown (1990):

The first form is *body-size distortion* and involves a perceptual disturbance in which persons seem unable to assess their size accurately. The second form, often referred to as *body dissatisfaction*, represents an attitudinal or affective dimension. Subjects rate feelings about their body or body parts, ranging from satisfaction to disparagement or dysphoria. (italics in original, p. 214)

Researchers have looked into both forms of body image. For this discussion, however, any reference to body image will refer to body dissatisfaction.

### *Influences on Body Image*

Body image clearly has an effect upon eating disorders, but what has an effect upon body image dissatisfaction? Several theories have been suggested to explain various influences upon body dissatisfaction. Most theories have at its basis societal pressure to be thin. Many say that our society is encouraging a thin ideal that women feel pressured

to comply with. Some theories suggested include female sex role pressure, perfectionism, social comparison, and media influences.

Heilbrun and Putter (1986) suggested a theory on the correlation between body image and eating disorders. They suggest that some women may feel pressure to fit into a female sex role, which often includes an ideal of a low body weight. If a discrepancy is found between the ideal body weight and actual body weight, it often times causes stress. This stress could serve as motivation for dieting and may lead to disordered eating (Heilbrun & Putter, 1986).

Another theory deals with perfectionistic tendencies, a characteristic common among women with eating disorders (Hewitt, Cordon, & Ediger, 1995). These perfectionistic tendencies can play a part in how they perceive their body. If one is to truly be perfect, she or he must fit into the thin ideal that is encouraged by society. If there is any discrepancy between a person's actual body image and the thin ideal, it may be perceived as an imperfection or a failure. Whichever way the discrepancy is perceived, it may lead to disordered eating (Hewitt et al., 1995).

Pressure to be thin can also be found in the media and in magazines, which can have a profound effect upon an individual. According to social comparison theory, women often compare themselves to thin models and characters in the media and in magazines. When they find a discrepancy between the ideal and what they perceive their bodies to be, they may engage in dieting or disordered eating (Bissell & Zhou, 2004). Bissell and Zhou (2004) found in their study that high exposure to entertainment television that had "thin ideal" characters predicted "decreased satisfaction with the body

and more negative attitudes regarding the ‘ideal’ body shape” as well as higher scores on disordered-eating scales (p. 19).

Stice, Schupak-Neuberg, Shaw, and Stein (1994) investigated the exact correlation between the media and eating disorders. A conclusion from this study was that media exposure has a definite correlation with eating disorder symptomatology. To describe the correlation in further detail, “greater ideal-body stereotype internalization predicted increased body dissatisfaction, which was related to heightened eating disorder symptoms” (p. 239).

In a study by Cattarin, Thompson, Thomas, and Williams (2000), they found that “media-presented images of women have the ability to affect (either positively or negatively) both mood and satisfaction with appearance within a normative female sample” (p. 236). A moderating factor to this finding was the tendency of the participant to internalize sociocultural norms for attractiveness. Thus, if females are especially susceptible to the sociocultural norm of attractiveness being associated with thinness and are bombarded with images of such, they tend to be more at risk to have a higher level of body dissatisfaction, and thus an eating disorder.

Cash and Brown (1987) found a similar finding to that of Cattarin and his colleagues (2000) in their literature review. Cash and his colleague (1987) reviewed research from various studies on the correlation between various aspects of body image and eating disorders. In their review, they noted some findings from a study by Striegel-Moore, Silberstein, and Rodin (1986). Striegel-Moore et al. (1986) believed that women who were at greatest risk for bulimia nervosa were those who internalized the thin ideal

of attractiveness. Other researchers have agreed that this is a risk factor for body dissatisfaction and ultimately, an eating disorder (Cash & Brown, 1987).

The degree of internalization of the thin ideal of our society has been shown to have an influence on eating disturbances. Differences in ethnicities may, in turn, influence a woman's tendency to internalize this thin ideal of attractiveness. Rucker and Cash conducted a study in 1992 that compared the body images, body-size perceptions, and eating behaviors of African-American and Caucasian college women. In this study, they found that African-American women had a more moderate ideal of body size than that of the Caucasian women, whose ideal size was thinner. They attributed this difference to the close adherence of Caucasian women to the conception in Western culture of a thin body size being ideal. African-American women, on the other hand, were somehow not as receptive as the Caucasian women and thus were more weight-tolerant.

