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Anne L. Hague

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**EVALUATING ATTITUDES OF OBESITY AND THEIR CHANGE PROCESSES
AMONG STUDENT TEACHERS AND SCHOOLTEACHERS ON THE
WORLD WIDE WEB USING THE ELABORATION LIKELIHOOD MODEL**

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A THESIS

Submitted in Partial Fulfillment of the

Requirements for the Degree of

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(in Food and Nutrition Sciences)

The Graduate School

The University of Maine

August, 2003

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By Anne L. Hague

Advisor: Dr. Adrienne A. White

An Abstract of the Thesis Presented
in Partial Fulfillment of the Requirements for the
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(in Food and Nutrition Sciences)
August, 2003

Teachers have an active role in helping to prevent and deter stigmatizing acts toward children labeled as “fat.” The objective was to examine attitudes of obesity and their change processes among student teachers and schoolteachers, when exposed to a Web-based educational module promoting size acceptance, using the Elaboration-Likelihood Model (ELM). The ELM is a theoretical approach to message-based persuasion specifying conditions under which attitude change occurs. The theory was used to explain the impact of the module (content included etiological factors of obesity, implications of weight loss efforts, and emotional/psychosocial effects of obesity), high nutrition credibility of the module presenter (PhD, RD), and her appearance (digital image was altered to appear either “fat” or “nonfat”) on attitude change. The effect of subject body mass index (BMI) on attitudes was also evaluated.

The sample included undergraduate and graduate students from the University of Maine System as well as schoolteachers from the New England region. Subjects (n=258; mean age=26.8±10.2) were randomly assigned to one of five groups (control/four

treatment groups). The treatment groups evaluated the effect of the module, credibility, credible “non-fat” source, and credible “fat” source on attitude change. Change was assessed on-line at pretest, posttest, and six-week follow-up using the Anti-Fat Attitudes Test (AFAT). AFAT is a Likert scale ranging from 1 = strongly disagree with negative attitude to 5 = strongly agree with negative attitude toward obesity. Additional tests were used to evaluate support for the ELM.

Attitude means decreased in treatment groups between pretest (mean scores \pm standard error ranged from 1.912 ± 0.062 to 1.995 ± 0.067) to posttest (1.724 ± 0.262 to 1.815 ± 0.074) ($p=0.000$) and pretest to follow-up (mean scores ranged from 1.721 ± 0.070 to 1.871 ± 0.078) ($p\leq 0.006$). Although attitude was not associated with subject BMI, exposure to the credible “fat” presenter more favorably influenced attitudes (i.e. posttest and follow-up) compared to the credible “non-fat” presenter ($p<0.025$). Communicating the size acceptance paradigm on-line appeared to reduce negative attitudes of obesity regardless of subject BMI. The findings support moderate elaboration based on the ELM. The presence of the credible “fat” source may have increased attention to the size acceptance message.

DEDICATION

I dedicate this dissertation to my most thoughtful and giving husband, Dave. His endless support and encouragement made this project possible. I am blessed to have a best friend with such a big heart and will always be grateful for his love, understanding, and patience throughout my years as a student.

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TABLE OF CONTENTS

| | |
|--|-----|
| DEDICATION..... | iii |
| ACKNOWLEDGEMENTS..... | iv |
| LIST OF TABLES..... | ix |
| LIST OF FIGURES | xi |
| Chapter | |
| 1. INTRODUCTION | 1 |
| 2. LITERATURE REVIEW | 4 |
| Etiology of Obesity..... | 5 |
| Health Risks Associated with Obesity..... | 7 |
| Obesity Treatment..... | 11 |
| “Non-Diet” Approach to Obesity..... | 14 |
| Stigmatization of Obesity | 19 |
| Negative Attitudes Among Children | 24 |
| Negative Attitudes Among Health Care Professionals..... | 26 |
| Negative Attitudes Among Schoolteachers | 28 |
| Need for Nutrition Education..... | 30 |
| Rationale for Study | 32 |
| Attitudes Defined | 33 |
| Theoretical Orientation to Attitude Change..... | 34 |
| Cognitive-Consistency Theories..... | 36 |
| Learning Theory Approach..... | 38 |
| Application of the Elaboration Likelihood Model (ELM): An Educational/Nutritional Context | 46 |
| Objectives | 52 |
| 3. METHODS | 54 |
| Subjects..... | 54 |
| Recruitment..... | 54 |
| Group Assignment | 56 |
| Research Design..... | 56 |
| Research Instruments | 57 |
| Antifat Attitudes Test..... | 57 |
| Short Obesity Knowledge Scale | 57 |
| Need for Cognition Scale..... | 58 |
| Counselor Rating Form..... | 59 |
| Theory Application | 59 |
| Demographics | 60 |
| Development of Source Images..... | 61 |

