BODY SHAPE AND WEIGHT AS DETERMINANTS OF WOMEN'S SELF-ESTEEM

by

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Abstract

Shape- and weight-based self esteem was proposed to be a central cognitive component of the eating disorders. In this thesis, the psychometric properties of the Shape- and Weight-Based Self-esteem (SAWBS) Inventory, a newly-developed measure of the influence of shape and weight on feelings of self-worth, were determined. A preliminary examination of possible developmental precursors of shape- and weight-based self-esteem was also performed. SAWBS scores were stable over 1 week, and correlated with women's negative perceptions about their bodies in eating disorder and undergraduate control groups (EDG and UCG, respectively). In the UCG, SAWBS scores correlated with one of two measures of shape and weight cognitive schemata. The validity of shape- and weight-based self-esteem as a central feature of eating disorder symptomatology was supported in a number of ways. SAWBS scores correlated positively with eating disorder symptom scores in the UCG, and were significantly higher in women identified as "possible or probable" eating disorder cases than in women not suspected of having an eating disorder. SAWBS scores were also higher in the EDG than in the UCG or a psychiatric control group (PCG), even after controlling for age, socioeconomic status, Body Mass Index (BMI), self-esteem, and depression. Interestingly, a differing relationship between depression and SAWBS emerged as a function of group. Follow-up investigations revealed that SAWBS scores differed significantly between depressed, but not nondepressed women from the three groups. With regard to discriminant validity, SAWBS scores were uncorrelated with BMI and socioeconomic status in UCG and EDG women, and were uncorrelated with the tendency to respond in a socially sanctionned manner in UCG women. Although the tendency to respond in a socially sanctionned manner was related to SAWBS scores in EDG women, SAWBS scores remained higher in EDG than in UCG women after the effect of social desirability was controlled. The proposed developmental precursor variables of SAWBS included endorsement of stereotyped beliefs about thinness, perceived SAWBS in friends, siblings, and parents, and perceived importance placed by parents and romantic partner on the woman's own shape and weight. In both EDG and UCG women, endorsement of societal beliefs about shape and weight, and perceived importance placed
on their own shape and weight by mother and father were significantly related to SAWBS scores.
In sum, the SAWBS Inventory showed early promise as a reliable and valid measure of shape- and weight-based self-esteem, and may be a useful tool in the assessment of eating disorders. Theoretical and clinical implications with regard to the role of SAWBS in the development and treatment of eating disorders are discussed.
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Body Shape and Weight as Determinants of Women's Self-Esteem

Individuals suffering from the eating disorders of anorexia nervosa and bulimia nervosa have been characterized as having "implacable and distorted attitudes toward weight, eating, and fatness" (Hsu, 1990, p.1). In general terms, most researchers and clinicians would agree that this description holds some merit. However, growing dissatisfaction with the lack of specificity of such formulations has stimulated researchers to develop clearer, more specific descriptions, delineating the particular attitudes, beliefs, and/or cognitions that are unique to the eating disorders. The focus of this thesis will be the identification and measurement of what is believed to be a central cognitive feature of the eating disorders: shape- and weight-based self-esteem.

This thesis begins by describing current conceptualizations of anorexia and bulimia nervosa, including the newly-developed criteria in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, American Psychiatric Association (APA), 1994). Theoretical approaches to understanding the eating disorders are then reviewed, including sociocultural, biological, family, and developmental perspectives. A description of cognitive conceptualizations follows; it includes a review of research on the self-schema, and evidence for eating disorder-related schemata. Research on shape- and weight-based self-esteem is then reviewed, and a new measure of this construct described. Finally, the research questions addressed in the thesis are presented, and two studies designed to test these questions are outlined.

Current Conceptualization of the Eating Disorders

Although there has been general agreement with regard to the physical and behavioural defining features of the eating disorders (e.g., in anorexia, highly restrictive eating and loss of menses; in bulimia, the occurrence of binge eating episodes and compensatory behaviours), the central cognitive and psychological characteristics of these disorders have been the topic of considerable debate (e.g., Fairburn & Garner, 1988, Hsu & Sobkiewicz, 1989; Shaw & Garfinkel, 1990). For instance, body image distortion, formerly a diagnostic criterion for anorexia nervosa (DSM-III-R, APA, 1987), has been eliminated from the newly revised 4th edition of the DSM (APA, 1994). Research studies have demonstrated that the tendency to overestimate body
dimensions may not always occur in individuals who have eating disorders (Hsu, 1982), and is not unique to the eating disordered (Buree, Papageorgis, & Solyom, 1984; Hsu & Sobkiewicz, 1989).

Past difficulties in isolating the core cognitive features of eating disorders may stem in part from the development and use of measures that have assessed multiple dimensions of an eating disorder within a single instrument. For instance, a widely used measure, the Eating Attitudes Test (EAT; Garner & Garfinkel, 1979), contains items that assess eating practices, food- and weight-related thoughts, and affective responses to eating, to name just a few. Not surprisingly, although measures such as this have had descriptive utility, research has shown that not all of these dimensions are unique to the eating disorders.

The DSM-IV provides revised conceptualizations of anorexia nervosa and bulimia nervosa which describe each of the disorders as comprised of two components; a physical/behavioural component and a cognitive, psychological component (see Appendix A). The physical/behavioural features of bulimia nervosa include recurrent episodes of binge eating (defined by both the amount of food consumed and the perceived lack of control over eating during the episode), and recurrent inappropriate compensatory behaviours in order to prevent weight gain (e.g., self-induced vomiting, misuse of laxatives, diuretics, enemas, or other medications, fasting, or excessive exercise). The cognitive component consists of the undue influence of shape and weight on self-evaluation. In anorexia nervosa, the physical/behavioural criteria include a refusal to maintain body weight within a normal weight range, and amenorrhea, or loss of menses. The cognitive components include an intense fear of gaining weight or becoming fat (even though underweight), and one or more of the following: the undue influence of body shape and weight on self-evaluation, a disturbance in the way in which one's body weight or shape is experienced, and/or the denial of the seriousness of current low body weight. The criteria for Eating Disorder Not Otherwise Specified, a category for disorders of eating that do not meet criteria for anorexia nervosa and bulimia nervosa, are also provided in Appendix A.

Common (and newly added) to the two DSM-IV sets of diagnostic criteria is the cognitive feature "self-evaluation is unduly influenced by shape and weight." This criterion has been
accorded central status in the diagnosis of bulimia nervosa, and is one of three possible components of one of the criteria for anorexia nervosa. This construct, that will be referred to in this thesis as "shape- and weight-based self-esteem" (SAWBS), has received growing attention in the research literature (e.g., Cooper & Fairburn, 1993; Fairburn & Garner, 1988; Fairburn, Peveler, Jones, Hope, & Doll, 1993; Vitousek & Hollon, 1990). However, despite empirical and theoretical interest, the extent to which one's self-esteem is based on shape and weight has lacked specific definition and measurement. One goal of this thesis is the development and validation of such a measure.

Before proceeding to a review of the literature on cognitive approaches to the eating disorders, and to a description of how SAWBS fits into such formulations, current etiological models of the eating disorders will be examined. Striegel-Moore, Silberstein, and Rodin (1986) have identified three central characteristics of eating disorders that such formulations should explain. First, research consistently indicates that the majority of individuals who have eating disorders are female (Hsu, 1990; Whitaker et al., 1989). Second, only a small minority of women actually develop eating disorders, despite the high prevalence of weight concerns in the general population (e.g., Rodin, Silberstein, & Striegel-Moore, 1985) and repeated dieting efforts among females (e.g., Nylander, 1971; Polivy & Herman, 1985). Finally, although changes in the definition of eating disorders have made comparison of epidemiological studies across time difficult, a number of researchers suggest that eating disorders are on the rise, particularly among women under age 20 (Hsu, 1990; Lucas, Beard, O'Fallon, & Kurland, 1988; Striegel-Moore et al., 1986). In the following section, sociocultural, biological, psychological, family, and developmental models will briefly be described and their ability to address these issues examined. It should be noted, however, that regardless of theoretical orientation, most clinicians and researchers working with eating disorders agree that anorexia nervosa and bulimia nervosa are multidetermined disorders of eating (e.g., Garfinkel & Garner, 1982), and result from an interplay of many factors.
Theoretical Approaches to Understanding the Eating Disorders

Sociocultural Factors. Numerous studies suggest that western social norms placing value on attractiveness and thinness are applied more strongly to women than they are to men, and that these cultural factors are linked to women's desire for thinness (see Rodin, Silberstein, & Striegel-Moore, 1985 for a review). For instance, level of acculturation to "American culture" is correlated to Eating Attitude Test (EAT) scores in 16- to 18-year old Hispanic females living in Britain (Pumariega, 1986). Striegel-Moore et al. (1986) suggest that women who are at greatest risk for bulimia are those who have accepted and internalized most deeply sociocultural mores about thinness and attractiveness. They posit that the more women endorse beliefs equating thinness with beauty and success, and fatness with "what is bad," the more they will work toward thinness and be distressed about fatness.

Not unsurprisingly, body size preferences have been shown to be related to cultural surroundings. For instance, Kenyan immigrants to Britain rate larger female figures more favourably than Caucasian British women (Furnham & Alibhai, 1983). Furthermore, social norms in western societies have also been changing over time. Garner, Garfinkel, Schwartz, and Thompson (1980) reviewed weight and height data from Playboy centerfolds and Miss America contestants between 1959 and 1978. They found a significant trend towards a thinner standard over the 20 year period. There was a 10% decrease in average weight for height among Playboy centerfolds and Miss America contestants, while during the same period, average women's size actually increased. This increasing disparity between the beauty "ideal" and reality for most women was linked to the six fold increase in diet articles in popular women's magazines during the same 20 year period (Garner et al., 1980). A more recent study has shown that between 1979 and 1988, beauty ideals have become even thinner, and that women's magazine articles now encourage women to pursue thinness not only through dieting, but also through exercise (Wiseman, Gray, Mosimann, & Ahrens, 1988). Indeed, the new expectation that women's bodies must also be toned and firm to meet current beauty ideals has increased pressure on women to alter their bodies through diet and exercise (Wolf, 1990). Furthermore, the association between overweight
and a number of negative attributes, including moral failure, lack of success, and poor health have increased the stigma associated with any deviation from the slim ideal. Not surprisingly, women's dissatisfaction with their bodies has been widely reported (e.g., Bunnell, Cooper, Hertz, & Shenker, 1992; Collins, 1991; Fallon & Rosen, 1985). For instance, female undergraduate students judge themselves to be fatter than their perception of their ideal shape, and the shape they believe members of the opposite sex find most attractive (Fallon & Rosen, 1985). In contrast, for men, perceived current, ideal, and attractive figures are about the same. Similar patterns of results have been reported in samples of children as young as 6 to 8 years of age (Cavior & Dokecki, 1973; Collins, 1991).

In sum, sociocultural factors address (at least in part), the three central characteristics of eating disorders identified by Striegel-Moore et al. (1986). Eating disorders may occur more frequently in women because western norms of thinness and attractiveness are applied more strongly to women than they are to men. Women who develop eating disorders may be those who are most exposed to those norms, such as those living in western societies. Finally, eating disorders may be on the rise because of increasingly unrealizable standards of beauty. Nevertheless, although sociocultural factors undoubtedly play an important role in the development of eating disorders, they do not account for why only a minority of women exposed to western sociocultural values actually develop eating disorders. Theoretical formulations that are more successful at answering the question "which women in particular" will be described in subsequent sections.

**Biological Factors.** This section examines the hypothesized role of genetic (Boskind, White, & White, 1983; Crisp, Hall, & Holland, 1985; Stunkard, Foch, & Hrubec, 1985) and biological (e.g., Fava, Copeland, Schweiger, & Herzog, 1989; Hsu, 1990; Liebowitz & Shor-Posner; Wurtman & Wurtman, 1984) risk factors in the development of eating disorders.

First, researchers have argued that genetic factors that predispose an individual to be heavier than the thin ideal may also place that person at risk to develop an eating disorder (Boskind, White, & White, 1983). Twin studies suggest that substantial individual differences in
body build are genetically determined (e.g., Stunkard, Foch, & Hrubec, 1985, cited in Striegel-Moore et al., 1986), and clinical and empirical evidence suggests that heavier women are more likely to develop bulimia (Fairburn & Cooper, 1983; Johnson et al., 1982). In addition, although the mode of transmission is not known, the concordance rate for anorexia nervosa is greater in monozygotic twins than it is in dizygotic twins, suggesting that a predisposition to anorexia nervosa may also be genetically transmitted (e.g., Crisp, Hall, & Holland, 1985).

Because the hypothalamus plays an important role in regulating eating and weight, the role of neurotransmitter systems involving the hypothalamus has been investigated in eating disorder symptomatology. For instance, there is some evidence for possible roles of serotonin, dopamine, and endogenous opioid peptides. Because low levels of brain serotonin can result in carbohydrate craving (Wurtman & Wurtman, 1984), and consumption of large quantities of carbohydrate can increase mood, it has been proposed that eating disorders that involve binge eating may involve a vicious cycle of cyclical mood states as a function of alternate food restriction and binges. However, because many individuals do not binge preferentially on carbohydrates, and because drugs that specifically raise serotonin levels are no more effective than other types of drugs in the treatment of eating disorders, the role of serotonin in eating disorder symptomatology is unconfirmed. Conversely, increased levels of dopamine have been shown to be associated with decreased eating (Hsu, 1990). However, a link between dopamine and the eating disorders has not been clearly established (Fava, Copeland, Schweiger, & Herzog, 1989). Finally, endogenous opioid peptides (EOP's), which are released in response to starvation, may be one of the ways in which the body is motivated to eat. EOP's play a role in contributing to the pleasure of eating, particularly in the preference for sweet-tasting foods. It has been speculated that individuals who have eating disorders become "addicted" to the release of these opiates in their bodies during dietary restriction and thus, maintain their cycles of dietary restriction and starvation and binging, since these cycles continually stimulate production of the opiates (Liebowitz & Shor-Posner, 1986). However, not all individuals who have eating disorders experience cycles of restriction
and binging, and the appropriateness of applying an addiction model to the eating disorders has been challenged (Wilson, 1991).

In sum, because the eating disorders involve disruption to basic biological functions of the body, a number of genetic and biological theories have been posited to explain eating disorder symptoms. However, of the neurobiological theories, links between neurotransmitter systems and eating disorder symptoms have not been clearly established, and cause and effect questions remain unclear. Consequently, these theories do not help explain the greater prevalence of eating disorders in women, or the increasing prevalence of the eating disorders. However, genetic theories may help explain why only some women develop eating disorders.

Psychological Factors. This section examines the hypothesized roles of personality factors (e.g., Herzog, 1982; Vitousek & Manke, 1994; Yager & Strober, 1985) and the sequelae of dieting (Polivy & Herman, 1985; Rodin, 1981; Wardle, 1980) in the development of eating disorders.

A number of etiological models of the eating disorders implicate personality variables in the emergence of weight concerns and the development of specific eating disorder symptomatology. With regard to specific personality features, differences have been detected between women who have diagnoses of anorexia and bulimia nervosa. The most consistent findings have emerged with regard to anorexia, in which the characteristics of constraint and compulsivity have repeatedly been described (e.g., Hsu, 1990; Wonderlich, Swift, Slotnick, & Goodman, 1990). Studies examining the distinguishing personality features of individuals with normal-weight bulimia nervosa, however, have yielded contradictory and inconsistent results. The most consistent finding to emerge is the identification of a subgroup of women characterized by elevations on scales of disinhibition and affective instability, (Cooper et al., 1988). These features have not been shown to apply to all women with normal weight bulimia nervosa, however.

Vitousek and Manke (1994) note that a number of special problems has complicated the interpretation of personality data in eating disorder populations, however. These include the young age of onset of the eating disorders (and consequent influence of developmental factors),
the influence of state variables such as depression and starvation sequelae, denial and distortion of self-report, the instability of diagnostic categories, and changes in personality pathology following symptom control.

Other researchers have argued that dieting, which is significantly more common in women than it is in men (Nielson, 1979; Rosen & Gross, 1987), may be linked to eating disorders through both psychological and physiological effects. Physiological changes that occur in response to dieting include increased efficiency in food utilization and proportion of fat in body composition (e.g., Polivy & Herman, 1985; Rodin, 1981; Wardle, 1980). Studies investigating the physiological changes that occur as a result of dieting suggest that these changes in metabolism may cause even normal eating following a diet to promote weight gain (Even, Nicolaidis, & Meile, 1981). Dieting may therefore ultimately produce effects opposite to those intended, and encourage increasingly restrictive and unhealthy eating patterns. With regard to the psychological effects of dieting, it is commonly reported that dieters feel deprived of favourite foods, and when "off" the diet, are likely to overeat, particularly on foods that were restricted or eliminated while dieting (e.g., Herman & Mack, 1975; Polivy & Herman, 1985). Polivy and Herman (1985) argue that diet restrictiveness and all-or-nothing thinking fostered by diets sets the stage for binge-eating to occur in response to minor diet violations. In support of this view, the clinical literature suggests that, in many cases, bulimia is preceded by a period of restrictive dieting (e.g., Johnson, Stuckey, Lewis, & Schwartz, 1982). As a result, many researchers believe that dieting is not only an ineffective way to attain long-term weight loss but that it may in fact contribute to significant binge eating (e.g., Polivy & Herman, 1985; Rodin, 1981).

In sum, psychological factors, including personality features and the interplay of the psychological and physiological sequelae of dieting may predispose some women to develop eating disorders. In the case of dieting, while this behaviour is more commonly seen in women than in men, only a small proportion of dieting women go on to develop an eating disorder. Personality features may better help to explain which women in particular might develop an eating disorder, although again, such personality characteristics have been observed in a number of other
disorders. With regard to explaining the increasing prevalence of the eating disorders, the ever-expanding diet industry in North America suggests that dieting may indeed be associated with the rise in eating disorders.

**Family Factors.** A number of investigators have examined the role of family factors in the etiology of eating disorders. Research efforts have focused on demographic factors (e.g., Morgan & Russell, 1975), psychological characteristics of parents and other family members (e.g., Garfinkel et al., 1983; Pike & Rodin, 1991), and family interactional patterns (e.g., Blouin, Zuro & Blouin, 1990; Dolan, Lieberman, Evans, & Lacey, 1990; Hsu, 1990).

With regard to demographic factors, a number of authors have suggested that individuals who have anorexia nervosa (e.g., Bruch, 1973) and bulimia nervosa (e.g., Boskind-White & White, 1987) are more likely to come from middle and upper-middle class backgrounds. However, empirical studies examining these questions have yielded mixed results, with some studies finding no differences between eating-disordered and non-eating-disordered groups (e.g., Dolan et al., 1990). In addition, no consistent group differences have been reported between eating-disordered and non-eating disordered families in birth order of the eating disordered individual, family size, or religious affiliation (Dolan et al., 1990; Lacey, Gowers & Bhat, 1991). However, one study found parents of bulimic women to have been older at the time of their child's birth than the parents of children who did not have an eating disorder (Dolan et al., 1990).

Researchers have also noted increased incidence of substance abuse (e.g., Kog & Vandereycken, 1985) and eating-disordered symptoms in the parents of individuals who have eating disorders (Kaffman & Sadeh, 1989; Pike & Rodin, 1991). Although not directly related to actual cases of eating disorders, Hill, Weaver, and Blundell (1990) found a positive relationship between dietary restraint, or cognitive resistance to eating, in mothers and their 8 to 10 year old daughters. Such cognitive restraint or chronic self-control over eating is seen as a stressor that leads to the development of unhealthy eating patterns (Herman & Polivy, 1980) and has repeatedly been associated with binge eating (e.g., Herman & Mack, 1975; Ruderman, 1985). Finally, there is evidence that children are accurate predictors of their parents' evaluation of their
(the children's) body size (Pierce & Wardle, 1993). However, the possible impact of parents' evaluation, and the importance parents or other important individuals (e.g., romantic partners) place on the young girl's or woman's body has not been investigated.

With regard to family dynamics, a number of researchers have examined family interaction patterns in eating-disordered families. Women who have anorexia and bulimia nervosa have reported lower adaptability and cohesion, less independence, more conflict, and greater achievement orientation in their families than non-eating disordered women (e.g., Blouin et al., 1990; Dolan et al., 1990; Hsu, 1990; Waller et al., 1990). However, recent evidence suggests that the family environments described by women who have eating disorders may not be associated with their eating disorder per se, but rather with level of depression (Blouin et al., 1990). These researchers reported that group differences between a group of bulimic and non-bulimic women were only specific to the subgroup of bulimic women who were also depressed. These results suggest that it is essential to consider the role of concomitant characteristics of the eating disorders (e.g., depression), and to exercise caution in drawing conclusions regarding the relationship between family variables and eating disorder symptomatology.

In sum, although a number of family factors such as substance abuse in family members and environment variables have been shown to be associated with the eating disorders, the direction of causality cannot be determined from the correlational design of much of the research. In addition, the specificity of these variables to the eating disorders requires further investigation. With regard to the eating disorder characteristics outlined by Striegel-Moore et al., on the whole, much of this research does not help explain why eating disorders occur more frequently in women than in men, as presumably this research was performed on families in which there were sons as well as daughters. The research presented here also does not lend itself to explaining why eating disorders are on the rise. Nevertheless, some family variables may account for additional variance in eating disorder symptomatology amongst women who are exposed to similar sociocultural influences. Therefore, family variables may provide an interesting avenue for future research in determining which women in particular develop eating disorders.
Developmental Factors. Researchers and clinicians have identified a number of aspects of female development that may place women at risk for developing an eating disorder. In childhood, developmental studies have documented that girls are more concerned than boys about looking attractive (Coleman, 1961). Parents, teachers, and peers describe girls as more focused on their looks, and children's fantasies and choice of toys also reflect this interest (Ambert, 1976; Nelson & Rosenbaum, 1972; Oakley, 1972; Wagman, 1967). Studies have found that even as children, girls are more likely than boys to be dissatisfied with their bodies. Although normal-weight females have a more positive attitude toward their bodies than obese girls, they still express more concerns about their appearance than both normal-weight and obese boys (Tobin-Richards, Boxer, & Petersen, 1983).

Research suggests that young girls' dissatisfaction with their bodies, and concerns about shape and weight continue into adolescence (e.g., Wadden, Brown, Foster, & Linowitz, 1991). Adolescence has been described as a particularly difficult period for females, since it is a time associated with physical, interpersonal, and intrapersonal growth (Striegel-Moore et al., 1986). Whereas physical maturation has been described as bringing boys closer to the "masculine ideal," for girls, who gain their weight at puberty primarily in the form of fat tissue (Clarke-Stewart, Friedman, & Koch, 1985), adolescence is a period of movement away from the thin cultural female beauty ideal.

In a recent survey examining the extent to which tenth grade teenagers worried about different aspects of their lives (e.g., weight, family, parents, complexion, popularity), females worried significantly more than males about weight, figure, and looks, and males worried significantly more than females about money and sports (Wadden, Brown, Foster, & Linowitz, 1991). Perhaps most striking from this study was the finding that females worried significantly more about their looks, weight, and figure than they did about grades, family, health, and the future. In contrast, boys worried most about money, suggesting that financial success held the same prominent position for adolescent males that weight and figure did for females. It is interesting that on the whole, girls were more anxious and reported more extreme worrying than
the boys. Possibly, this was because the content of girls' worries involved areas over which they can exercise relatively little control, in contrast to the more task-oriented worries (e.g., making money) of the boys.