Studies researching the differences between Caucasians and African-Americans have frequently concluded that Caucasians are at more risk of developing an eating disorder (Akan & Grilo, 1995; Thompson-Leonardelli, 2002). Thompson-Leonardelli (2002) found in her study that

for both African and European American women, greater awareness and acceptance of the thin beauty ideal were associated with greater disordered eating characteristics. However, these associations were stronger for European American women who were highly aware and accepting of this beauty ideal than for African American women with same level of awareness and acceptance. (p. 86)

Hence, even when placed on equal footing, Caucasian women are still at a greater risk for an eating disorder than African American women.

### *Assessment of Body Image*

Body image has thus been proven to exert a great influence on eating attitudes and behaviors. Like eating attitudes, body image has been assessed using various methods. Keeton, Cash, and Brown (1990) conducted a study to find out what the best method of assessing body image would be. From that study, they concluded that attitudinal measures of body image have stronger evidence for validity than “perceptual measures that focus on the accuracy of body-size estimation” (Keeton et al., 1990, p. 227). Thus assessments that measure a person’s attitude toward their body image will be of greater benefit than those that measure the discrepancy between their ideal and what their perceptions of their body are.

An assessment that measures an individual’s attitude toward their body image is the Body Shape Questionnaire (BSQ). Cooper, Taylor, Cooper, and Fairburn (1987) developed the BSQ and conducted a study to validate it. It was found to discriminate among patients and nonpatients and has concurrent validity with the EAT and Body Dissatisfaction subscale of the Eating Disturbance Inventory. In a study by Rosen, Jones, Ramirez, and Waxman (1996), the authors stated that an advantage of the BSQ seems to be the inclusion of questions that tap into other important body image symptom, such as distressing preoccupation with weight and shape, embarrassment in public and avoidance of activity or exposure of the body due to self-consciousness, and excessive feelings of fatness after eating. (p. 315)



With that description, it is evident that the BSQ can be considered a comprehensive instrument of assessment that can be used to discriminate those with and those without a body image disturbance.

According to Cooper et al. (1987), in addition to assessing for body image disturbance, the BSQ also assists in discriminating between those with an eating disorder and those without one. Hadigan and Walsh (1991) found that patients with bulimia nervosa had higher BSQ scores than their other eating-disordered counterparts, who in turn had a higher score than those not suffering from an eating disorder. This finding gave credence to the added criterion of overconcern with body shape and weight in the diagnosis for bulimia nervosa in the DSM-III. Thus, women who are overly dissatisfied with their body shape are at a higher risk for an eating disorder.

A study by Bunnell, Cooper, Hertz, and Shenker (1992) also supports the conclusion of Cooper and his colleagues (1987). They found that adolescents who suffer from bulimia nervosa seem to have a higher BSQ score than other eating-disordered peers. However, it was noted by the authors that adolescent females in general have higher BSQ scores than adults. In fact, the authors suggest, “concerns about shape and weight may play crucial roles in the development of eating pathology, especially bulimia nervosa, but, more generally, they appear to be important components of the female adolescent's developing sense of self” (p. 83).

#### *Possible Correlations Between the BSQ & EAT*

The BSQ has been shown to differentiate between patients with and without eating disorders. Thus, the proceeding question is whether the BSQ correlates with an eating disorder discriminating test, namely the EAT. According to the study by Cooper et

al. (1987), a significant positive correlation of 0.61 between the BSQ and the EAT was found. A study conducted by Mumford and Choudry in 2000 also reported a significant positive correlation ( $r = 0.57$ ,  $p < 0.01$ ) between EAT and BSQ scores. This was consistent in all three ethnic groups of women (South Asian, White, and English-speaking from Lahore, Pakistan) that were tested.