| | |
|---|-----|
| Research Questions and Null Hypotheses | 64 |
| Educational Intervention..... | 66 |
| Objectives | 67 |
| Obesity Defined | 68 |
| Pilot Test..... | 69 |
| Statistical Analysis..... | 70 |
| | |
| 4. RESULTS | 72 |
| Descriptive Statistics of Subjects..... | 72 |
| Pretest Scores..... | 74 |
| Feedback About Module (Quantitative and Qualitative)..... | 75 |
| Research Question (A)..... | 78 |
| Antifat Attitudes Test Analysis..... | 79 |
| Subscale Analysis | 80 |
| Association of Antifat Attitudes Test (AFAT) with Demographics..... | 82 |
| Response to Testing H1 – 5 | 84 |
| Research Question (B)..... | 85 |
| Association of Antifat Attitudes Test (AFAT) with Body Mass Index (BMI) | 85 |
| Response to Testing H6 – 7 | 85 |
| Research Question (C)..... | 86 |
| Association of Antifat Attitudes Test (AFAT) with Counselor Rating Form (CRF)..... | 86 |
| Subscale Analysis | 88 |
| Comparative Analysis of Subscales..... | 93 |
| Response to Testing H8 – 10 | 93 |
| Research Question (D)..... | 94 |
| Association of Antifat Attitudes Test (AFAT) with Need for Cognition (NC) | 94 |
| Association of Need for Cognition (NC) with College Status..... | 95 |
| Response to Testing H11 | 96 |
| Research Question (E) | 96 |
| Association of Antifat Attitudes Test (AFAT) with Knowledge of Obesity (KOB)..... | 96 |
| Short Obesity Knowledge Scale Analysis | 97 |
| Association of Knowledge of Obesity (KOB) with College Status..... | 98 |
| Response to Testing H12 – 13 | 99 |
| Research Question (F)..... | 99 |
| Association of Antifat Attitudes Test (AFAT) with Demographics..... | 100 |
| Response to Testing H14 – 15 | 101 |
| | |
| 5. DISCUSSION | 102 |
| Overview..... | 102 |
| Effect of Educational Intervention..... | 103 |

| | |
|---|-----|
| Attitude | 103 |
| Knowledge | 105 |
| Effect of Source | 105 |
| Support for the Elaboration Likelihood Model (ELM)..... | 109 |
| Methodological Considerations | 112 |
| Need for Teacher Training..... | 115 |
| Implications..... | 117 |
| Limitations | 118 |
| Future Directions | 122 |
| | |
| 6. CONCLUSION..... | 126 |
| | |
| REFERENCES | 127 |
| | |
| APPENDICES | 142 |
| Appendix A. The Elaboration Likelihood Model | 143 |
| Appendix B. Recruitment Materials | 145 |
| Appendix C. Informed Consent | 153 |
| Appendix D. Instructions to Access WebCT “Weighty Insights” Program | 156 |
| Appendix E. Antifat Attitudes Test | 167 |
| Appendix F. Short Obesity Knowledge Scale | 172 |
| Appendix G. Need for Cognition Short Scale | 175 |
| Appendix H. Counselor Rating Form | 178 |
| Appendix I. Demographic Questionnaire | 182 |
| Appendix J. Module Introductions and Conclusions..... | 186 |
| Appendix K. Source Images and Body Image Scales..... | 210 |
| Appendix L. Intervention - Web-Based Educational Module | 215 |
| Appendix M. Pilot Test Participant Comments | 269 |
| Appendix N. Prototypical Statistical Analyses | 271 |
| Appendix O. Supplemental Tables | 286 |
| Appendix P. Module Feedback..... | 291 |
| | |
| BIOGRAPHY OF THE AUTHOR..... | 307 |

