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**PRIMARY PREVENTION OF EATING DISORDERS:  
A PILOT PROGRAM**

by

Rafael David Richman

B.Sc. (Hons.), University of Toronto, 1988

THESIS SUBMITTED IN PARTIAL FULFILLMENT OF  
THE REQUIREMENTS FOR THE DEGREE OF  
MASTER OF ARTS  
in the department  
of  
Psychology

© Rafael D. Richman

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## ABSTRACT

A pilot program in eating disorders primary prevention and education was implemented in two grade five and two grade six classes in an urban primary school. Classes from a similar school served as a no-treatment comparison group. The program consisted of six weekly sessions focusing on eating disorders, social pressures to be thin, harmful effects and myths about dieting and weight, coping with the influences of family and friends, healthy eating habits, and self-esteem. Questionnaires on eating disorder knowledge (KQ), eating patterns, body satisfaction (BSM), dieting, gaining, and maladaptive eating attitudes and behaviours (ChEAT) were administered to both groups prior to and following the prevention program. Overall results suggested that the program was successful and effective in inducing change. Statistically significant values were obtained for the KQ and BSM. While not statistically significant, group means on the Children's Eating Attitudes Test (ChEAT), proportion of children scoring above the ChEAT cutoff criterion, and the percentages of children trying to lose and gain weight all displayed a tendency in a positive direction. It is suggested that eating disorder prevention programs may serve as a practical and feasible tool to combat the increasing prevalence of eating disorders in children.

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## INTRODUCTION

Eating disorders in general, and anorexia nervosa and bulimia nervosa in particular, are prevalent in today's western society. Whereas not too long ago the terms anorexia nervosa and bulimia nervosa were unfamiliar to the average layperson, today they are a part of our vocabulary and, for many, affect our daily lives -- through family, friends, someone we know, or maybe ourselves.

Before discussing primary prevention, the prevalence of eating disorders, and eating disorder prevention programs, it is necessary to define anorexia nervosa and bulimia nervosa, and briefly mention some relevant epidemiological data.

What is anorexia nervosa? The central feature of anorexia nervosa is the relentless pursuit of thinness associated with the self-perception that one's body size is too large (or fat). Weight gain is dreaded and dieting becomes the means for avoiding fatness. The anorexic needs to have control over her body; achievement is through the pursuit of thinness (Garfinkel & Garner, 1982).

We now have a working definition; who does this disorder affect? In repeated observations, anorexia nervosa is overrepresented in the upper social classes (Garfinkel & Garner, 1982; Levine, 1987). The majority of anorexics are White females (90% to 95%) who develop the disorder before they are 25 years of age (Crisp, 1988; Garfinkel & Garner, 1982; Levine, 1987). There is a shift toward a higher representation in upper and lower classes and Blacks (Garfinkel & Garner, 1982). Eating disorders are manifested in other groups, for example, in males and in older females, however, this occurs to a significantly smaller degree.

Bulimia nervosa is characterized by recurrent episodes of binge-eating followed by repeated attempts to purge the body of any perceived excess weight.

Frequent weight fluctuations and depressed mood are also common, but not necessary, symptoms of this condition (Levine, 1987). Although not receiving as much attention, until recently, as anorexia nervosa, it is nevertheless a severe problem affecting many young females. Anorexia nervosa and bulimia nervosa are not mutually exclusive disorders. In other words, it is not uncommon to find the two conditions coexisting within a single person.

The number of research articles pertaining to anorexia nervosa, and more recently bulimia nervosa, has increased dramatically in recent years, coinciding with a general increase in prevalence of the disorders. This will be thoroughly discussed in a later section.

A concurrent trend sweeping through western culture is the diet craze. Society is placing tremendous pressure on women to diet as a means for attaining a thinner body shape (Garner, Garfinkel, Schwartz, & Thompson, 1980; Garner, Garfinkel, & Olmsted, 1983)

### **Media influences**

Diet advertisements and diet articles are difficult to avoid in the media. A glance through a recent newspaper or women's magazine reveals countless ads for weight-loss clinics, new diet books, and calorie-wise diet foods. An unforgettable image is the 'before-weight-loss' versus 'after-weight-loss' campaigns. Relatively heavy women, or occasionally men, are photographed prior to embarking on weight-loss programs and, some time thereafter, rephotographed after a significant weight-loss. In the former, the individuals are often portrayed as unhappy with themselves and with life in general. In the latter, the opposite is portrayed: happy people who are pleased with their lives. More often than not, the implication is that these altered body shapes drastically

improved all realms of the successful dieters' lives. We, the readers, are led to believe that our lives will also improve if we subscribe to their weight-loss programs.

Television commercials and programs convey the same messages. A recent example is Oprah Winfrey from the Oprah daytime talk show, who dieted and substantially reduced her weight. She sends her audience a familiar message: "I look great, I feel healthier, and I am a better person now that I am thin." Oprah, proudly modeling her slim proportions, is perpetuating the belief common in females (and to a lesser extent in males): the secret to success, wealth, and happiness lies in the attainment of a thin body. This is only a single instance of a common theme. Not surprisingly, Oprah later regained all the weight she lost, plus an additional few pounds!

Society is given the impression that successful dieting followed by weight loss makes for a better person. Is this true? According to two prominent researchers in the field (Polivy & Herman, 1983) this is not necessarily the case:

the ultimate goals -- weight loss, slimness, attractiveness, health, and happiness -- have been taken for granted. Also taken for granted is the notion that these various goals all go together...there is an accumulating store of research that indicates that neither health, nor happiness, nor attractiveness, nor even slimness necessarily follows from dieting...for many of us, these various goals may be directly incompatible. (p. 8)

Society's obsession with dieting as a means toward attaining the coveted thin body shape may be causing, or at least contributing somewhat, to the current increase in prevalence of eating disorders (Bruch, 1978; Garner et al., 1983).

### **Sociocultural standards of beauty**

Until Garner et al.'s (1980) article "Cultural expectations of thinness in women", there were no empirical data supporting the sociocultural anorexia nervosa association. The authors noted a shift, particularly during the 1970s "in the idealized female shape from the voluptuous, curved figure to the angular, lean look of today" (p. 483).

Garner et al. (1980) set out to support their hypothesis through studying female body sizes from two sources: Playboy magazine centerfolds and Miss America pageant contestants. Both offer an indirect index of contemporary norms for desirable body sizes in women. Average bust, waist, hip, height, and weight measurements were calculated for all monthly playmates over a 20-year period (1959-1978). In addition, average weights were compared to population mean- female-weights over the same period. Garner et al. (1980) found a significant decrease in percent of average weight for the centerfolds over the 20 years.

Data were also collected for the contestants and the winners of the Miss America pageant from the same 20-year period. The pattern paralleled what Garner et al. (1980) found from analyzing the magazine centerfolds: a significant, gradual decline in average weight. Noteworthy is the additional finding that since 1970, winners have weighed significantly less than contestants.

Silverstein, Peterson, and Perdue (1986a) studied correlates of the thin standard of bodily attractiveness for women using an extension of Garner et al.'s (1980) methodology, lengthening the time period to 80 years. Pictures of women from Vogue and Ladies Home Journal -- women's magazines chosen because of their popularity and influence among women -- were measured. Using ratios between bust, waist, and hips the authors measured "curvaceousness".

Silverstein et al. (1986a) found a very low bust/waist ratio during the 1920s and during the late 1960s to early 1970s. This is indicative of noncurvaceousness, or slimness.

Silverstein, Perdue, Peterson, and Kelly (1986b) set out to demonstrate the role of the mass media in promoting a thin standard of attractiveness for women. They followed three lines of reasoning: first, they demonstrated that "the current standard of attractiveness for women portrayed in the media is slimmer than for men". Second, "that the portrayed standard is slimmer now than in the past". And third, that the "findings apply to many of the major media" (p. 519).

In the first method, men and women characters from 33 current television programs were rated using a weight-rating scale created especially for this study. Silverstein et al. (1986b) rated female characters as significantly thinner than their male television counterparts. Conversely, fewer of the females were rated as heavy compared to the males.

Another media source, popular women's and men's magazines, were analyzed for the number of advertisements and articles about body shape and size, dieting, and food-related ads. Women's magazines contained many more advertisements for diet foods (63 to 1), articles dealing with body shape and size (96 to 8), and food ads (73 to 3) than men's magazines.

Women receive a barrage of contradictory messages. Television characters and diet ads urge them to do whatever is necessary to maintain a slim physique; and at the same time, women are required to resist the temptation to indulge in the foods presented to them in magazines and other mass media.

### **DiETING**

A correlate of the cultural emphasis on thinness in women is the diet craze. Even though repeated dieting constitutes a risk factor for anorexia nervosa and bulimia (Smead, 1985), dieting is, for many individuals, perceived as the norm:

The current societal preference for a thin physique has spawned a corresponding societal preoccupation with dieting and weight loss. The extent of this preoccupation is such that it may now be accurate to regard dieting and its attendant diet mentality as normative...normal eating now requires periodic dieting. (Polivy & Herman, 1987, p. 635)

Abundant evidence supporting the ubiquity of dieting in our society is found in the media (magazines, books, newspapers, television, films), the diet industry itself, and in research. Earlier this was illustrated with two anecdotal examples from magazines and television. There are corroborative psychological studies.

Garner et al. (1980) tabulated the number of articles about dieting and weight loss from six popular women's magazines; advertisements were excluded. Over a 20-year period (1959 through 1978), the number of diet articles significantly increased.

The diet industry is big business today. According to Mazur (1986), the growth of the diet industry is well known, and is reflected in the growth in popularity of diet centers, diet clubs, and diet foods and beverages. Obviously, this industry has a substantial vested financial interest in perpetuating the thin

body standard. If the obsession with dieting and striving for thinness subsides, these businesses would stand to lose billions of dollars in revenue.

In an indirect way, the diet industry's attempts to continue making big money is related to the increase in eating disorders. This is not to say they are solely responsible, or they caused the increase, -- the opposite may be true, the diet industry may have sprung up as a response to a societal demand -- but they nevertheless have reaped large benefits from promoting a relatively unsuccessful fight against fat.

Diet books are one influential part of the diet business. Many are popular and often appear atop the best seller lists. An often criticized diet book is Mazel's (1980) The Beverly Hills Diet. Apart from its popularity in terms of selling a phenomenal number of copies, the book promotes anorexia-nervosa-like eating patterns as a cure for fatness.

The Beverly Hills Diet marks the first time an eating disorder -- anorexia nervosa -- has been marketed as a cure for obesity. It is a case of one disease being offered as a cure for another...The popularity of her diet can be seen as yet another symptom of a weight-obsessed culture. (Wooley & Wooley, 1982, p. 57)

Mazel's (1980) diet is a prescribed lifelong maintenance plan for a slim body shape. The central feature is how to accommodate those unavoidable, but frequent, eating binges. Punishment proceeding a binge episode entails eating only one type of fruit per day until weight returns to the pre-binge, desirable level.

Wooley and Wooley (1982) call The Beverly Hills Diet (1980) "training in anorexic psychopathology" (p. 65). That the book sold millions of copies is an



indication of our culture's obsession with dieting and the lengths individuals will go to obtain and maintain a slim physique.

Media influences, sociocultural standards of beauty, and the diet industry, affect opinions regarding what is an optimal body weight, and consequently influence self-esteem levels, and attitudes and behaviours toward eating. The effects of these forces may be particularly damaging on younger children who are still in their formative years, and hence more influenceable and impressionable. Countering the potentially negative effects of these pervasive societal influences on children may reduce the incidence of eating disorders, and maladaptive behaviours and attitudes toward body size, eating, and dieting. Primary prevention programs are a means to achieve this end.