Although in the eating disorders literature relatively little attention has been directed toward the influence of siblings and friends on attitudes about shape and weight, there is some evidence that peer groups have an impact on individuals' eating attitudes and behaviours. For instance, Crandall (1988) reported that in a college sample, a sorority member's binge eating could be predicted from the binge eating level of her friends, and the relationship grew stronger with friendship cohesiveness.

In sum, childhood and adolescence are critical periods of development during which a number of attitudes and self-perceptions associated with eating disorders appear to originate. Although a developmental perspective does not help answer why some women in particular develop eating disorders, it does clarify the origins and development of processes that may lead to eating disorder symptomatology.

The Distinctiveness of the Eating Disorders

One of the challenges in designing this thesis was to determine the circumstances in which anorexia nervosa and bulimia nervosa are best considered separate entities, and the circumstances in which the overlapping features make them more appropriately considered together. The fact that anorexia nervosa and bulimia nervosa have been viewed as both distinct and sharing important features was demonstrated in the preceding review of etiological models, in which some models applied to only one of the eating disorder diagnoses and others applied to both. For instance, unique etiological features were identified for anorexia nervosa in some of the family and psychological models, but models focusing on developmental or sociocultural factors generally considered the two disorders together. The issue of diagnostic distinctiveness is complicated by the clinically-observed continuity of symptomatology between the two disorders. That is, DSM-IV describes the disorders as having considerable overlap. For instance, a subtype of anorexia nervosa includes bulimic symptomatology, including laxative use or vomiting as compensatory
strategies. In addition, initially pure restrictive anorexic presentations, in the course of the illness, may develop bulimic features. The issue is therefore unclear. With regard to cognitive components of the eating disorders, there is also overlap in the diagnostic categories. Furthermore, in a recent study examining a variety of body-related attitudes, no differences were detected between women with anorexia nervosa and bulimia nervosa (Ben-Tovim & Walker, 1992). In this thesis, because the focus is on a predominantly cognitive, body-related feature of the eating disorders (considered common to both), anorexia nervosa and bulimia nervosa will be considered together.

**Cognitive Conceptualizations of the Eating Disorders**

Cognitive models of eating disorders are not incompatible with other theoretical orientations that place the cause of the eating disorder in developmental, biological, psychological, family, or environmental origins. Cognitive orientations simply place greater emphasis on proximal causal and maintaining variables. Therefore, factors emphasized within different theoretical perspectives may converge to give rise to core cognitive beliefs, such as the meaning attached to shape and weight. In fact, the central importance accorded to the significance of shape and weight by individuals with eating disorders has been noted by researchers and clinicians from a number of orientations (e.g., Bruch, 1978; Crisp, 1983; Fairburn, 1984). Cognitive psychologists have argued that it is unnecessary to rely upon distal and occasionally obscure symbolic interpretations of eating behaviour, when belief systems account for significant variance in current behaviour (Garner & Bemis, 1982; 1985). Although a possible weakness of cognitive models is the lack of attention directed towards etiology, examination of cognitive belief systems associated with the eating disorders nevertheless provides a fruitful area of investigation into the individual's feelings about herself and the world.

The premise behind cognitive models is that eating disordered behaviour is caused and maintained by eating disorder-specific beliefs and thought processes. The eating-disordered individual's belief system is thought to be comprised of attitudes about shape and weight, assumptions about self-worth, values related to performance, developmental expectations, and
attitudes about the family (Garner & Bemis, 1985). Analogous to cognitive models of depression (e.g., Beck, 1976; Beck, Rush, Shaw, & Emery, 1979) is the assumption that maladaptive beliefs in the aforementioned areas are associated with distorted or maladaptive thinking processes (e.g., catastrophizing, all-or-none thinking, centering, and "should" belief systems).

Research evidence supporting the existence of these cognitive characteristics in eating disordered individuals is accumulating. For instance, on self-report questionnaires, individuals who have eating disorders report greater preoccupation with food and eating (Fairburn, 1980), and show greater likelihood of using dichotomous thinking styles (e.g., Lingswiler, Crowther, & Stephens, 1989), irrational beliefs (Phelan, 1987), and cognitive distortions (Thompson, Berg, & Shatford, 1987) than do individuals who do not have an eating disorder. Lending external validity to these results is the finding that the daily thoughts of women who have bulimia nervosa contain a greater proportion of references to eating, weight, and shape than do those of non-eating disordered women (Zotter & Crowther, 1991). Recently, researchers have attempted to understand these cognitive phenomena by placing them in the context of broader structural models of the self. In the following section, proposed relationships among eating disorders, self-esteem, and eating-disorder specific schemata will be reviewed.

The Self-Concept

The self-concept is comprised of knowledge and evaluative components. The structural, self-knowledge component, refers to "who I am." The evaluative, self-judging component refers to "how I feel about who I am," and is usually referred to as self-esteem (Campbell & Lavallee, 1993). Self-esteem reflects general feelings of self-regard and refers to an individual's global, overall evaluation of the self.

Self Esteem. Although researchers have typically examined general feelings of self-worth (e.g., Rosenberg, 1979), the specific dimensions along which self-esteem is based have more recently been the focus of research efforts (e.g., Fleming & Courtney, 1984; Harter, 1990; Marsh, 1986, 1993; Marsh & O'Neil, 1984; O'Brien, 1980). A number of dimensions, including physical appearance, competence in academic and work endeavors, spiritual growth, aspects related to
relationships and friendships (including same-sex and opposite-sex relationships), honesty, emotional stability, and physical abilities have been identified (Fleming & Courtney, 1984; Marsh, 1986; O'Brien, 1980). The deconstruction of global self-esteem into components has led investigators to assess the relative importance of these individual dimensions. That is, individuals have rated both how they feel about each of the dimensions and the extent to which they think the dimension is important for them. Researchers have therefore been able to investigate whether a person's overall self-evaluation reflects a weighted average of corresponding specific domains of the self. The utility of these importance ratings is currently the topic of debate (Harter, 1993; Marsh, 1986, 1993). A recent study suggests that in predicting global self-esteem, it is unnecessary to individually weight specific domains according to importance for each individual (Marsh, 1993). Marsh found that this weighting procedure was not superior to weighting domains according to the importance of the domain across all individuals. Further research will need to clarify whether individual weightings add to our understanding of global self-esteem.

Despite uncertainty regarding the utility of importance ratings, however, the extent to which self-esteem is based upon a specific dimension, shape and weight, is currently hypothesized as a key feature of the eating disorders. Shape and weight concerns are not seen merely as important to the eating disordered individual, but rather as having a central role in the structure of the eating-disordered individual's self-concept. In this study, an attempt was made to go beyond examining the importance of self-esteem dimensions, and to assess instead the relative contribution of a number of individual dimensions (including shape and weight) to an individual's total feeling of self-worth. That is, a measure reflecting the structure of self-esteem was developed.

Dimensions that are important to an individual's feelings of self-worth are likely to be areas of greater salience for that individual. For instance, a self-esteem structure that includes a significant shape and weight component is likely to be associated with a particular style of cognitive processing of shape- and weight-related information. There is evidence, for instance, that patterns of word recognition (a cognitive process involving memory) of self-descriptive
adjectives are different from those of adjectives that are not considered self-descriptive (Rogers, Rogers, & Kuiper, 1979). It is perhaps the greater salience of the self-descriptive adjectives (which is analogous to the hypothesized salience of shape and weight words for the eating disordered individual), that impacts on the cognitive processing of those adjectives. In the following section, cognitive schemata will be defined, and research identifying dimensions along which eating-disordered individuals may be schematic will be examined.

Evidence for Eating Disorder Related Schemata. According to Markus (1977), self schemata are "cognitive generalizations about the self, derived from past experience, that organize and guide the processing of self-related information contained in the individual's social experiences" (p. 64). Schemata function as selective mechanisms that determine the way in which information is processed. An individual with a self-schema in a particular domain such as independence, extraversion, or creativity is said to demonstrate behaviour which can be consistently predicted in that domain. It has been shown that self-schemata accelerate the processing of information about the self, contain easily retrievable behavioural evidence, provide a basis for confident self-prediction of behaviour on schema-related dimensions, and make individuals resistant to counterschematic information (Derry & Kuiper, 1981; Markus, 1977; Rogers, Kuiper, & Kirker, 1977).

Butow, Beaumont, and Touyz (1993) applied the theory and methodology of personal construct theory (Kelly, 1955) to investigate the role of cognitions and cognitive styles in the eating disorders. These researchers established dimensions along which individuals were schematic by having them identify the most important difference between pairs of elements. Some of the elements referred to important people (e.g., "mother," and "me as I would like to be"), and some were specific weight descriptors (e.g., "me much fatter," and "a thin person I know"). The extent to which each of the elements held personal meaning for the subjects was subsequently examined. The responses of a group of anorexic and bulimic patients were compared with those of normal restrained and nonrestrained eaters. Overall, the two patient groups showed extreme negativity in their view of themselves, appeared to exhibit lack of awareness of the role played by
inner sensations in regulating weight and eating behaviour, and emphasized black and white rules in their thinking. Both patient groups were more likely than the two control groups to use "concern about weight" and "control" in identifying important differences between pairs of elements. This study supports cognitive formulations of eating disorders by demonstrating differences between eating disordered and non-eating disordered samples in the processing of shape- and weight-related information, and in the natural dimensions along which important elements are compared.

Researchers have attempted to identify the presence of cognitive schemata using techniques designed to identify underlying themes in individuals' thought processes. Cognitive tasks involving word recognition and cognitive interference have been most commonly used. For instance, in word recognition studies, it is argued that one of the most stringent requirements of a set of words representing a schema is the presence of a false alarm effect (FAE) (e.g., Rogers et al., 1979). An FAE is present if there is an increase in false alarms (saying that an item was in a study list when it was not) as a function of schema. For example, Rogers et al. (1979) provided undergraduates with a list of self-referent adjectives, and asked them to rate the extent to which the adjectives described themselves. Ten weeks later, the students were shown half of the words they had initially rated, and an equal number of distractor words, then asked to recall (from the entire list of words), which words were old (i.e., they had seen it on the first list 10 weeks earlier) or new. The number of false alarms (saying that the word was previously seen when it was not) was found to increase with the degree of self-reference of the adjectives. It is hypothesized that highly schematic novel items are prone to be confused with previous items because they belong to the schema. It is therefore argued that the FAE is a measure of schema (Posner & Keele, 1970).

In the present study, the relationship between shape- and weight-based self-esteem and a shape- and weight-based self-schema was examined using a FAE word recognition paradigm.

The identification of eating disorder-specific schemata in individuals who have eating disorders would strongly support the proposed cognitive models of these disorders. Such schemata would also have considerable potential explanatory power. For instance, a shape- and
weight-related self-schema might account for the importance and affectivity associated with shape and weight in individuals who have eating disorders. Such schemata would also help explain the clinical observation that patients frequently regard their symptoms as serving a valued function. Clinicians have noted that individuals with eating disorders appear to be overwhelmed by the ambiguity and lack of predictability of the real world, and are desperately trying to restore a sense of control and personal efficacy over their lives (Bruch, 1973, 1978; Crisp, 1980, 1983; Slade, 1982). A weight-related self-schema would reduce this ambiguity by providing a simple set of premises from which rules for processing information can be deduced.

Schemata have most commonly been investigated in the eating disorders using the Stroop colour-naming task (Stroop, 1935). The Stroop task has the advantage of assessing cognitive processing effects without depending on veracity (or accessibility) of self-report. In this task, individuals are asked to identify the colour of a series of words printed in different colours of ink. In the control condition, neutral words are presented, such as sit, dare, and wool. The standard interference task involves the use of actual colour words, such as red, green, orange, etc., in which no word appears in its own colour ink. Individuals reliably take longer to colour-name words in the interference task than in the control condition. In studies investigating the presence of eating and body-related schemata, a target condition is included in which individuals must colour-name words such as hips, thighs, and diet. Recently, researchers have examined food, eating, shape, and weight as dimensions along which individuals with eating disorders may be schematic (Cooper, Anastasiades, & Fairburn, 1992; Cooper & Fairburn, 1992; Markus, Hamill, & Sentis, 1987; Vitousek & Hollon, 1990).

Cooper et al. (1992) found that the amount of disruption caused by colour-naming shape and weight target words was significantly greater in a sample of women with bulimia nervosa than in an age-matched female control group, whereas that caused by the colour words was similar in both groups. These results were cited as providing support for the presence of a weight-related schema in bulimic women. In another study, Cooper and Fairburn (1992) found similar interference effects in the processing of eating and body words in patients with eating disorders,
and in a group of dieters exhibiting either current sub-clinical features, or who had a history of features of an eating disorder. These two groups differed from a group of normal dieters and a group of non-dieting controls.

In one effort to clarify the mechanism responsible for Stroop effects, Cooper et al. (1992) examined relationships among Stroop interference, depression, and a measure of eating symptom severity. Degree of interference by eating and body words on the Stroop was significantly correlated with symptom severity in a group of women with bulimia nervosa, but not in the control group. However, this relationship dropped to below significance when the effects of depression were controlled. Thus, it is not clear whether the significant relationship between Stroop interference and symptom scores is specific to the eating disorders or whether it is mediated by depression. A number of inconsistencies in work using the Stroop paradigm have also been noted. Ben-Tovim and colleagues (1989) found that when shape and weight words were presented separately (without food words), colour-naming interference was significantly reduced, reaching statistical significance only in bulimic, and not in anorexic subjects. In addition, the Stroop task has been shown to be susceptible to priming influences, which can significantly affect the sensitivity of this task (e.g., Warren, 1974).

In sum, Stroop paradigm research suggests that women who have eating disorders may selectively process information related to eating, weight, and shape, and supports the idea that elaborated cognitive schemata representing these categories of information are characteristic of the eating disorders. However, findings from this research have not always been easy to interpret, and the specific mechanism driving Stroop effects in eating disordered individuals requires clarification. In the present research, the relationship between shape- and weight-based self-esteem and a shape- and weight-based schema will also be examined using a Stroop paradigm.

The preceding review of cognitive conceptualizations of the eating disorders described the self-concept as comprised of evaluative and structural components. In the present study, a new measure that combines these two components and examines a particular structural aspect of self-esteem, was developed. This measure was designed to assess the relative contribution of a
number of personal attributes to overall feelings of self-worth. It was hypothesized that the
dimensions along which greater portions of an individual's self-esteem are based would be
associated with characteristic cognitive processes, such as those described in the schema
literature. That is, it was proposed that individuals who base a large part of their feelings of self-
worth on a particular dimension are likely to be schematic along that dimension. In partial
support of this idea, individuals who have eating disorders (and who are therefore hypothesized as
basing a large portion of their self-worth on shape and weight) have shown predicted cognitive
processing patterns, such as in Stroop interference tasks. However, this research requires
clarification and replication. In addition, the presence of a shape- and weight-specific (as opposed
to a more general eating disorder) schema has not been specifically demonstrated, and will be
examined in the present research.

Research on Shape- and weight-based self-esteem (SAWBS)

Although few research studies have directly addressed SAWBS, some of the properties of
shape and weight concerns have recently been examined. Fairburn et al. (1993) investigated the
role of shape and weight concerns (as measured by a structured interview, the Eating Disorders
Examination [EDE; Cooper & Fairburn, 1987], described in the following section), in predicting
treatment outcome and post-treatment relapse in a group of women with bulimia nervosa.
Pretreatment predictor variables included the duration, history, and severity of eating symptoms,
severity of dietary restraint, level of general psychiatric disturbance, global self-esteem,
personality disturbance, and the shape and weight concern subscales of the EDE. Three indices of
treatment outcome were used: overall severity of the eating disorder, whether the subject's level
of eating disorder severity fell within one standard deviation of the mean of young women from
the same area, and both objective and subjective reports of complete cessation of uncontrolled
overeating, vomiting, and laxative use. Patients participated in an 18-week treatment program,
then entered into a 1-year period of follow-up, after which time they were reassessed.

The premise of cognitive formulations is that cognitions precede and drive behaviour.
This premise was examined in two ways. First, the relationship between pre-treatment variables
and outcome at the end of the 18-week period was investigated. Two variables had significant predictive relationships with outcome: global self-esteem and the combined score of the shape and weight concern subscales of the EDE. Interestingly, the relationship between pretreatment shape and weight concern scores and the three outcome measures was non-linear, such that patients scoring in the intermediate range at pretest did least well, and those with the most severe levels did best. In contrast, self-esteem was linearly and positively related to the first two outcome indices (measuring overall severity of the eating disorder), but was unrelated to post reports of bingeing and compensatory behaviours. The relationship between pretest shape and weight concern scores and outcome is puzzling, for it would be expected that lower levels of these concerns at pretest would be associated with more favourable outcomes. One interpretation is that individuals with already present high shape and weight concern had more to gain from participation in a brief treatment program than did individuals with intermediate or low scores. Perhaps this group of eating disordered individuals had symptoms that were more closely tied to the highly important role shape and weight played in their feelings about themselves, and consequently this group benefited more from changes that may have occurred along this dimension in the course of treatment. These findings clearly require further investigation.

Second, to further test the premise of cognitive formulations that cognitions precede and drive behaviour, in the same study, post-treatment levels of attitudinal disturbance were used to predict relapse. To do this, post-treatment levels of attitudinal disturbance were used to predict relapse 1 year later in the women who responded to treatment (defined as those who had completely ceased uncontrolled overeating, vomiting, and laxative use). In that analysis, a linear relationship was detected between the variables, such that higher concern scores were associated with greater relapse.

In a recent paper attempting to clarify the oft-confused concepts of shape and weight concerns (referred to by the authors as overvalued ideas about shape and weight) and body shape dissatisfaction, Cooper and Fairburn (1993) note that whereas body shape dissatisfaction is commonly found in women who have bulimia, it is not necessarily present. In contrast,
overvalued ideas about shape and weight are a necessary diagnostic feature of bulimia nervosa according to DSM-IV (APA, 1994). Cooper and Fairburn propose that overvalued ideas are closely tied to self-esteem, whereas body dissatisfaction is closely tied to depression. They further posit that body dissatisfaction may be construed as a specific manifestation of the depressive symptom of self-depreciation (although they do not provide evidence supporting the directionality of this relationship). However, Cooper and Fairburn (1993) have shown that in the course of treatment, change in body shape dissatisfaction is associated with changes in mood, and change in overvalued ideas is associated (although to a lesser extent) with change in self-esteem.

In sum, early research on shape- and weight-based self-esteem (e.g., as measured by the shape and weight concern scales of the EDE) has shown promising results. In the treatment of women with bulimia nervosa, shape and weight concerns were related to both treatment outcome and relapse, and Cooper and Fairburn's construct of overvalued ideas about shape and weight was shown to be linked to global self-esteem.

Review of Existing Measures

The idea that eating disordered individuals tie views of the self to beliefs about shape and weight is not new. As noted earlier, DSM-IV criteria for both anorexia nervosa and bulimia nervosa include this construct. Yet despite almost universal agreement of the existence (and potential import) of the link between self-esteem and shape and weight, researchers have not yet developed a clear, valid, and easily administrable measure of shape- and weight-based self-esteem. However, a number of assessment tools examining related concepts, such as importance ascribed to shape and weight, have been developed. Unfortunately, none of these measures is specific to shape- and weight-based self-esteem.

The Salient Beliefs subscale of the Bulimic Thoughts Questionnaire (BTQ; Phelan, 1987) assesses a variety of beliefs about food, eating, dieting, and self-worth, some of which attach value as a person to weight (e.g., "I'm not worth anything if I'm fat"). However, because this item is embedded in a scale assessing a variety of beliefs, it is not a specific measure of shape- and weight-based self-esteem.
The Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairburn, 1987) is a 34-item scale that measures the phenomenal experience of feeling fat and the antecedents and consequents of feeling fat. This measure contains a number of items that assess the impact of body size on feelings about the self and mood. However, as before, because these items are embedded in a larger questionnaire assessing eating behaviours, feelings about specific body parts, and other related beliefs, it is not a specific measure of shape-and weight-based self-esteem. In addition, in both of the preceding measures, importance placed on shape and weight is not assessed in the context of other aspects of the self, so it is not possible to determine the relative importance ascribed to shape and weight in comparison to other aspects of the self.

The Eating Disorders Examination (EDE; Cooper & Fairburn, 1987) is a comprehensive structured interview for the diagnosis of eating disorders. It contains two subscales which assess the importance of body image, the Weight Concern and the Body Concern subscales. These subscales include questions that place body weight and shape concerns in the context of other concerns about the self. However, the interview examination requires at least an hour to administer individually, and using only two subscales out of the context of the rest of the interview may invalidate the subscales.

Finally, the Body Attitudes Questionnaire (BAQ; Ben Tovim & Walker, 1991) is a measure of women's attitudes towards their bodies. It contains six subscales, one which has been labeled "salience of shape and weight." This scale assesses intensity of weight concerns, and is perhaps the closest, among existing self-report instruments, to being a measure of shape- and weight-based self-esteem. However, the scale assesses general concerns about shape and weight, and does not assess the importance of shape and weight to self-worth in the context of other dimensions upon which self-esteem is based.

In sum, although a number of measures of shape and weight concerns exist, a specific, easily-administrable measure of shape- and weight-based self-esteem does not.
A New Measure of Shape- and Weight-Based Self-esteem

The SAWBS Inventory is a measure developed for this study that examines the extent to which feelings of self-worth are based on shape and weight. In this measure, individuals choose from a list of personal attributes those that are relevant to their feelings about themselves. They then rank order the attributes in terms of how much each attribute influences feelings of self-worth. Individuals then divide a circle into pieces such that the size of each piece reflects the importance of each selected attribute to feelings of self-worth. This instrument has the advantage of allowing for the relative size of different attributes to be compared. The psychometric properties of the SAWBS Inventory will be investigated in this study. The Pie (Cowan & Cowan, 1978), a measure that uses a similar format to the SAWBS Inventory (in which a circle is divided up into pieces according to different life roles), has shown good test-retest reliability and acceptable concurrent validity.

Research Questions (see model in Appendix B)

Stability of the SAWBS Inventory. First, given that overvalued ideals about shape and weight are purported to be enduring over time (Cooper & Fairburn, 1993), the stability of shape- and weight-based self-esteem, as assessed by the SAWBS Inventory, was examined in this study. It was hypothesized that SAWBS scores assessed at two time points would be significantly and highly correlated.

Concurrent Validity of the SAWBS Inventory. Several types of concurrent validity were investigated. First, the relationship between shape- and weight-based self-esteem as measured by the SAWBS Inventory and two measures of cognitive schemata was determined. Although a link between shape and weight schemata and shape- and weight-based self-esteem is implied in definitions of cognitive schemata (e.g., Markus, 1977), the relationship has not been empirically tested. The relationship between the SAWBS Inventory and the Stroop interference task was examined in a sample of female undergraduate students. It was hypothesized that individuals who based a larger part of their self-worth on shape and weight would show greater delay times to shape and weight related words in a Stroop colour-naming interference task than individuals who
based a smaller part of their self-worth on shape and weight. Next, the relationship between SAWBS scores and the false recognition of shape and weight words in a word recognition paradigm was examined in a sample of female undergraduate students. It was hypothesized that the false recognition of words belonging to the shape and weight prototype (as described by Rogers et al., 1979) would be related to higher SAWBS scores.