LIST OF TABLES

| | | |
|-------------|---|-----|
| Table 3.1. | Selection Frequency from the Body Size (BS) Scale (12 sizes) with Multiple Sources..... | 62 |
| Table 3.2. | Selection Frequency from the Body Size (BS) Scale (12 sizes) with a Single Source..... | 63 |
| Table 3.3. | Selection Frequency from the Body Size (BS) Scale (9 sizes) with a Single Source | 63 |
| Table 4.1. | Mean BMI Category (\pm SD) by Gender..... | 72 |
| Table 4.2. | School Status and Mean Age (\pm SD) of Sample..... | 73 |
| Table 4.3. | Subjects' College Major | 73 |
| Table 4.4. | Antifat Attitudes Test: Time by Treatment Mean Scores (\pm SE) | 79 |
| Table 4.5. | Antifat Attitudes Test Items: Time by Treatment Mean Scores (\pm SE)..... | 80 |
| Table 4.6. | Antifat Attitudes Test, Social/Character Disparagement and Physical/Romantic Unattractiveness: Time by Treatment Mean Scores (\pm SE) | 81 |
| Table 4.7. | Antifat Attitudes Test, Weight Control/Blame: Time by Treatment Mean Scores (\pm SE) | 82 |
| Table 4.8. | Correlation of Rating of Counselor Attractiveness (CRFsub3) Mean and Antifat Attitudes Test (AFAT) Mean Scores for Treatment Groups 2, 3, & 4 | 93 |
| Table 4.9. | Correlation of Need for Cognition (NC) Mean and Antifat Attitudes Test (AFAT) Mean Scores | 95 |
| Table 4.10. | Knowledge of Obesity Test: Time by Treatment Mean Scores (\pm SE) | 97 |
| Table 4.11. | Knowledge of Obesity Test Items: Time by Treatment Mean Scores (\pm SE)..... | 98 |
| Table O.1. | Frequencies for Nutrition Information Sources | 287 |
| Table O.2. | Antifat Attitudes Test (AFAT) Mean Scores Adjusted by College Status: Time by Year in School Least Square (LS) Mean Scores (\pm SE) | 287 |

| | |
|--|-----|
| Table O.3. Antifat Attitudes Test Mean Scores Covaried with Counselor Rating Form: Group Slope Values..... | 288 |
| Table O.4 Antifat Attitudes Test Mean Scores Covaried with Counselor Expertise: Group Slope Values..... | 288 |
| Table O.5 Antifat Attitudes Test Mean Scores Covaried with Counselor Trustworthiness: Group Slope Values..... | 289 |
| Table O.6. Need for Cognition (NC) Mean Scores Adjusted by College Status | 289 |
| Table O.7. Knowledge of Obesity (KOB) Mean Scores Adjusted by College Status: Time by Year in School Least Square (LS) Mean Scores (\pm SE) | 290 |

LIST OF FIGURES

| | | |
|------------|--|-----|
| Figure 4.1 | Effect of Counselor Rating on Antifat Attitudes Test (AFAT) Posttest Mean Scores: Treatment Group Slopes | 87 |
| Figure 4.2 | Effect of Counselor Rating on Antifat Attitudes Test (AFAT) Follow-up Mean Scores: Treatment Group Slopes | 88 |
| Figure 4.3 | Effect of Counselor Expertise Rating on Antifat Attitudes Test (AFAT) Posttest Mean Scores: Treatment Group Slopes..... | 89 |
| Figure 4.4 | Effect of Counselor Expertise Rating on Antifat Attitudes Test (AFAT) Follow-up Mean Scores: Treatment Group Slopes | 90 |
| Figure 4.5 | Effect of Counselor Trustworthiness Rating on Antifat Attitudes Test (AFAT) Posttest Mean Scores: Treatment Group Slopes | 91 |
| Figure 4.6 | Effect of Counselor Trustworthiness Rating on Antifat Attitudes Test (AFAT) Follow-up Mean Scores: Treatment Group Slopes | 92 |
| Figure A.1 | The Elaboration Likelihood Model of Persuasion..... | 144 |
| Figure K.1 | Source Images..... | 211 |
| Figure K.2 | Body Image Scale: Range 1 – 12 | 212 |
| Figure K.3 | Re-altered “Non-Fat” Source Image..... | 213 |
| Figure K.4 | Body Image Scale: Range 1 – 9..... | 214 |