### **Primary prevention: What and why?**

What is primary prevention? Primary prevention targets the entire population or high risk groups in an attempt to prevent a problem's or a disorder's widespread manifestation before it becomes insurmountable. In contrast to secondary prevention, which focuses on reducing the duration of a disorder, and tertiary prevention, which focuses on the treatment of individuals, the goal of primary prevention is to reduce incidence levels in an entire targeted population (Rappaport, 1977; Mann, 1978; Cowen, 1983).

Albee (1982) argues cogently in favor of the widespread application of primary prevention strategies in psychology. This approach, he stresses, allows for the maximum allocation of limited financial resources and social service agencies toward dealing with widespread psychological problems and disorders at the individual and societal level. Albee (1982) believes that the favored

alternative, entailing treatment after a problem or illness has already manifest itself, is costly and ineffective when viewed from the big picture.

Discussion regarding primary prevention for eating disorders has received increasing attention throughout recent years (Chng, 1983; Collins, 1988; Crisp, 1979; 1988; Shisslak & Crago, 1987). Arthur Crisp, a well known and respected author and psychiatrist specializing in the field of eating disorders, writes in favor of applying primary prevention to deal with this increasing problem (1979; 1988). He recommends developing pilot studies to permit the evaluation of intervention programs, and outlines a number of goals and specific strategies.

Shisslak and Crago (1987) strongly encourage the development and implementation of eating disorder primary prevention programs, and they outline exercises and assignments appropriate for conducting such programs. Three years after they published this article, Shisslak and Crago (1990) designed and carried out a successful pilot program with high school students.

Accurate knowledge of causal variables for eating disorders, according to Vandereycken and Meermann (1984), is crucial when developing prevention programs for anorexia nervosa. They question the feasibility of these programs, remarking that it is difficult to change certain predisposing variables such as middle-class family characteristics and sociocultural influences. Nevertheless, Vandereycken and Meermann (1984) stress that specific attention should be paid to recognition of pre-anorexics through an evaluation of certain known risk factors in combination with reliable screening instruments.

Yager (1985) and Katz (1985) disagree with Vandereycken and Meermann's (1984) pessimistic opinions. For example, Yager reasons that sociocultural pressures to be thin could possibly be changed through concerted public awareness of the detrimental effects of these attitudes and pressure for

change. Katz (1985) believes that countering sociocultural influences may be the most appropriate target for eating disorder prevention programs.

Considerations prior to establishing preventive interventions for eating disorders were outlined by Smead (1985). For instance, she proposes that material designed to counter the prevailing attitudes toward thinness must be presented in a careful and thoughtful manner because it faces a strong adversary and vested interest from the multi-billion dollar diet and weight-loss industry

Garner (1985) also favors primary prevention for eating disorders and states that this would be enormously cost-effective in human and economic terms and probably beneficial in most instances. Potential iatrogenic effects, however, no matter how well-intentioned the program designers, may be an unforeseen adverse component. In order to minimize this risk, Garner (1985) recommends that special care be taken when planning an eating disorder prevention program.

Pre- and early adolescents appear to be the most logical recipients for eating disorder prevention programs. Crisp (1988) recommends targeting 11- to 16-year-old students, whereas Shisslak and Crago (1987) encourage developing programs for students as early as the junior-high-school level. Moreover, many successful smoking and drug prevention programs have focused on pre-adolescents (e.g., Luepker, Johnson, Murray, & Pechacek, 1983; Perry, Killen, & Slinkard, 1980).

Most children at the ages of 11- and 12-years-old are old enough to understand, and therefore hopefully benefit from an eating disorders prevention program. Preadolescence may be a critical stage in developing attitudes and behaviours associated with eating disorders. Unhealthy attitudes toward weight and dieting issues, which may have evolved out of years of parent-, family-, peer-, and society-child (subject) interactions, may not actually cause harm until these

attitudes interact with a pubertal weight gain. This may be a primary contributor to the development of eating disorders. The facts that anorexia nervosa is commonly first manifested between the ages of 14 to 18, that the peak age of onset for bulimia nervosa is 16 (Levine, 1987), and the belief that unhealthy attitudes may begin to develop early in childhood, provide reasons that efforts toward changing students' attitudes should be optimal before the onset of the pubertal physical growth stage.

Pre-adolescent children, in my opinion, are still relatively impressionable and open minded, and may be more willing to listen and change their attitudes, beliefs toward eating, diet, and body shape, than older adolescents and adults.

### **Substance abuse prevention programs**

A growing body of research in the area of substance abuse prevention demonstrates the feasibility, general success, and potential benefits of applied prevention programs (Flay et al., 1985; Killen, 1985; Perry et al., 1980; Schaps, Dibartolo, Moskowitz, Palley, & Churgin, 1981). In particular, targeting junior high school students, cigarette smoking prevention programs have been effective in reducing the incidence of smokers immediately following the sessions and during long-term follow-up (Luepker, et al., 1983; Perry, Killen, & Slinkard, 1980). These and other studies may be useful in providing some of the groundwork for developing and conducting effective eating disorder programs.

Schaps et al. (1981) reviewed 127 drug abuse prevention programs, pointing out the characteristics of the best studies. According to the authors, these experiments included: good, detailed program descriptions, detailed demographic information on the participants, use of multiple dependent measurement techniques, pre- and posttesting, and making sure respondents

understand the questions asked. Applying these features to eating disorder programs may enhance the quality of the studies.

### **Prevalence of eating disorders**

Hilda Bruch, in the preface to her book the Golden Cage (1978), writes:

for the last fifteen or twenty years anorexia nervosa is occurring at a rapidly increasing rate. Formerly it was exceedingly rare...Now it is so common that it represents a real problem...One might speak of an epidemic illness.(pp. vii-viii)

Research pertaining to the epidemiology and prevalence of eating disorders may be organized into four general groups:

1. Original articles describing the prevalence of eating disorders in the general population, where the authors wished to inform professionals and the lay public of eating disorder's existence, and alert them to the seriousness of these conditions. Attention was directed, in particular, to an adult, female population.
2. Subsequent articles demonstrating the tremendous increase in the prevalence of eating disorders during the previous 15 to 20 years. The focus, again, was mainly on adult and college-age women.
3. Studies illustrating a trend toward development of eating disorders and associated behaviours (e.g., dieting, preoccupation with thinness) in a younger population: high school students in the 13- to 18-year-old age range.
4. Current data, perhaps the most distressing of all, illuminating the prevalence of eating disorders, dieting, and abnormal attitudes and behaviours toward weight and body-size, among young children. These studies demonstrate that the

insidious precursors for developing eating disorders are apparently set in motion early in childhood.

### **Original and subsequent epidemiological research**

Evidence supports the notion of an increasing incidence of eating disorders in recent years. I will briefly review three supportive studies: Theander (1970), Kendall, Hall, Hailey, and Babigian (1973), and Jones, Fox, Babigian, and Hutton (1980).

The earliest attempt at documenting the incidence of anorexia nervosa for a defined population was by Theander (1970). Data were taken from psychiatric and medical records at two Swedish university hospitals during the years 1931 to 1960. An annual incidence rate of .24 per 100,000 was observed.

In a subsequent study, Kendall et al. (1973) extracted information on anorexia nervosa patients from three psychiatric case registrars: North-East Scotland, Camberwall (an area in London), and Monroe County, New York. Length of data collection varied according to area. The authors acknowledged an inevitable degree of under-reporting the incidence of the eating disorder owing to their assumption that nearly all anorexics in the designated areas were reported to the register. Nevertheless, anorexia nervosa increased in incidence in all three register areas.

Jones et al. (1980) criticized the two previous attempts for their probable underestimation of the disorder's true incidence. Measurements used in estimating anorexia nervosa from Theander's (1970) and Kendall et al.'s (1973) studies only included patients who entered hospitals in the formal health care system for mental health care. The Kendall (1973) study is further criticized by Jones et al. (1980) for not including hospital records. This additional data would

extend anorexia nervosa incidence to individuals in the medical health care system in addition to the psychiatric health care system.

Jones et al. (1980) studied the epidemiology of anorexia nervosa in Monroe County, New York from the years 1960 through 1969 and again from the years 1970 through 1976. To overcome the aforementioned shortcomings and obtain a more accurate measure, the authors investigated anorexia nervosa incidence through psychiatric case register and hospital records.

A significant increase in the total number of individuals first diagnosed anorexic was found in the years 1970 to 1976 when compared to the previous decade (1960 to 1969). The numbers per 100,000 population nearly doubled from .35 to .64.

The evidence that anorexia nervosa is increasing comes from (a) a general agreement by leading authorities in the field that there has been an increase (for example, Bruch, 1978), and (b) empirical evidence (Theander, 1970; Kendall et al. 1973; Jones et al. 1980). There are, however, significant arguments suggesting the contrary: that the increase is more apparent than real (Schwartz et al., 1982).

Schwartz et al. (1982) discussed four alternate explanations. First, the increase in anorexia nervosa may be owing to better record keeping. Second, a substantial increase in females under 30-years-old resulting from the post-World-War-Two baby boom may be associated with a higher incidence of eating disorders. This is most apparent when incidence rates are recorded per 100,000 of the population as a whole. This hypothesis is testable, for example, by calculating the proportion of anorexic-females-under-30 per 100,000 under-30-year-old-females in the population as a whole. Prevalence in any arbitrarily chosen group could be tested in this manner. Research in this area could be

useful in that it may possibly predict a decrease in prevalence when these babies of baby-boomers grow older and approach middle age.

Third, the increase could be due to anorexia nervosa's current popularity as a "fad". Eating disorders are glamorized, not chastised. Playgirl's 1975 "Golden Girl's Disease" article is an example of this glamorization (Garner et al., 1983). Last, Schwartz (1982) hypothesizes that the increase could be a function of the confusion between the number of referrals to centers and individuals specializing in eating disorders (an apparent increase), and an actual increase.

An additional argument, related to Schwartz's (1982) third point, is that the higher incidence rate may be a by-product of the increased attention given to, and recognition of, anorexia as a psychological disorder with potentially severe consequences. The current heightened awareness may encourage individuals to turn to psychiatric and medical hospitals, eating disorder clinics, or psychologists for professional care, whereas in the past the same individuals may have remained at home, untreated. Although impossible to discredit entirely, it is unlikely that this possibility accounts for a substantial percentage of the increase in eating disorders.

### **Prevalence in adolescents**

Nylander (1971) conducted a landmark study with the aim of discovering how common it is that young people feel fat and how often they diet. In total, 2370 Swedish boys and girls, aged 14 to 21, received questionnaires. Somewhat disturbingly, most of the girls in Nylander's survey stated that they had at some time felt fat and many responded that they presently felt fat. In both cases, the percentage increased with age. Specifically, 25% of the 14-year-old girls and 50% of the 18-year-old girls considered themselves fat. Only 8% of the girls



claimed that they had dieted before the age of 14, but this amount jumped considerably after age 15.

The boys in Nylander's (1971) sample were significantly less likely to say that they felt fat or had dieted. The reason given for dieting by most of the girls that were trying to lose weight, was that they felt fat. Nylander's disturbing findings spurred many subsequent investigations in the area of adolescent eating disorders and abnormal eating attitudes and behaviours. Four studies will be described below.

Pope and colleagues (1984) assessed the lifetime prevalence of eating disorders in three student populations. Their study differed from other research by not simply assessing current eating disorders (i.e., point prevalence).

Pope et al. (1984) administered an anonymous questionnaire covering DSM-III criteria for bulimia and anorexia nervosa to 1060 students at two colleges and a secondary school. Between 1.0% and 4.2% of the respondents met the criteria for anorexia nervosa, and 6.5% to 18.6% met the criteria for bulimia. No men in Pope et al.'s (1984) experiment met the DSM-III criteria. The authors concluded that eating disorders represent a serious health problem and that their results suggest "alarmingly high prevalence rates of eating disorders in all three student populations" (Pope et al., p. 49).