Second, although central importance has been accorded to shape- and weight-based self-esteem in current conceptualizations of the eating disorders, the relationship between shape- and weight-based self-esteem and eating disorder symptomatology has not been determined. In this study, this relationship was examined in a number of ways. First, SAWBS scores were used to predict eating disorder symptoms in an undergraduate sample. It was hypothesized that higher SAWBS scores would be associated with more severe eating disorder symptoms. Second, shape- and weight-based self-esteem was assessed in women who have eating disorders, a psychiatric control group, and an undergraduate control group. It was hypothesized that shape- and weight-based self-esteem would discriminate the eating disordered group from the two control groups. The inclusion of a psychiatric control group was considered particularly important in establishing the specificity of shape- and weight-based self-esteem to the eating disorders. Finally, to determine whether shape- and weight-based self-esteem accounts for a unique aspect of eating disorder symptomatology, independent from global self-esteem and depression (two constructs that are not eating disorder-specific, but that are frequently associated with eating disorder symptomatology [e.g., Hsu, 1990; Kaplan, Busner, & Pollack, 1988]), the relationship between SAWBS scores and eating disorder symptomatology was examined controlling for the effects of these two constructs.

**Developmental Precursors of SAWBS.** The role of cognitive variables in the development of eating disorders has received little attention in the eating disorders literature. Although the causal role of cognitions in the development of other disturbances, such as depression, has been widely debated (e.g., Beck, 1976; Coyne & Gotlib, 1983; Persons & Miranda, 1992; Teasdale, 1983), there has been a paucity of theory in the cognitive literature with regards to etiology of
eating disorders. In this study, exploratory analyses were performed to investigate possible predictors of shape- and weight-based self-esteem in samples of undergraduate women as well as in women who have eating disorders.

According to Markus (1977), schemata are derived from an individual's history. They are "constructed from information processed by the individual in the past, and influence both input and output of information related to the self" (pp. 64). The proposal made in this thesis is that shape and weight-related self-schemata occur in individuals who base a significant portion of their feelings of self-worth on their shape and weight.

Four possible groups of predictors of high SAWBS scores were proposed (see model in Appendix B). Although it was not possible to measure the direction of the relationships between these variables and SAWBS in the present study, the proposed variables were hypothesized as having a causal role in the development of SAWBS. First, given the proposed influence of sociocultural mores about thinness on women's eating disordered behaviours, and the hypothesized role of SAWBS as a central component of eating disorder symptomatology, endorsement of sociocultural beliefs about the meaning of thinness and fatness was posited to be positively related to SAWBS scores. Second, it was hypothesized that perceived SAWBS in family members would predict SAWBS scores. This hypothesis was partially based upon reports of similarity between parents' and children's attitudes and beliefs (e.g., Alessandri & Wozniak, 1987; Collins, 1990) and on the previously described association between dietary restraint in mothers and their daughters (Hill et al., 1990). In that study, it was proposed that mothers' behaviours and attitudes surrounding food and their own bodies might be communicated to and adopted by their daughters. Therefore in this study it was predicted that the perception of SAWBS in family members would be related to SAWBS scores. Third, as noted earlier, given that binge eating may be influenced by peer behaviours, it was hypothesized that perceiving female friends as basing their self-worth to a large extent on shape and weight would be related to one's own SAWBS. Finally, it was hypothesized that perceiving one's own shape and weight as important to parents and romantic partners would be related to higher SAWBS scores.
In sum, in examining possible developmental precursors of SAWBS, the relationship between SAWBS and the following variables were examined; endorsement of stereotyped beliefs about thinness, perceived SAWBS in family members, perceived SAWBS in friends, and perceived importance placed on shape and weight by parents and current romantic partner.
STUDY I: PSYCHOMETRIC PROPERTIES OF THE SAWBS INVENTORY IN UNDERGRADUATE WOMEN

Purposes and Hypotheses

The first purpose of Study I was to determine the stability of scores on the SAWBS Inventory in a sample of undergraduate women. Given that overvalued ideas about shape and weight are purported to be relatively enduring over time (Cooper & Fairburn, 1993), it was hypothesized that SAWBS scores assessed 1 week apart would be significantly and highly correlated. Although one would expect shape- and weight-based self-esteem to be stable over much longer periods of time, 1 week was considered to be a minimal test-retest interval, and chosen as a compromise with the practical limitations of this study.

The second purpose of the study was to investigate three types of concurrent validity of SAWBS scores. First, shape- and weight-based self-esteem was related to women's perceptions of their own shape and weight. It is important to note that shape- and weight-based self-esteem is not a measure of positive or negative feelings about the body, but rather of the extent to which feelings of self-worth are based on the body. However, given that shape- and weight-based self-esteem is a diagnostic criterion for eating disorders, and individuals who have eating disorders generally report high body dissatisfaction (e.g., Hsu & Sobkiewicz, 1989), it was hypothesized that higher SAWBS scores would be associated with the tendency to view oneself as more overweight, and one's shape as less attractive. Second, the relationships between SAWBS scores and two cognitive tests of shape and weight schemata were investigated. Given that views of the self are closely tied to cognitive schemata (e.g., Markus, 1977), it was hypothesized that shape- and weight-based self-esteem would be positively correlated with the extent to which women are schematic for shape and weight, as assessed by two measures of cognitive schemata, the Stroop and word recognition tasks. Finally, the relationship between SAWBS scores and eating disorder symptomatology was investigated. Again, because an undue influence of shape and weight on self-esteem is described as a necessary and unique feature of the eating disorders, it was hypothesized that SAWBS scores would be positively related to disturbed eating patterns.
Furthermore, to examine whether shape- and weight-based self-esteem accounts for a unique aspect of eating disorder symptomatology, independently from global self-esteem and depression (two constructs that are not eating disorder-specific, but that are frequently associated with eating disorder symptomatology [e.g., Hsu, 1990; Kaplan, Busner, & Pollack, 1988]), the relationship between SAWBS scores and eating disorder symptomatology was examined controlling for the effects of global self-esteem and depression.

The third purpose of this study was to investigate the discriminant validity of SAWBS scores. Because shape- and weight-based self-esteem is the extent to which feelings of self worth are based upon shape and weight, and not a measure of actual shape and weight, SAWBS scores were not expected to be correlated with body mass index (BMI). It was also hypothesized that SAWBS scores would not be associated with the tendency to respond in a socially sanctioned manner, nor to family socioeconomic status.

The fourth purpose of this study was to perform a preliminary test of the ability of shape- and weight-based self-esteem to discriminate between suspected and nonsuspected cases of eating disorder. To do this, the undergraduate sample was divided into two groups. One group consisted of women identified as probable and possible eating disorder cases, and a second group consisted of women not suspected of having an eating disorder. It was hypothesized that SAWBS scores would be higher in the group identified as probable and possible cases. This finding would have implications for the utility of the SAWBS Inventory as a screening instrument.

Finally, in an effort to generate hypotheses regarding the developmental precursors of shape- and weight-based self-esteem, this study examined correlations between SAWBS scores and a number of variables, including endorsement of stereotyped beliefs about thinness, perceived SAWBS in family members, perceived SAWBS in friends, and perceived importance placed on shape and weight by parents and current romantic partner. Although the correlational nature of this study cannot address questions of causality, the relationships between these variables and SAWBS scores were examined to develop hypotheses for future research.
Method

Subjects

One hundred and ten female undergraduate students between the ages of 18 and 45 (M = 21.2, SD = 6.6) participated in a study on women's attitudes and self-perceptions in exchange for course credit. Fifty-two (48%) of the women described their ethnic background as European or Anglo Saxon, 33 (31%) as Asian, 5 (5%) as Indo-Canadian, and 1 woman (1%) described herself as African. Seventeen (16%) women either failed to respond to this question or gave uncodable responses (e.g., "Canadian"). Most of the women (91%) were raised in two-parent families. Family socioeconomic status ranged from 1 to 5 on the Hollingshead Four-factor Index (Hollingshead, 1975), with a mean of 2.3 (SD = 1.0), indicating upper middle class status.

Measures

Sample items from the measures used in this study are provided in Appendix C.

Shape- and weight-based self-esteem (SAWBS) Inventory. In the SAWBS Inventory, individuals select from a number of personal attributes those that are important to how they have felt about themselves over the past 4 weeks. The list of personal attributes was generated from previous measures that have identified specific dimensions of self-esteem (Harter, 1993; Marsh, 1986, 1993; O'Brien, 1980). Several possible personal attributes were initially pilot-tested on female graduate students, who provided suggestions regarding the relevance of the attributes for young women. The final list of attributes included; intimate or romantic relationships, body shape and weight, competence at school/work, personality, friendships, face, personal development, competence at activities other than school/work, and other (individuals were asked to list an attribute if it is not covered in the preceding list). After selecting the personal attributes that are important to how they feel about themselves, individuals rank-order the attributes in terms of how much their opinion of themselves is based on each. Then, they divide a circle into wedge-shaped pieces originating from the center, such that the size of each piece reflects how much their self-opinion is based on each of the ranked attributes. The SAWBS score is the angle, in degrees (as measured by protractor), of the shape and weight piece of the circle. Thus constructed, the
SAWBS Inventory has the advantage of measuring the relative contribution of shape and weight to overall self-esteem. In addition to the SAWBS score, the SAWBS Inventory also provides a rank order score of shape and weight. In calculating this score, a conservative approach is taken in which individuals who fail to select shape and weight as an attribute that is important to their feelings of self-worth are assigned a rank order that is one more than the lowest rank assigned (e.g., an individual who doesn't select shape and weight and who selects four other attributes would have a shape and weight rank ordering of 5).

**Eating Disorders Inventory (EDI; Garner & Olmstead, 1984; Garner et al., 1983).** This is a 64-item self-report scale designed to measure attitudes, personality features, and eating disorder symptoms thought to be relevant to anorexia nervosa and bulimia nervosa. Subjects are asked to rate each item on a 6-point scale ranging from "never" to "always." The EDI was constructed to have eight independent subscales (Garner et al., 1983). Some of these assess personality factors thought to be associated with the eating disorders (i.e., Perfectionism, Interpersonal Distrust), and others assess behaviours that are more directly tied to eating disorder symptomatology (i.e., Drive for Thinness, Bulimia). A factor analysis in a non-clinical sample revealed that three of the scales (Drive for Thinness, Bulimia, and Body Dissatisfaction) loaded on the same factor and appeared to tap a general concern with shape, weight, and eating, and this factor was recommended as a screening measure of eating disorder symptoms (Welch, Hall, & Walkey, 1988). Accordingly, in this study, the sum of the Drive for Thinness, Body Dissatisfaction, and Bulimia subscales was used to measure severity of eating disorder symptomatology. Scores on this composite scale can range from 0 to 69.

**Health Information Questionnaire (HIQ).** This measure, developed for the purposes of this study, was designed to assess the presence and severity of disturbed eating practices in a non-eating-disordered population. The HIQ was designed to complement the composite EDI score by providing a more behaviourally-based measure of eating disorder symptomatology. The HIQ is based on DSM-IV eating disorders criteria, and other self-report surveys developed for similar purposes (Greenfeld et al., 1987; Kagan & Squires, 1983; Whitaker et al., 1989). Recent weight
history is measured in four questions concerning current height and weight, and recent (previous year) weight gains or losses of 10 or more pounds. Menstrual history is assessed in two questions assessing regularity of menstruation during the past year. Fear of gaining weight is assessed by the question "Many people at some time feel afraid to eat because they think they will gain weight. During the past year, have you ever had this fear?" which subjects respond to on a 6-point scale ranging from "all the time" to "never," and by follow-up questions assessing presence or absence of specific fears. Although not a criterion of DSM-IV, worries about eating habits are also assessed, in terms of severity (on a 4-point rating scale ranging from "not at all worried" to "very worried") and with regards to presence or absence of specific worries (e.g., worrying about not eating enough, worrying about eating too much, feeling urges to stuff oneself). Presence of binge eating, defined as "an episode of eating a large amount of food in a relatively short amount of time (e.g., 2 hours)," is rated on a scale with the following choices; a) never, b) less than once a month in the past year, c) about once in the last month, d) about once a week, e) between 2 and 6 times a week, f) every day, and g) more than once every day. Perceived lack of control over eating is assessed on a 6-point rating scale ranging from "all the time" to "never." Finally, the frequency of occurrence of crash dieting, and six compensatory behaviours (defined as strategies used to control weight), including excessive exercise, fasting, use of diet pills, diuretics or water pills, vomiting, and laxatives, are assessed on a scale with the same choices as the binge eating question. In addition to providing diagnostic information about eating disorder symptomatology, the HIQ yields a total disturbed eating score, calculated as the sum of all of the items (items are reverse-scored when appropriate, so that higher scores indicate greater eating disturbance). Scores on the HIQ can range between 0 and 69. Because this measure is not an established measure of eating disorder symptomatology, the internal consistency was calculated in this study. Cronbach's alpha was .85.

**Stroop Task.** Two word cards (18 X 25 cm) and one practice card (9 X 10 cm) were used. The word cards contained 12 stimulus words repeated five times. The words were printed in block capitals (4 mm in height) in one of six colours of ink; red, yellow, green, blue, black, or
The words were presented in random order in 12 rows of 6. On the shape and weight card, the words were *stomach, shape, buttocks, weight, thighs, hips, fat, obese, flabby, thin, firm,* and *slim.* Each word on the shape and weight card was matched to a control word on the basis of first letter, word frequency, and, when possible, word length. The control words were *soldier, seven, bribe, welcome, theatre, helm, folk, orchard, fired, theatre, farms,* and *shoe.* The control card was constructed in the same way as the shape and weight card. A practice card was designed for subjects to familiarize themselves with the ink colours and the colour-naming task. This was a smaller card in which the capital letter "o" was printed in the six colours, in random order, in three columns of six.

Instructions for the Stroop informed participants that the task involved naming the colour of words printed in different coloured ink. Subjects were shown the practice card, the experimenter identified the six ink colours, and subjects were instructed to name the colours by placing their finger below each word prior to naming its colour. Subjects were then asked to name the colours of the words printed on the word cards as quickly as possible, and to correct any mistakes as they occurred. The experimenter measured the time taken to colour-name the words on each of the word cards using a hand-held stop watch. The order of presentation of the two word cards was counterbalanced across subjects. The Stroop interference score is the difference between the time taken to colour-name the shape and weight words and the time taken to colour-name the control words.

**Word Recognition Task.** For this task, the 24 words used in the Stroop task (12 shape and weight, and 12 control) were presented on a sheet of paper, randomly interspersed with 24 distractor words (also 12 shape and weight, 12 control). Each distractor word was matched to a target word on the basis of word length, word meaning and structure, and, when possible, first letter and word frequency. The 12 shape and weight distractor words were *bottom, rotund, pelvis, figure, fat, hard, waist, curves, round, tummy, chubby,* and *trim.* The 12 control distractor words were *orange, eleven, held, ranch, salute, sailor, clan, sole, discharged, sliver, bait,* and *movie.* Participants were instructed to read through the word list and indicate which words they
had seen on the previous two cards (target words). The false alarm effect (FAE) score was the number of shape and weight distractor words that were incorrectly identified as target words. Scores can range from 0 to 12.

**Beck Depression Inventory** (BDI; Beck et al., 1961). The BDI is a 21-item self-report questionnaire assessing depressive symptoms. This measure has demonstrated good internal consistency, test-retest reliability, and concurrent validity (Beck, Steer, & Garbin, 1988). Scores can range from 0 to 63.

**Rosenberg Self-Esteem Scale** (RSES; Rosenberg, 1979). This self-report questionnaire is composed of 10 items that assess global attitudes toward the self. Individuals rate the extent to which statements are descriptive of them on a 5-point rating scale ranging from "not at all descriptive of me" to "very descriptive of me." The RSES has been shown to have strong construct, convergent, and discriminant validity (Rosenberg, 1979; Wylie, 1989). It correlates with other measures of self-esteem, as well as with peer ratings (Demo, 1985). Scores on the RSES can range from 10 to 50.

**Short Marlowe-Crowne Social Desirability Scale** (M-C 1(10); Strahan & Gerbasi, 1972). This is a 10-item, true-false measure of the tendency to respond in a socially-sanctioned manner. The scale has shown moderate internal consistency and correlates highly with the longer version of this measure (Strahan & Gerbasi, 1972). Scores can range from 0 to 10.

**General Information Sheet.** Designed for this study, this form asked women to provide their date of birth, year of study, faculty, major, family situation (two-parent family, one-parent family, step-family, or other), parents' occupations and educations, ethnic background, and height and weight. Parents' occupations and education were used to determine family socioeconomic status (Hollingshead, 1975), and height and weight were used to calculate BMI. Women also rated the extent to which they felt they had an attractive shape (on a 7-point scale ranging from "not at all attractive" to "extremely attractive") and rated how they felt about their weight (on a 7-point scale ranging from "extremely overweight" to "extremely underweight"). These variables were used to describe the sample and were explored as possible correlates of SAWBS scores.
Family and Friends Attitude Inventory (FFAI). The FFAI was developed for the purposes of this study to assess women's beliefs regarding the importance of shape and weight concerns to individuals to whom they are close. In the first part of this measure, women think of important people in their lives, and estimate the extent to which they think each individual's feelings of self-worth are based on shape and weight. As in the SAWBS Inventory, the women are provided with a circle for each individual (e.g., father), and they draw in the circle piece that corresponds to the contribution of shape and weight to each individual's feelings of self-worth. They do not divide up the rest of the circle, as in the SAWBS Inventory. The FFAI assesses women's beliefs regarding SAWBS in their mother and father, up to three siblings, and three female friends. In the second part of the FFAI, the women rate, on 5-point rating scales ranging from "not at all important" to "extremely important," the extent to which they believe it is important to their mother, father, current romantic partner, and past romantic partner, that they (the subject) have an attractive shape.

A composite friends' SAWBS score was calculated by averaging across the three SAWBS scores assigned to friends. Similarly, a composite siblings' SAWBS score was calculated by taking the average of the total number of SAWBS scores assigned to siblings. Eleven (13.1%) women were only children and therefore did not have a siblings' score. The romantic partner importance score was the "current" partner importance score for individuals who responded to this question, or the "past" romantic partner importance score for participants who did not respond to the "current partner" question. Ten (11.9%) women did not respond to either romantic partner question. In sum, the FFAI provided the following scores: mother, father, siblings', and friends' SAWBS, and mother father, and partner importance score.

Health Beliefs Inventory (HBI). This is a 17-item scale developed for the purposes of this study to assess endorsement of stereotyped beliefs about thinness. Individuals rate, on 5-point rating scales ranging from "completely true" to "completely false," the extent to which they agree with statements such as "thinness is a measure of an individual's success." A total score of endorsement of stereotyped beliefs is calculated by summing all HBI items (items were reverse-
scored as appropriate so that higher scores indicated stronger endorsement of stereotyped beliefs). Scores can range between 17 and 85. The internal consistency of this measure in this sample calculated using Cronbach's alpha was .85.

Procedure

Fifty of the women completed, in the following order, the SAWBS Inventory, the Stroop colour-naming task followed by the word-recognition task, the EDI, the BDI, and a General Information Sheet. Although it was anticipated that completing the SAWBS Inventory prior to performing the Stroop task might prime participants for shape and weight words, this order was nevertheless considered more desirable than having SAWBS Inventory responses biased by prior presentation of the Stroop, or indeed any other measure. Therefore, because it was my goal to minimize bias in responses to the SAWBS Inventory, possible compromise to the sensitivity of the Stroop task was tolerated. Forty women were asked to return for re-test 1 week later, and 24 (60%) agreed. These women completed the SAWBS Inventory a second time, as well as the additional questionnaire packet described below.

Sixty other women participated on only one occasion and did not complete the Stroop or word recognition task. These participants completed a questionnaire packet that included, in the following order, a Short General Information Sheet, the SAWBS Inventory, the FFAI, the BDI, the EDI, the M-C 1(10), the RSES, the HBI, and the HIQ. This standard order was chosen for the following reasons: First, because the psychometric properties of the SAWBS Inventory were being investigated, it was completed first, so that responses would not be influenced by other measures that could sensitize participants to shape and weight concerns. Second, because the FFAI required participants to recall procedural details from the SAWBS Inventory, this measure was completed immediately after the SAWBS Inventory. Finally, to minimize the extent to which participants would be able to guess the purpose of the study, the HBI, which assesses endorsement of stereotyped beliefs about shape and weight, and the HIQ, which assesses disordered eating behaviours, were administered last. Given these constraints, the remaining measures were administered in a predetermined order to all participants. As part of a larger
study, individuals completed three other measures. These measures are not included in this thesis.

In summary, a sample of 50 women completed the SAWBS Inventory, the cognitive tasks, BDI, and EDI. Twenty-four provided test-retest data for the SAWBS. Eighty-four women completed the SAWBS Inventory, the FFAI, EDI, BDI, M-C 1(10), HBI, and the HIQ (and 24 of these women completed these measures as part of the SAWBS re-test).

Results

Description of Sample

With regard to eating disorder symptomatology, in the 84 women who completed the larger questionnaire package, EDI Drive for Thinness (DT), Bulimia (BUL), and Body Dissatisfaction (BD) mean subscale scores were within the nonclinical range, and were similar to values reported in other university samples (e.g., Klemchuk, Hutchinson, & Frank, 1990; Vanderheyden, Fekken, & Boland, 1988). For instance, in the Klemchuk et al. study (1990), scores in a sample of undergraduate women on the DT, BUL, and BD subscales were 6.3, 2.0, and 11.8, respectively. In the present study, the same subscales had scores of 5.8, 2.5, and 11.4, respectively. Also similar to previous research (e.g., Klemchuk et al., 1990), a wide range of eating disorder symptoms were reported, and clinical level pathology appeared to be present in some women. For instance, on the HIQ, 20% of the women stated that they felt afraid to eat for fear of weight gain "often" or "all the time," and 12% indicated that they binge-ate two or more times a week. In order to get rid of unwanted calories, the percentage of women who reported that they had fasted, used diuretics, vomitted, or used laxatives at least once per month was 7%, 1%, 6%, and 5%, respectively. Using the HIQ items that assessed specific DSM-IV eating disorder criteria, two women from the sample met the behavioural criteria for bulimia nervosa (i.e., the occurrence of both binge eating episodes and compensatory behaviours two or more times per week), and were identified as "probable cases." An additional eight women met criteria for one behavioural category (e.g., binge eating), but were subthreshold on one or more other categories (e.g., used self-induced vomiting, but only once per week). These individuals were
identified as "possible cases." On the rating items of weight and shape attractiveness, the mean perceived shape attractiveness score was 4.23 (SD = 1.19), with a score of 4 representing "neutral" and a score of 5 representing "shape is moderately attractive". The mean perceived weight score was 3.24 (SD = .70). On this scale, a score of 3 corresponds to "a little overweight" and a score of 4 corresponds to "weight is just right". BMI ranged from 17.0 to 40.5, with a mean within the range associated with the lowest risk of illness for most people (Health and Welfare Canada, 1988). BDI scores ranged from 0 to 30, with a mean at the upper end of the "normal range" (M = 9.50, SD = 7.20; Beck & Steer, 1987). RSES scores ranged from 16 to 50, with a mean typically seen in undergraduate women (e.g., Campbell, 1993). Table 1 provides means and standard deviations on BMI, EDI composite, BDI, and RSES scores.