INTRODUCTION

In the United States, negative attitudes toward fat people are highly pervasive (Garner & Wooley, 1991, Sobal, 1999). Many Americans view obese individuals as unappealing aesthetically and less healthy than idealized thin individuals (Allon, 1973). Much of the stigma associated with obesity is attributed to cultural pressures for thinness (Crandall & Martinez, 1996) and the belief that obese individuals are personally responsible for their physical deviance (Crocker, Cornwell, & Major, 1993, Garner & Wooley, 1991, National Education Association, 1994). The latter is largely attributed to the traditional biomedical model of obesity, which supports the view that body weight is voluntarily controlled and that fatness is a deviant condition associated with health risks (Parham, 1996). Consequently, obese individuals tend to blame themselves for their weight condition (Garner & Wooley, 1991) and accept stigmatizing acts as just (Sobal, 1999).

Researchers have suggested that fat individuals often attempt weight loss to avoid the social prejudice and discrimination associated with obesity (Butters & Cash, 1987, Ikeda, 1995). However, weight loss efforts are typically futile and often pose a greater psychological and physical risk than excess body weight (Feldman, Feldman, & Goodman, 1988, Hawks & Richins, 1994, Kassirer & Angell, 1998, Polivy, 1996). Weight loss efforts such as chronic dieting have been associated with numerous deleterious effects including preoccupation with food (Brownell & Rodin, 1994, Garner & Wooley, 1991, Wooley & Wooley, 1979), body dissatisfaction (Wilson, 1996), low self-confidence (Garner & Wooley, 1991, Wooley & Garner, 1991), and an increased risk for eating disorders (Garner & Wooley, 1991, Kirschenbaum & Fitzgibbon 1995, Polivy

& Herman, 1985, Wooley & Wooley, 1979). These factors are a grave concern, particularly for fat children and adolescents, since body image and peer acceptance is of vital interest to these age groups.

The school is a highly stigmatized environment for fat children (Neumark-Sztainer, Story, & Faibisch, 1998, Neumark-Sztainer, Story, & Harris, 1999). Therefore, it is imperative that teachers play an active role in helping to prevent and deter stigmatizing acts in the school setting. Unfortunately, teachers, like other professionals, share society's negative view of obesity (Schroer, 1986, Quinn, 1987). Negative attitudes of obesity among teachers can have serious consequences, especially since teachers serve as role models to students. Educational interventions can help reduce negative attitudes associated with obesity. More specifically, education diminishes blame that is frequently directed toward the obese individual for his/her condition and reduces bias (Wiese, Wilson, Jones, & Neises, 1992). Although researchers have examined attitudes of obesity among select groups, attitude change among prospective and current schoolteachers has not been reported.

This research was designed to determine attitudes of obesity in teacher credential candidates and certified teachers. Attitude change, as a result of participation in an educational module, was evaluated. The module is based on the principles of the "non-diet" approach to obesity. This alternative paradigm promotes normalized eating, self-acceptance, and social acceptance of size diversity (Ciliska, 1998, Neumark-Sztainer, 1999, Parham, 1996, Robison, 1997). Based on preliminary research of this model, numerous positive effects have been observed particularly in regard to psychological function (Polivy & Herman, 1992) and eating behaviors (Omichinski & Harrison, 1995,

Polivy & Herman, 1992). The theoretical framework used to evaluate attitude change was Petty and Cacioppo's Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986). Support for this model was examined. The objectives of this study included to: a) examine attitudes toward obesity among teacher credential candidates and certified teachers, b) evaluate processes of attitude change using the ELM, c) determine attitude change as a result of reviewing a Web-based educational program, d) evaluate the effect of subject BMI on attitude, and e) examine the effect of source (presenter) attractiveness and credibility on attitude change.