Rosen and Gross (1987) surveyed 1373 geographically, racially, and economically diverse high school girls and boys from the northeastern United States. Students in their study were asked "Are you currently trying to lose or gain weight?" Affirmative responses were followed with further probing, trying to determine the methods of weight reducing and gaining. Options for weight reducing included: exercising, decreasing calories, fasting, skipping meals,

vomiting, and cutting out junk food/snacks/sweets. Exercising, increasing caloric intake, and eating special foods were listed as weight gaining methods.

On the day of Rosen and Gross's (1987) survey, 63% of girls and 16% of boys reported that they were trying to lose weight; 9% of girls and 28% of boys reported that they were trying to gain weight. The four favored methods of losing weight, in descending order, were exercise (71% of the girls; 61% of the boys), decreasing calories (65% of the girls; 43% of the boys), cutting out snacks (59% of the girls; 43% of the boys), and skipping meals (34% of the girls; 20% of the boys). Fasting, vomiting, and other techniques were mentioned less often. The two most popular methods of gaining weight for boys were exercising (63%) and increasing calories (60%). Girls preferred increasing their caloric intake (48%) as a means for gaining weight.

In discussing their results, Rosen and Gross (1987) concluded that some form of weight modification is common among high school students, and that these behaviours have increased twofold compared to studies of 15 and 20 years ago.

Rosen and Gross (1987) also measured the students' actual weight. They noted, first, that perhaps one of the most striking findings of their study was that the majority of the students that were actively losing or gaining weight were already in the normal weight range. In other words, the adolescents were not over- or underweight. Second, Rosen and Gross (1987) commented that whereas four times as many girls than boys were trying to lose weight, the opposite pattern was observed for weight gainers. This finding confirms cultural stereotypes dictating that girls should be slender and boys should be muscular.

The present study applies the same general questions regarding weight gaining and losing, to a younger population.

Levine (1987), in a book on student eating disorders, reviews the extent of the problem in high school students. He estimates that:

1. Between one and six in every 200 girls will develop anorexia nervosa between the ages of 12 and 20.
2. Six to ten percent of high school girls are bulimic at any given point in time.
3. At least 40% of White, middle class high school student girls are actively engaged in losing weight at any given point in time.
4. The peak age of onset for anorexia nervosa is 14 to 18, whereas for bulimia nervosa it is 16 to 18.
5. Student eating disorders are increasing in prevalence.

Levine (1987) arrived at the last estimation by comparing the rates from the earlier epidemiological studies in the 1960s and 1970s to findings from the 1980s.

Levine (1987) delineates goals and guiding principles for developing eating disorder prevention programs. He asserts that "the prevention of eating disorders may be the most important aspect of efforts to combat eating disorders (chapter 1). A lesson plan for grade 7 to 12 teachers, designed by Levine, provides direct, affirmative actions for his suggestions.

Numerous studies have consistently demonstrated that a large percentage of adolescents, girls in particular, are dieting, concerned with weight and image, and using drastic measures to reduce weight (Crowther, Post, & Zaynor, 1985; Greenfeld, Quinlan, Harding, Glass, & Bliss, 1987; Killen et al., 1988). For example, Crowther et al. (1985), found that substantial proportions of adolescents in their sample were using self-induced vomiting, laxatives, and fasting to control their weight.

Researchers have also documented that anorexia nervosa and bulimia nervosa occur with a relatively high frequency in adolescent girls (Crowther et al., 1985; Ledoux, Choquet, & Flament, 1991). Furthermore, Button and Whitehouse (1981) argued that a substantial proportion of post-pubescent females (approximately 5%) develop a subclinical form of anorexia nervosa. Subclinical cases present serious problems of eating and weight concern, but do not fulfill the strict criteria for clinical anorexia nervosa.

### **Prevalence in pre-adolescents**

Determining the age of onset for eating disordered behaviours is particularly important when developing an eating disorders prevention program. Until recently, no study targeted pre-adolescents in order to clarify this issue. A comprehensive literature search led to the discovery of relevant articles from the past few years.

Olsen (1984, cited in Maloney et al., 1989) surveyed teenagers and found that self-reported dieting among adolescents started as early as eight to ten years of age. Alarming as this may seem, the author may have underestimated the extent of this problem. Brown and Forgay (1987) reported that by age 13, 60% of American girls have dieted. In a study of fourth, fifth, and sixth grade children, between 3% and 4% reported self-induced vomiting (Stein & Reichart, 1990). Salmons, Lewis, Rogers, Gatherer, and Booth (1988) found that 12% of girls and 9.9% of boys between 11- and 13-years-of-age were dissatisfied with their body shape, while 30% of boys and 35% of girls were terrified of gaining weight.

Maloney, McGuire, Daniels, and Specker (1989) surveyed 318 predominantly White, middle-class boys and girls from grades three through six, randomly selected from elementary schools in Cincinnati. Their dependent

variables included a children's version of the Eating Attitudes Test (ChEAT), and a demographic and dieting questionnaire.

The overall mean ChEAT score from Maloney et al.'s (1989) data was eight with a standard deviation of seven. They reported that 6.9% of students scored in the anorectic range ( $\geq 20$ ), closely matching the findings from older populations. Moreover, 45% of the children wanted to be thinner, and 37% responded that they had tried to lose weight. Common methods of dieting included exercising (40.3%), restricting calories (12.6%), and binging (10.4%).

Maloney et al. (1989) concluded that concerns about body fat and dieting are common in 8- to 13-year-olds. They further hypothesized that anorectic eating attitudes may be set during the preadolescent years but not acted out until adolescence. Successful interventions, therefore, should focus on shifting attitudes in relatively young children in order to prevent the development of later problems.

Leichner, Arnett, Rallo, Srikameswaran, and Vulcano (1986) looked at maladaptive eating attitudes in a large sample of Canadian males and females throughout the province of Manitoba. The original Eating Attitudes Test (EAT-40; Garner & Garfinkel, 1979) was given to 5150 students between the ages of 12 and 20 from rural schools, urban schools, and the University of Manitoba. The EAT-40, the first Eating Attitudes Test developed by Garner and Garfinkel (1979), was later factor analyzed and condensed to the EAT-26 (Garner & Garfinkel, 1982). The two tests, which contain 40 and 26 questions, respectively, are highly correlated and maintain equal levels of validity and reliability. A score of 30 and above on the EAT-40 reliably identifies the anorectic population (compared to a score of 20 on the EAT-26).

From Leichner et al.'s (1986) total sample, they found that 5% of males and 22% of females scored in the anorectic range on the EAT, implying significant abnormal concerns and attitudes regarding eating. Specifically, 7.3% of twelve year olds (219 in the sample) scored above the cutoff value, and this number substantially jumped to 23.7% at age thirteen, remaining relatively constant thereafter.

Leichner et al.'s (1986) findings closely parallel the percentages obtained by researchers on eating disordered behaviours and attitudes in pre-adolescents (Maloney et al., 1988; 1989), and suggest that a sharp increase in maladaptive eating attitudes occurs between ages 12 and 13. These data lend further support for developing a prevention program that targets pre-13-year-old (prepubertal) adolescents and children.

A recent survey and interviews with 1600 girls and 1530 boys in grades five through eight (Brewerton, 1992; Childress, 1991), the largest sample assessed to date, revealed similar information, consistent with the disturbing trend from Maloney et al. (1989) and Leichner et al.'s (1986) research. In this South Carolina population, Childress (1991) found that 55% of girls and 28% of boys say that they are fat, when in fact only 13% are actually overweight. Among fifth and sixth grade students, 30% of the girls and 25% of the boys had dieted. Data from Black and White girls were compared, indicating that feeling fat and wanting to lose weight were more prevalent among White children.

Brewerton (1992), director of the Eating Disorders Program at the Medical University of South Carolina, presented Childress's (1991) data at the annual meeting of the National Mental Health Association. He added that a significant number of the children had used fasting, vomiting, diet pills, or diuretics to lose weight. This recent research further substantiates the evidence indicating that

maladaptive eating attitudes and behaviours are ubiquitous among young children.

### **Eating disorder prevention programs**

Shisslak and Crago (1990) developed a pilot eating disorder prevention project for high school students. The goal of their program was primarily educational, aiming to teach students and teachers about incidence, symptoms, and consequences of eating disorders. Subjects, 50 sophomore students, were exposed to the nine-week program during their health education class. Eight information-oriented presentations were made by a psychologist and teachers, with ample extra time allotted for classroom discussion. The program's evaluation component consisted of a short questionnaire on eating disorders.

In comparison to driver education or physical education control groups, the treatment group correctly answered significantly more questions on the eating disorder quiz. From their data, Shisslak and Crago (1990) inferred that high school students are generally receptive to their eating disorders prevention program. Shisslak and Crago (1990) also demonstrated the feasibility of this approach.

Commenting on the seriousness, scope, and significance of eating disorders, Shisslak and Crago (1990) argue that it is imperative to institute prevention programs. Although their pilot study was limited to an information-lecture type design, it did set a precedent and provides encouragement for future research.

Criticisms of Shisslak and Crago's (1990) research are fourfold. First, they did not include pretest measures. The authors questioned students only after the program ended, and therefore determining whether the treatment and control

groups differed prior to the program's initiation is not possible. Second, because students were not randomly assigned to the two conditions, the students in the health education classes (treatment group) may have been more informed and educated regarding eating disorders than students enrolled in driver's education or physical education classes (control group). Students in the health education classes presumably have more knowledge in health-related issues such as eating disorders, and differences in the groups may have reflected previous knowledge, not the effects of Shisslak and Crago's (1990) program. Third, by failing to address the link between knowledge and attitudes and behaviour, there is no guarantee that any knowledge gained by Shisslak and Crago's (1990) students would lead to attitude and behavioural changes. Last, by emphasizing information regarding eating disorders, the authors may have unwittingly caused an iatrogenic effect (Garner, 1985). In other words, the knowledge and awareness gained by the subjects may contribute to the development of eating disorders in certain susceptible individuals.

In a thorough literature search, only one article describing an eating disorders prevention for pre- and early adolescents was located. Porter, Morrell, and Moriarty (1986) designed an innovative half-day inoculation program consisting of art therapy, dance therapy, and music therapy -- all proven beneficial in the treatment of eating disordered related problems. For example, according to the authors, dance therapy has been effective in enhancing body awareness and correcting biased self-body perceptions. A brief film on anorexia nervosa and discussion of eating disorders preceded the therapy components, with the goal of "inoculating" (exposing the subjects to a weak dose of unwanted behaviour) the subjects. Porter et al.'s (1986) inoculation approach aimed at gently educating students to resist participating in unwanted behaviours (i.e.,



eating disorder related behaviours). This contrasts with a fear arousal technique which attempts to induce behaviour and attitude change with fear-enhancing techniques.

In Porter et al.'s (1986) program, 44 boys and girls, aged 9 to 16, volunteered as subjects. Pre- and posttest eating disorder behaviours were measured using the Eating Disorder Inventory (EDI; correlates highly with the EAT). The authors found a significant score reduction on the 'Drive for Thinness' subscale of the EDI for the sample as a whole. Scores on the other two EDI subscales ('Perfectionism' and 'Interpersonal Distrust') decreased, but t-test values did not reach statistical significance.

Porter et al. (1986) admit that although their findings are interesting, the data are preliminary and must be interpreted with caution. The absence of a control group greatly restricts any interpretations of the results. Furthermore, the program was brief and no long-term follow-up analysis was conducted. It is therefore difficult to rule out alternative explanations for the observed changes and also to predict whether the obtained effects were temporary or more permanent. For example, demand characteristics or high subject expectations may have accounted for Porter et al.'s (1986) findings.