Table 1.
Means and Standard Deviations for Body Mass Index (BMI), the Eating Disorders Inventory (EDI), the Beck Depression Inventory (BDI) and the Rosenberg Self-Esteem Scale (RSES) in Undergraduate Women

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
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<tbody>
<tr>
<td>Body Mass Index</td>
<td>21.72</td>
<td>3.10</td>
</tr>
<tr>
<td>EDI Composite score</td>
<td>19.81</td>
<td>16.95</td>
</tr>
<tr>
<td>BDI</td>
<td>9.50</td>
<td>7.20</td>
</tr>
<tr>
<td>RSES</td>
<td>36.01</td>
<td>8.18</td>
</tr>
</tbody>
</table>

N = 84

Treatment of the Data

All variable distributions were inspected for violations of normality. Significant deviations with regards to skewness and kurtosis were corrected using log and square root transformations,
as appropriate (Tabachnick & Fidell, 1989). All of the analyses reported were performed with both transformed and non-transformed scores, and no differences in the pattern of significant results emerged. Consequently, the non-transformed results are reported for ease of interpretation. The variables used as predictors in regression analyses were inspected for multicollinearity. As recommended by Tabachnick and Fidell (1989), variables with intercorrelations greater than .90 were considered to be redundant, and in such a case, elimination of one of the variables would be considered for ease of interpretation of the results. With regard to experiment-wise error control, a conservative alpha level of .01 was used in stating statistical significance for concurrent validity correlations. Because they were intended to be hypothesis-generating, however, for correlations between proposed developmental precursor variables and SAWBS, a more liberal alpha of .05 was used in interpreting the results.

Properties of the SAWBS Inventory

In dividing the self-esteem circle, the 110 women used between three and eight pieces (attributes). The SAWBS score, or the angle of the shape and weight piece, ranged from 0 to 230 degrees, with a mean of approximately one sixth of the circle. Looking at the rankings of shape and weight compared with other attributes, 17 of the 84 women (20.2%) did not select shape and weight as an important attribute in feelings of self-worth, and therefore did not rank it at all, while others ranked shape and weight between 1 and 8. Using the strategy outlined previously for calculating rank order, the shape and weight attribute was ranked about third most important among the personal attributes in contributing to overall feelings of self-esteem. Means and standard deviations of SAWBS Inventory characteristics are presented in Table 2.

Stability

The mean SAWBS score in the 24 women who completed the SAWBS Inventory twice was 53.32 (SD 47.33) at Time 1, and 55.67 (SD 35.07) at Time 2, 1 week later. These scores were not significantly different (p > .05). The 1-week test-retest correlation of the SAWBS score as provided by this sample was .81, p < .001.
Table 2.

Means and Standard Deviations for Shape- and Weight-Based Self-esteem (SAWBS) Inventory Characteristics in Undergraduate Women

<table>
<thead>
<tr>
<th>SAWBS Inventory Characteristics</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAWBS score (angle)</td>
<td>57.58</td>
<td>46.53</td>
</tr>
<tr>
<td>Total number of pieces used</td>
<td>5.45</td>
<td>1.35</td>
</tr>
<tr>
<td>Rank order of shape and weight</td>
<td>2.88</td>
<td>2.04</td>
</tr>
</tbody>
</table>

N = 110

Concurrent Validity

Relationships between SAWBS, Perceptions of Shape and Weight, and Eating Disorder Symptoms. As shown in Table 3, in the sample of 84 women who completed the questionnaire packet, SAWBS scores were significantly negatively related to the extent to which women perceived their shape to be attractive, and to the extent to which they perceived themselves to be underweight. SAWBS scores were positively correlated with the two measures of eating symptomatology: the EDI composite score and the HIQ symptom score. As predicted, both correlations were statistically significant.

To determine whether SAWBS scores contributed significant unique variance to eating symptom scores after the effects of BMI, depression, and global self-esteem were controlled, two regression analyses were performed in which the dependent variables were the EDI composite score and the HIQ symptom score, respectively. Table 4 displays a correlation matrix of all variables used in the two regressions. As shown in the table, no intercorrelations exceeded .90. However, the correlation between BDI and RSES was -.74, which, although not within the
problematic range (Tabachnick & Fidell, 1989), was nevertheless considered high. However, because these two variables were used as blocking variables in the regression, and no interpretations were made with regards to the unique contribution of either to the dependent variable, the high intercorrelation was not considered problematic. Table 5 provides the unstandardized (B) and standardized (B) beta coefficients for the full prediction models, and the $R^2$ change for each step when entered into the equations. The full models were both statistically significant; for EDI scores, $F(4,79) = 25.61, p < .001$, and for the HIQ scores, $F(4,79) = 17.49, p < .001$. In both cases, even after the variance accounted for by BMI, depression, and self-esteem was controlled, SAWBS scores accounted for additional statistically significant variance in EDI (10%) and HIQ (12%) symptom scores.

Table 3.

Correlations between Shape- and Weight-Based Self-esteem (SAWBS) Scores and Perceptions of Shape and Weight, the Health Information Questionnaire (HIQ) and the Eating Disorders Inventory (EDI) Composite Score in Undergraduate Women

<table>
<thead>
<tr>
<th>SAWBS Score</th>
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<tbody>
<tr>
<td>Weight Perception</td>
<td>-.38**</td>
</tr>
<tr>
<td>Shape Perception</td>
<td>-.37**</td>
</tr>
<tr>
<td>HIQ</td>
<td>.57**</td>
</tr>
<tr>
<td>EDI Composite</td>
<td>.57**</td>
</tr>
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</table>

**p < .001

Note. N = 84. Higher scores correspond to perceiving oneself as more underweight, perceiving one's shape as more attractive, and to higher levels of eating disorder symptomatology on the HIQ and on the EDI Composite score.
Table 4.

Correlation Matrix of Shape- and Weight-Based Self-esteem (SAWBS) Scores, Health Information Questionnaire (HIQ), Eating Disorders Inventory (EDI), Rosenberg Self-Esteem Scale (RSES), Beck Depression Inventory (BDI), and Body Mass Index (BMI)

<table>
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<tr>
<th></th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SAWBS Score</td>
<td>.57**</td>
<td>.57**</td>
<td>-32*</td>
<td>.57**</td>
<td>.13</td>
</tr>
<tr>
<td>2. HIQ</td>
<td>.83**</td>
<td>-55**</td>
<td>.59**</td>
<td>.15</td>
<td></td>
</tr>
<tr>
<td>3. EDI Composite</td>
<td>-63**</td>
<td>.65**</td>
<td>.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. RSES</td>
<td></td>
<td>-74**</td>
<td>.00</td>
<td></td>
<td></td>
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<tr>
<td>5. BDI</td>
<td></td>
<td></td>
<td>.01</td>
<td></td>
<td></td>
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<tr>
<td>6. BMI</td>
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</table>

**p < .001, *p < .01

Note: N = 84. Higher scores correspond to higher levels of eating disorder symptomatology on the HIQ and the EDI Composite Score, higher levels of self-esteem on the RSES, more elevated depressed mood on the BDI, and to a greater BMI.

**Stroop Task.** Most (90%) of the 50 women who completed the Stroop task took longer to colour-name the words on the shape and weight card than they did to colour-name the words on the control card. The average interference score (shape and weight card time minus control card time) was 5.5 seconds (SD = 4.7). A t-test examining whether Stroop colour-naming interference was related to the order of presentation of the Stroop cards (shape and weight first vs. control first) was not statistically significant (p = .40).

Contrary to prediction, the correlation between SAWBS and Stroop colour-naming interference scores was not statistically significant, r(50) = .13, p > .05. However, Stroop scores were related to the number of shape and weight "hits" in the word recognition task (the correct identification of shape and weight target words), r(50) = .38, p < .01. Therefore, not
unexpectedly, women whose colour-naming time was most delayed by the shape and weight card, and who consequently spent more time looking at the shape and weight words, were able to recall more of those words than did individuals whose colour-naming was not as delayed by the shape and weight target words.

Table 5.

**Summary of Regression Analysis with Body Mass Index (BMI), Beck Depression Inventory (BDI), Rosenberg Self-Esteem (RSE), and Shape- and weight-based self-esteem (SAWBS) scores as Predictors of Eating Disorder Inventory (EDI) Composite and Health Information Questionnaire (HIQ) Total Symptom Score**

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>EDI Composite Score</th>
<th>HIQ Total Symptom Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>incremental</td>
<td>incremental</td>
</tr>
<tr>
<td>Step 1:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>.006</td>
<td>.10</td>
</tr>
<tr>
<td>BDI Score</td>
<td>.72</td>
<td>.30**</td>
</tr>
<tr>
<td>RSE Score</td>
<td>-.60</td>
<td>-.28**</td>
</tr>
<tr>
<td></td>
<td>.46***</td>
<td></td>
</tr>
<tr>
<td>Step 2:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAWBS score</td>
<td>.13</td>
<td>.34***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

***p < .001, **p < .01, *p < .05

**Word Recognition Task.** Looking first at the relationship between the two measures of cognitive schemata, Stroop interference scores were unrelated to women's incorrect identification
of shape and weight target words in the word recognition task (FAE), \( r(50) = -0.06, p > 0.05 \). However, as predicted, the correlation between SAWBS scores and the FAE was positive, and statistically significant, \( r(50) = 0.44, p < 0.001 \). As expected, SAWBS scores were not associated with the false recognition of control words, \( r(50) = 0.05, p > 0.05 \). Because previous literature has shown measures of cognitive schemata to be associated with depression (e.g., Cooper, Anastasiades, & Fairburn, 1991), and because there was a statistically significant relationship between BDI scores and the FAE in this study (\( r(50) = 0.40, p < 0.01 \)), a multiple regression analysis was performed to determine whether SAWBS scores contributed unique variance to FAE scores after the effect of depression was controlled. In this analysis, the dependent variable was the FAE score, BDI scores were entered as a first predictor, and SAWBS scores were entered second. Table 6 provides the unstandardized (B) and standardized (\( B \)) beta coefficients for the full prediction model, and the \( R^2 \) change for each step when entered into the equation. The overall model was statistically significant, \( F(2,47) = 9.37, p < 0.001 \). BDI scores accounted for 16% of the variance in FAE scores, \( F(1,47) = 9.02, p < 0.01 \), and SAWBS scores accounted for a further 13% of the variance in FAE scores, \( F(1,47) = 9.37, p < 0.001 \). Therefore, the relationship between SAWBS scores and shape and weight false alarms was statistically significant, even after the effect of depression was controlled.

To further test the relationship between SAWBS scores and eating disorder symptomatology in the group of 84 women, the 3 probable and 7 possible eating disorder cases (identified on the basis of the HIQ) were combined into one group. First, the validity of this classification based on the HIQ was verified by comparing these cases with the remainder of the sample on the EDI composite score. This t-test was statistically significant, \( t(83) = 6.40, p < 0.001 \), confirming that individuals identified as "probable and possible cases" scored significantly higher (\( M = 49.50, SD = 13.09 \)) on eating disorder symptomatology than the remainder of the sample (\( M = 18.68, SD = 14.37 \)) as assessed by the EDI Composite score. A t-test comparing SAWBS scores in the probable and possible eating disorder case group to scores for women with no suspected eating disorder was also statistically significant, \( t(83) = 3.10, p < 0.01 \), indicating that
SAWBS scores were significantly higher in the probable and possible eating disorder group ($M = 99.70$, $SD = 35.90$) than in the remainder of the sample ($M = 56.19$, $SD = 42.30$). Further support for the predictive validity of the SAWBS Inventory was obtained by comparing women's rank ordering of the contribution of shape and weight to overall feelings of self-worth between the two groups. This rank ordering indicated that shape and weight was more important in the probable and possible cases group ($M = 2.50$, $SD = 1.18$) than in the group of women with no suspected eating disorder ($M = 3.48$, $SD = 1.75$), $t(83) = -1.71$, $p < .05$.

Table 6.

**Summary of Regression Analysis with Beck Depression Inventory (BDI) and Shape- and Weight-Based Self-esteem (SAWBS) scores as Predictors of False Alarm Effect (FAE) Score**

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>$B$</th>
<th>$B$ increment</th>
<th>$R^2$ incremental</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDI Score</td>
<td>.097</td>
<td>.31*</td>
<td>.16**</td>
</tr>
<tr>
<td><strong>Step 2:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAWBS score</td>
<td>.017</td>
<td>.37**</td>
<td>.13***</td>
</tr>
</tbody>
</table>

***$p < .001$, **$p < .01$, *$p < .05$***
Discriminant Validity

Non-Eating Disorder Correlates of SAWBS. In the sample of 84 women, SAWBS scores were not significantly related to the tendency to respond in a socially desirable manner ($r = -.08, p > .05$), to socioeconomic status ($r = -.09, p > .05$), or to BMI ($r = .13, p > .05$). As shown in Table 4, with regard to the relationship between SAWBS scores and global self-esteem, SAWBS scores were negatively correlated with RSES scores, indicating that the more self-esteem was based on shape and weight, the lower were global feelings of self-worth. As noted earlier, and also shown in Table 4, the relationship between SAWBS and BDI scores was positive, and statistically significant. That is, the tendency to base one's self-esteem on shape and weight was related to higher depressed mood scores.

Hypothesized Developmental Predictors of SAWBS

To examine the extent to which the possible precursor variables were related to shape- and weight-based self-esteem, correlations were computed between SAWBS scores and endorsement of stereotyped beliefs about thinness (as assessed by the HBI), perceived SAWBS in mother, father, siblings, and in female friends, and women's perception of the importance placed on their own shape and weight by mother, father, and either current or past romantic partner (as assessed by the FFAI). As shown in Table 7, SAWBS scores were significantly positively related to endorsement of stereotyped beliefs about thinness, to perceived SAWBS in friends, and to perceived importance placed by mother and father on the woman's shape and weight. SAWBS scores were not significantly correlated with perceived SAWBS in mother, father or siblings, or with perceived importance placed by romantic partner on the woman's shape and weight.

Discussion

The purpose of this study was to establish the psychometric properties of the SAWBS Inventory in undergraduate women, and to examine the relationships between hypothesized developmental precursor variables and SAWBS scores. Findings from this study indicated that
Table 7.

Correlations between SAWBS Scores and Health Beliefs Inventory (HBI), Perceived SAWBS in Mother, Father, Friends, and Siblings, and Importance Placed on Women's Shape and Weight by Mother, Father, and Romantic Partner in Undergraduate Sample

<table>
<thead>
<tr>
<th>SAWBS Score</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HBI Score</td>
<td>.46**</td>
</tr>
<tr>
<td>Perceived SAWBS in:</td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>.06</td>
</tr>
<tr>
<td>Father</td>
<td>-.12</td>
</tr>
<tr>
<td>Siblings</td>
<td>.07</td>
</tr>
<tr>
<td>Friends</td>
<td>.20*</td>
</tr>
<tr>
<td>Importance placed by:</td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>.20*</td>
</tr>
<tr>
<td>Father</td>
<td>.22*</td>
</tr>
<tr>
<td>Romantic Partner</td>
<td>.14</td>
</tr>
</tbody>
</table>

Note: N ranged between 73 and 84 in these analyses. **p < .001, *p < .05

SAWBS scores were stable over 1 week and correlated moderately with a cognitive measure of shape and weight schemata derived from a word recognition task. However, SAWBS scores did not correlate significantly with a second cognitive measure of shape and weight schemata, Stroop interference times using shape and weight words. Consistent with the idea that a unification of views of the self with beliefs about shape and weight characterizes the eating disorders, SAWBS scores were moderately correlated with two measures of eating disorder symptomatology. In
further support of the view that individuals who have eating disorders can be distinguished by the
degree of influence (positive or negative) that shape and weight has on their feelings of self-
worth, SAWBS scores were significantly higher in women identified as possible and probable
eating disorder cases than they were in women who reported few or no disturbed eating
symptoms. In addition, shape- and weight-based self-esteem was not related to family
socioeconomic status or to the tendency to respond in a socially sanctioned manner. With regard
to possible developmental correlates of shape- and weight-based self-esteem, SAWBS scores
were positively related to endorsement of stereotyped beliefs about thinness, perceived SAWBS
in friends, and perceived importance placed by mother and father on the women's shape and
weight.

The correlation between SAWBS scores and the word recognition task FAE was
consistent with the hypothesis that shape- and weight-based self-esteem is associated with a shape
and weight schema. In this study, women who based a greater portion of their self-worth on
shape and weight were more apt to confuse novel shape and weight words with ones they had
already seen, whereas no such relationship occurred with neutral control words. Because previous
research has shown that false alarms increase with the degree to which stimulus words refer to
important aspects of the self-concept (Rogers, Rogers, & Kuiper, 1987), at the very least, these
findings suggest that SAWBS scores tap a salient dimension of beliefs about the self. The fact
that SAWBS scores were associated with the FAE even after the effects of depressed mood were
controlled suggests the specificity of the SAWBS Inventory in measuring a central cognitive
dimension of eating disorders (shape- and weight-based self-esteem), independent of depressed
mood. This finding is in contrast to previous research (Cooper et al., 1992) in which the
association between general eating disorder attitudes and behaviours and a shape, weight, and
eating schema assessed using a Stroop paradigm was reduced to nonsignificance when the effect
of depression was controlled. A number of differences between the methodology used in the
present study and that of Cooper et al. may account for this difference in results, including, most
importantly, use of the SAWBS Inventory, a specific measure of shape- and weight-based self-
esteem instead of the more general Eating Attitudes Test (Garner & Garfinkel, 1979), and the use of the FAE instead of the Stroop task to assess cognitive schemata.

The failure to detect a relationship between SAWBS and Stroop scores, the second measure of shape and weight schemata used in this study, was contrary to prediction. Follow-up inspection of scores revealed that the lack of correlation was not due to restrictions in score distribution, as Stroop interference scores were approximately normally distributed and had an adequate range (20.53 seconds) and variance (SD = 4.70). In addition, the significant positive relationship between Stroop scores and shape and weight "hits" in the word recognition task suggests that the problem was not one of inaccuracies in the recording of participants' response time, as women who took longer to colour-name shape and weight words correctly identified more of those words in the subsequent word recognition task. Instead, one possible explanation for the lack of relationship between SAWBS and Stroop scores may have been the failure to make control words in the Stroop task content consistent. That is, although the control words in this study were carefully selected with respect to word frequency and length, they did not belong to a common content area. Green and Rogers (1992) reported that, when they controlled for this oft-seen methodological shortcoming in eating disorder Stroop research, Stroop sensitivity increased. Performance on the Stroop task may also have been affected by the women's awareness of the purpose of the study. The Stroop has been shown to be susceptible to extraneous influences (e.g., Warren, 1974), and it is possible that some individuals guessed that the focus of the research pertained to shape and weight. Finally, the inconsistencies reported earlier in eating disorder Stroop research (e.g., Cooper & Fairburn, 1992; Green & Rogers, 1992; ) suggest that the Stroop may simply not be a good measure of the construct of interest. Possibly, the word recognition task is a more promising measure of eating disorder schemata for future research.

The relationship between SAWBS and eating disorder symptom scores supports the view that shape- and weight-based self-esteem is a central cognitive feature of the eating disorders. The specificity of the relationship between shape- and weight-based self-esteem and eating disorder symptomatology was further demonstrated in regression analyses, in which SAWBS
scores accounted for unique variance in eating symptom scores, even after the effects of depression, global self-esteem, and BMI were controlled. It is also noteworthy that SAWBS scores were negatively correlated with self-esteem and positively correlated with depression. These findings suggest that, in addition to being associated with eating disorder symptomatology, basing one's self-worth largely on shape and weight is associated with poorer global feelings about the self and a greater likelihood of depression. It was also interesting that although SAWBS scores were not associated with actual weight and shape (as assessed by the BMI), they were associated with women's perceptions of their shape and weight.

With regard to the hypothesized developmental precursors of shape- and weight-based self-esteem, the relationship between endorsement of stereotyped beliefs about thinness and SAWBS scores suggests that, not unexpectedly, the belief that thinness is a measure of success in others is likely to be associated with a personalization of this belief. SAWBS scores were also related to women's perceptions of the importance placed by both mother and father on the women's shape and weight. Although it is tempting to hypothesize that daughters' attempts to gratify what they perceive to be their parents' wishes for their bodies precede the development of shape- and weight-based self-esteem, this perception may also be a consequence of shape and weight preoccupation. The finding that perceived SAWBS in friends was associated with SAWBS scores is also suggestive of the possibility that peer relationships may influence this structural aspect of self-esteem. Again, however, it is not possible to determine from these data whether friends were selected because of a pre-established shape- and weight-based self-esteem, or whether the perception of SAWBS in friends is influenced by women's pre-established shape- and weight-based self-esteem. Only longitudinal work can answer these questions. Interestingly, perceived SAWBS in parents and siblings were not related to women's own SAWBS scores, suggesting that within the family, women responded more to what they believed parents expected of them than to their perception of what family members viewed as important to their own self-esteem.
Although use of a female undergraduate sample was considered appropriate as a first step towards the validation of this new instrument, clinical samples are clearly needed to determine whether the promising properties of SAWBS scores observed in this study hold in samples affected by clinical levels of eating disorders, and to determine the specificity of shape- and weight-based self-esteem to eating disorder symptomatology, as opposed to other psychiatric symptomatology. These issues will be investigated in Study II.
STUDY II: PSYCHOMETRIC PROPERTIES OF THE SAWBS INVENTORY IN WOMEN WHO HAVE EATING DISORDERS AND A COMPARISON OF SAWBS SCORES AMONG EATING DISORDER, PSYCHIATRIC, AND CONTROL SAMPLES

Purposes and Hypotheses

The first purpose of Study II was to determine the stability of the SAWBS Inventory in women who have eating disorders. Shape- and weight-based self-esteem was hypothesized to be stable in these women. As in Study I, although shape- and weight-based self-esteem is purported to be stable over much longer periods of time, 1 week was considered to be a minimal test-retest interval, and chosen as a compromise with practical limitations.

To further examine the validity of the SAWBS Inventory, correlates of SAWBS scores were examined among women with eating disorders. With regard to concurrent validity, as in Study I, it was hypothesized that within a sample of women who have eating disorders, higher SAWBS scores would be associated with the tendency to view oneself as more overweight, and to view one's shape as less attractive. With regard to discriminant validity, also as in Study I, SAWBS scores were expected to be uncorrelated with BMI, the tendency to respond in a socially sanctioned manner, and with family socioeconomic status.

To test the specificity of high shape- and weight-based self-esteem scores to women who have eating disorders, SAWBS scores were compared among a group of women with eating disorders, a non-eating disordered psychiatric control group, and a non-eating disordered undergraduate control group. It was hypothesized that SAWBS scores would be significantly higher in the women who had eating disorders than in the two control groups. To further test the specificity of shape- and weight-based self-esteem to eating disorder symptomatology, the ability of SAWBS scores to distinguish among the three groups after controlling for differences in depression and general self-esteem was also examined.

Finally, this study examined the relationships between SAWBS scores and the developmental precursor variables outlined in Study I. First, scores from the FFAI and the HBI were compared between the undergraduate control group and the eating disordered group.
Second, correlations between SAWBS scores and the developmental precursor variables were examined within the group of women with eating disorders. As noted earlier, because cross-sectional designs cannot address questions of directionality, these relationships were examined in an exploratory fashion to develop hypotheses for future research.