Although these studies have shown a correlation between the EAT and BSQ, some reservations can be drawn concerning them. The first of these studies is outdated and does not give detailed information about how they are correlated. The second study was not conducted in the United States and thus cannot be applied to the states. Hence, the objective of this particular study is to estimate how the EAT and BSQ are correlated in a college setting in the United States. If a positive, significant correlation is found between the EAT and BSQ, it would give credence to the BSQ as a supplementary measure in diagnosing an eating disorder and could be added to the standard battery of eating disorder questionnaires administered to an individual.

## METHODS

### *Participants*

The participants for this study included 1,997 female undergraduate students at Brigham Young University (BYU), a large, private university located in Provo, Utah. The majority of participants were Caucasian, members of The Church of Jesus Christ of Latter-Day Saints, and within the age range of 18-24 during this longitudinal study. Participants were separated into three cohorts. The first cohort consisted of 658 randomly selected incoming freshmen women during the fall semester of 2001. The second cohort consisted of 696 randomly selected incoming freshmen women during the fall semester of 2002. The last cohort consisted of 643 randomly selected incoming freshmen women during the fall semester of 2003.

### *Procedure*

In fall of 2001, 1,800 incoming freshmen students at BYU were randomly selected. Each student was sent the Eating Attitudes Test (EAT-40), the Body Shape Questionnaire (BSQ), and a demographics questionnaire to fill out. Each subject was assigned an identification number so as to keep track of each individual case. The initial response rate was 37%. Those who returned the questionnaires were sent the EAT and BSQ again during the winter semester of that year. The following academic year, the freshmen, now sophomore, women were sent the EAT and BSQ, once in the fall and again in the winter. These women were sent the EAT and BSQ twice a year until the end of their senior year. In fall of 2002, another group of 1,800 incoming freshmen students at BYU were randomly selected to receive the EAT-40, BSQ, and a demographics questionnaire. This group received questionnaires twice a year until the end of their

junior year. In fall of 2003, another group of 1,800 freshmen were once again randomly selected and sent questionnaires. The participants in this last group were sent the questionnaires twice a year until the end of their sophomore year. This procedure resulted in eight semesters of data for Cohort 1 (2001), six semesters of data for Cohort 2 (2002), and four semesters of data for Cohort 3 (2003). New questionnaires were usually only sent to those participants who returned their questionnaires the previous semester and thus response rates rapidly decreased (see Table 1).

Table 1

*Number of Participants in Each Semester, by Group*

Cohort	Freshman Fall	Freshman Winter	Sophomore Fall	Sophomore Winter	Junior Fall	Junior Winter	Senior Fall	Senior Winter
2001 Cohort	658	472	342	272	184	155	90	92
2002 Cohort	696	499	266	244	168	169		
2003 Cohort	564	289	176	197				

*Instruments*

The Eating Attitudes Test (EAT) was developed in 1979 to be used as a screening tool for anorexia nervosa. It is an objective, self-report questionnaire that consists of 40 questions that are answered using a 6-point Likert scale ranging from “never” to “always.” Only the three most extreme scores are assigned a point value from 1 to 3, resulting in total scores that can range from 0 to 120. Any subject who has a total score of

30 or above on the EAT is considered to be “at risk” for eating disorder behavior and symptomatology. The EAT has a validity coefficient of .87 and an internal consistency coefficient of .79 for anorexic patients and .94 for control subjects (Garner & Garfinkel, 1979).

The Body Shape Questionnaire (BSQ) was developed in 1987 to measure an individual’s concerns about body shape, especially their concerns of “feeling fat.” It is a self-report questionnaire that consists of 34 questions that refer to the subject’s feelings about their appearance for the previous four weeks. Questions are answered using a 6-point Likert scale ranging from “never” to “always.” Each scaled answer is assigned a point value from 1 to 6 resulting in total scores that can range from 34 to 204. Those who are considered “probable cases” or definite cases of bulimia score about 130 or above on the BSQ (Cooper et al., 1987). The BSQ takes approximately 10 minutes to complete. This questionnaire provides a “measure of the extent of psychopathology rather than a means of case detection” (Cooper et al., 1987, p. 490). Rosen, Jones, Ramirez, and Waxman (1996) reported a test-retest reliability of .88 and a concurrent validity of .77 with the Body Dysmorphic Disorder Examination among university undergraduates.