Criticisms aside, this article, in conjunction with Shisslak and Crago's (1990) research, also demonstrates the feasibility of conducting eating disorder prevention research. Porter et al. (1986) were some of the few researchers willing to take the critical step of carrying out a prevention program instead of merely perpetuating the rhetoric calling for the crucial need for prevention research.

### **Present study**

The purpose of the present study was to design and implement an eating disorders prevention program that facilitated change in participants' attitudes and behaviours toward eating, dieting, self-esteem, and body satisfaction, and increased their knowledge of eating disorders. Primary goals of this program were:

1. Increasing students' knowledge about eating disorders, dieting, and nutrition.
2. Modifying participants eating patterns away from unhealthy eating styles and toward healthier eating habits.
3. Enhancing subjects' self-esteem.
4. Encouraging students to resist social pressures and negative influences from family and friends to be thin.
5. Prompting participants to question societal myths evolving around dieting and overweight.

Pre- and posttesting questionnaires enabled an assessment of the success of these goals. It was hypothesized that the program would be successful and positively benefit the participants. In particular, five subhypotheses were formulated. First, that there would be an increase in eating disorders, nutrition, and diet-related knowledge in the program participants. Second, that there would be a decrease in the overall ChEAT score from pretest to posttest for the treatment group, but no decrease in the comparison group. Third, that ChEAT subscale scores would decrease more for the treatment group than the comparison group. Fourth, that there would be a positive change in dieting (i.e., a decrease in the proportion of program participants reporting that they were trying to lose weight), gaining (i.e., a decrease in the proportion of program participants reporting that they were trying to gain weight), and eating

patterns (i.e., a shift toward more healthy eating patterns) in the treatment group. Last, it was hypothesized that there would be an increase in self-reported body-satisfaction in the treatment group.

## METHOD

### Subjects

Fifth and sixth grade students from seven classes participated as subjects. Two grade five and two grade six classes, from a North Vancouver school, received the eating disorders prevention program -- the treatment condition -- and one grade five and two grade six classes from another North Vancouver school were assigned to the comparison group condition. The teachers and principal in the treatment condition agreed to run the prevention program, whereas the comparison group condition teachers chose to participate in the pre- and posttesting, but not the program itself.

Data were initially collected from 184 subjects. Parents of one student refused to allow their child to participate in the program. Data were also not tabulated for one student who did not comprehend most of the questions, and two students who missed more than two prevention program sessions.

The final sample included 180 students: 99 in the treatment and 81 in the comparison group condition. The actual number of subjects included in the analyses varied slightly for each of the questions and tests, and at pretest and posttest. The missing data resulted from students who were absent, for various reasons, from school during pre- or posttesting, and from ambiguous or unmarked items.

The students were predominantly White, from middle-class families. The sample consisted of 81.6% White, 8.4% Asian, 6.7% Indo-Canadian, 1.7% Middle Eastern, 1.1% Native Indian, and 0.6% Black children. Students ranged in age from 9- to 12-years-old, and the average age was 10.43 years.

### **Dependent Measures**

Multiple dependent variables assessing knowledge, attitudes and behaviours associated with eating disorders, body satisfaction, eating patterns, and dieting, were measured at pretest and posttest. (see Appendix A for the detailed questionnaires)

The knowledge measure (KQ), constructed by the author, consisted of a ten question multiple-choice exam on general eating disorders, dieting, and nutrition. Questions were based on material covered in the prevention program. One point was awarded for each correct answer, for a maximum total score of 10 points.

Eating attitudes were measured with a children's version of the Eating Attitudes Test (ChEAT; Maloney, McGuire, & Daniels, 1988; Maloney, McGuire, Daniels, & Specker, 1989). The ChEAT is a 26-item, self-report questionnaire used to assess abnormal eating attitudes and behaviours. Testees answer forced-choice items on a 6-point Likert scale ranging from never to always. Responses yield a total score and three empirically (factor analytically) derived subscales: dieting behaviours, bulimia and food preoccupation, and oral control (self-control of eating and concerns about being overweight). Possible total scores range from zero to 78, with scores greater than or equal to 20 suggestive of anorexia nervosa (Maloney et al., 1988). Sampled on 8- to 13-year-olds, the ChEAT is a modification of the Eating Attitudes Test (EAT) designed by Garner and Garfinkel (1979), with simple synonyms replacing the more difficult words. The ChEAT's test-retest ( $r=.81$ ) and internal reliability ( $r=.76$ ) are comparable to the original version (Maloney et al., 1988).

The EAT total score is highly correlated with the Eating Disorder Inventory (EDI; Garner & Olmsted, 1984) drive for thinness subscale (Raciti & Norcross,

1987). Garner, Garfinkel, Rockert, and Olmsted (1987) studied 11- to 14-year-old ballet students and found that this subscale was particularly relevant in predicting future eating disorders. The EAT and ChEAT may therefore have some predictive utility for screening individuals at high risk for developing eating disorders.

Attitudes toward students' own physical appearance was estimated with a body satisfaction measure (BSM), constructed by the author. Subjects indicated, on a 6-point scale, the degree to which they were happy or unhappy with the way their bodies look. Possible responses on this one-item continuum ranged from zero to five, with five representing 'very happy with the way my body looks' and zero representing 'not happy with the way my body looks'.

Eating Patterns behaviours were measured on eight separate 5-point scales. Possible responses ranged from 1 (none) to 5 (a lot). Subjects were asked to estimate the amount of a particular food or food group that they consumed during the previous seven days. These included: dairy products, red meat, fish and fowl, whole grains, legumes, junk food, vegetables, fruits, and nuts and seeds.

Students were asked whether they were currently trying to lose or gain weight. If the answer to the former question was affirmative, they were further asked to check off the way(s) they used to lose weight. The listed options were: fasting, skipping meals, cutting out snacks, cutting down calories, exercising, and "other". The format for this section was based on a questionnaire devised by Rosen and Gross (1987) in their study on the prevalence of weight reducing and gaining in adolescents.

### **Procedure**

Cover letters (see Appendix B), briefly describing the eating disorder prevention program, were mailed to 13 elementary school principals in North Vancouver that were randomly selected from the telephone directory. The principals were later contacted by telephone and asked if grade five and six classes in their schools would be willing to participate. Two of the principals responded positively and provided names of teachers in their schools for further contact.

### **Design**

These efforts led to two grade five and two grade six teachers from one school agreeing to run the program, and one grade five and two grade six teachers who chose not to partake in the eating disorders program, but volunteered their classes for the comparison group condition.

Letters were distributed to the students' parents, before the program commenced, briefly describing the eating disorders program and enabling them to withdraw their children from participating (see Appendix C). Parents of one child in the treatment group decided to pursue this option. Participants in both conditions received written consent forms prior to completing the questionnaires (see Appendix D).

The researcher met with all of the teachers for a pre-program orientation meeting. The program itself, a revision of Carla Rice's (1989) eating disorders prevention program<sup>1</sup>, encompassed six modules of approximately one to two hours each, and was run on a weekly basis by the teachers during regular classroom hours. Pretesting preceded, and posttesting followed the program. Briefly, the project proceeded as follows:

Week 1: General Orientation. Pre-test measures, introduction to the program, and overview of forthcoming sessions.

Week 2: Introduction to eating disorders. Brief background on anorexia nervosa and bulimia nervosa. Eating disorders defined, followed by an exploration of what causes them to develop.

Week 3: Social pressures to be thin. Looks at weight obsession in society, pressures to be thin, and prejudice against fat.

Week 4: So what is healthy? Examines the harmful effects of dieting and myths about dieting and weight.

Week 5: Influence of family and friends. Focuses on helping students to identify and resist pressures to diet and lose weight.

Week 6: Eating well. Promotes healthy eating habits by presenting accurate information and research on nutrition and diet.

Week 7: Self-esteem. Looks at self-esteem in terms of how it develops and how it can become related to body size.

Week 8: Conclusion. Review and wrap-up. Open discussion on how subjects evaluate the program. Comments. Post-test.

Following the completion of the program, the author met with the four teachers that led the treatment groups. They were asked to provide feedback, criticisms, and recommendations.

A letter (see Appendix E), describing the study's general findings, was distributed to the parents of the participants after the questionnaire data

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<sup>1</sup>To obtain copies of the Eating Disorder Prevention Program please write to the author c/o Dept. of Psychology, Simon Fraser University, Burnaby, B.C. V5A 1S6; To obtain Carla Rice's (1989) Teacher's Resource Kit, write to the National Eating Disorder Information Center, 200 Elizabeth St., CW-328, Toronto, Ontario, M5G 2C4.



were analyzed. Included in this letter was the telephone number for an Eating Disorder Resource Center, intended for any parents with specific concerns or those wishing further services and information.

## RESULTS

All of the dependent measures were analyzed using a 2 (condition: treatment versus comparison group) X 2 (sex: male versus female) X 2 (grade: five versus six) Analysis of Covariance (ANCOVA) design. Posttest means were compared using the pretest scores as covariates. In all cases, except for the Knowledge Questionnaire, the covariates related to the dependent measures, confirming the rationale for using the ANCOVA procedure. Differences between the pre-treatment means for the comparison group and treatment conditions were not statistically significant.

The analyses yielded no statistically significant triple interactions. A double interaction, between condition and sex, on the "dieting" measure approached, but did not reach statistically significant levels.

A Bonferroni correction was used to adjust for the multiple dependent variables. An initial .05 level of significance was chosen and divided by the number of dependent variables (5). This resulted in a critical value of .01 that was applied in determining statistical significance for the ANCOVA F-ratios. For the three ChEAT subscales a further Bonferroni correction was made, where the .01 level of significance was divided by three, resulting a .0033 critical value.

Unadjusted pretest and posttest means for the treatment and comparison groups, by condition, grade and sex, on the KQ, BSM, and ChEAT, are presented in Tables 1, 3, and 5.

Main effects for condition and sex were found for the Knowledge Questionnaire,  $F(1,145)=76.13, p<.0001$ ,  $F(1,145)=12.17, p<.001$ , respectively. A significant main effect for condition was found on the Body Satisfaction Measure,  $F(1,138)=9.81, p<.005$ .

Means on the KQ show that subjects in the treatment condition ( $\bar{x}=5.72$ ) scored significantly higher than comparison group subjects ( $\bar{x}=3.32$ ) on the

posttest. Moreover, females ( $\bar{x}=4.25$ ) in both conditions performed better than their male ( $\bar{x}=3.43$ ) classmates on the KQ, as indicated by a significant main effect for sex. The complete ANCOVA for the KQ is presented in Table 2.

Covariate-adjusted treatment group means ( $\bar{x}=4.20$ ) were also significantly higher than the comparison group means ( $\bar{x}=3.76$ ) for the BSM. This suggests that male and female subjects in the treatment condition, on the whole, were more satisfied with their physical appearance at post-test than the comparison group subjects (see Table 4 for the complete BSM ANCOVA).

Comparisons of covariate-adjusted posttest means on the eight Eating Patterns Survey variables failed to reach statistical significance.

Although the condition effect did not reach statistical significance for the Children's Eating Attitudes Test scores (see Table 6 for the complete ANCOVA), careful observations of the group means shows that there was a tendency toward a positive effect: treatment group means decreased more than the comparison group means at posttest compared to pretest (see Table 5).

All effects failed to reach statistical significance for the three ChEAT subscales: dieting, bulimia and food preoccupation, and oral control. Mean subscale scores, by group, condition, and sex, are presented in Tables 8, 9 and 10.

ChEAT scores above the cutoff value  $\geq 20$ , which is suggestive of anorexia nervosa, were observed in 5.4% of total subjects during pretesting. Table 7 shows the percentage of students scoring above the cutoff value by condition, grade, and sex.