The controversy surrounding the etiology, health risks, and treatment of obesity were examined in the literature review. Likewise, literature pertaining to the non-diet approach, stigmatization of obesity, and the psychosocial effects from stigmatizing acts were reviewed. Definitions of obesity, when provided, are described accordingly. Following the literature review, a rationale statement, theoretical orientation to attitude change, theoretical applications, and objectives have been discussed. The research methodology, results, discussion, and conclusion follow.

LITERATURE REVIEW

There is tremendous pressure in American society to be thin and to have a certain body shape. Such qualities have been valued by Western cultures since the beginning of the twentieth century and have become increasingly idealized since the latter half of the century. As pressure to obtain thinness escalates, fatness has become more denigrated and is now considered a deviant, marginal, and stigmatized attribute in most Western, post-industrial nations (Sobal, 1999).

The perceived notion of the ideal body weight and shape is largely influenced by societal values and attitudes (Sobal & Devine, 1997). Societal values and attitudes are shaped by images portrayed via television, catalogues, advertisements, and even toys (Brownell, 1991a). The pressure to conform to unrealistic notions of an ideal body shape and size is especially applicable to American women and shows few signs of diminishing in the near future (Robison, 1997). Societal pressure for an increasingly thinner body shape for women is evident in idealized social roles, such as beauty pageant winners and fashion models (Wiseman, Gray, Mosimann, & Ahrens 1992). It has been reported that the majority of beauty pageant contestants and models are at least 15 percent below the recommended body weight for height. Such a low body weight represents a diagnostic criterion for anorexia nervosa (Robison, 1997).

As the idealized image becomes thinner, recent reports have been that the prevalence of obesity among Americans is increasing. In the last two decades, the prevalence of overweight among the United States population has achieved epidemic proportions (Godfrey Meisler & St. Jeor 1996a, Technology Assessment Conference Panel, 1992). Based on recent statistics, 31% of men and 24% of women are overweight

(body mass index [BMI] of 25 to 30) (Brownell & Rodin, 1994). Data from the National Health and Nutrition Examination Surveys (NHANES) indicate that the prevalence of overweight (BMI value ≥ 27.8 for men and ≥ 27.3 for women) increased eight percent among United States adults (ages 20 to 74) between NHANES II (1976 to 1980) and NHANES III phase 1 (1988 to 1991) (Kuczmarski, Flegal, Campbell, & Johnson, 1994). Based on NHANES III data (1988-1994), 22.5% of United States adults are obese (Mokdad, et al., 1999). Weight changes monitored among United States adults from 1991-1998, indicated an increase in obesity among states that ranged from 11.3% to 101.8%. The increase in obesity was evident among all age groups, ethnicity, educational levels, and gender (Mokdad, et al., 1999).

Increases in body weight are also evident among children and adolescents in the United States. Based on NHANES data from 1976 – 1980, 7.6% of children (6 – 11 years) and 5.7% of adolescents (12 – 17 years) were overweight and in 1988 – 1994, 14% of children and 12% of adolescents were overweight ($> 95^{\text{th}}$ percentile) (Neumark-Sztainer, 1999). Despite the government health goals to reduce obesity to 20% for adults and 15% for adolescents by the year 2000 (The Committee to Develop Criteria for Evaluating the Outcomes Approaches to Prevent and Treat Obesity, 1995), Americans continue to get fatter (Brownell & Rodin, 1994). Many consider this epidemic a risk to psychological, social, and physical health (Ritenbaugh, 1982, Weil, 1977).

Etiology of Obesity

Numerous factors are responsible for the sudden increase in obesity. Those identified include social factors (Sobal & Devine, 1997), an overabundance of food

choices (particularly high fat and fast foods), energy-saving devices, declining physical activity (Brownell & Rodin, 1994), changes in dietary knowledge, attitudes, and practices (Kuczmarski, Flegal, Campbell, & Johnson, 1994), physiological changes (Brownell & Rodin, 1994), as well as psychological factors (Technology Assessment Conference Panel, 1992). However, it is unclear to what extent these variables directly influence the rate of obesity.