#### *Data Analysis*

The data collected from this study were analyzed in accordance with a specific research question. The research question was answered using correlational statistics. Correlational statistics were used to describe the correlation between EAT and BSQ scores (1) screened by cohorts across time, resulting in 8, 6, and 4 correlation coefficients, (2) according to semesters, resulting in 8 correlation coefficients, and (3) according to time, resulting in 8 correlation coefficients.

## RESULTS

The data were analyzed using correlational statistics. The sample sizes collected varied each semester. As the study continued, the return rate decreased. The sample sizes for the two questionnaires also differ because incomplete questionnaires were removed from the data analysis. It was found that the distribution of BSQ scores followed a normal bell curve, whereas the distribution of EAT scores was significantly positively skewed (as shown in Figures 1 and 2, respectively). Figures 1 and 2 are representative of the distributions for EAT and BSQ scores in all perspectives. For this reason, a Spearman's Rho correlation was used rather than a Pearson Product Moment correlation.

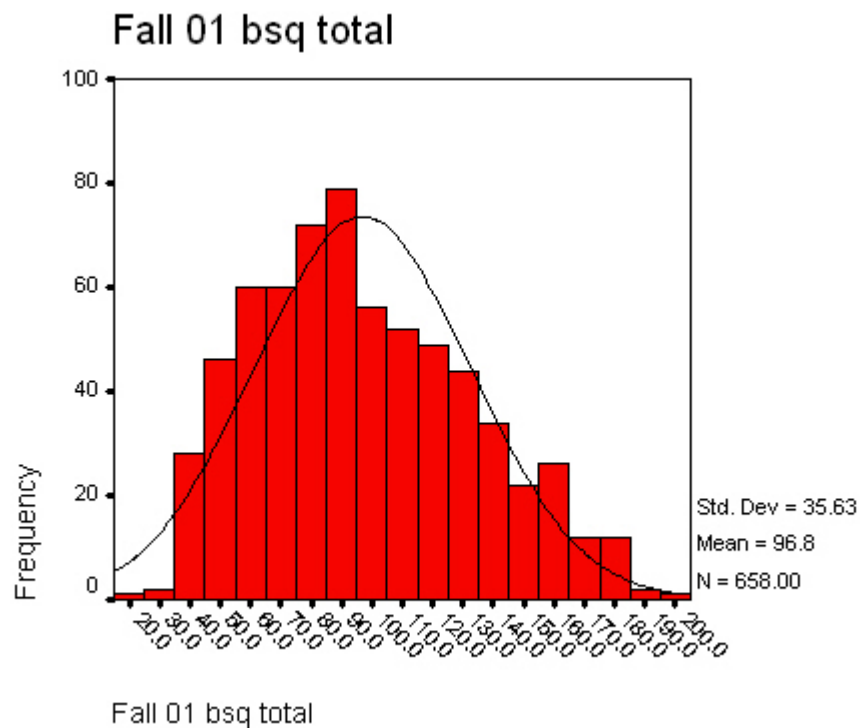


Figure 1. *Histogram of BSQ scores in fall of 2001.*

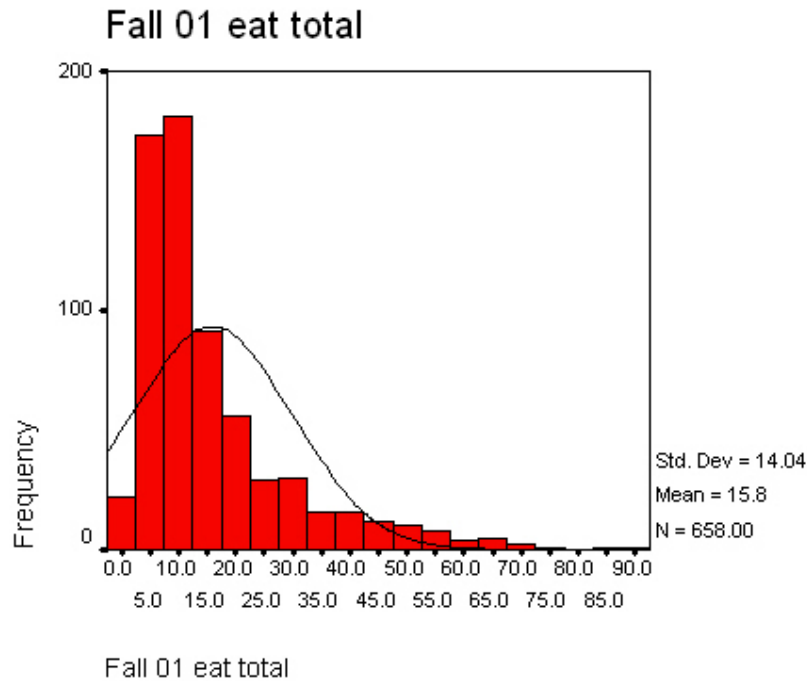


Figure 2. *Histogram of EAT scores in fall of 2001.*

The data were analyzed using three different perspectives: by cohort and semester, by semester alone, and by time of administration. Tables 2 and 3 display sample size and median scores on the EAT and BSQ by cohort and semester. Table 4 displays the correlations on the EAT and BSQ by cohort and semester as well. As illustrated in these tables, a significant positive correlation was found between the EAT and BSQ within each cohort of participants as they progressed through the study over time.