Analysis of Covariance for the remaining dichotomous, dependent variables: "Are you currently trying to lose weight?" (dieting), and "Are you currently trying to gain weight?" (gaining) yielded no significant effects. The

**Table 1**  
**Knowledge Questionnaire Scores**

Condition	Grade 5		Grade 6	
	Pre	Post	Pre	Post
<b>Treatment</b>				
Boys				
$\bar{x}$	2.80	5.12	2.94	5.29
<u>s.d.</u>	1.38	1.83	1.52	1.61
$n$	25	25	17	17
Girls				
$\bar{x}$	2.95	6.10	3.33	6.38
<u>s.d.</u>	1.20	2.10	1.32	1.75
$n$	21	21	21	21
<b>Comparison</b>				
Boys				
$\bar{x}$	2.60	2.67	2.87	2.83
<u>s.d.</u>	1.50	1.40	1.60	1.27
$n$	15	15	23	23
Girls				
$\bar{x}$	2.70	3.30	3.68	4.32
<u>s.d.</u>	1.49	1.42	1.64	1.70
$n$	10	10	22	22

Table 2

**Knowledge Questionnaire Analysis of Covariance**

Source	Sum of Squares	D.F.	Mean Square	E
condition	211.27	1	211.27	38.49*
sex	33.77	1	33.77	12.37**
grade	3.79	1	3.79	4.52
cond X sex	.00	1	.00	.07
cond X grade	.76	1	.76	.81
sex X grade	1.41	1	1.41	1.44
cond X sex X grade	.97	1	.97	.58
preKQ	10.04	1	10.04	3.62
Error	402.40	145	2.78	

\*  $p < .0001$ \*\*  $p < .001$

**Table 3**  
**Body Satisfaction Measure**

Condition	Grade 5		Grade 6	
	Pre	Post	Pre	Post
<b>Treatment</b>				
Boys				
$\bar{x}$	4.10	4.38	3.47	4.00
<u>s.d.</u>	1.48	1.36	1.37	1.00
$n$	21	21	17	17
Girls				
$\bar{x}$	3.33	4.33	3.62	3.90
<u>s.d.</u>	1.71	.97	1.02	.94
$n$	21	21	21	21
<b>Comparison</b>				
Boys				
$\bar{x}$	3.92	3.61	3.73	3.95
<u>s.d.</u>	.86	.96	.94	.90
$n$	13	13	22	22
Girls				
$\bar{x}$	3.60	3.70	3.91	3.82
<u>s.d.</u>	1.35	1.34	1.06	.96
$n$	10	10	22	22

Table 4

**Body Satisfaction Measure Analysis of Covariance**

Source	Sum of Squares	D.F.	Mean Square	F
condition	7.19	1	7.19	9.81*
grade	.13	1	.13	.17
sex	.06	1	.06	.08
cond X grade	2.34	1	2.34	3.19
cond X sex	.04	1	.04	.05
grade X sex	1.90	1	1.90	2.59
cond X grade X sex	.00	1	.00	.00
pre BSM	51.69	1	51.69	70.53**
Error	101.14	138	.73	

\*  $p < .005$ \*\*  $p < .0001$

Table 5

**Children's Eating Attitudes Test (ChEAT) Total Scores**

Condition	Grade 5		Grade 6	
	Pre	Post	Pre	Post
<b>Treatment</b>				
Boys				
$\bar{x}$	8.71	5.17	6.41	5.35
<u>s.d.</u>	9.37	3.16	3.24	3.06
$n$	24	24	19	19
Girls				
$\bar{x}$	9.95	7.48	6.94	5.79
<u>s.d.</u>	6.39	7.15	5.15	3.33
$n$	21	21	19	19
<b>Comparison</b>				
Boys				
$\bar{x}$	9.23	7.15	5.00	5.70
<u>s.d.</u>	4.09	5.41	3.41	3.40
$n$	13	13	23	23
Girls				
$\bar{x}$	9.40	5.50	7.27	6.77
<u>s.d.</u>	5.40	2.32	4.56	6.53
$n$	10	10	22	22



**Table 6****Children's Eating Attitudes Test Analysis of Covariance**

Source	Sum of Squares	D.F.	Mean Square	F
condition	7.16	1	7.16	.44
grade	23.92	1	23.92	1.49
sex	.20	1	.20	.01
cond X grade	6.78	1	6.78	.42
cond X sex	27.99	1	27.99	1.74
grade X sex	.13	1	.13	.01
cond X grade X sex	24.20	1	24.20	1.50
pre ChEAT	897.54	1	897.54	55.77*
Error	2253.00	140	16.09	

\*  $p < .0001$

**Table 7****ChEAT score  $\geq 20$** 

Condition	Grade 5		Grade 6	
	Pre	Post	Pre	Post
<b>Treatment</b>				
Boys	10.3(3)	0.0(0)	0.0(0)	0.0(0)
$n$	29	27	18	17
Girls	13.0(3)	9.1(2)	4.5(1)	0.0(0)
$n$	23	22	22	22
<b>Comparison</b>				
Boys	7.7(1)	6.7(1)	0.0(0)	0.0(0)
$n$	13	15	23	24
Girls	8.3(1)	9.1(1)	0.0(0)	0.0(0)
$n$	12	11	26	23
<b>Combined</b>				
	10.4(8)	4.0(3)	1.1(1)	1.2(1)
$n$	77	75	89	86

**Note.** Values are in percentages (number of subjects in parentheses).

Table 8

**ChEAT Dieting Subscale**

Condition	Grade 5		Grade 6	
	Pre	Post	Pre	Post
<b>Treatment</b>				
<b>Boys</b>				
$\bar{x}$	4.38	1.88	3.06	2.00
s.d.	5.22	1.85	3.26	1.90
$n$	24	24	17	17
<b>Girls</b>				
$\bar{x}$	5.40	3.25	3.05	2.11
s.d.	4.71	3.85	3.34	1.33
$n$	20	20	19	19
<b>Comparison</b>				
<b>Boys</b>				
$\bar{x}$	5.15	3.54	1.61	2.26
s.d.	3.05	3.60	1.12	1.89
$n$	13	13	23	23
<b>Girls</b>				
$\bar{x}$	5.00	2.00	3.45	2.64
s.d.	4.11	1.15	2.96	3.91
$n$	10	10	22	22

**Note.** Values are for unadjusted means.

**Table 9**  
**ChEAT Bulimia and Food Preoccupation Subscale**

Condition	Grade 5		Grade 6	
	Pre	Post	Pre	Post
<b>Treatment</b>				
Boys				
$\bar{x}$	1.46	.21	.12	.18
s.d.	3.53	.66	.49	.53
$n$	24	24	17	17
Girls				
$\bar{x}$	.60	.55	.00	.11
s.d.	1.14	1.57	.00	.46
$n$	20	20	19	19
<b>Comparison</b>				
Boys				
$\bar{x}$	.54	.08	.39	.22
s.d.	.88	.28	1.08	1.04
$n$	13	13	23	23
Girls				
$\bar{x}$	.30	.00	.27	.14
s.d.	.95	.00	.77	.64
$n$	10	10	22	22

**Note.** Values are for unadjusted means.

Table 10

**ChEAT Oral Control Subscale**

Condition	Grade 5		Grade 6	
	Pre	Post	Pre	Post
Treatment				
Boys				
$\bar{x}$	2.88	3.08	3.24	3.18
s.d.	2.68	1.95	2.22	1.47
$n$	24	24	17	17
Girls				
$\bar{x}$	4.35	3.75	3.89	3.58
s.d.	2.80	2.86	2.77	2.81
$n$	20	20	19	19
Comparison				
Boys				
$\bar{x}$	3.54	3.54	3.00	3.13
s.d.	2.11	2.44	2.61	1.82
$n$	13	13	23	23
Girls				
$\bar{x}$	4.10	3.50	3.55	4.00
s.d.	2.38	1.43	2.24	2.86
$n$	10	10	22	22

**Note.** Values are unadjusted means.

detailed ANCOVAs are presented in Tables 12 and 14.

On the gaining question, 9.1% of pretest subjects reported that they were trying to gain weight, compared to 5.9% at posttest. This decrease was primarily attributable to a change from 6.6% to 2.4% in the treatment condition. The reported frequency of gainers in the comparison group remained relatively stable (pretest=12.2%; posttest=10.3%). Percentages are broken down by condition, grade, and sex, in Table 11.

At pretest, 24.7% of the students from both treatment and comparison groups reported that they were dieting. This dropped to 10.5% at posttest. Percentages of dieters, broken down by condition, grade, and sex, are displayed in Table 13.

The proportion of females in the treatment condition from both grades who were trying to lose weight decreased from 33.3% at pretest to 8.9% after the prevention program. This contrasts with a much smaller change in the comparison group females from 26.3% at pretest to 20.6% at posttest.

Among the 41 students reporting that they were currently trying to lose weight 68.3% listed exercising, 75.6% cutting out snacks, 22.0% skipping meals, 36.6% cutting down calories, and 7.3% listed fasting as dieting strategies used at pretest. Refer to Table 15 for percentages of methods for boys and girls broken down by each grade.

Table 11

**Self-Reported Weight Gaining**

Condition	Grade 5		Grade 6	
	Pre	Post	Pre	Post
<b>Treatment</b>				
Boys	10.7(3)	0.0(0)	11.8(2)	5.9(1)
$\underline{n}$	28	23	17	17
Girls	0.0(0)	4.5(1)	4.2(1)	0.0(0)
$\underline{n}$	22	22	24	22
<b>Comparison</b>				
Boys	7.1(1)	14.3(2)	27.3(6)	25.0(5)
$\underline{n}$	14	14	22	20
Girls	8.3(1)	0.0(0)	3.8(1)	0.0(0)
$\underline{n}$	12	11	26	23

**Note.** Values are in percentages (number of subjects in parentheses).

Table 12

**"Gaining" Analysis of Covariance**

Source	Sum of Squares	D.F.	Mean Square	F
condition	.02	1	.02	.74
grade	.02	1	.02	.89
sex	.12	1	.12	4.56
cond X grade	.00	1	.00	.08
cond X sex	.06	1	.06	2.40
grade X sex	.02	1	.02	.80
cond X grade X sex	.01	1	.01	.19
preGaining	1.55	1	1.55	57.45*
Error	3.45	128	.03	

\*  $p < .0001$



**Table 13**  
**Self-Reported Dieting**

Condition	Grade 5		Grade 6	
	Pre	Post	Pre	Post
<b>Treatment</b>				
Boys	10.3(3)	4.0(1)	22.2(4)	10.5(2)
$\underline{n}$	29	25	18	19
Girls	28.6(6)	8.7(2)	37.5(9)	9.1(2)
$\underline{n}$	21	23	24	22
<b>Comparison</b>				
Boys	38.5(5)	6.3(1)	17.4(4)	8.7(2)
$\underline{n}$	13	16	23	23
Girls	41.7(5)	18.2(2)	19.2(5)	21.7(5)
$\underline{n}$	12	11	26	23

**Note.** Values are in percentages (number of subjects in parentheses).

Table 14

**"Dieting" Analysis of Covariance**

Source	Sum of Squares	D.F.	Mean Square	F
condition	.10	1	.10	1.25
grade	.05	1	.05	.62
sex	.08	1	.08	1.02
cond X grade	.07	1	.07	.91
cond X sex	.33	1	.33	4.29
grade X sex	.01	1	.01	.16
cond X grade X sex	.00	1	.00	.02
preDieting	3.74	1	3.74	47.88*
Error	10.78	138	.08	

\* p&lt;.0001

Table 15

**Methods of Weight Reducing Used by Boys and Girls**

	Grade 5		Grade 6		Total
	Boys	Girls	Boys	Girls	
Exercise	57.1	58.3	62.5	85.7	68.3
<u>n</u>	4	7	5	12	28
Cut out junk foods	42.9	83.3	87.5	78.6	75.6
<u>n</u>	3	10	7	11	31
Skip meals	28.6	25.0	25.0	14.3	22.0
<u>n</u>	2	3	2	2	9
Cut down calories	71.4	41.7	25.0	21.4	36.6
<u>n</u>	5	5	2	3	15
Fasting	14.3	16.7	0.0	0.0	7.3
<u>n</u>	1	2	0	0	3

**Note.** Results are in percentages. Values are tabulated from pretest questionnaires. Total number of subjects reporting that they were trying to lose weight=41.