Method

Subjects

Eating Disorder Group (EDG). Forty-eight women between the ages of 17 and 45 (M = 27.09, SD = 8.59) who had received a diagnosis of anorexia nervosa (AN), bulimia nervosa (BN), or eating disorder not otherwise specified (EDNOS) were recruited from a Canadian metropolitan hospital Eating Disorders Clinic (EDC). Family socioeconomic status in this group ranged from 1 to 5 on the Hollingshead Four-factor Index (Hollingshead, 1975), with a mean of 2.77 (SD = 1.06), indicating middle class status. Most of the women (83.3%) were raised in two parent families.

Presence of eating disorder was determined using a two-step process. First, individuals were assigned a diagnosis by a psychologist or psychiatrist at the EDC following an initial assessment interview. This interview took place from 1 week to 8 months before participation in this study. Second, the clinical diagnosis was confirmed using participants' responses to the eating disorder diagnostic questions from the HIQ completed at the time of the study. All of the 48 women included in the study met diagnostic criteria for either AN, BN, or EDNOS using both methods, although there were some differences regarding specific diagnoses: Forty of the women (83.3%) were assigned the same diagnostic category (AN, BN, or EDNOS) by both diagnostic methods. Of the eight women who received a different diagnosis, in four cases, clinical diagnoses of AN were assigned a diagnosis of BN using the HIQ. The other four cases involved clinical diagnoses of AN and BN (two of each) that were classed as EDNOS using the HIQ. These differences were not entirely surprising considering the time span between the two diagnoses, and the fact that many of the women had received treatment since the time of initial diagnosis. The HIQ diagnoses were considered to be more accurate because they were made at the time of the
study, and were determined in a more formal and systematic manner. Because no specific hypotheses were made regarding differences in shape- and weight-based self-esteem across the types of eating disorder or across subtypes within each of the diagnostic groups (e.g., restricting or purging subtypes of AN), these various sub-classifications of eating disorder are combined in this study. According to the HIQ, 23 (47.9%) women met criteria for AN, 18 (37.8%) women met criteria for BN, and 7 (14.6%) met criteria for EDNOS. To provide greater detail on the sample composition, eating disorder symptomatology is reported according to diagnostic group in Table 8.

**Psychiatric Control Group (PCG).** Forty-six women between the ages of 20 and 55 ($M = 37.12$, $SD = 7.40$) were recruited from inpatient and outpatient psychiatry programs from two Canadian metropolitain hospitals. Family socioeconomic status in this group ranged from 1 to 5 on the Hollingshead Four-factor Index (Hollingshead, 1975), with a mean of 2.27 ($SD = 1.24$), indicating upper middle class status. Most of these women (82%) indicated they were raised in two parent families.

The HIQ was used to assess eating disorder symptomatology among the PCG. Two of the 46 women met criteria for an eating disorder, and were thus excluded from the study. Clinical diagnoses were obtained from the psychiatrist or psychologist from whom the women were receiving care. According to the diagnoses provided by the therapists, 36 (81%) of the women received a diagnosis of a mood disorder (20 involving a major depressive episode, 12 bipolar disorder, 2 schizoaffective, and 2 dysthymic disorder), 7 (16%) received a diagnosis of an anxiety disorder (3 generalized anxiety disorder, 2 social phobia, 1 panic disorder, 1 post traumatic stress disorder), and 1 woman (2.3%) was diagnosed with an adjustment disorder.

Descriptive information regarding level of psychiatric symptomatology in this group was assessed using the Symptom Checklist 90 Revised (SCL-90-R; Derogatis, 1983). This 90-item self-report measure of psychological symptoms requires respondents to rate their experience of psychological symptoms on a 0 to 4 rating scale ranging from "not at all" to "extremely." The measure provides nine specific scales (somatization, obsessive-compulsive, interpersonal
Table 8.

Description of Eating Disorder Symptomatology as Measured by the Health Information Questionnaire in the Eating Disorders Group According to Diagnostic Subtype; Anorexia Nervosa (AN), Bulimia Nervosa (BN), and Eating Disorder Not Otherwise Specified (EDNOS)

<table>
<thead>
<tr>
<th></th>
<th>AN</th>
<th>BN</th>
<th>EDNOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>n = 23</td>
<td>n = 18</td>
<td>n = 7</td>
<td></td>
</tr>
<tr>
<td>Fear of Weight Gain</td>
<td>100%</td>
<td>83%</td>
<td>86%</td>
</tr>
<tr>
<td>Binge Eating</td>
<td>30%</td>
<td>100%</td>
<td>14%</td>
</tr>
<tr>
<td>Laxative Use</td>
<td>17%</td>
<td>11%</td>
<td>0%</td>
</tr>
<tr>
<td>Vomitting</td>
<td>52%</td>
<td>67%</td>
<td>0%</td>
</tr>
<tr>
<td>Diuretics</td>
<td>13%</td>
<td>.1%</td>
<td>0%</td>
</tr>
<tr>
<td>Fasting</td>
<td>26%</td>
<td>22%</td>
<td>0%</td>
</tr>
<tr>
<td>Exercise</td>
<td>43%</td>
<td>67%</td>
<td>43%</td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>15.1 (3.5)</td>
<td>21.1 (6.7)</td>
<td>20.5 (3.2)</td>
</tr>
</tbody>
</table>

sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) and a Global Severity Index. The SCL-90-R has good test-retest reliability, correlates with other measures of psychological symptomatology, and normative data are available for interpreting scores (Derogatis, 1983). As can be seen by the T-scores reported in Table 9, the PCG group averaged scores between .5 and 1.5 standard deviations above the mean on the SCL-90-R subscales, indicating a generally mild level of pathology. Consistent with subscale pathology range, the mean Global Severity Index score on the SCL-90-R was 63.42 (SD = 10.74), indicating a level of pathology approximately 1.5 standard deviations above the norm.
Table 9.

Psychiatric Control Group Means and Standard Deviations on the Symptom Checklist-90-Revised (SCL-90-R) Subscales

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somatization</td>
<td>57.26</td>
<td>10.57</td>
</tr>
<tr>
<td>Obsessive Compulsive</td>
<td>63.93</td>
<td>10.28</td>
</tr>
<tr>
<td>Interpersonal Sensitivity</td>
<td>63.74</td>
<td>11.09</td>
</tr>
<tr>
<td>Depression</td>
<td>64.12</td>
<td>9.16</td>
</tr>
<tr>
<td>Anxiety</td>
<td>60.65</td>
<td>11.51</td>
</tr>
<tr>
<td>Hostility</td>
<td>57.19</td>
<td>9.93</td>
</tr>
<tr>
<td>Phobias</td>
<td>55.26</td>
<td>11.42</td>
</tr>
<tr>
<td>Paranoid</td>
<td>56.16</td>
<td>10.64</td>
</tr>
<tr>
<td>Psychoticism</td>
<td>61.56</td>
<td>12.80</td>
</tr>
</tbody>
</table>

*T-scores, N = 46,

Undergraduate Control Group (UCG). Of the 84 female undergraduates who participated in the large questionnaire portion of Study I, 82 comprised the undergraduate control group for Study II. The two women identified as "probable cases" of eating disorder were not included in the Study II sample. The 8 women identified as "possible cases" in Study I, however, were left in this group in order to avoid creating a "supernormal" control group which excludes mild pathology typically seen in non-eating disordered women. The mean age in this reduced sample was 20.95 (SD = 6.66). Family socioeconomic status ranged from 1 to 5 on the Hollingshead Four-factor Index (Hollingshead, 1975), with a mean of 2.27 (SD = 1.03), indicating upper middle class status. Most of these women (94%) were raised in two parent families.
Procedure

Eating Disorder Group (EDG). Hospital charts of women attending the EDC were reviewed and women who had received a diagnosis of an eating disorder were provided with an information sheet by the clinic secretary during a visit to the clinic. The information sheet described the study and requested consent to be contacted by telephone. Women who consented by providing their phone number were called and appointments arranged. Unfortunately, response rate data was not available. However, records on women who attended the clinic in the past 18 months were obtained and age and BMI were compared between the larger clinic sample and the current sample to determine the representativeness of the sample. T-tests revealed no significant differences between the two samples on either variable ($t(169) = .79, p > .05$ and $t(172) = .56, p > .05$, for age and BMI, respectively). When women arrived at the clinic for their appointment, they completed a detailed informed consent form, followed by the SAWBS Inventory, two tasks with a research assistant (as part of a larger study, not reported here) and a questionnaire packet for this study. The tasks were administered following the SAWBS Inventory to ensure that responses on the SAWBS Inventory were not influenced by these tasks. The questionnaire packet included the same measures completed by the undergraduates in Study I (FFAI, EDI, BDI, M-C 1(10), RSES, HBI, and the HIQ). As part of a larger study, three other measures were also included in the questionnaire packet. Of the first 25 women who participated in the study, 21 returned 1 week later to complete the SAWBS Inventory a second time.

Psychiatric Control Group (PCG). Women in the PCG were provided with a questionnaire packet by the mental health professional they were seeing (psychiatrist, psychologist, or psychology intern). The mental health professionals were asked to provide a packet to clients who were within the stated age range and who had neither an eating disorder nor known history of an eating disorder, and who did not suffer from an illness involving psychosis. The questionnaire packets were identified by subject number only. The mental health professionals were provided with a list of subject numbers corresponding to the questionnaire
packets, on which they recorded the diagnosis of each individual they provided with a packet. Women returned their questionnaire packet in a stamped addressed envelope provided. This procedure was used to ensure that the mental health professionals were unaware of who returned completed packets, so that women's participation was not influenced by possible perceived demand characteristics. Using this procedure, 82% of the questionnaire packages that were handed out were returned. Instructions provided on the first page of the questionnaire described the study and indicated that return of a completed questionnaire packet was understood to be the woman's consent to participate in the study. The questionnaire packet included the Short General Information Sheet, the SAWBS Inventory, the BDI, EDI, RSES, SCL-90-R, HIQ, and two measures included as part of a larger study\(^1\). In order to keep the packet as brief as possible (it was anticipated that this would be the most difficult group to recruit), the FFAI and the M-C 1(10) were not included in the questionnaire packet.

Undergraduate Control Group (UCG). As noted, the 82 women in this group were from among the 84 who completed the large questionnaire packet in Study I. Twenty-four from this group had also completed the cognitive tasks 1 week earlier. Details of recruitment and procedures are provided in Study I.

Measures

The SAWBS Inventory, FFAI, BDI, RSES, M-C 1(10), HBI, and HIQ have been described previously in Study I.

Results

Treatment of the Data

As in Study I, all variable distributions were inspected for violations of normality. Significant deviations with regard to skewness and kurtosis were corrected using log and square root transformations, as appropriate (Tabachnick & Fidell, 1989). All of the analyses reported were performed with both transformed and non-transformed scores, and no significant differences in the overall pattern of results emerged. As in Study I, the non-transformed results were reported for ease of interpretation. With regard to error control strategies, as in Study I, a
conservative alpha level of .01 was used in stating statistical significance for concurrent validity correlations. In between-group comparisons, for variables that were assumed to differ across group (e.g., the family of measures pertaining to eating disorder symptomatology), a conservative approach of dividing .05 by the number of comparisons in each family was used in stating statistical significance (e.g., in this case, the family of eating disorder symptomatology variables comprised the HIQ, EDI Composite, and the perceived shape and weight scores, thus an alpha of .0125 (.05/4) was used). For non-hypothesized between-group comparisons (e.g., demographic variables), a significance level of .05 was used for each comparison so as not to miss possible unpredicted differences among groups. As in Study I, because they were intended to be hypothesis-generating, for correlations and between-group comparisons involving the proposed developmental precursor variables, a more liberal alpha of .05 was used in interpreting the results.

For ANCOVA analyses, appropriate tests and follow-up analyses were performed to ensure that ANCOVA assumptions were not violated. The assumptions of homogeneity of variance, multicollinearity among the covariates, and homogeneity of regression were tested for each analysis. The Bartlett test was performed to determine whether the homogeneity of variance assumption was violated, and, when appropriate, as recommended by Howell (1987), the Box test was used as a stringent correction test. With regard to multicollinearity, intercorrelations between the covariates were inspected. Correlations greater than .90 were considered elevated, and would require possible elimination of one of the correlated variables to ensure unambiguous interpretation of the results (Tabachnick & Fidell, 1989). Finally, homogeneity of regression was tested to determine whether the relationship between each covariate and the dependent variable was consistent across groups. As recommended by a number of sources (e.g., Glass, Peckham & Sanders 1972; Tabachnick & Fidell, 1989), in cases in which the homogeneity of regression assumption was violated (i.e., the relationship between the covariate and the dependent variable varied across group), and in which the covariate in question was significantly related to group, a hierarchical multiple regression was performed. In the regression, each of the covariates and the interaction between-group and the identified problematic covariate were first entered in a block to
predict the dependent variable. Group was then entered in a second block to determine whether differences in the dependent variable across group remained significant after the potentially confounding influence of the covariate by group interaction was removed. This follow up regression analysis was not performed in cases in which the heterogeneity of regression was obtained for a covariate that was not significantly related to group, because in that case the heterogeneity of regression would not be expected to impact on between-group differences. Finally, in cases in which the heterogeneity of regression had particular theoretical significance with regard to the principal hypotheses of this study and a more thorough interpretation was desired, in addition to performing the regression analysis just described, a median split of scores on the identified covariate was conducted, turning it into a factor. The ANCOVA was then rerun as a factorial design, and simple main effects testing performed to enable a more detailed interpretation of the results.

Between-group Comparisons on Demographic Variables

Table 10 provides means and standard deviations for the EDG, PCG, and UCG for the variables age, SES, and BMI. Between-groups comparisons were performed for each variable using Analysis of Variance (ANOVA) procedures, and Tukey's post hoc tests were performed to follow up significant main effects. All three ANOVAs were significant ($F(2, 169) = 67.73, p < .001$; $F(2, 160) = 3.58, p < .05$; and $F(2, 169) = 13.75, p < .001$, for age, SES, and BMI, respectively). Post hoc tests revealed that with regard to age, PCG women were significantly older than EDG women, who were significantly older than UCG women ($p < .05$). EDG women were of lower SES than were the PCG and UCG women ($p < .05$), but there were no statistically significant differences between the two control groups. Finally, BMI was significantly higher in the PCG than in the UCG, which was significantly higher than BMI in the EDG ($p < .05$).

Between-group Comparisons on Eating Disorder Symptomatology and Psychological Variables

To confirm the diagnostic distinctiveness of the groups and to compare their overall levels of eating disorder symptomatology, the EDG, UCG, and PCG were compared on HIQ, EDI
Composite, and Perceived Weight and Shape scores. For this family of measures, an alpha level of .0125 (.05 divided by 4) was used in stating statistical significance. Because the groups differed significantly on the demographic variables, analyses of covariance were performed such that for each comparison, age, SES, and BMI were first entered as covariates.

Table 10.

Means and Standard Deviations for Age, Socioeconomic Status (SES), and Body Mass Index (BMI), in the Eating Disorder Group (EDG), Psychiatric Control Group (PCG), and the Undergraduate Control Group (UCG)

<table>
<thead>
<tr>
<th></th>
<th>EDG</th>
<th>PCG</th>
<th>UCG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 48</td>
<td>n = 44</td>
<td>n = 82</td>
</tr>
<tr>
<td>Age</td>
<td>27.09 (8.59)a</td>
<td>37.12 (7.40)b</td>
<td>20.95 (6.66)c</td>
</tr>
<tr>
<td>SES</td>
<td>2.77 (1.06)a</td>
<td>2.27 (1.24)b</td>
<td>2.27 (1.03)b</td>
</tr>
<tr>
<td>BMI</td>
<td>19.09 (4.41)a</td>
<td>24.09 (6.57)b</td>
<td>21.72 (3.08)c</td>
</tr>
</tbody>
</table>

Note: Different superscripts in the table refer to statistically significant group differences.

Between-group differences were examined with the ANCOVA procedure, and followed up with Tukey's HSD post hoc comparisons. First, ANCOVA assumptions of homogeneity of variance, multicollinearity, and homogeneity of regression were tested in each analysis. With regard to homogeneity of variance, significant Bartlett tests were obtained in all analyses, and Box’s correction factor was applied, with no change to the pattern of significance of the results. No problematic intercorrelations were detected. With regard to heterogeneity of regression, significant tests were obtained for the age covariate in the analyses of perceived shape, HIQ, and EDI Composite scores (all p's < .01). That is, the relationship between age and each of these
variables differed as a function of group. Correction for this heterogeneity of regression will be addressed following presentation of initial ANCOVA results.

Unadjusted means and standard deviations for the four measures of eating disorder symptomatology are reported in Table 11. Looking first at the relationships between the covariates and the dependent variables, a number of significant relationships emerged: BMI was negatively related to weight and shape perception scores and positively related to HIQ and to EDI Composite scores (all p's < .05). SES and age were not related to any of the measures of eating disorder symptomatology. Three of the four overall ANCOVAs were significant, indicating that the dependent variable differed across group. These were for shape perception, $F(2,155) = 26.58, p < .001$, HIQ, $F(2,154) = 72.99, p < .001$, and the EDI Composite score, $F(2,154) = 29.94, p < .001$. Weight perception scores did not differ across group. As shown in Table 11, Tukey's post hoc tests revealed that women from the EDG reported significantly higher levels of eating disordered symptoms on both the HIQ and on the EDI Composite scores than did women from the UCG and PCG, and the differences between the two control groups were not statistically significant. On the shape perception score, the same pattern emerged; the EDG women perceived their shape to be less attractive than the other two groups, with no statistically significant difference between the UCG and PCG.

Although the relationships between age and shape perception, age and HIQ, and age and EDI Composite scores were found to differ across group (as indicated by the significant heterogeneity of regression tests reported earlier), age was not significantly related to any of these variables in the ANCOVA analyses. Consequently, the significant between-group differences obtained were not expected to be influenced by the heterogeneity of regression for age, and follow-up multiple regression analyses to control for the heterogeneity were not performed.

With regard to psychological distress, the EDG, UCG, and PCG were also compared on BDI and RSES scores using a similar ANCOVA procedure. An alpha level of .025 (.05 divided by 2) was used in stating statistical significance. As with the previous family of variables, between-group differences were examined with the ANCOVA procedure, and followed up with
Table 11.

Means and Standard Deviations for the Health Information Questionnaire (HIQ), the Eating Disorders Inventory (EDI), and the Weight and Shape Perception Scores in the Eating Disorder Group (EDG), Psychiatric Control Group (PCG), and the Undergraduate Control Group (UCG)

|                | EDG  
|----------------|------ 
| n = 48         | PCG  
| n = 44         | UCG  
| n = 82         |      
| HIQ Totalc     | 38.6 (2.7)a | 12.8 (9.3)b | 16.5 (8.5)b |
| EDI Composite Score | 43.4 (18.0)a | 18.6 (14.2)b | 21.5 (16.4)b |
| Weight Perception Scored | 3.2 (1.5)a | 3.0 (1.0)a | 3.2 (.71)a |
| Shape Perception Scoree | 2.5 (1.5)a | 3.9 (1.4)b | 4.3 (1.2)b |

Note: Different superscripts in the table refer to statistically significant group differences.

cScore can range from 0 to 69 with higher scores indicating more disturbed eating practices.

dScore can range from 1 to 7, with higher scores indicating seeing oneself as more underweight, and lower scores indicating seeing oneself as being more overweight. A score of 4 indicated seeing one's weight as just right.

eScore can range from 1 to 7, with higher scores indicating seeing oneself as having a more attractive shape.

Tukey's HSD post hoc comparisons. ANCOVA assumptions of homogeneity of variance, multicollinearity, and homogeneity of regression were first tested. In the case of both BDI and RSES scores, significant Bartlett tests of homogeneity of variance were obtained, and followed up with Box's correction procedure. This resulted in no change to the significance of the results. No problematic intercorrelations were detected. With regard to heterogeneity of regression,
significant tests were obtained for the age covariate in both analyses (both p's < .01). As in the previous section, this will be addressed following presentation of initial ANCOVA results.

Looking first at the relationship between the covariates and the two measures of psychological distress, no significant relationships emerged (all p's > .05). Both ANCOVAs were, however, statistically significant for group ($F(1,155) = 30.82, p < .001$ and $F(2,157) = 22.79, p < .001$, for BDI and RSES, respectively). Tukey's post hoc analyses revealed that women from the EDG reported significantly more depression, and lower self-esteem than did women in the PCG, who reported significantly more depression and lower self-esteem than women in the UCG. Means and standard deviations for the three groups are reported in Table 12.

Table 12.

Means and Standard Deviations for the Beck Depression Inventory (BDI), and the Rosenberg Self-Esteem Scale (RSES) in the Eating Disorder Group (EDG), Psychiatric Control Group (PCG), and the Undergraduate Control Group (UCG)

<table>
<thead>
<tr>
<th></th>
<th>EDG</th>
<th>PCG</th>
<th>UCG</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>48</td>
<td>44</td>
<td>82</td>
</tr>
<tr>
<td>BDI</td>
<td>27.7 (13.4)$^a$</td>
<td>17.2 (12.0)$^b$</td>
<td>10.2 (7.1)$^c$</td>
</tr>
<tr>
<td>RSES</td>
<td>22.9 (8.1)$^a$</td>
<td>31.4 (10.5)$^b$</td>
<td>36.4 (8.0)$^c$</td>
</tr>
</tbody>
</table>

Note: Different superscripts in the table refer to statistically significant group differences.

With regard to the heterogeneity of regression for age reported earlier for BDI and RSES, as in the previous set of analyses, because age was not significantly related to either dependent variable in the ANCOVA analyses, no follow-up multiple regression analyses were performed.
Test-Retest Correlation

In the EDG, SAWBS scores in the 21 women who returned for retest were 180.91 (SD = 108.24) at Time 1, and 186.38 (SD = 111.74) at Time 2. These scores were not significantly different (p > .05). The 1 week test-retest correlation of SAWBS scores in this group was .94, p < .001.

Correlates of SAWBS in the EDG

With regard to concurrent validity, as in the UCG, correlational analyses were performed to examine the relationships between SAWBS scores and the measures of eating disorder symptomatology. Because four correlations were computed, an alpha of .0125 (.05 divided by 4) was used in stating statistical significance. As in the UCG, SAWBS scores were negatively related to the extent to which EDG women perceived themselves to be underweight. However, unlike the findings from Study I, the correlation between SAWBS scores and perceptions of shape attractiveness was nonsignificant (p = .10). SAWBS scores were significantly positively related to EDI Composite scores, but there was only a trend for SAWBS scores to be correlated to HIQ scores (p = .05). These correlations are reported in Table 13.

With regard to discriminant validity, SAWBS scores were not associated with BMI or SES (p > .05). SAWBS scores were, however, significantly negatively correlated with the tendency to respond in a socially sanctioned manner, r(46) = -.39, p < .01.