Tables 5 and 6 display sample size and median scores on the EAT and BSQ by semester. Table 7 displays the correlations on the EAT and BSQ by semester as well. As illustrated in these tables, a significant positive correlation was found between the EAT and BSQ in each semester throughout the study.

Table 2

*Sample Size (n) on the EAT & BSQ, by Cohort and Semester*

Test	Fall 2001	Winter 2002	Fall 2002	Winter 2003	Fall 2003	Winter 2004	Fall 2004	Winter 2005
2001 Cohort <i>n</i>								
EAT	658	487	342	272	185	162	100	99
BSQ	658	472	342	272	203	156	104	101
2002 Cohort <i>n</i>								
EAT	----	----	696	499	269	256	186	188
BSQ	----	----	696	499	310	246	190	182
2003 Cohort <i>n</i>								
EAT	----	----	----	----	572	321	194	238
BSQ	----	----	----	----	629	294	205	215

Table 3

*Median Scores on the EAT & BSQ, by Cohort and Semester*

Test	Fall 2001	Winter 2002	Fall 2002	Winter 2003	Fall 2003	Winter 2004	Fall 2004	Winter 2005
2001 Cohort								
EAT	11.0	10.0	10.0	10.0	9.0	9.0	10.0	9.0
BSQ	91.0	92.0	89.5	88.0	81.0	82.5	82.0	82.0
2002 Cohort								
EAT	----	----	10.0	10.0	10.0	10.0	10.0	9.0
BSQ	----	----	89.0	87.0	84.0	86.5	84.5	77.0
2003 Cohort								
EAT	----	----	----	----	11.0	11.0	10.0	11.0
BSQ	----	----	----	----	96.0	95.0	85.0	87.0



Table 4

*EAT & BSQ Correlation, by Cohort and Semester*

Semester/ Year	Fall 2001	Winter 2002	Fall 2002	Winter 2003	Fall 2003	Winter 2004	Fall 2004	Winter 2005
2001 Cohort	.716**	.706**	.658**	.698**	.570**	.650**	.709**	.717**
2002 Cohort	----	----	.659**	.700**	.641**	.655**	.645**	.608**
2003 Cohort	----	----	----	----	.664**	.716**	.615**	.655**

*Note.* \*\* Correlation is significant at the 0.01 level (2-tailed).