## DISCUSSION

The high prevalence of eating disorders, body shape dissatisfaction, dieting, and maladaptive eating attitudes and behaviours is widely accepted and undisputed by most researchers and clinicians in the field. Revelations that these potentially harmful phenomena are becoming increasingly common and recognized among younger children is disturbing, and for some, difficult to believe.

Accompanying the expanding literature that exposes the high prevalence of eating disordered behaviours and attitudes, are authors calling for the establishment of preventative measures to avert or at least reduce the incidence of these problems in the general population. While many authors write persuasively in favor of prevention programs, only a small number actually follow up and implement their recommendations. The present study attempts to begin to fill this void through the development and implementation of an eating disorders primary prevention and education program that was carried out with grade five and six classes.

Based on information and data gathered from questionnaires, the author, and comments made by teachers, students, and parents, the present program was deemed a success. The present study illustrates that not only are prevention techniques feasible and practical, but they may greatly benefit participants. Large scale application of prevention programs, in general, and eating disorder programs, in particular, may aid in reducing maladaptive behaviours and attitudes in the whole of society, avoiding considerable pain and suffering.

The questionnaire data suggest that the treatment group subjects' behaviour and attitudes shifted in a positive direction on most of the dependent measures. These tendencies were not observed, to the same significant degree,

in the comparison group over the concurrent 3-month period. It can therefore be inferred that the positive changes were affected, to a large extent, by the eating disorders program.

Statistically significant differences between the treatment and comparison groups were found on the KQ and BSM. Analyses of the mean ChEAT scores, scores above the ChEAT cutoff value, gaining, and dieting measures displayed a tendency in the positive direction for the treatment groups.

Owing to the nature of the overall design (all treatment subjects came from the same school) it is impossible to rule out school differences as a possible confound. It seems implausible, however, that the differences noted between the treatment and comparison groups were caused by school differences and not by the eating disorders intervention program itself.

The KQ data suggest that the program participants' knowledge about eating disorders, dieting, and nutrition, increased more than students not receiving the program. Most of the students knew little or were misinformed about this material during the pretest. The program provided participants with accurate information, and this appeared to have been learned during the sessions and retained at posttest in the treatment group as a whole.

The present program also tried to enhance student's self-esteem and make them more accepting of diverse body shapes and sizes. The BSM indirectly estimated this component, and the results suggest that participants' body self-image was enhanced during the program.

Dieting and gaining data show that the percentage of girls who were trying to lose weight, and boys who were trying to gain weight decreased considerably in the treatment conditions. Program participants' eating attitudes and behaviours, as measured by the ChEAT, also noticeably improved. Moreover,

the percentage of children scoring above the ChEAT cutoff score decreased considerably in the treatment condition.

Analyses of Covariance for the ChEAT, ChEAT subscales, dieting, and gaining measures yielded no statistically significant effects for condition. These results may have been due to the large amount of variance on these variables paired with a relatively small sample size. Considering the positive tendencies in the present study, it is possible that future research using larger sample sizes may produce more substantial statistical effects.

The lack of significant findings on the eight Eating Patterns Survey questions was not surprising. Three comments on this particular questionnaire are in order. First, these items were included to assess potential changes in eating habits and determine whether the lesson on healthy eating influenced the students' eating patterns. This session encouraged students to improve their diet by cutting down on junk foods, sweets, and red meats, and by consuming more whole grains, vegetables, fruits, fowl, and fish. Compared to comprehensive school nutrition programs, this was a brief lesson, and definitely not the major focus of the eating disorder package. Expecting a profound shift in eating habits during the course of the program would have been unrealistic.

Second, nutrition research has shown that alternative methods, that do not rely as heavily as the questionnaire used in this study on children's memory and estimation abilities, may be superior for estimating the foods that they regularly consume (Blom, Lundmark, Dahlquist, & Persson, 1989; Jenner, Neylon, Croft, Beilin, & Vandongen, 1989). Therefore, even if the participants' eating habits improved, this change may not have been reflected in the EPS answers. Although relatively accurate methods for estimating and/or directly measuring food intake are available, many of these alternatives are intrusive, expensive,

time-consuming, and generally impractical. Application of more involved measurement tools was not warranted in this study.

Third, the foods that children do or do not eat are determined and controlled to a large degree by their parents. Significant and measurable dietary changes may not be attainable when the parents are responsible for their child's food selection and meal preparation. Perhaps future programs should provide healthy eating information to the parents as well as to the children.

Of the nine students that scored above the cutoff value on the ChEAT at pretest, eight were in grade five and only one was in grade six. How can the difference between the two grades be explained? It is difficult to account for this unforeseen discrepancy. It is possible that the grade five students, as a group, experienced problems comprehending the questions and mistakenly answered inappropriately, thereby artificially inflating their scores. If this was the case, though, the mean ChEAT scores for the grade five classes would be higher than for grade six classes. This was not what happened. Another explanation could be that only some of the grade five students had trouble understanding the ChEAT, and it was these students that tended to score above the cutoff range. At this point, however it is difficult to account with any degree of confidence for the discrepancy. This pattern is not consistent with Maloney et al.'s (1989) data. In their study slightly more grade six children obtained ChEAT scores above the cutoff value compared to their grade five subjects. Hopefully, future research will either clarify or shed light on this possibly anomalous finding.

An interesting tendency was the decrease in certain scores for both treatment and comparison conditions. For instance, self-reported dieting for males (see Table 13), ChEAT mean total scores, and ChEAT factor I (dieting) scores (see Tables 5 and 8), decreased from pretest to posttest for both groups.

This illustrates the necessity for including a comparison group when conducting primary prevention research.

What are the reasons for this decrease in both groups? One possible explanation may be related to the time of the school year when the measures were administered. The pretest was conducted in October, relative early in the school year, whereas the posttest was conducted in December, later in the term and closer to the winter vacation.

Some students may have been more uncomfortable earlier on in the term, with their classmates and themselves. This discomfort may manifest in lower self-esteem, lower body satisfaction, and more eating disordered behaviours. As the term progressed and this anxiety diminished, students may have been less concerned with body shape and less inclined to display maladaptive behaviours, specifically eating disorder related behaviour.

In general, the feedback given to the author from students, parents, and teachers was extremely positive and enthusiastic. The students and teachers appeared to have enjoyed the sessions. For example, during many weeks some of the teachers ended up spending extra hours of class time per week on the program on top of the scheduled one to one-and-a-half hours. This was in response to the high level of discussion and interest that was generated by the students.

The program's success was also indirectly inferred by positive parental comments to the teachers. Many students began watching television more critically during and after the program and commented on weight and beauty. These students seemed to be more aware of the sociocultural pressures placed on them to diet and to achieve an unrealistically thin body shape.



During the post-program meeting between the author and the four treatment condition teachers, they were generally pleased with the program and indicated that they would be willing to run it again in their classrooms in the future.

Demographic data showed that this study's sample is comparable to other Canadian and American student populations. The percentages of young children who are trying to lose weight and score high on the ChEAT are disturbingly high. This finding is consistent with other recent surveys (Childress, 1991; Maloney et al., 1989; Rosen & Gross, 1987) and provides further impetus for the need for more direct preventative action at this young age.

### **Limitations and Future Revisions**

Some of the students may have experienced difficulty comprehending the questionnaires, particularly the grade five children. This was noted even though careful planning was taken to keep the questions as understandable and simple as possible. More effort and time could be spent ensuring that students fully understand all of the questions and difficult words during pre- and posttesting. Perhaps for the grade five classes, the teachers and author could orally recite each question, asking if everyone understands the overall meaning and each of the words.

A follow up study would be valuable in determining whether the immediate positive findings persevere over the long term.

A potential confound may have arisen due to the demographic differences between the schools used in the studies. The method consisted of a between school design, and not a within school design.

Subjects in the treatment school predominantly came from lower-middle to middle-class families, and the school was located in a middle-class section of the city near the city center. Subjects from the comparison groups, on the other hand, came from middle- to upper-middle-class families. The school specialized in French immersion (students spent half of their day studying in French and half in English), and was located in an affluent neighborhood further away from the city core.

These demographic differences may have potentially caused a problem when comparing the two groups. Pretest measures, however, partially alleviated this concern, indicating that the two groups were not significantly different on the dependent measures. Future research may try to include school populations with more similar economic and social backgrounds.

### **Summary and Conclusions**

The present prevention and education program illustrates that eating disorder programs are feasible and can be successfully implemented in the school system. Conducted on grade five and six classes, participants in the present program improved their knowledge of eating disorders, dieting, and nutrition information, and decreased their maladaptive attitudes and behaviours associated with eating disorders. Moreover, children receiving the program indicated that they were more satisfied with their body shape, and reported significantly less weight reducing and gaining behaviours than nontreatment comparison groups.

It is recommended that the present program be conducted again using a slightly revised format and fully implemented with a larger number of participating classes and schools.

**APPENDIX A**  
**QUESTIONNAIRES**

Eating Patterns Survey

Name: \_\_\_\_\_

Grade: \_\_\_\_\_

Teacher: \_\_\_\_\_

Please think carefully about the foods that you have eaten during the past week (seven days). For each question circle the number next to the answer that best applies to you.

1. During the past seven days about how much dairy products did you eat and drink? (some dairy products are: milk, cheese, yogurt, ice-cream, cottage cheese)

- 1 NONE
- 2 A SMALL AMOUNT (about a couple of times)
- 3 SOME (a few times during the week)
- 4 A MODERATE AMOUNT (about once every day)
- 5 A LOT (some every day)

2. During the past seven days about how much sweets and junk food did you eat? (some sweets are: chocolate bars, cookies, cake, candies)

- 1 NONE
- 2 A SMALL AMOUNT (about a couple of times)
- 3 SOME (a few times during the week)
- 4 A MODERATE AMOUNT (about once every day)
- 5 A LOT (some every day)

3. During the past seven days about how much fruits and vegetables did you eat? (some vegetables are: green salad, carrots, broccoli, spinach, celery)(some fruits are: apples, bananas, plums, pears)

- 1 NONE
- 2 A SMALL AMOUNT (about a couple of times)
- 3 SOME (a few times during the week)
- 4 A MODERATE AMOUNT (about once every day)
- 5 A LOT (some every day)

4. About how much nuts and seeds did you eat during the past seven days? (some nuts are: almonds, walnuts, pecans)(some seeds are: sunflower seeds, pumpkin seeds)

- 1 NONE
- 2 A SMALL AMOUNT (about a couple of times)
- 3 SOME (a few times during the week)
- 4 A MODERATE AMOUNT (about once every day)
- 5 A LOT (some every day)

5. About how much grains did you eat during the past seven days? (some grains are: rice, whole wheat bread, oatmeal, pasta)

- 1 NONE
- 2 A SMALL AMOUNT (about a couple of times)
- 3 SOME (a few times during the week)
- 4 A MODERATE AMOUNT (about once every day)
- 5 A LOT (some every day)

6. During the past week about how much legumes did you eat? (some legumes are: all types of beans such as baked beans and kidney beans, lentils, split peas)

- 1 NONE
- 2 A SMALL AMOUNT (about a couple of times)
- 3 SOME (a few times during the week)
- 4 A MODERATE AMOUNT (about once every day)
- 5 A LOT (some every day)

7. During the past week about how much fish and fowl did you eat? (fowl are chicken and turkey)(some fish are: salmon, sardines, tuna, halibut)