Properties of the SAWBS Inventory in Clinical Samples

In dividing the self-esteem circle, the women from the EDG used between one and nine pieces (attributes), and the women from the PCG used between two and nine pieces. SAWBS scores ranged from 0 to 360, and from 0 to 245 degrees in the EDG and PCG, respectively. Looking at the rankings of shape and weight compared with other attributes, 3 of the 48 women in the EDG did not select shape and weight as an important attribute to feelings of self-worth, and therefore did not rank it at all, while others ranked shape and weight between first and seventh. In the PCG, 7 of the 44 women did not select shape and weight as an important attribute to feelings of self-worth, while the others ranked shape and weight between first and ninth.
Table 13.
Correlations between Shape- and Weight-Based Self-esteem (SAWBS) Scores and Perceptions of Shape and Weight, the Health Information Questionnaire (HIQ) and the Eating Disorders Inventory (EDI) Composite Score in Women who have Eating Disorders

<table>
<thead>
<tr>
<th>SAWBS Score</th>
<th>Weight Perception</th>
<th>Shape Perception</th>
<th>HIQ</th>
<th>EDI Composite</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-.41**</td>
<td>-.19</td>
<td>.25</td>
<td>.60**</td>
</tr>
</tbody>
</table>

**p < .001

Note. N = 48. Higher scores correspond to perceiving oneself as more underweight, perceiving one's shape as more attractive, and to higher levels of eating disorder symptomatology on the HIQ and on the EDI Composite score.

Between-Group Comparisons of SAWBS Scores

Table 14 displays SAWBS Inventory characteristics in the EDG, PCG, and UCG, including the total number of attributes selected, the rank ordering of the shape and weight piece, and the SAWBS score. ANCOVA procedures were performed to examine between-group differences for each variable, with age, BMI, and SES entered as covariates. Significant main effects were followed up with Scheffe's post hoc comparisons. Scheffe's post hoc tests were performed as the most stringent between-groups comparison was desired for these comparisons. For the ANCOVAs, an alpha level of .017 (.05 divided by 3) was used in interpreting significance.

Assumptions of homogeneity of variance, multicollinearity, and homogeneity of regression were tested. The Bartlett test of homogeneity of variance was statistically significant in all three analyses. Therefore, as before, the Box correction procedure was applied, and resulted in no
difference to the overall significance of the results. Results of evaluation of multicollinearity among the covariates were satisfactory. The assumption of homogeneity of regression was met in the first two analyses (i.e., total number of pieces and rank order of shape and weight), but was not met in the analysis of SAWBS scores for the age covariate (p < .01). This ANCOVA assumption violation will be addressed following presentation of the initial ANCOVA results.

Table 14.

Means and Standard Deviations of Properties of the SAWBS Inventory in the Eating Disorders Group (EDG), Psychiatric Control Group (PCG) and the Undergraduate Control Group (UCG)

<table>
<thead>
<tr>
<th></th>
<th>EDG n = 48</th>
<th>PCG n = 44</th>
<th>UCG n = 82</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of pieces</td>
<td>5.7 (1.8)a</td>
<td>5.7 (1.6)a</td>
<td>5.4 (3.7)a</td>
</tr>
<tr>
<td>(attributes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rank Order of Shape</td>
<td>2.0 (1.8)a</td>
<td>3.8 (2.1)b</td>
<td>3.7 (1.8)b</td>
</tr>
<tr>
<td>and Weight Piece</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAWBS score (angle)</td>
<td>144.8 (90.1)a</td>
<td>62.8 (63.8)b</td>
<td>59.5 (42.6)b</td>
</tr>
</tbody>
</table>

Note: Different superscripts in the table refer to statistically significant group differences.

With regard to the analysis for the number of pieces used, none of the covariates was significantly related to the total number pieces selected, and the overall ANCOVA was nonsignificant (p > .05). Therefore, women from the three groups did not differ in the number of pieces they used in dividing the self-esteem circle. Looking next at the analysis of rank ordering of the shape and weight piece, SES was significantly negatively related to the rank order of shape and weight. In addition, the overall ANCOVA was significant, F(2,150) = 12.84, p < .001. Scheffe's post hoc test revealed that women from the EDG ranked shape and weight significantly
higher than women from the two control groups, with no significant difference in rank ordering in the UCG and PCG. Finally, with regard to the analysis for SAWBS scores, BMI was significantly positively associated with SAWBS scores (p < .01). The overall ANCOVA was significant for group, F(2,155) = 31.39, p < .001, and follow up tests revealed that SAWBS scores were significantly higher in the EDG than in the two control groups (p < .01), with no difference between the PCG and the UCG. Because the homogeneity of regression assumption was only violated for age, a covariate that was not associated with SAWBS scores, follow-up regression analyses were not performed.

A second ANCOVA was performed to determine whether between-groups differences in SAWBS scores were independent of the effects of depression and self-esteem. This question was considered to have particular importance because depression and self-esteem differed among the groups (see Table 10), and may consequently have accounted for SAWBS score differences. In this analysis, in addition to controlling for BMI (the only demographic variable shown to be significantly associated with SAWBS scores in the previous analysis), adjustments were also made for depression and global self-esteem. SAWBS scores were the dependent variable, and BDI, RSES, and BMI were controlled through covariance. Once again, the Bartlett test of homogeneity of variance was statistically significant for SAWBS scores, BMI, and BDI. Therefore, the Box test was applied, and resulted in no difference to the overall pattern of results. No violations of multicollinearity among the covariates were detected. Testing for homogeneity of regression, however, revealed that the regression slope between SAWBS and BDI scores differed according to group. This difference will be addressed following presentation of the initial ANCOVA results.

In the ANCOVA, BMI and BDI were positively and significantly associated with SAWBS scores (ps < .001), and no significant association between RSES and SAWBS scores was detected. The overall ANCOVA was significant (F(2,145) = 17.52, p < .001), and Scheffe's follow-up tests revealed, as in the previous analysis, that SAWBS scores were significantly higher
in the EDG than in the two control groups (p < .01), with no significant differences between the PCG and the UCG.

Given the violation of the homogeneity of regression assumption for BDI and the finding that BDI scores were significantly related to SAWBS scores, a hierarchical multiple regression analysis was performed in which BMI, BDI, RSES, and the group by BDI interaction were entered in a first block, and group was entered in a second block. In this analysis, group accounted for significant unique variance in SAWBS scores, \( R^2 \) incremental \((1,168) = .017, p < .001\), indicating that even after the effects of the BDI by group interaction were controlled, group was still significantly associated with SAWBS scores.

Because a differing relationship between depression and shape- and weight-based self-esteem across group was considered to be theoretically important in understanding shape- and weight-based self-esteem in the eating disorders, a second ANCOVA was performed to further clarify the nature of the relationship between SAWBS and BDI scores. In this analysis, a median split of BDI scores was performed, turning this variable into a factor (low BDI corresponded to a score of less than or equal to 12, and high BDI corresponded to a BDI score of greater than 12). In the resulting ANCOVA, SAWBS score was the dependent variable, BMI and SES were covariates, and both group and BDI were factors. Not unexpectedly, previously reported group differences on BDI scores were reflected in unequal cell sizes within each group with regard to high and low BDI. In the UCG, 56 (72%) women were classified as low BDI, whereas only 18 (42%) and 8 (18%) of the PCG and EDG women were low BDI. Conversely, 22 (28%), 24 (58%), and 38 (82%) women were classified as high BDI in the UCG, PCG, and EDG, respectively. Once again, of the covariates, BMI (but not RSES) was significantly related to SAWBS scores. Multicollinearity among the covariates was acceptable, and no violations of the assumption of homogeneity of regression were detected. The overall ANCOVA was significant for group, \( F(2,153) = 10.36, p < .001 \) and the group by BDI interaction, \( F(2,153) = 3.04, p < .05 \). Simple main effects testing was performed to clarify the nature of the interaction. Results from these analyses revealed that among nondepressed women from the three groups, the differences in
SAWBS scores were not significantly different ($p > .05$). Among depressed women from the three groups, however, SAWBS scores were significantly higher in the EDG than they were in the two control groups ($p < .01$), with no significant differences between the UCG and the PCG. In other words, when both group and level of depression were considered, only EDG women reporting higher levels of depression had significantly higher SAWBS scores than women from the other groups. Figure 1 illustrates these relationships.

To further clarify the relationship between SAWBS and eating disorder symptomatology in nondepressed women, t-tests were performed to compare the depressed and nondepressed subgroups among the EDG, PCG, and UCG. Because these analyses were intended to clarify previous findings, a liberal alpha of .05 was used in stating statistical significance. First, the subgroups were compared on the demographic variables (age, BMI, and SES). These comparisons are reported in Table 15. As shown in the table, within the three groups, there were no differences between the high and low depressed subgroups on any demographic variables (all $p$'s > .05). Next, the groups were compared on level of eating disorder symptomatology, as assessed by the shape and weight perception scores, HIQ, and EDI Composite symptom scores. These are reported in Table 16. As shown in the table, within all three groups, depressed women reported significantly higher levels of eating disorder symptomatology on the HIQ ($t(43) = 2.47$, $p < .05$; $t(40) = 2.99$, $p < .01$; $t(73) = 4.63$, $p < .001$, for the EDG, PCG, and UCG, respectively), and significantly greater negative feelings about their shape ($t(44) = 4.89$, $p < .001$; $t(40) = 2.12$, $p < .05$; $t(76) = 3.01$, $p < .01$, for the EDG, PCG, and UCG, respectively). Depressed women also reported higher levels of eating disorder symptomatology on the EDI Composite score in the EDG, $t(40) = 4.59$, $p < .001$ and in the UCG, $t(72) = 5.25$, $p < .001$, but not in the PCG. In the UCG (but not in EDG or PCG), depressed women saw themselves as significantly more overweight than women from the nondepressed group, $t(76) = 2.66$, $p < .01$. Generally, then, the depressed subgroups were more symptomatic with regard to eating disorder symptomatology, although this effect was more pronounced in the UCG and EDG, and least pronounced in the PCG. It is noteworthy, however, that there were no actual differences in shape and weight
SAWBS Scores in Undergraduate Control Group (UCG), Eating Disorder Group (EDG), and Psychiatric Control Group (PCG) as a Function of Beck Depression Inventory (BDI) Scores.
between the subgroups as assessed by BMI. In sum, depressed women within the three groups were not different on demographic variables or on BMI, but were generally more troubled by eating disorder symptomatology.

Table 15. 

Comparison between Depressed and Nondepressed Women on Age, BMI, and SES in the Eating Disorders Group (EDG), Psychiatric Control Group (PCG) and the Undergraduate Control Group (UCG)

<table>
<thead>
<tr>
<th>BDI Status</th>
<th>Age</th>
<th>BMI</th>
<th>SES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EDG</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (n = 8)</td>
<td>27.00 (7.86)a</td>
<td>19.65 (2.27)a</td>
<td>3.00 (1.41)a</td>
</tr>
<tr>
<td>High (n = 38)</td>
<td>27.08 (8.95)a</td>
<td>19.02 (4.81)a</td>
<td>2.70 (1.00)a</td>
</tr>
<tr>
<td><strong>PCG</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (n = 18)</td>
<td>36.50 (7.20)q</td>
<td>23.34 (3.33)q</td>
<td>2.17 (1.25)q</td>
</tr>
<tr>
<td>High (n = 24)</td>
<td>37.75 (7.76)q</td>
<td>24.71 (8.34)q</td>
<td>2.32 (1.29)q</td>
</tr>
<tr>
<td><strong>UCG</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (n = 56)</td>
<td>20.52 (4.93)x</td>
<td>21.78 (3.33)x</td>
<td>2.22 (1.00)x</td>
</tr>
<tr>
<td>High (n = 22)</td>
<td>21.82 (9.91)x</td>
<td>21.69 (2.67)x</td>
<td>2.44 (1.04)x</td>
</tr>
</tbody>
</table>

Note: Different superscripts within each group refer to statistically significant group differences.

Finally, because SAWBS scores were significantly related to the tendency to respond in a socially sanctioned manner, an additional analysis was performed to ensure that group differences in SAWBS scores were not attributable to differences across groups in socially desirable responding. In order to test this, an ANCOVA was performed in which SAWBS scores were the
dependent variable, and M-C (10) scores were entered as covariates. BMI was also controlled because of the significant relationship between SAWBS scores and BMI reported earlier.

Table 16.
Comparison between Depressed and Nondepressed Women on Weight and Shape Perception, HIQ, and EDI Composite Score within the Eating Disorders Group (EDG), Psychiatric Control Group (PCG) and the Undergraduate Control Group (UCG)

<table>
<thead>
<tr>
<th>BDI Status</th>
<th>Weight Perception</th>
<th>Shape Perception</th>
<th>HIQ Score</th>
<th>EDI Composite</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EDG</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (n = 8)</td>
<td>3.87 (1.12)</td>
<td>4.50 (1.07)</td>
<td>29.75 (9.16)</td>
<td>19.71 (18.34)</td>
</tr>
<tr>
<td>High (n = 38)</td>
<td>3.05 (1.56)</td>
<td>2.13 (1.28)</td>
<td>40.86 (11.93)</td>
<td>48.11 (14.25)</td>
</tr>
<tr>
<td><strong>PCG</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (n = 18)</td>
<td>3.33 (.91)</td>
<td>4.44 (1.04)</td>
<td>8.22 (5.04)</td>
<td>13.83 (14.72)</td>
</tr>
<tr>
<td>High (n = 24)</td>
<td>2.75 (1.07)</td>
<td>3.54 (1.56)</td>
<td>16.29 (10.56)</td>
<td>22.17 (13.16)</td>
</tr>
<tr>
<td><strong>UCG</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (n = 56)</td>
<td>3.38 (.70)</td>
<td>4.48 (1.08)</td>
<td>14.09 (7.78)</td>
<td>16.68 (13.13)</td>
</tr>
<tr>
<td>High (n = 22)</td>
<td>2.91 (.68)</td>
<td>3.63 (1.22)</td>
<td>23.14 (7.01)</td>
<td>35.76 (16.39)</td>
</tr>
</tbody>
</table>

Note: Different superscripts within each group refer to statistically significant group differences.

Because the M-C (10) was not completed by the PCG in this study, this analysis was only possible comparing women from the EDG and UCG. ANCOVA assumptions were first tested. The homogeneity of variance assumption was violated, and the Box test applied as correction, resulting in no difference to the overall significance of the results. Multicollinearity tests were satisfactory. The homogeneity of regression was, however, significant for M-C (10) scores,
indicating that the relationship between M-C(10) and SAWBS scores varied across group. This will be addressed following presentation of initial ANCOVA results. Inspection of standardized beta weights of the covariates indicated that M-C (10) scores were not significantly associated with SAWBS scores (p > .05). The overall ANCOVA was, however, significant, F(1, 113) = 38.9, p < .001, indicating that SAWBS scores were significantly higher in the EDG than in the UCG, even after the variance accounted for by social desirability was controlled. Because social desirability was not significantly associated with SAWBS scores, no follow-up analyses were performed to address the heterogeneity of regression obtained with regard to M-C (10) scores.

**Hypothesized Developmental Precursors of SAWBS**

First, to examine whether the possible precursor variables were more elevated in the EDG than in the UCG, t-tests were performed comparing the two groups on each of the variables. Means and standard deviations for each variable are provided in Table 17. As shown in the table, the EDG scored significantly higher than did the UCG on endorsement of stereotyped beliefs and on the importance placed on the woman's shape and weight by mother and by romantic partner. There were no significant differences between the two groups on perceptions of SAWBS in mother, father, siblings or friends, or in perceived importance placed on the woman's shape and weight by father.

Finally, as in Study I, to explore the extent to which the developmental precursor variables were related to shape- and weight-based self-esteem within the EDG, correlations were computed between SAWBS scores and endorsement of stereotyped beliefs about thinness (as assessed by the HBI), perceived SAWBS in mother, father, siblings, and in female friends, and women's perception of the importance placed on their own shape and weight by mother, father, and either current or past romantic partner (as assessed by the FFAI). With regard to the sibling score, 4 of the women were only children and therefore did not have a sibling score. In the case of the romantic partner question, 8 women did not respond to questions pertaining to either a past or present romantic partner. As shown in Table 18, SAWBS scores were significantly positively related to endorsement of stereotyped beliefs about thinness and to perceived importance placed
by mother and father on their (the woman's) shape and weight. SAWBS scores were unrelated to perceived SAWBS in any family members or friends.

Table 17.
Means and Standard Deviations of Health Beliefs Inventory (HBI), Perceived SAWBS in Mother, Father, Friends, and Siblings, and Importance Placed on Women's Shape and Weight by Mother, Father, and Romantic Partner in the Eating Disorder Group (EDG) and Undergraduate Control Group (UCG)

<table>
<thead>
<tr>
<th></th>
<th>EDG</th>
<th>UCG</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>48</td>
<td>82</td>
</tr>
<tr>
<td>HBI Score</td>
<td>59.21 (14.51)</td>
<td>48.63 (9.95)</td>
</tr>
<tr>
<td>Perceived SAWBS in:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>105.73 (80.68)</td>
<td>99.77 (68.09)</td>
</tr>
<tr>
<td>Father</td>
<td>54.77 (60.77)</td>
<td>60.43 (64.06)</td>
</tr>
<tr>
<td>Siblings</td>
<td>110.47 (74.23)</td>
<td>94.45 (57.20)</td>
</tr>
<tr>
<td>Friends</td>
<td>116.40 (60.38)</td>
<td>111.58 (59.89)</td>
</tr>
<tr>
<td>Importance placed by:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>2.56 (1.29)</td>
<td>2.15 (1.05)</td>
</tr>
<tr>
<td>Father</td>
<td>2.20 (1.31)</td>
<td>1.96 (.93)</td>
</tr>
<tr>
<td>Romantic Partner</td>
<td>3.41 (1.10)</td>
<td>2.97 (.92)</td>
</tr>
</tbody>
</table>

Note: Different superscripts in the table refer to statistically significant group differences.

Scores can range from 1 to 5, with higher scores corresponding to greater perceived importance.
Table 18.

Correlations between SAWBS Scores and Health Beliefs Inventory (HBI), Perceived SAWBS in Mother, Father, Friends, and Siblings, and Importance Placed on Women's Shape and Weight by Mother, Father, and Romantic Partner in Eating Disordered Sample

<table>
<thead>
<tr>
<th></th>
<th>SAWBS Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBI Score</td>
<td>.56**</td>
</tr>
<tr>
<td>Perceived SAWBS in:</td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>-.16</td>
</tr>
<tr>
<td>Father</td>
<td>.04</td>
</tr>
<tr>
<td>Siblings</td>
<td>-.08</td>
</tr>
<tr>
<td>Friends</td>
<td>.02</td>
</tr>
<tr>
<td>Importance placed by:</td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>.29*</td>
</tr>
<tr>
<td>Father</td>
<td>.38**</td>
</tr>
<tr>
<td>Romantic Partner</td>
<td>-.24</td>
</tr>
</tbody>
</table>

N ranged between 40 and 48. **p < .01, *p < .05

Discussion

The purpose of this study was to establish the psychometric properties of the SAWBS Inventory in women who have eating disorders, to compare shape- and weight-based self-esteem among women who have eating disorders and two control groups of women, and to explore the relationship between SAWBS scores and hypothesized developmental precursor variables within an eating disordered sample. Similar to findings from the undergraduate study, SAWBS scores
were stable over 1 week and were positively correlated with perceiving oneself as overweight. Unlike in the undergraduate sample, however, there was only a trend for SAWBS scores to be negatively associated with perceived shape attractiveness ($p = .10$). Inspection of standard deviations of perceived shape attractiveness scores in the UCG and EDG (see Table 11) revealed that the failure to detect a significant association between SAWBS and perceived shape attractiveness in the EDG was not due to insufficient variance in scores in the EDG. Instead, the lack of statistical significance in this group may in part have been due to decreased power. With regard to the specificity of shape- and weight-based self-esteem, SAWBS scores were significantly higher in women with eating disorders than they were in normal and psychiatric control groups, even after the effects of age, socioeconomic status, BMI, depression, and self-esteem were controlled. With regard to discriminant validity, SAWBS scores were uncorrelated with BMI and socioeconomic status. However, within the eating disorder sample, shape- and weight-based self-esteem was negatively correlated with the tendency to respond in a socially-sanctioned manner. Follow-up analyses indicated, however, that even after controlling for social desirability, SAWBS scores differed significantly between women who have eating disorders and women from a normal control group. With regard to proposed developmental precursors of shape- and weight-based self-esteem in women who have eating disorders, as in Study I, endorsement of stereotyped beliefs about thinness and perceived importance placed on the woman's shape and weight by mother and father were significantly related to SAWBS scores in this sample.

The strong test-retest correlation of SAWBS scores in the eating disordered group was as predicted, and supports the hypothesized stability of shape- and weight-based self-esteem in women who have eating disorders. This finding is also consistent with the view that shape- and weight-based self-esteem is a fundamental aspect of eating disorder symptomatology (Cooper & Fairburn, 1993). The positive correlation between SAWBS scores and perception of being overweight, and the trend for SAWBS scores to be related to perceived shape attractiveness suggests that in women who have eating disorders, as in the undergraduate sample, shape- and
weight-based self-esteem is related to negative perceptions about weight and shape attractiveness. As in the undergraduate sample, SAWBS scores were not significantly related to actual shape and weight (as assessed by BMI) in women who have eating disorders.

A number of interesting findings emerged from the between-group analyses of SAWBS scores. Most importantly, the finding that SAWBS scores were significantly higher in the EDG than in the control groups after controlling for demographic variables supports the hypothesis that shape- and weight-based self-esteem is specific to eating disorder symptomatology. The finding that SAWBS scores were higher in the eating disorder group than in the two control groups even after controlling for depression and self-esteem also supports the thesis that shape- and weight-based self-esteem is a distinct feature of eating disorder symptomatology. However, the differing relationship between BDI and SAWBS scores as a function of group (as detected by the significant test of heterogeneity of regression for BDI), and follow-up analyses performed to examine this relationship indicated that the relationship between-group, depression, and SAWBS scores was complex. It is important to note that this heterogeneity of regression for BDI scores was not due to heterogeneity of variance across group (see Table 12). As noted earlier, among nondepressed women, SAWBS scores did not differ significantly in the three groups, while among depressed women, SAWBS scores were significantly higher in the EDG than in the two control groups. Several interpretations for these findings exist. One is that women who have eating disorders in the absence of depressed mood simply do not have higher shape- and weight-based self-esteem than women who do not have eating disorders. If that were the case, then the DSM-IV criterion linking shape- and weight-based self-esteem to an eating disorder diagnosis would be inaccurate, in that it is only the subset (admittedly a large subset) of women who have both eating disorder and depressive symptomatology who meet this criterion. In this study, the finding that the depressed and nondepressed subgroups of the EDG differed significantly on level of eating disorder symptomatology suggests that the EDG nondepressed subgroup may have been a somewhat unusual group of women, in that they had relatively low levels of eating disorder symptomatology. One possible explanation is that the women from this group were
characterized by previous treatment which decreased both eating disorder and depressive symptomatology (although they still met DSM-IV criteria for an eating disorder). This was suspected because a significant portion of the women who participated in this study (83%) had either completed or were currently in treatment for their eating disorder. Although examination of hospital charts did not show the proportion of women in treatment to differ between the depressed and nondepressed subgroups, it is possible that women in the nondepressed subgroup were more likely to have benefitted from therapy. Another possibility is that the women from the nondepressed subgroup simply had a milder form of eating disorder, characterized by the absence of depressed mood and lesser level of eating disorder symptomatology.