Table 5

*Sample Size (n) on the EAT & BSQ, by Semester*

Semester/ Year	Fall 2001	Winter 2002	Fall 2002	Winter 2003	Fall 2003	Winter 2004	Fall 2004	Winter 2005
EAT <i>n</i>	658	487	1038	771	1026	739	480	525
BSQ <i>n</i>	658	472	1038	771	1142	696	499	498

Table 6

*Median Scores on the EAT & BSQ, by Semester*

Semester/ Year	Fall 2001	Winter 2002	Fall 2002	Winter 2003	Fall 2003	Winter 2004	Fall 2004	Winter 2005
EAT	11.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
BSQ	91.0	92.0	89.0	88.0	89.5	88.0	84.0	84.5

Table 7

*EAT & BSQ Correlations, by Semester*

Semester/ Year	Fall 2001	Winter 2002	Fall 2002	Winter 2003	Fall 2003	Winter 2004	Fall 2004	Winter 2005
<i>r</i>	.716**	.706**	.658**	.700**	.645**	.686**	.640**	.648**

*Note.* \*\* Correlation is significant at the 0.01 level (2-tailed).

Tables 8 and 9 display sample size and median scores on the EAT and BSQ by time of administration. Table 10 displays the correlations on the EAT and BSQ by time of administration as well. As illustrated in these tables, a significant positive correlation was found between the EAT and BSQ from the time of the first administration through the time of the last administration.

Table 8

*Sample Size (n) on the EAT & BSQ, by Administration*

Administration	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8
EAT <i>n</i>	1926	1307	805	766	371	350	100	99
BSQ <i>n</i>	1983	1265	857	721	393	338	104	101

Table 9

*Median Scores on the EAT & BSQ, by Administration*

Administration	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8
EAT	10.0	10.0	10.0	10.0	10.0	9.0	10.0	9.0
BSQ	92.0	90.0	86.0	87.0	82.0	81.0	82.0	82.0

Table 10

*EAT & BSQ Correlations, by Administration*

Administration	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8
<i>r</i>	.682**	.710**	.642**	.668**	.607**	.628**	.709**	.717**

*Note.* \*\* Correlation is significant at the 0.01 level (2-tailed).

Within each of the three perspectives in which the data were analyzed, a significant positive correlation was found. Thus, it can be said with more confidence that if subjects scored high on the EAT, they were more likely to score high on the BSQ, and vice versa.

## DISCUSSION

Through the data analysis, it was found that there is a significant positive correlation between the EAT and BSQ. Hence, if a subject obtains a relatively higher score on the EAT, they are likely to obtain a relatively higher score on the BSQ as well. This provides evidence that validates the use of the BSQ as a supplementary measure for an eating disorder diagnosis. It can assist in giving more detailed information of a subject's thoughts and practices of disordered eating.

The results of this study are congruent with the research on the strong correlation between disordered eating and body image dissatisfaction as well as the findings of Mumford and Choudry (2000) and Cooper et al. (1987). The results of this study found correlations that were slightly higher than correlations documented by Cooper et al. (1987) ( $r = .61$ ) and Mumford and Choudry (2000) ( $r = .57$ ).

While not accounting for the changes in the correlation, it is interesting that there have been changes in mean values on the BSQ over time. The Cooper et al. study was done in 1987. In that study, women in the community attained a mean score of 81.5 on the BSQ. Since then, other studies have been conducted in which women have attained a higher BSQ score. Evans and Dolan (1993) conducted a study with a sample of adult women attending a women's health and family planning clinic in which the women attained a mean score of 85.5 on the BSQ. Six years later, in 1999, Mazzeo conducted a study with a sample of female undergraduates in a Midwestern university in which the women attained a mean score of 99.23 on the BSQ. In 2003, female undergraduates at BYU attained a mean score of 96.30. From these studies, it seems evident that since 1987

there has been an overall trend of women attaining higher scores on the BSQ than in previous years.