Despite numerous studies, the etiology of obesity is not well understood (Garner & Wooley, 1991, Technology Assessment Conference Panel, 1992). Some experts believe that genetic factors are primary determinants of obesity while others attribute individual behaviors as primary causal factors (Neumark-Sztainer, 1999). The degree of controversy is particularly evident among the latter. For instance, excess caloric intake has been widely recognized as a major factor of obesity. However, researchers have failed to demonstrate a significant difference in the caloric intake or eating patterns of obese versus non-obese individuals (Garner & Wooley, 1991, Gast & Hawks, 1998, Hawks & Richins, 1994). This finding is particularly evident among the lower socioeconomic group, which demonstrates a higher prevalence of obesity yet exhibits a caloric intake that is comparable to lean and average weight individuals (Garner & Wooley, 1991). Other researchers believe that a lack of energy expenditure among obese individuals is a primary contributor of obesity (Gast & Hawks, 1998). However, others argue that activity levels and caloric expenditure among obese and non-obese individuals are comparable (Atkinson et al., 1994). At the same time, some critics question the validity of these findings since some obese individuals eat significantly more and exercise less than they report. Wilson (1996) noted that “part of this underreporting of food intake

seems to be deliberate impression management; another part may be self-deception or cognitive avoidance” (p. 434).

Although it is evident that researchers fail to agree on the primary etiological factors of obesity, experts do tend to agree that both nature and nurture exert influences on body weight (Garner & Wooley, 1991). Hence, the genetic propensity for obesity is enhanced when the individual is “exposed to triggering environmental conditions and behaviors” (Atkinson et al., 1994, p. 573). Therefore, most researchers tend to agree that a child with a genetic predisposition towards obesity, who lives in a social environment in which caloric-dense food is easily accessible, and whose family tends to be sedentary, is at increased risk of obesity.

It is evident that more research is needed regarding the etiology of obesity, including the synergistic effects of nature and nurture. Unfortunately, many questions are not likely to be resolved in the near future. Consequently, “stigmatizing claims about gluttony and sloth” will continue to be “counterpoised with de-stigmatizing claims about inheritance and metabolism” (Sobal, 1999, p. 190). At present, the general consensus in contemporary society is to consider obese individuals personally responsible for their condition and to “discredit and reject them as personal failures” (Sobal, 1999, p. 190).

Health Risks Associated with Obesity

For many years obesity has been viewed by society as distasteful and shameful. However, more recently, there has been a growing “phenomenon of extreme disgust” (Czajka-Narins & Parham, 1990, p. 29). This lower tolerance toward obesity is primarily attributed to society’s value of slenderness as well as the public’s increasing health

consciousness. The general public's perception of fatness has been strongly influenced by the biomedical model of fatness, which considers excess body fat a disease and a threat to the quality of life (Parham, 1996). This paradigm is highly pervasive and is further propagated by the insurance companies and the diet industry, which claim that obesity is incompatible with health (Maddox, Back, & Liederman, 1968).

Although current researchers suggest that obesity is associated with increased mortality and morbidity from sleep apnea, coronary heart disease, hypertension, dyslipidemias, diabetes, gallstones, osteoarthritis; endometrial, breast, prostate, and colon cancers (Cummings, Goodrick, & Foreyt, 1997, The National Heart, Lung, and Blood Institute Expert Panel, 1998), the association between obesity and mortality is extremely complex and is far from cause and effect. A considerable amount of controversy currently exists regarding the association between excess body weight and increased morbidity and mortality. For example, based on data from the 1976 -1980 National Health and Nutrition Examination Survey (NHANES II), obesity is clearly associated with hypertension and high blood cholesterol. However, based on data from the NHANES III phase 1, general blood lipid levels and blood pressure decreased despite an increased prevalence of overweight. Similar findings have also been reported from the Minnesota Heart Survey (Kuczmarski, Flegal, Campbell, & Johnson, 1994). Many researchers have also demonstrated that slight to mild obesity (10% to 30% overweight) is not linked to morbidity and mortality and that these individuals may actually live longer than normal weight or slightly underweight individuals (Garner & Wooley, 1991).