- 1 NONE
- 2 A SMALL AMOUNT (about a couple of times)
- 3 SOME (a few times during the week)
- 4 A MODERATE AMOUNT (about once every day)
- 5 A LOT (some every day)

8. During the past seven days about how much red meat did you eat? (some types of red meat are: steak, pork, bacon, hamburger, hotdogs)

- 1 NONE
- 2 A SMALL AMOUNT (about a couple of times)
- 3 SOME (a few times during the week)
- 4 A MODERATE AMOUNT (about once every day)
- 5 A LOT (some every day)

Eating Disorders Questionnaire

Name: \_\_\_\_\_ Grade: \_\_\_\_\_

Teacher: \_\_\_\_\_

\*\*\*please try to answer all of the questions, choosing the best response. If you are not sure about an answer, please make your best guess.\*\*\*

1. A person with anorexia nervosa...

- a) usually thinks she is too thin
- b) feels out of control around food
- c) often becomes very thin through dieting
- d) easily becomes nervous

2. A person with bulimia nervosa...

- a) does not eat very much food
- b) is usually very thin
- c) is usually overweight
- d) often overeats and then tries to get rid of the food by vomiting

3. Persons with bulimia...

- a) are usually very thin
- b) are usually overweight
- c) can be any body size
- d) are usually normal-weight

4. Persons with anorexia nervosa...

- a) have usually lost a lot of weight
- b) are usually overweight
- c) can be any body size
- d) are usually normal-weight

5. About \_\_\_ out of every 100 people who have eating disorders (anorexia nervosa and bulimia nervosa) are female:

- a) 50
- b) 75
- c) 90
- d) 99

6. Most obese persons...

- a) eat more than the non-obese
- b) eat a lot more than the non-obese
- c) eat about the same as the non-obese
- d) eat a lot less than the non-obese

7. Which of the following statements is true:

- a) thin people are healthier than fat people
- b) fat people are healthier than thin people
- c) fat people are just about as healthy as thin people
- d) none of the above

8. Most diets...

- a) do not work (fail) over the long-term
- b) do not work (fail) over the short-term
- c) lead to permanent weight loss (work well)
- d) are healthy

9. Most obese people...

- a) have more emotional problems than the non-obese
- b) have less emotional problems than the non-obese
- c) have no more or less emotional problems than the non-obese
- d) are happy all of the time

10. Which is the most healthy meal?

- a) hamburger, french fries, and milkshake
- b) green salad, vegetable soup, brown rice, and beans
- c) barbecued chicken, white bread, milk, and carrots
- d) chocolate ice-cream and seven-up

Dieting Questionnaire

Name: \_\_\_\_\_

Sex:            male            female(circle one)

Height: \_\_\_\_\_ (in centimeters)

Weight: \_\_\_\_\_ (in kilograms)

Grade in school: \_\_\_\_\_

1. Are you trying to lose weight?    yes    no    (circle one)

2. If you answered yes to question #1, place a check mark next to the way(s) you are using to lose weight (you may check more than one):

 fasting (not eating solid food for at least 24 hours) skipping meals cutting out snacks/junk food/sweets cutting down calories exercising (some forms of exercise are: jogging, aerobics, swimming, walking) other (please list: \_\_\_\_\_ )

3. Are you trying to gain weight?    yes    no    (circle one)

**Body satisfaction measure:**

Please circle the number which best describes how you feel:

I am very happy  
with the way  
my body looksI am not happy  
with the way  
my body looks

5

4

3

2

1

0



Children's Version of the Eating Attitudes Test

Name: \_\_\_\_\_ Grade: \_\_\_\_\_

Age: \_\_\_\_\_ Sex: \_\_\_\_\_ Teacher: \_\_\_\_\_

Instructions: Please place an (X) under the column which best applies to each of the numbered statements. Please answer each question honestly and carefully. Thank you.

A VO O S R N

- ( ) ( ) ( ) ( ) ( ) ( ) 1. I am scared about being overweight.
- ( ) ( ) ( ) ( ) ( ) ( ) 2. I stay away from eating when I am hungry.
- ( ) ( ) ( ) ( ) ( ) ( ) 3. I think about food a lot of the time.
- ( ) ( ) ( ) ( ) ( ) ( ) 4. I have gone on eating binges where I feel that I might not be able to stop.
- ( ) ( ) ( ) ( ) ( ) ( ) 5. I cut my food into small pieces.
- ( ) ( ) ( ) ( ) ( ) ( ) 6. I am aware of the energy (calorie) content in foods that I eat.
- ( ) ( ) ( ) ( ) ( ) ( ) 7. I try to stay away from foods such as breads, potatoes, and rice.
- ( ) ( ) ( ) ( ) ( ) ( ) 8. I feel that others would like me to eat more.
- ( ) ( ) ( ) ( ) ( ) ( ) 9. I vomit after I have eaten.
- ( ) ( ) ( ) ( ) ( ) ( ) 10. I feel very guilty after eating.
- ( ) ( ) ( ) ( ) ( ) ( ) 11. I think a lot about wanting to be thinner.
- ( ) ( ) ( ) ( ) ( ) ( ) 12. I think about burning up energy (calories) when I exercise.
- ( ) ( ) ( ) ( ) ( ) ( ) 13. Other people think I am too thin.
- ( ) ( ) ( ) ( ) ( ) ( ) 14. I think a lot about having fat on my body.
- ( ) ( ) ( ) ( ) ( ) ( ) 15. I take longer than others to eat my meals.
- ( ) ( ) ( ) ( ) ( ) ( ) 16. I stay away from foods with sugar in them.
- ( ) ( ) ( ) ( ) ( ) ( ) 17. I eat diet foods.

---

Note. A=always, VO=very often, O=often, S=sometimes, R=rarely, N=never.

- 18. I think that food controls my life.
- 19. I can show self-control around food.
- 20. I feel that others pressure me to eat.
- 21. I give too much time and thought to food.
- 22. I feel uncomfortable after eating sweets.
- 23. I have been dieting.
- 24. I like my stomach to be empty.
- 25. I enjoy trying new rich foods.
- 26. I have the urge to vomit after eating.

**APPENDIX B**

**COVER LETTER TO SCHOOL PRINCIPALS**

Rafael Richman  
c/o Dept. of Psychology  
Simon Fraser University  
Burnaby, B.C. V5A 1S6

June 4, 1991

Principal's name  
School name  
School address

Dear Principal:

I am a clinical psychology graduate student at Simon Fraser University, presently working on my master's thesis. The project involves planning and implementing an eating disorders prevention program for grade five and six students. Components of the program include: a brief introduction to eating disorders, looking at societal pressures to be thin, examining harmful effects and myths about dieting, improving self-esteem, decreasing prejudices and stereotypes surrounding fat people, and promoting healthy eating habits. Some of the lessons nicely complement, and may be integrated with, the province's Learning For Living program.

Enthusiastic approval for my research has been given by Mr. Ken Meehl, who is the North Vancouver school district consultant for the Learning for Living program.

Having completed the planning stage, I am now looking for grade five and six classes and teachers who would be willing to participate in the program. Therefore, I will be following this letter with a phone call, at which time I would be happy to answer any questions you may have. I look forward to speaking with you in the near future. Thank you.

Yours truly,

Rafael Richman

**APPENDIX C**  
**PARENTAL CONSENT LETTERS**

Dear Parents:

Eating disorders, obsessive dieting, and unhealthy eating patterns are a major concern in pre-adolescents. The incidence of eating disorders among children and adolescents is disturbingly on the increase. In response to this problem, this school has decided to implement an eating disorders education and prevention program. The primary goal is to prevent eating disorders and related problems from developing in the first place. A further aim is to foster informed and accurate attitudes toward obesity and dieting.

Beginning in October your child will have an opportunity to participate in the eating disorders education and prevention program. The lessons include: introduction to anorexia nervosa and bulimia nervosa, examination of the harmful effects of and myths surrounding dieting, enhancement of self-esteem, looking at the myths of obesity, discussion of the influence of family and friends on dieting and weight, and suggestions for healthy eating habits.

Before and after the program your child will be asked to complete some questionnaires on eating attitudes, general knowledge of eating disorders, personal eating patterns, and dieting. The results will be kept confidential and used solely for research purposes, as part of a psychology master's thesis conducted at Simon Fraser University. Your child will be informed that he/she is allowed to withdraw from the questionnaire component of the program at any time.

If you have any questions, concerns, or if you object to you child participating in the questionnaire component of the program, please contact "School Principal" at "Telephone number".

Thank you.

Yours truly,

Dear Parents:

As part of a psychology master's thesis conducted at Simon Fraser University on eating disorders, your child will be asked to complete some questionnaires on eating attitudes, general knowledge of eating disorders, personal eating patterns, and dieting. The results will be kept confidential and used solely for research purposes. Your child will be informed that he/she is allowed to stop answering the questions at any time.

If you have any questions, concerns, or if you object to your child's participation in answering the questionnaires, please contact "School Principal" at "Telephone number". Thank you.

Yours truly,

**APPENDIX D**

**STUDENT CONSENT FORMS**



You will be taking part in a special program on eating disorders. The goal of the program is to make you aware of the harmful effects of eating disorders and to reduce the risk of future development of unhealthy eating patterns and attitudes.

In addition to answering some questionnaires, the program will include lessons on: eating disorders information, looking at the myths of dieting and obesity, self-esteem, talking about healthy eating habits, and how family and friends influence your feelings about your body.

I agree to answer questionnaires for an eating disorders research project run by Mr. Rafael Richman of the Psychology Department at Simon Fraser University. I understand that all of my answers will be kept confidential (they will not be shown to anyone). I also understand that I may stop answering the questions at any time. If I have any complaints I may speak to my teacher and/or Mr. Richman.

\_\_\_\_\_ Name \_\_\_\_\_ Date \_\_\_\_\_

\_\_\_\_\_ Teacher's name \_\_\_\_\_ Grade: \_\_\_\_\_

I agree to answer questionnaires for an eating disorders research project run by Mr. Rafael Richman of the Psychology Department at Simon Fraser University. I understand that all of my answers will be kept confidential (they will not be shown to anyone). I also understand that I may stop answering the questions at any time. If I have any complaints I may speak to my teacher and/or Mr. Richman.

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Name

---

Date

---

Teacher's name

Grade: \_\_\_\_\_

**APPENDIX E**

**FINAL LETTERS TO PARENTS**

Dear Parents:

Your child participated in an eating disorders education and prevention program in October and November, 1991. Lessons in the program included: introduction to anorexia nervosa and bulimia nervosa, examination of the harmful effects of and myths surrounding dieting, enhancement of self-esteem, looking at the myths of obesity, discussion of the influence of family and friends on dieting and weight, and suggestions for healthy eating habits.

Before and after the eating disorders prevention program, questionnaires on eating attitudes and behaviours were completed by your child and his/her classmates. Based on the answers from these forms, and comments by the participating teachers and students, the program appeared to be successful. The number of children reporting that they were trying to lose or gain weight decreased during the eating disorders program. Abnormal eating attitudes and behaviours also diminished, and most of the participants were more satisfied with their body shape at the end of the program.

Some of the students, however, reported that they were dieting and were not satisfied with their body shape. Moreover, some of the children's answers on the test of eating attitudes indicated that they have attitudes and behaviours similar to persons suffering from anorexia nervosa and bulimia. Although your child may not necessarily belong in this group, I would encourage you to speak to your child about their attitudes and behaviours related to eating, dieting, and their body satisfaction. If you are concerned and would like further information or services, please contact the Eating Disorder Resource Centre of British Columbia (telephone # 631-5313).

Yours truly,

Rafael Richman  
Dept. of Psychology  
Simon Fraser University

Dear Parents:

Your child and his/her classmates participated in the questionnaire component of an eating disorders education and prevention program in October and November, 1991. This involved providing information and answering questions on eating attitudes and behaviours. Based on the answers from these forms, the majority of students appeared to be satisfied with their body shape, satisfied with their weight, and held normal attitudes toward eating.