Along with BSQ scores, body dissatisfaction in general seems to have increased over the years as well. In 1999, *Psychology Today* reported results from a nationwide survey that they conducted which asked readers about the physical attributes that they disliked (Thompson, Heinberg, Altabe, & Tantleff-Dunn). This survey was conducted in 1972, 1985 and 1996. With each successive survey, the percentage of discontent for most physical attributes for both men and women increased. Thus, according to this survey, body dissatisfaction has increased for at least part of the population in the United States, if not the majority.

The trend of increasing BSQ scores and body dissatisfaction may be the result of an increase in the media's reinforcement of the thin ideal in their portrayal of women. Although the thin ideal has been present for several decades, in the recent past, more women in the magazines and on television appear to be thinner than those portrayed in those same venues in previous years. The adherence to the thin ideal is becoming so apparent that television shows are commenting on actresses becoming too thin. Thin is still "in" and women are still trying their best to fit that thin ideal. Women are still falling short of that ideal and are turning to eating disorders in the hopes of achieving something that resembles the thin ideal.

Major strengths of this study include its large non-clinical sample size, focus on college students, and staggered baseline design. This provided a large database from which correlations could be ascertained, thus increasing its reliability and validity. The focus on non-clinical college students gives evidence that the EAT and BSQ can be used

with non-clinical populations. The longitudinal nature of the study provides a more complete picture of the course of the relationship between these two measures than a one semester or one-year study would be able to.

The major weakness of this study was the attrition rate. No incentive was given to participants, which resulted in a decrease in response rate as the years progressed. However, in comparison to the two previous studies on a correlation between the EAT and BSQ, Cooper, et al. (1987) and Mumford and Choudry (2000), in which the sample sizes were  $n = 554$  and  $n = 104$  respectively, the sample size of this study was still rather high, ranging from  $n = 1918$  to  $n = 458$ .

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## Appendix

a-

### EATING ATTITUDES TEST

Please check a response for each of the following statements and fill out **both sides**:

		Always	Usually	Often	Sometimes	Rarely	Never
1.	Like eating with other people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Prepare foods for others but do not eat what I cook.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Become anxious prior to eating.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Am terrified about being overweight.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Avoid eating when I am hungry.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Find myself preoccupied with food.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	Have gone on eating binges where I feel that I may not be able to stop.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	Cut my food into small pieces.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	Aware of the calorie content of foods I eat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	Particularly avoid foods with a high carbohydrate content (e.g. bread, potatoes, rice, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	Feel bloated after meals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.	Feel that others would prefer if I ate more.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	Vomit after I have eaten.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.	Feel extremely guilty after eating.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.	Am preoccupied with a desire to be thinner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.	Exercise strenuously to burn off calories.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17.	Weigh myself several times a day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.	Like my clothes to fit tightly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.	Enjoy eating meat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20.	Wake up early in the morning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21.	Eat the same foods day after day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22.	Think about burning up calories when I exercise.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**TURN OVER**



### BODY SHAPE QUESTIONNAIRE

*Directions: We would like to know how you have been feeling about your appearance over the PAST FOUR WEEKS. Please read each question and fill in the appropriate response to the right. Please answer all of the questions and fill out both sides of the questionnaire.*

		Always	Usually	Often	Sometimes	Rarely	Never
1.	Has feeling bored made you brood about your shape?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Have you been so worried about your shape that you have been feeling you ought to diet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Have you thought that your thighs, hips, or bottom are too large for the rest of you?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Have you been afraid that you might become fat (or fatter)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Have you worried about your flesh not being firm enough?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Has feeling full (e.g., after eating a large meal) made you feel fat?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	Have you felt so bad about your shape that you have cried?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	Have you avoided running because your flesh might wobble?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	Has being with thin women made you feel self-conscious about your shape?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	Have you worried about your thighs spreading out when sitting down?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	Has eating even a small amount of food made you feel fat?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.	Have you noticed the shape of other women and felt that your own shape compared unfavorably?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	Has thinking about your shape interfered with your ability to concentrate (e.g., while watching television, reading, listening to conversations)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.	Has being naked, such as when taking a bath, made you feel fat?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.	Have you avoided wearing clothes which make you particularly aware of the shape of your body?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**TURN OVER**