The finding that SAWBS scores were correlated with the tendency to respond in a socially sanctioned manner, although not predicted, was not entirely surprising given that women who have eating disorders have been characterized as highly conforming (e.g., Garner, Garfinkel, & O'Shaughnessy, 1985; Strober, 1980). Because a number of the women who participated in this study were receiving treatment for an eating disorder, it is likely that they were aware that a healthy treatment goal was reducing shape- and weight-based self-esteem. Possibly, this knowledge made women from the EDG experience greater social pressure than did women from the UCG to report diminished importance of shape and weight to feelings of self-worth (i.e., fake "good") in completing the SAWBS Inventory. Future research might investigate the relationship between SAWBS scores and the tendency to respond in a socially-sanctioned manner in women who have not yet started treatment, to determine whether an awareness of the maladaptive nature of using shape and weight as attributes upon which to base self-esteem was partially responsible for the correlation obtained between these two measures in this study.

Finally, with regard to the proposed developmental precursors of shape- and weight-based self-esteem, in the eating disorder sample, endorsement of stereotyped beliefs about shape and weight was a significant predictor of SAWBS scores. As in the undergraduate study, this finding suggests that endorsement of societal beliefs about shape and weight is strongly related to an internalization of these beliefs with regard to one's own value as a person. The pattern of
relationships between SAWBS scores and the family and friends variables was also similar to that found in Study I. Namely, in the EDG, SAWBS scores were not significantly related to perceived shape- and weight-based self-esteem in family or friends, but were related to perceived importance placed on their own shape and weight by mother and father. Shape- and weight-based self-esteem may therefore develop more in response to women's wish to fulfill what they perceive to be others' expectations for them than through a process of learning through modeling. Interestingly, two of the three proposed developmental precursor variables on which significant group differences between the EDG and the UCG were obtained were also found to be associated with SAWBS scores within the two groups (i.e., stereotyped beliefs about thinness and importance placed on shape and weight by mother). This general consistency is suggestive that these may be reliable predictors of shape- and weight-based self-esteem. Of course, the correlational nature of this study precludes any conclusions regarding directionality from being drawn, and longitudinal work is clearly needed to directly examine causal influences on shape- and weight-based self-esteem.
General Discussion

This thesis began with a theoretical examination of the significance of shape- and weight-based self-esteem to the eating disorders. It was noted that, although considerable conceptual discussion of this construct existed in the literature, as well as inclusion of shape- and weight-based self-esteem as a diagnostic criterion for anorexia nervosa and bulimia nervosa in *DSM-IV*, no satisfactory measure and empirical study of shape- and weight-based self-esteem had been developed. In developing the SAWBS Inventory, this thesis sought to fill this empirical gap by examining shape- and weight-based self-esteem in women from undergraduate, eating disorder, and psychiatric control groups. Investigation of this new construct, however, required first establishing measurement validity, and some psychometric properties of the SAWBS Inventory were examined as part of this research. In the present discussion, the psychometric properties of the SAWBS Inventory are initially reviewed, followed by a discussion of the thesis in broader theoretical and clinical contexts. Implications for prevention are then described, in which thesis findings with regard to the proposed developmental precursor variables are incorporated. Finally, limitations of the thesis, and directions for future research are addressed.

With regard to the psychometric properties of the SAWBS Inventory, this study determined that SAWBS scores were stable over 1 week, and correlated with women's negative perceptions about their bodies in undergraduate and eating disorder samples. In undergraduate women, SAWBS scores correlated with one of two measures of shape and weight cognitive schemata. The validity of shape- and weight-based self-esteem, as assessed by the SAWBS Inventory, as a central feature of eating disorder symptomatology, was supported in a number of ways. In Study I, SAWBS scores correlated positively with eating disorder symptom scores in undergraduate women, and were significantly higher in women identified as "possible or probable" eating disorder cases than in women not suspected of having an eating disorder. In Study II, SAWBS scores were higher in the EDG than in the UCG and PCG, even after controlling for age, socioeconomic status, BMI, self-esteem, and depression. Study II revealed a complex relationship between depression and shape- and weight-based self-esteem, however, which has
significant theoretical implications. These will be elaborated upon in the section on theoretical implications. With regard to discriminant validity, SAWBS scores were uncorrelated with BMI and socioeconomic status in UCG and EDG women, and were uncorrelated with the tendency to respond in a socially sanctioned manner in UCG women. Although the tendency to respond in a socially sanctioned manner was related to SAWBS scores in EDG women, SAWBS scores remained higher in EDG than in UCG women, even after the effect of social desirability was controlled. In sum, the SAWBS Inventory showed early promise as a reliable and valid measure of shape- and weight-based self-esteem, and shape- and weight-based self-esteem appears to be closely and uniquely related to eating disorder symptomatology.

Theoretical Implications

The positive relationship between shape- and weight-based self-esteem and depression, and the negative relationship between SAWBS and global self-esteem in the EDG and UCG suggest that basing one's self-worth on shape and weight was associated with generally unhealthy psychological functioning in those groups. Interestingly, the relationship between SAWBS and depression did not hold in the PCG. This was demonstrated in the significant heterogeneity of regression in the ANCOVA analysis, in which the relationship between BDI and SAWBS scores differed as a function of group. Inspection of scatterplots revealed that, although there was a significant positive slope between SAWBS and BDI in the EDG and the UCG, in the PCG, the slope between SAWBS and BDI was 0, indicating no relationship between SAWBS and BDI. This is an interesting finding, and may reflect the salience of different self-dimensions among the three groups. Speculation with regard to the nature of these relationships is tempting. For instance, the association between shape- and weight-based self-esteem and depression in women who have eating disorders may in part be because an increased focus on the body is likely to increase access to negative feelings about the body and result in feelings of depression. Of course, the direction of these relationships may be reversed, in that higher depression may manifest itself in a more negative view of the body and in an increase in trying to meet shape and weight ideals so as to enhance shape- and weight-based self-esteem as a perceived solution to the
depression. These speculations also apply to the UCG, in which significant relationships were detected between SAWBS, depression, negative self-esteem, and eating disorder symptomatology. In contrast, in the PCG, depression was not significantly associated with SAWBS scores. Inspection of correlations between SAWBS scores and all of the SCL-90-R subscale scores and Global Severity Index scores in the PCG also revealed no significant relationships between SAWBS and other measures of psychiatric symptomatology. Possibly, in the PCG, depression and other indices of psychological distress were related to self-dimensions other than shape and weight. For instance, possible domains of concern in the PCG might include coping with anxiety symptoms, themes of loss, and/or significant interpersonal conflict. In sum, whereas shape- and weight-based self-esteem was closely tied to depression in the EDG and UCG, in which shape and weight are salient dimensions, in the PCG, depression may have been more closely associated with other areas of concern.

In addition to the simple correlation between SAWBS and depression in the EDG and UCG reported above, this research revealed an especially interesting relationship between shape- and weight-based self-esteem and group as a function of depression. As noted earlier, although SAWBS scores distinguished women who have eating disorders from the control groups, group differences in SAWBS scores in nondepressed women were nonsignificant. Follow up analyses within the EDG revealed that the nondepressed subgroup of women did not differ from the depressed women on age, BMI, or SES, but that this group was significantly less symptomatic than their depressed counterparts on the indices of eating disorder symptomatology. It was proposed that the eight women who comprised this nondepressed subgroup of the EDG might have been unusual, in that they may have been, for instance, partially recovered from their eating disorder. This would explain why they reported less severe symptoms of all types, including depression and eating disorder cognitions and behaviours. If that were the case, then it might be speculated that at least a moderate level of depression is central to eating disorder symptomatology, and that depression is not just a frequently observed comorbid feature. Future
research would need to examine SAWBS scores and depression in untreated women who have eating disorders to answer this question.

The significant correlation between SAWBS scores and one of the two measures of cognitive schemata used in this research suggests that the relationship between shape- and weight-based self-esteem and measures of cognitive schemata needs to be investigated further. Certainly, the theoretical premises upon which schemata research is founded suggest that a dimension upon which self-esteem is largely based will increase the salience of that dimension for that individual. The possible connection between shape- and weight-based self-esteem and a shape and weight schema therefore helps explain the preoccupation and focus observed in women who have eating disorders on their own shape and weight. It also sheds some light on the cognitive narrowing that is observed in some women who have eating disorders, who appear unable to see the merit or value in attributes other than shape and weight. Perhaps the self-esteem circle of such individuals would be dominated, if not entirely filled, by the shape and weight dimension. This was observed in a number of cases among the women in the EDG in this study. The extent to which SAWBS scores are actually related to cognitive processing, however, is yet unclear, given the positive findings with regard to the FAE, but lack of relationship between SAWBS and Stroop scores in this study. Further research needs to examine whether the failure to detect a relationship between SAWBS and Stroop scores was due to possible methodological problems outlined earlier, or whether the assumption of a relationship between shape- and weight-based self-esteem and a shape and weight schemata needs to be revisited.

In considering the strengths and limitations of the SAWBS Inventory as a diagnostic tool, a few unusual findings from this study need to be understood. In this study, a small number of women from the UCG (11 women) and PCG (6 women) had SAWBS scores that exceeded 140 degrees, and a small number of women from the EDG (8 women) reported SAWBS scores of 40 degrees or less. In order to understand these findings in the context of categorical diagnostic models of eating disorders, possible characteristics of these women were explored. With regard to the non-eating disordered women, it is possible that high SAWBS may be present in women
who are involved in activities requiring a focus on shape and weight. For instance, aspiring models, dancers, and different types of athletes, including runners, rowers, and weight-lifters, all need a particular shape and weight to perform optimally, and may therefore place greater emphasis and focus on the body than do individuals who are not involved in those types of activities. It is also possible, however (and this is supported by the data from this research), that non-eating disordered individuals who have higher SAWBS scores comprise an at-risk group, in that they have intermediate levels of eating disorder symptomatology. With regard to EDG women who had low SAWBS scores, inspection of hospital charts of the eight individuals with SAWBS scores at or below 40 degrees showed that without exception, each had received extensive treatment for her eating disorder. Several possibilities therefore explain the low SAWBS scores obtained in that group. One possibility comes from the observation that seven of the eight women had histories of chronic anorexia nervosa. Possibly, although shape- and weight-based self-esteem may have been an important part of the etiology and initial maintenance of their eating disorder, their longstanding history of chronic low weight, repeated hospitalizations, and isolation and withdrawal from normal life may have left them fearful of recovery. That is, this subgroup may have become more like the PCG in that they were more focused on other things, such as how their eating disorder kept them isolated from normal relationships and healthy living than on their shape and weight per se. SAWBS may therefore be a more salient feature in individuals whose eating disorder has not yet had a chronic impact on their lives. For these women, important features other than eating disorder symptomatology (i.e. social anxiety, extreme interpersonal difficulties) may have become significant barriers to recovery. The other woman in that subgroup had a diagnosis of bulimia, and was pregnant with her first child at the time she participated in the study. Possibly, for her, the upcoming birth of her baby had changed the picture of her eating disorder, in that she may have been focusing more on motherhood and good health than on shape and weight as a means to feel good about herself. It is therefore also possible that women who have an eating disorder but who have low SAWBS are partially recovered with regard to their eating disorder symptomatology.
Clinical Implications

The proposed centrality of shape- and weight-based self-esteem to eating disorder symptomatology has a number of clinical implications. Although it is not known whether shape- and weight-based self-esteem precedes, follows, or develops concurrently with physical and behavioural eating disorder symptomatology, the present research suggests that shape- and weight-based self-esteem is intrinsically linked with eating disorder symptoms. Consequently, with regard to treatment, reducing physical and behavioural symptomatology will likely be fostered by interventions that are also directed at reducing clients' shape- and weight-based self-esteem. Typically, eating disorders treatment outcome research has focused on weight restoration and cessation of binge-purge activity. Relatively little attention has focused on cognitive change resulting from treatment. This may be partially why current treatment approaches have shown relatively high relapse rates. In targeting for change what may be a core cognitive feature of eating disorder symptomatology, overall outcome may be improved. This might be accomplished in a number of ways, including use of cognitive restructuring strategies, in which the merit and healthfulness of basing one's self-worth on shape and weight might be examined, as well as by assisting clients to develop and see value in other dimensions in themselves aside from the physical, such as in their relationships, hobbies, or spirituality. These approaches, of course, are not at odds with many existing treatment approaches, but rather more clearly delineate what may have been a nonformalized aspect of therapy. The SAWBS Inventory also shows promise as an outcome measure to assess changes in shape- and weight-based self-esteem that occur in the course of treatment, and may be an important predictor of relapse in recovered women (Fairburn et al., 1993).

Prevention

The finding that SAWBS scores were unrelated to actual shape and weight (as assessed by the BMI), but were related to negative perceptions about the body has significant implications with regard to the etiology and development of eating disorders. Primarily, this finding suggests that shape- and weight-based self-esteem is unlikely to be a consequence of extreme weight loss,
like other frequently observed concomitant features of eating disorders, such as inability to concentrate, impaired memory, and general cognitive narrowing. Instead, it may actually precede the development of eating disorder symptomatology, and be a central risk factor for the development of an eating disorder. The SAWBS Inventory therefore shows promise as a screening instrument to identify individuals at high-risk to develop an eating disorder. Of course, only longitudinal work can evaluate this hypothesis.

The value placed upon thinness in our society communicated through the media has been posited to play an important causal role in the development of eating disorders. The link between HBI and SAWBS scores in this study shows that endorsement of stereotyped beliefs about thinness is closely linked to basing one's own self-worth on shape and weight. If SAWBS is a risk factor for an eating disorder, then this finding supports the view that endorsement of societal ideals about thinness puts women at risk to develop an eating disorder. Nevertheless, although presumably all of the women in this study (and in North American society in general) are exposed to thinness ideals, there is considerable variability with regard to endorsement of stereotyped beliefs about thinness, and in shape- and weight-based self-esteem. What therefore requires explanation is why only some women buy into these societal ideals, develop high shape- and weight-based self-esteem, and possibly go on to develop an eating disorder. This research offered one possible hypothesis, in that the extent to which the women believed that their parents placed importance on the women's shape and weight was associated with SAWBS scores. Possibly, this parental influence makes societal influences more salient, and more likely to be internalized among women who perceive such expectations from their parents. The correlation between SAWBS scores and one of the measures of shape and weight cognitive schemata in this study further suggests that these women may go on to process other cues about shape and weight differently, such that they are likely to attend to and focus on societal messages to a greater extent than women who are not exposed to high parental expectations with regard to shape and weight. An initial attentiveness to shape and weight from parents might consequently feed into an increased preoccupation with media messages and an increasingly selective attention to shape and weight.
cues. In planning prevention efforts, although it is unlikely that societal beliefs about thinness will change, expectations from parents may be an important avenue for intervention. Specifically, parents might be assisted to emphasize other aspects of their daughters' development than their physical appearance, such as their relationships, participation in diverse activities of interest, schooling, or spirituality.

Limitations of this Research

A limitation of the present research is the self-report nature of the SAWBS Inventory, and the implicit assumption that individuals are able to accurately report on the extent to which shape and weight affects their self-esteem. Although this limitation cannot be discounted, the fact that SAWBS scores correlated with the FAE, a measure of low face validity, and were unaffected by social desirability scores in the undergraduate sample, suggests that individuals may indeed have such awareness, and are able to accurately report on a structural aspect of their self-esteem, independent of their need to present themselves in a socially-sanctioned manner. A second possible limitation of the SAWBS Inventory is that it is based on a single score. As the SAWBS Inventory requires the relative importance of a number of selected attributes to feelings of self-worth to be assessed, this is simply an intrinsic property of this measure. However, it might be argued that participants' prior selection and rank-ordering of attributes increase the validity of the SAWBS score, in that the final SAWBS score is the culmination of a number of preliminary steps. Another shortcoming of the present research was the short test-retest interval of only 1 week. Future research is clearly warranted to determine whether SAWBS scores are stable over longer periods of time. A number of sample limitations were also present in this study. Ideally, EDG women would not have received any treatment at the time of recruitment, and the three groups would not have differed on the demographic variables. Finally, in addition to assessing women's perceptions regarding family and friend attitudes, a nice addition to the study would have been to actually assess these attitudes directly.
Directions for Future Research

This research lays the groundwork for a number of future studies on shape- and weight-based self-esteem. Although it was tempting in this research to consider the possible causal role of shape- and weight-based self-esteem in the development of eating disorders, the correlational design of this study prevents such questions from being addressed. Longitudinal designs offer a necessary and valuable avenue for future research. Future research might also explore whether treatment interventions directly targeted at reducing shape- and weight-based self-esteem in women who have eating disorders are more successful than existing treatment modalities at reducing overall eating disorder symptomatology. Finally, longitudinal work might also examine whether women who are successful at reducing shape- and weight-based self-esteem in the course of their treatment are at lower risk to relapse.
References


FOOTNOTES

1The UCG and the EDG completed a measure of perceived control, a measure of shoplifting behaviour, and a newly developed measure of shape and weight concerns. The PCG completed the latter two measures.
APPENDIX A

DSM-IV Diagnostic Criteria for Anorexia Nervosa and Bulimia Nervosa
ANOREXIA NERVOSA

A. Refusal to maintain body weight at or above a minimally normal weight for age and height (e.g., weight loss leading to maintenance of body weight less than 85% of that expected; or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected).

B. Intense fear of gaining weight or becoming fat, even though underweight.

C. Disturbance in the way in which one’s body weight or shape is experienced, undue influence of body shape and weight on self-evaluation, or denial of the seriousness of the current low body weight.

D. In post-menarchal females, amenorrhea, i.e., the absence of at least three consecutive menstrual cycles. (A woman is considered to have amenorrhea if her periods occur only following hormone, e.g., estrogen, administration.)

Specify type:

Restricting type: During the episode of Anorexia Nervosa, the person does not regularly engage in binge eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas).

Binge eating/purging type: During the episode of Anorexia Nervosa, the person regularly engages in binge eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas).
BULIMIA NERVOSA

A. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:
   (1) 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,
   (2) 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).

B. 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 exercise.

C. The binge eating and inappropriate compensatory behaviors both occur, on average, at least twice a week for three months.

D. Self-evaluation is unduly influenced by body shape and weight.

E. The disturbance does not occur exclusively during episodes of Anorexia Nervosa.

Specify type:

Purging type: The person regularly engages in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.

Non-purging type: The person uses other inappropriate compensatory behaviors, such as fasting or excessive exercise, but does not regularly engage in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.
EATING DISORDER NOT OTHERWISE SPECIFIED

The Eating Disorder Not Otherwise Specified category is for disorders of eating that do not meet criteria for any specific Eating Disorder. Examples 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 of 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 of less than twice a week or for a duration of less than 3 months.

4. The regular use of inappropriate compensatory behaviour by an individual of normal body weight after eating small amounts of food (e.g., self-induced vomiting after the consumption of two cookies).

5. Repeatedly chewing and spitting out, but not swallowing, large amounts of food.

APPENDIX B

SAWBS Model
PREDICTORS

* Perceived Family Attitudes
* Perceived Family SAWBS
* Perceived Friends' SAWBS
* Perceived Partner Attitudes
* Stereotyped Beliefs

COGNITIVE MEASURES

SAWBS

Shape and Weight Based Self-Esteem

Stroop Interference
False Alarm Effect

EATING DISORDER SYMPTOMS

* EDI and HIQ in student sample
* Discriminates between EDG, PCG, UCG
APPENDIX C

Consent Forms and Measures
OUR OPINION OF OURSELVES IS BASED ON HOW WE FEEL ABOUT OUR DIFFERENT PERSONAL ATTRIBUTES.

STEP 1: Please read through the list below and PLACE AN "X" on the line next to each attribute that is important to how you have felt about yourself in the last four weeks.

STEP 2: Now, look over the attributes you have selected, and RANK ORDER them in terms of how much your opinion of yourself in the last four weeks has been based on each attribute. The numbers should not necessarily reflect how satisfied you have been with the attribute, but rather how important the attribute has been to how you feel about yourself.

STEP 3: Using the attributes you selected, DIVIDE THE CIRCLE below so that the size of each section is a reflection of how much your opinion of yourself in the last four weeks has been based on that attribute (larger pieces should indicate that a greater part of your opinion of yourself has been based on that attribute, for example). Place the letters corresponding to the attributes inside the pieces of the circle.

A: Your Intimate or Romantic Relationships
   e.g., as reflected in the level of closeness you feel in close relationships

B: Your Body Shape and Weight
   e.g., your actual current shape or weight

C: Your Competence at School/Work
   e.g., as reflected by grades or work evaluation

D: Your Personality
   e.g., warmth, level-headedness, openness, self-control

E: Your Friendships
   e.g., as reflected by the number or quality of friendships

F: Your Face
   e.g., how "good looking" you are

G: Your Personal Development
   e.g., your sense of morality, ethics, or spirituality

H: Your competence at activities other than school/work
   e.g., your competence in music, sports, hobbies

I: Other
   Please describe: ____________________________

EXAMPLES:

YOUR CIRCLE:
**CONTROLLABILITY QUESTIONNAIRE**

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<td>Completely within my control</td>
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Using the above scale, please rate the extent to which you feel that you CURRENTLY HAVE CONTROL over the following areas:

___ 1. Your Intimate or Romantic Relationships  
___ 2. Your Body Shape and Weight  
___ 3. Your Competence at School/Work  
___ 4. Your Personality  
___ 5. Your Friendships  
___ 6. Your Face  
___ 7. Your Personal Development  
___ 8. Your competence at activities other than school/work

Using the same scale, please indicate the extent to which you feel that you SHOULD HAVE CONTROL over each of the following areas:

___ 1. Your Intimate or Romantic Relationships  
___ 2. Your Body Shape and Weight  
___ 3. Your Competence at School/Work  
___ 4. Your Personality  
___ 5. Your Friendships  
___ 6. Your Face  
___ 7. Your Personal Development  
___ 8. Your competence at activities other than school/work
FAMILY AND FRIENDS ATTITUDE INVENTORY

Now we would like you to think about some important people in your life, and estimate their attitudes about shape and weight.

Please think of the following individuals and estimate how THEY would DRAW THE SELF ESTEEM CIRCLE for THEMSELVES. However, we only want you to draw the piece that corresponds to the extent to which THEIR FEELINGS OF SELF-WORTH ARE BASED ON THEIR SHAPE AND WEIGHT.

For each individual, draw a circle piece and label it with the initials "SW" for shape and weight.

EXAMPLES:

1. PARENTS
(If you have one or more step-parent, choose the parent(s) to whom you feel closest).
   MOTHER

   FATHER

2. SIBLINGS
If you have more than three siblings, choose the three to whom you feel closest.
   SIBLING #1: SIBLING #2 SIBLING #3
   Age: Age: Age:
   Gender: Gender Gender:

3. FRIENDS
Please think of three female friends whose friendship is important to you.
   FRIEND #1: FRIEND #2: FRIEND #3:
   Age: Age: Age:
FAMILY AND FRIENDS ATTITUDE INVENTORY (cont'd)

NI = Not at all Important
MI = Mildly Important
PI = Pretty Important
VI = Very Important
EI = Extremely Important

1. To what extent do you think it has been IMPORTANT to your MOTHER that YOU have an attractive shape and weight?

NI MI PI VI EI

2. To what extent do you think it has been IMPORTANT to your FATHER that YOU have an attractive shape and weight?

NI MI PI VI EI

3. If you are currently involved in a romantic relationship, to what extent do you think it has been IMPORTANT to your PARTNER that YOU have an attractive shape and weight?

NI MI PI VI EI

4. If you are not currently seeing someone but have been in a romantic relationship in the last year, please estimate the extent to which you think it was IMPORTANT TO YOUR PREVIOUS PARTNER that YOU have an attractive shape and weight?