Some of the students, however, reported that they were dieting and were not satisfied with their body shape. Moreover, some of the children's answers on the test of eating attitudes indicated that they have attitudes and behaviours similar to persons suffering from anorexia nervosa and bulimia. Although your child may not necessarily belong in this group, I would encourage you to speak to your child about their attitudes and behaviours related to eating, dieting, and their body satisfaction. If you are concerned and would like further information or services, please contact the Eating Disorder Resource Center of British Columbia (telephone #: 631-5313).

Yours truly,

Rafael Richman  
Dept. of Psychology  
Simon Fraser University

**REFERENCES**

- Albee, G. W. (1982). Preventing psychopathology and promoting human potential. American Psychologist, *37*, 1043-1050.
- Blom, L., Lundmark, K., Dahlquist, G., & Persson, L. A. (1989). Estimating children's eating habits: Validity of a questionnaire measuring food frequency compared to a 7-day record. Acta Paediatr Scand, *78*, 858-864.
- Brewerton, T. (1992, November/December). Childhood eating disorders on the rise. East-West Natural Health, p. 17.
- Brown, C., & Forgay, D. (1987). An uncertain well-being: Weight control and self-control. Healthsharing Winter, 11-15.
- Bruch, H. (1978). The Golden Cage: The Enigma of Anorexia Nervosa. Cambridge, MA: Harvard University Press.
- Button, E. J., & Whitehouse, A. (1981). Subclinical anorexia nervosa. Psychological Medicine, *11*, 509-516.
- Childress, A. C. (1991, October 22). Study finds many kids worry about weight. Bellingham Herald.
- Chng, C. L. (1983). Anorexia nervosa: Why do some people starve themselves? The Journal of School Health, *53*, 22-26.
- Collins, M. E. (1988). Education for healthy body weight: Helping adolescents balance the cultural pressure for thinness. Journal of School Health, *58*, 227-231.
- Cowen, E. L. (1983). Primary prevention in mental health: Past, present, and future. In R. D. Felner, L. A. Jason, J. N. Moritsugu, & S. S. Farber (eds.) Preventive Psychology: Theory, Research, and Practice. New York: Pergamon Press.

- Crisp, A. H. (1979). Early recognition and prevention of anorexia nervosa. Developmental Medicine and Child Neurology, 21, 393-395.
- Crisp, A. H. (1988). Some possible approaches to prevention of eating and body weight/shape disorders, with particular reference to anorexia nervosa. International Journal of Eating Disorders, 7, 1-17.
- Crowther, J. H., Post, G., Zaynor, L. (1985). The prevalence of bulimia and binge eating in adolescent girls. International Journal of Eating Disorders, 4, 29-42.
- Flay, B. R., Ryan, K. B., Best, A., Brown, K. S., Kersell, M. W., D'Avernas, J. R., & Zanna, M. P. (1985). Are social-psychological smoking prevention programs effective? The Waterloo study. Journal of Behavioral Medicine, 8, 37-57.
- Garfinkel, P. E., & Garner, D. M. (1982). Anorexia Nervosa: A multidimensional perspective. New York: Brunner/Mazel.
- Garner, D. M. (1985). Etiogenesis in anorexia nervosa and bulimia nervosa. International Journal of Eating Disorders, 4, 701-726.
- Garner, D. M., & Garfinkel, P. E. (1979). The eating attitudes test: An index of the symptoms of anorexia nervosa. Psychological Medicine, 9, 273-279.
- Garner, D. M., Garfinkel, P. E., Rockert, W., & Olmsted, M. P. (1987). A prospective study of eating disturbances in the ballet. Psychotherapy and Psychosomatics, 48, 170-175.
- Garner, D. M., Garfinkel, P. E., & Olmsted, M. P. (1983). An overview of sociocultural factors in the development of anorexia nervosa. In Anorexia nervosa: recent developments in research (pp. 65-82). New York: Alan R. Liss.

- Garner, D. M., Garfinkel, P. E., Rockert, W., & Olmsted, M. P. (1987). A prospective study of eating disturbances in the ballet. Psychotherapy and Psychosomatics, 48, 170-175.
- Garner, D. M., Garfinkel, P. E., Schwartz, D., & Thompson, M. (1980). Cultural expectations of thinness in women. Psychological Reports, 47, 483-491.
- Garner, D. M., & Olmsted, M. P. (1984). Manual for Eating Disorder Inventory. Florida: Psychological Assessment Resources.
- Garner, D. M., Olmsted, M. P., Bohr, Y. & Garfinkel, P. E. (1982). The eating attitudes test: Psychometric features and clinical correlates. Psychological Medicine, 12, 871-878.
- Greenfeld, D., Quinlan, D. M., Harding, P., Glass, E., Bliss, A. (1987). Eating behavior in an adolescent population. International Journal of Eating Disorders, 6, 99-111.
- Hays, W.L. (1988). Statistics (4th ed.). New York: Holt, Rinehart, & Winston.
- Jenner, D. A., Neylon, K., Croft, S., Beilin, L. J., & Vandongen, R. (1989). A comparison of methods of dietary assessment in Australian children aged 11-12 years. European Journal of Clinical Nutrition, 43, 663-673.
- Jones, D. J., Fox, M. M., Babibian, H. M., & Hutton, H. E. (1980). Epidemiology of anorexia nervosa in Monroe County, New York: 1960-1976. Psychosomatic Medicine, 42, 551-558.
- Katz, J. L. (1985). Some reflections on the nature of eating disorders: On the need for humility. International Journal of Eating Disorders, 4, 616-626.
- Kendall, R. E., Hall, D. J., Hailey, A., & Babigian, H. M. (1973). The epidemiology of anorexia nervosa. Psychological Medicine, 3, 200-203.



- Killen, J. D. (1985). Prevention of adolescent tobacco smoking: the social pressure resistance training approach. Journal of Child Psychology and Psychiatry, 26, 7-15.
- Killen, J. D., Taylor, B., Telch, M. J., Saylor, K. E., Maron, D. J., & Robinson T. N. (1986). Self-induced vomiting and laxative and diuretic use among teenagers: Precursors of the binge-purge syndrome? Journal of the American Medical Association, 255, 1447-1449.
- Ledoux, S., Choquet, M., & Flament, M. (1991). Eating disorders among adolescents in an unselected French population. International Journal of Eating Disorders, 10, 81-89.
- Leichner, P., Arnett, J., Rallo, J. S., Srikameswaran, S., & Vulcano, B. (1986). An epidemiologic study of maladaptive eating attitudes in a Canadian school age population. International Journal of Eating Disorders, 5, 969-982.
- Levine, M. P. (1987). How Schools can Help Combat Student Eating Disorders: Anorexia Nervosa and Bulimia. Washington: National Education Association.
- Luepker, R. V., Johnson, C. A., Murray, D. M., & Pechacek, T. F. (1983). Prevention of cigarette smoking: Three-year follow-up of an education program for youth. Journal of Behavioral Medicine, 6, 53-62.
- Maloney, J. J., McGuire, J., & Daniels, S. R. (1988). Reliability testing of a children's version of the Eating Attitude Test. Journal of the American Academy of Child Adolescent Psychiatry, 5, 541-543.
- Maloney, M. J., McGuire, J., Daniels, S. R., & Specker, B. (1989). Dieting behavior and eating attitudes in children. Pediatrics, 84, 482-489.
- Mann, P. A. (1978). Community Psychology: Concepts and Applications. New York: The Free Press.

- Mazel, J. (1980). The Beverly Hills Diet. New York: Macmillan Publishing.
- Mazur, A. (1986). U.S. trends in feminine beauty and overadaptation. Journal of Sex Research, 22, 281-303.
- Nylander, I. (1971). The feeling of being fat and dieting in a school population: An epidemiologic interview investigation. Acta Sociomedica Scandania, 3, 17-26.
- Perry, C. L., Killen, J., & Slinkard, L. A. (1980). Peer teaching and smoking prevention among junior high students. Adolescence, 58, 277-281
- Polivy, J., & Herman, C. P. (1983). Breaking the Diet Habit. New York: Basic Books.
- Polivy, J., & Herman, C. P. (1987). Diagnosis and treatment of normal eating. Journal of Consulting and Clinical Psychology, 55, 635-644.
- Pope, H. G., Hudson, J. I., Yurgelun-Todd, D. & Hudson, M. S. (1984). Prevalence of anorexia nervosa and bulimia in three student populations. International Journal of Eating Disorders, 3, 45-51.
- Porter, J. E., Morrell, T. L., & Moriarty, D. (1986). Primary prevention of anorexia nervosa: Evaluation of a pilot project for early and pre-adolescents. CAHPER Journal, 4, 21-26.
- Raciti, M. C., & Norcross, J. C. (1987). The EAT and EDI: Screening, interrelationships, and psychometrics. International Journal of Eating Disorders, 6, 579-586.
- Rappaport, J. (1977). Community Psychology: Values, Research, and Action. New York: Holt, Rinehart, & Winston.
- Rice, C. (1989). Teacher's Resource Kit. Toronto: National Eating Disorder Information Center.

- Rosen, J. C., & Gross, J. (1987). Prevalence of weight reducing and weight gaining in adolescent girls and boys. Health Psychology, 6, 131-147.
- Salmons, P. H., Lewis, V. J., Rogers, P., Gatherer, A. J. H., & Booth, D. A. (1988). Body shape dissatisfaction in school children. British Journal of Psychiatry, 153 (suppl. 2), 27-31.
- Schaps, E., DiBartolo, R., Moskowitz, J., Palley, C. S., & Churgin, S. (1981). A review of 127 drug abuse prevention program evaluations. Journal of Drug Issues, 11, 17-43.
- Schwartz, D. M., Thompson, M. G., & Johnson, C. L. (1982). Anorexia nervosa and bulimia: The socio-cultural context. International Journal of Eating Disorders, 1, 20-36.
- Shisslak, C. M., & Crago, M. (1987). Primary prevention of eating disorders. Journal of Consulting and Clinical Psychology, 55, 660-667.
- Shisslak, C. M., & Crago, M. (1990). Prevention of eating disorders among adolescents. American Journal of Health Promotion, 5, 100-106.
- Silverstein, B., Peterson, B., & Perdue, L. (1986a). Some correlates of the thin standard of bodily attractiveness for women. International Journal of Eating Disorders, 5, 895-905.
- Silverstein, B., Perdue, L., Peterson, B., & Kelly, E. (1986b). The role of the mass media in promoting a thin standard of bodily attractiveness for women. Sex Roles, 14, 519-532.
- Smead, V. S. (1985). Considerations prior to establishing preventative intervention for eating disorders. The Ontario Psychologist, 17, 12-17.
- Stein, D. M., & Reichart, P. (1990). Extreme dieting behaviors in early adolescence. Journal of Early Adolescence, 10, 108-121.

- Theander, S. (1970). Anorexia nervosa: A psychiatric investigation of 94 female patients. Acta Psychiatria Scandinavica (suppl.), 214, 1-194.
- Vandereyckhen, W., & Meermann, R. (1984). Anorexia nervosa: Is prevention possible? International Journal of Psychiatry in Medicine, 14, 191-205.
- Wooley, W. O., & Wooley, S. (1982). The Beverly Hills eating disorder: The mass marketing of anorexia nervosa. International Journal of Eating Disorders, 1, 57-69.
- Wooley, S. C., Wooley, O. W., & Dyrenforth, S. R. (1979). Theoretical, practical, and social issues in behavioral treatments of obesity. Journal of Applied Behavior Analysis, 12, 3-25.
- Yager, J. (1985). Afterword. In R. Hales & A. Frances (Eds.), Psychiatry Update: Annual Review (Vol. 4., pp. 516-521). Washington, D.C.: American Psychiatric Association.