NI MI PI VI EI
WORD RECOGNITION TASK

Please read the following word list and indicate which words you think you saw in the previous two cards. Work through the list as quickly as possible.

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<td>FIGURE</td>
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GENERAL INFORMATION SHEET

1. Birthdate (Day/Month/Year): __________

2. Please check the situation that best describes the family you grew up in:
   a) __ Two parent family
   b) __ One parent family
   c) __ Step-family
   d) __ Other. Please describe: ____________________________

3. Mother's Occupation: 4. Mother's Highest education:

5. Father's Occupation: 6. Father's Highest education:

7. What is your ethnic background?

8. Your Marital Status:
   a) __ Single, never married
   b) __ Married and living together
   c) __ Separated or divorced
   d) __ Widowed
   e) __ Common law (living together at least 6 months)
   f) __ Other. Please describe: ____________________________


If you are married or in a common law relationship:

11. Your Partner's Employment: 12. Partner's Highest Education:
On this questionnaire are groups of statements. Please read each group of statements carefully. Then pick out the one statement in each group which best describes the way you have been feeling the past week, including today. Circle the number beside the statement you picked. If several statements in the group seem to apply equally well, circle each one. Be sure to read all the statements in each group before making your choice.

1. I do not feel sad.
   1. I feel sad.
   2. I am sad all the time and I can't snap out of it.
   3. I am so sad or unhappy that I can't stand it.

2. I am not particularly discouraged about the future.
   1. I feel discouraged about the future.
   2. I feel I have nothing to look forward to.
   3. I feel that the future is hopeless and that things cannot improve.

3. I do not feel like a failure.
   1. I feel I have failed more than the average person.
   2. As I look back on my life, all I can see is a lot of failures.
   3. I feel I am a complete failure as a person.

4. I get as much satisfaction out of things as I used to.
   1. I don't enjoy things the way I used to.
   2. I don't get as much satisfaction out of anything anymore.
   3. I am dissatisfied or bored with everything.

5. I don't feel particularly guilty.
   1. I feel guilty a good part of the time.
   2. I feel quite guilty most of the time.
   3. I feel guilty all of the time.

6. I don't feel I am being punished.
   1. I feel I may be punished.
   2. I expect to be punished.
   3. I feel I am being punished.

7. I don't feel disappointed in myself.
   1. I am disappointed in myself.
   2. I am disgusted with myself.
   3. I hate myself.

8. I don't feel I am any worse than anybody else.
   1. I am critical of myself for my weaknesses or mistakes.
   2. I blame myself all the time for my faults.
   3. I blame myself for everything bad that happens.

9. I don't have any thoughts of killing myself.
   1. I have thoughts of killing myself, but I would not carry them out.
   2. I would like to kill myself.
   3. I would kill myself if I had the chance.

10. I don't cry any more than usual.
    1. I cry more now than I used to.
    2. I cry all the time now.
    3. I used to be able to cry, but now I can't even though I want to.

11. I am no more tired now than I ever was.
    1. I get annoyed or irritated more easily than I used to.
    2. I feel frustrated all the time now.
    3. I don't get frustrated at all by the things that used to irritate me.

12. I have not lost interest in other people.
    1. I am less interested in other people than I used to be.
    2. I have lost most of my interest in other people.
    3. I have lost all of my interest in other people.

13. I make decisions about as well as I ever could.
    1. I put off making decisions more than I used to.
    2. I have greater difficulty in making decisions than before.
    3. I can't make decisions at all anymore.

14. I don't feel I look any worse than I used to.
    1. I am worried that I am looking old or unattractive.
    2. I feel that there are permanent changes in my appearance that make me look unattractive.
    3. I believe that I look ugly.

15. I can work about as well as before.
    1. It takes an extra effort to get started at doing something.
    2. I have to push myself very hard to do anything.
    3. I can't do any work at all.

16. I can sleep as well as usual.
    1. I don't sleep as well as I used to.
    2. I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
    3. I wake up several hours earlier than I used to and cannot get back to sleep.

17. I don't get more tired than usual.
    1. I get tired more easily than I used to.
    2. I get tired from doing almost anything.
    3. I am too tired to do anything.

18. My appetite is as good as it used to be.
    1. My appetite is not as good as it used to be.
    2. My appetite is much worse now.
    3. I have no appetite at all anymore.

19. I haven't lost much weight, if any, lately.
    1. I have lost more than 5 pounds.
    2. I have lost more than 10 pounds.
    3. I have lost more than 15 pounds.

20. I am no more worried about my health than usual.
    1. I am worried about physical problems such as aches and pains, or upset stomach or constipation.
    2. I am very worried about physical problems and it's hard to think of much else.
    3. I am so worried about my physical problems that I cannot think about anything else.

21. I have not noticed any recent change in my interest in sex.
    1. I am less interested in sex than I used to be.
    2. I am much less interested in sex now.
    3. I have lost interest in sex completely.
INSTRUCTIONS

This is a scale which measures a variety of attitudes, feelings and behaviors. Some of the items relate to diet and eating. Others ask you about your feelings about yourself. THERE ARE NO RIGHT OR WRONG ANSWERS SO TRY VERY HARD TO BE COMPLETELY HONEST IN YOUR ANSWERS. RESULTS ARE COMPLETELY CONFIDENTIAL. Read each question and fill in the circle under the column which applies best to you. Please answer each question very carefully. Thank you.

1. I eat sweets and carbohydrates without feeling nervous. .................................................. ○ ○ ○ ○ ○ ○
2. I think that my stomach is too big. .................................................................................. ○ ○ ○ ○ ○ ○
3. I wish I could return to the security of childhood. ......................................................... ○ ○ ○ ○ ○ ○
4. I eat when I am upset. ........................................................................................................ ○ ○ ○ ○ ○ ○
5. I stuff myself with food. ....................................................................................................... ○ ○ ○ ○ ○ ○
6. I wish I could be younger. .................................................................................................... ○ ○ ○ ○ ○ ○
7. I think about dieting. ............................................................................................................. ○ ○ ○ ○ ○ ○
8. I get frightened when my feelings are too strong. ............................................................... ○ ○ ○ ○ ○ ○
9. I think that my thighs are too large. ..................................................................................... ○ ○ ○ ○ ○ ○
10. I feel ineffective as a person. ............................................................................................... ○ ○ ○ ○ ○ ○
11. I feel extremely guilty after overeating. ............................................................................. ○ ○ ○ ○ ○ ○
12. I think that my stomach is just the right size. ................................................................... ○ ○ ○ ○ ○ ○
13. Only outstanding performance is good enough in my family. ........................................ ○ ○ ○ ○ ○ ○
14. The happiest time in life is when you are a child. .............................................................. ○ ○ ○ ○ ○ ○
15. I am open about my feelings. .............................................................................................. ○ ○ ○ ○ ○ ○
16. I am terrified of gaining weight. .......................................................................................... ○ ○ ○ ○ ○ ○
17. I trust others. ........................................................................................................................ ○ ○ ○ ○ ○ ○
18. I feel alone in the world. ...................................................................................................... ○ ○ ○ ○ ○ ○
19. I feel satisfied with the shape of my body. ......................................................................... ○ ○ ○ ○ ○ ○
20. I feel generally in control of things in my life. ................................................................... ○ ○ ○ ○ ○ ○
21. I get confused about what emotion I am feeling. ............................................................... ○ ○ ○ ○ ○ ○
22. I would rather be an adult than a child. .............................................................................. ○ ○ ○ ○ ○ ○
23. I can communicate with others easily. ............................................................................... ○ ○ ○ ○ ○ ○
24. I wish I were someone else. ............................................................................................... ○ ○ ○ ○ ○ ○
25. I exaggerate or magnify the importance of weight. .......................................................... ○ ○ ○ ○ ○ ○
26. I can clearly identify what emotion I am feeling. ............................................................... ○ ○ ○ ○ ○ ○
27. I feel inadequate. ................................................................................................................ ○ ○ ○ ○ ○ ○
28. I have gone on eating binges where I have felt that I could not stop. ......................... ○ ○ ○ ○ ○ ○
29. As a child, I tried very hard to avoid disappointing my parents and teachers. ............. ○ ○ ○ ○ ○ ○
30. I have close relationships. .................................................................................................. ○ ○ ○ ○ ○ ○
31. I like the shape of my buttocks.
32. I am preoccupied with the desire to be thinner.
33. I don't know what's going on inside me.
34. I have trouble expressing my emotions to others.
35. The demands of adulthood are too great.
36. I hate being less than best at things.
37. I feel secure about myself.
38. I think about binging (over-eating).
39. I feel happy that I am not a child anymore.
40. I get confused as to whether or not I am hungry.
41. I have a low opinion of myself.
42. I feel that I can achieve my standards.
43. My parents have expected excellence of me.
44. I worry that my feelings will get out of control.
45. I think that my hips are too big.
46. I eat moderately in front of others and stuff myself when they're gone.
47. I feel bloated after eating a normal meal.
48. I feel that people are happiest when they are children.
49. If I gain a pound, I worry that I will keep gaining.
50. I feel that I am a worthwhile person.
51. When I am upset, I don't know if I am sad, frightened, or angry.
52. I feel that I must do things perfectly, or not do them at all.
53. I have the thought of trying to vomit in order to lose weight.
54. I need to keep people at a certain distance (feel uncomfortable if someone tries to get too close).
55. I think that my thighs are just the right size.
56. I feel empty inside (emotionally).
57. I can talk about personal thoughts or feelings.
58. The best years of your life are when you become an adult.
59. I think that my buttocks are too large.
60. I have feelings that I can't quite identify.
61. I eat or drink in secrecy.
62. I think that my hips are just the right size.
63. I have extremely high goals.
64. When I am upset, I worry that I will start eating.
Please read each of the following items and circle T if the item is true of you and circle F if the item is false. Thank you.

T  F  1. I like to gossip at times.
T  F  2. There have been occasions when I took advantage of someone.
T  F  3. I'm always willing to admit it when I make a mistake.
T  F  4. I always try to practice what I preach.
T  F  5. I sometimes try to get even rather than forgive and forget.
T  F  6. At times I have really insisted on having things my own way.
T  F  7. There have been occasions when I felt like smashing things.
T  F  8. I never resent being asked to return a favor.
T  F  9. I have never been irked when people expressed ideas very different from my own.
T  F  10. I have never deliberately said something that hurt someone's feelings.
RSE

Please indicate the extent to which each of the following statements describes you, using the following categories:

1 = Not at all descriptive of me.
2 = Hardly descriptive of me.
3 = Somewhat descriptive of me.
4 = Descriptive of me.
5 = Very Descriptive of me.

1. I feel that I am a person of worth, at least on an equal basis with others.
2. I feel that I have a number of good qualities.
3. All in all, I am inclined to feel that I am a failure.
4. I am able to do things as well as most other people.
5. I feel I do not have much to be proud of.
6. I take a positive attitude toward myself.
7. On the whole, I am satisfied with myself.
8. I wish I could have more respect for myself.
9. I certainly feel useless at times.
10. At times I think I am no good at all.
Please read the following statements and indicate the extent to which you believe they are true. Go with your immediate "gut reaction" or first instinct.

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1. Thinness is a measure of an individual's success.
2. Being heavy is a sign that something is wrong with the person.
3. Success in work or studies is more important than achieving and maintaining the right weight and shape.
4. Fat people are generally lazy.
5. Thin people don't have as many friends as fat people.
6. Being at the right weight or shape leads to greater happiness in relationships.
7. To be fat is to be unattractive and unhappy.
8. Being thin is important.
9. A person's weight is a sign of their value as a person.
10. Fat people are harder workers than thin people.
11. Being fat is one of the worst things to be.
12. Weight and shape are the least important parts of a person's identity.
13. It is important to have a firm body.
14. Being fat is something to feel ashamed of.
15. To be thin is to be successful, attractive and happy.
16. Fat people are more attractive than thin people.
17. Thin people enjoy life more than heavy people.
1. Please indicate the extent to which you feel you are overweight or underweight.
   a) ___ Extremely overweight
   b) ___ Very overweight
   c) ___ A little overweight
   d) ___ Weight is just right
   e) ___ A little underweight
   f) ___ Very underweight
   g) ___ Extremely underweight

2. Please indicate the extent to which you feel your shape is attractive.
   a) ___ Shape is extremely unattractive
   b) ___ Shape is very unattractive
   c) ___ Shape is a little unattractive
   d) ___ Neutral
   e) ___ Shape is moderately attractive
   f) ___ Shape is very attractive
   g) ___ Shape is extremely attractive

3. What is your PRESENT WEIGHT: ______

4. What is your PRESENT HEIGHT: ______

5. Have you LOST more than 10 pounds in the last year? YES/NO
   If YES, how many times has this happened? _____
   If YES, was there any special reason? __________________________

6. Have you GAINED more than 10 pounds in the last year? YES/NO
   If YES, how many times has this happened? _____
   If YES, was there any special reason? __________________________

7. Many people at some time feel afraid to eat because they think they will gain weight.
   During the past year, have you ever had this fear?
   a) ___ Never
   b) ___ Hardly ever
   c) ___ Sometimes
   d) ___ Often
   e) ___ Very often
   f) ___ All the time

   During the past year, has feeling afraid to eat ever led you to do any of the following:
   a) Refuse to eat even though you were hungry YES/NO
   b) Try to get rid of food you have just eaten YES/NO
   c) Pretend to others you have eaten YES/NO
8. During the past month, have you been worried about your eating habits?

   a) ____ NO, not at all worried
   b) ____ YES, slightly worried
   c) ____ YES, somewhat worried
   d) ____ YES, very worried

   If YES, have you worried for any of the following reasons?

   a) I don't eat enough  YES/NO
   b) I eat too much      YES/NO
   c) I get urges to stuff myself YES/NO
   d) I can't seem to stop eating once I start YES/NO
   e) I eat when I am upset YES/NO
   d) I eat when I am not hungry YES/NO
   e) I eat too much junk food YES/NO
   f) I eat between meals   YES/NO

9. Do you ever experience episodes of eating a large amount of food in a relatively short amount of time (i.e., less than 2 hours)?

   a) ____ Never
   b) ____ Less than once a month in the last year
   c) ____ About once in the last month
   d) ____ About once a week
   e) ____ Between 2 and 6 times per week
   f) ____ Every day
   g) ____ More than once every day

10. Do you ever feel that you CANNOT STOP EATING or CONTROL what or how much you are eating?

    a) ____ All the time
    b) ____ Very often
    c) ____ Often
    d) ____ Sometimes
    e) ____ Hardly Ever
    f) ____ Never

11. Do you ever try to CONTROL YOUR WEIGHT by EXERCISING (i.e., exercising with the primary intention of burning calories)?

    a) ____ Never
    b) ____ Less than once a month in the last year
    c) ____ About once in the last month
    d) ____ Once or twice a week
    e) ____ Between 3 and 5 times per week
    f) ____ About every day
    g) ____ More than once every day

12. Do you ever try to LOSE WEIGHT by going on a "CRASH DIET" (i.e., eating at least some food but much less than you usually eat for at least a few days)?

    a) ____ Never
    b) ____ Once in the last year
    c) ____ More than once in the last year
    d) ____ Once in the last month
    e) ____ More than once in the last month
13. Do you ever try to CONTROL YOUR WEIGHT by FASTING (i.e., no solid food for at least 24 hours)?
   a) ____ Never
   b) ____ Less than once a month in the last year
   c) ____ About once in the last month
   d) ____ About once a week in the last month
   e) ____ Between 2 and 6 times per week in the last month
   f) ____ Every day
   g) ____ More than once every day

14. Do you ever try to CONTROL YOUR WEIGHT by using DIET PILLS?
   a) ____ Never
   b) ____ Less than once a month in the last year
   c) ____ About once in the last month
   d) ____ About once a week in the last month
   e) ____ Between 2 and 6 times per week in the last month
   f) ____ Every day
   g) ____ More than once every day

15. Do you ever try to CONTROL YOUR WEIGHT by using DIURETICS or WATER PILLS?
   a) ____ Never
   b) ____ Less than once a month in the last year
   c) ____ About once in the last month
   d) ____ About once a week in the last month
   e) ____ Between 2 and 6 times per week in the last month
   f) ____ Every day
   g) ____ More than once every day

16. Do you ever try to CONTROL YOUR WEIGHT by VOMITING?
   a) ____ Never
   b) ____ Less than once a month in the last year
   c) ____ About once in the last month
   d) ____ About once a week in the last month
   e) ____ Between 2 and 6 times per week in the last month
   f) ____ Every day
   g) ____ More than once every day

17. Do you ever try to CONTROL YOUR WEIGHT by using LAXATIVES?
   a) ____ Never
   b) ____ Less than once a month in the last year
   c) ____ About once in the last month
   d) ____ About once a week in the last month
   e) ____ Between 2 and 6 times per week in the last month
   f) ____ Every day
   g) ____ More than once every day

18. Are your periods regular? YES/NO

19. Have your periods stopped AT ANY TIME during the past year? YES/NO
   If YES: For how many months? ____
   If this was due to physical illness, please describe: ___________________________
   Was this at a time you had lost weight? YES/NO

20. Have you ever received treatment for an eating disorder? YES/NO
   If so, when? __________________________________________
**INSTRUCTIONS:** This is a scale which measures a variety of personal opinions and feelings about your own body weight and shape. **THERE ARE NO RIGHT OR WRONG ANSWERS SO TRY VERY HARD TO BE COMPLETELY HONEST IN YOUR ANSWERS.** Read each statement carefully. For each statement fill in the square with the response that best represents your opinion or feeling. Make sure that your answer is in the correct box.

<table>
<thead>
<tr>
<th>Statement</th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
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</thead>
<tbody>
<tr>
<td>I think a lot about my weight or shape.</td>
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<td>I think that being at the right weight or shape leads to greater happiness</td>
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<td>in my relationships with other people my age.</td>
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<td>I think that changing my weight or shape are not high priorities at this</td>
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<td>point in my life.</td>
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<td>I think that changing my weight or shape is just about the only way I</td>
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<td>could feel better about myself at this point in my life.</td>
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<td>I think that the happiest moments in my life were mainly due to the fact</td>
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<td>that I was at the right weight or shape back then.</td>
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<td>I think I would rather be successful in my work or studies than be</td>
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<td>successful in achieving and maintaining the right weight or shape.</td>
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<td>I think that my weight or shape will have little or no influence on the</td>
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<td>direction that my life takes in the future.</td>
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<td>I think that getting to the right weight or shape makes me a more</td>
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<td>special person.</td>
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<td>I think that my desire to change my weight or shape is more important than</td>
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<td>just about anything else in my life at the moment.</td>
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<td>I think that my life would be much better if I were at the right weight</td>
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<td>or shape.</td>
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<td>I think that my weight or shape will have little or no influence on my</td>
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<td>ability to achieve the future goals that I have set for myself.</td>
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<td>I think that I worry a lot about my weight or shape.</td>
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<td>I think that many of the problems I face right now are caused by not</td>
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<td>being at the right weight or shape.</td>
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<td>I think that little else could make me happier than achieving or</td>
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<td>maintaining the right weight or shape.</td>
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<td>I think that my weight or shape do not greatly influence the way I feel</td>
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<td>about myself as a person.</td>
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<td>I think that many of my personal problems would be solved if I could only</td>
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<td>get to the right weight or shape.</td>
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<td>I think that my weight or shape are not the most important parts of my</td>
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<td>identity.</td>
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<td>18</td>
<td>I think that my own worth as a person is mainly determined by my weight or shape.</td>
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<td>19</td>
<td>I think that the good things I have experienced so far have had little to do with my weight or shape.</td>
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<td>20</td>
<td>I think that my main problem right now is my inability to achieve and maintain the right weight or shape.</td>
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<td>21</td>
<td>I think that other people my age don't really care about my weight or shape.</td>
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<td>22</td>
<td>I think that I would become a more valuable person if I were able to achieve or maintain the right weight or shape.</td>
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<td>23</td>
<td>I feel insecure about my weight or shape.</td>
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<td>24</td>
<td>I feel great about my weight or shape.</td>
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<td>25</td>
<td>I feel negative about my weight or shape.</td>
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<td>26</td>
<td>I feel humiliated about my weight or shape.</td>
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<td>27</td>
<td>I feel unhappy about my weight or shape.</td>
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<td>28</td>
<td>I feel comfortable about my weight or shape.</td>
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<td>29</td>
<td>I feel dissatisfied about my weight or shape.</td>
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<td>30</td>
<td>I feel satisfied about my weight or shape.</td>
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<td>31</td>
<td>I feel terrible about my weight or shape.</td>
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<td>32</td>
<td>I feel proud about my weight or shape.</td>
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<td>33</td>
<td>I feel bad about my weight or shape.</td>
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<td>34</td>
<td>I feel happy about my weight or shape.</td>
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<td>35</td>
<td>I feel satisfied about my weight or shape.</td>
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<td>36</td>
<td>I feel nervous about my weight or shape.</td>
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<td>37</td>
<td>I feel uncomfortable about my weight or shape.</td>
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<td>38</td>
<td>I feel relaxed about my weight or shape.</td>
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<td>39</td>
<td>I feel good about my weight or shape.</td>
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<tr>
<td>40</td>
<td>I feel positive about my weight or shape.</td>
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</tbody>
</table>

41. Your age:    
42. Your height:    feet and    inches [Guess if you don't know]  
43. Your current weight:    pounds [Guess if you don't know]  
44. What would be the right weight for you:    pounds  
45. Your sex:    female or    male

* R. Davis, 1993
SHOPLIFTING

18. Have you ever shoplifted?

___ Yes  ___ No

IF YES:

- How many times in total? (Check one)

___ 1 to 9 times
___ 10 to 19 times
___ 20 to 49 times
___ 50 or more times

- How old were you when you first shoplifted? ___ yr(s)
(Please be specific)

- What items have you shoplifted? (Check as many as appropriate):

___ Food  ___ Laxatives  ___ Diet pills
___ Other(Specify: ____________________________)

- Why have you shoplifted? (Check as many as appropriate):

___ No Money  ___ Peer Pressure  ___ Fun/Exciting
___ Embarrassed/Not Allowed To Buy Item(s)
___ Other(Specify: ____________________________)

- Have you shoplifted at all in the past 6 months?

___ Yes  ___ No
APPENDIX D

Stroop Protocol
STROOP PROTOCOL

The task we will be doing involves naming the color of some words. I'd like you to name as quickly as possible the color of the ink in which some words are printed. The words will be printed in six different colors; RED, GREEN, YELLOW, BLUE, BLACK, AND GREY.

(show sample card)

Here is an example of the colors in which the words will be printed. You are to name the color of each word, beginning here (point), then going down each column (point). When you are finished the first column, you go up here to the top of the second column (point), and when you are finished that column, you go up to the top of the third column (point), and so on.

To make sure you are familiar with all the colors, practice naming the colors of the letter "O" printed in the first column. Put your finger under each word before you name its color like this (demonstrate).

(Have subject read the first column only, and correct any mistakes).

Good. Now we are ready to begin with the word lists.

If you make any mistakes, correct them immediately as they occur. If I notice a mistake, I will let you know by pointing to the word you named incorrectly, and you are to correct the mistake, and continue. As before, put your finger under each word before you name it its color.

Any questions?

Okay. Work as quickly as you can. Here is the first card. BEGIN. (time)

Now I have some other words I want you to color-name. As before, work as quickly as you can, and correct any mistakes as they occur. Ready? BEGIN. (time)