Another source of disagreement is whether there is a threshold or linear effect in relation to health risk and body weight. Some researchers report a curvilinear relationship

between the degree of obesity and increased risk of chronic diseases (i.e. diabetes, hypertension, coronary heart disease, and cancer) (Kirschenbaum & Fitzgibbon, 1995). However, the shape of the curve relating BMI to health outcomes and possible differences in the relationship by gender, age, and ethnicity remain controversial (Kuczmarski, Flegal, Campbell, & Johnson, 1994). At present, authorities are more inclined to agree that those individuals who are >40% over ideal body weight are considered at increased health risk (Hanna, Loro, & Power, 1981, Wooley & Wooley, 1979). Garner and Wooley (1991) have stated that “what evidence exists for an association between obesity and mortality or morbidity is usually found not to apply to those with mild to moderate obesity” (p. 756).

Some researchers have expressed greater concern regarding body fat distribution versus body weight in regard to possible health risks. “Body build and regional distribution of body fat are more important than overall obesity in predicting mortality” (Garner & Wooley, 1991, p. 751). Based on data from numerous epidemiological studies, android obesity (i.e. a high proportion of abdominal fat) poses an increased risk for cardiovascular disease (Kirschenbaum & Fitzgibbon, 1995), hypertension, hyperlipidemia, type II diabetes (Cummings, Goodrick, & Foreyt, 1997) compared to those with gynoid obesity (i.e. body fat distributed below the waist). However, not all researchers support this view. Some indicate that health risks are independent of waist to hip ratio and that health risks are attributed to lifestyle factors rather than obesity per se. Proponents of this theory have suggested that excess consumption of alcohol, dietary fats, sugar, and inadequate physical exercise are responsible for the development of health risks rather than adiposity. Subsequently, health risks are alleviated via lifestyle change

rather than weight loss (Garner & Wooley, 1991). The scientific validity of current body fat standards (i.e. 15 percent for men and 22 percent for women) has also been questioned. Gaesser, (1996) stated that the measurements “have never been tied to objective assessments of body fat as a causal factor in either higher disease or higher mortality rates” (p. 50). Robison & Erdman (1998) have also noted that “although these standards are commonly used as measures of health-related fitness, recent research indicates that mortality is positively associated with fitness but not with fatness” (p. 59).

Much of the controversy regarding the health risks associated with obesity has stemmed from the lack of well-controlled longitudinal studies, inadequate sample sizes, and improper data interpretation. For example, some populations have exhibited a positive relationship between overweight and mortality, yet some researchers conclude that a relationship does not exist once conditions such as hypertension, hyperlipidemia, and diabetes are controlled (Kirschenbaum & Fitzgibbon, 1995). Some researchers argue that such conditions should not be statistically controlled because the latter conditions are not independent of obesity and “it is through hypertension, hyperlipidemia, diabetes, and related problems that obesity has its most noxious effects” (Kirschenbaum & Fitzgibbon, 1995, p. 49). Methodological concerns also exist in those studies that demonstrate a positive relationship between lower than average body weight and increased health risk. For instance, based on data from studies that have not controlled for smoking and involuntary weight loss (i.e. pre-existing diseases), “lower than average weights could prove as harmful as obesity” and those researchers that have controlled for these effects, have suggested that “maintaining lower than average weights may prove beneficial” (Kirschenbaum & Fitzgibbon, 1995, p. 49-50). Inadequate sample sizes in numerous

population studies have also fueled the debate. Abernathy & Black (1996) argued that “consistent significant findings for mortality can be obtained only when $\geq 20,000$ healthy subjects, with control subjects for those who smoke, are followed for several years and data from the first few years are discarded to reduce the effects of undetected illnesses” (p. 448S). It is apparent that few studies have met such criteria.

Obesity Treatment

Not only is there a lack of agreement in regard to health risks associated with obesity, but there is even less agreement in regard to its treatment. Traditional methods of treatment have been based on the biomedical model of obesity, which assumes that body weight can be voluntarily controlled (Parham, 1996) and that weight loss is the solution to the problem (Sobal, 1991). However, based on decades of clinical research, commonly used treatments such as behavioral and dietary interventions (i.e. caloric restriction, change in dietary proportions of macronutrients, low calorie diets or very low calorie diets) are often ineffective as long-term treatment (Wilson, 1996). Kramer, Jeffrey, Forster, & Snell (1989) reported that less than 3% of patients (n= 114 men and 38 women) maintained post-treatment weight four years after participating in a 15-week behavioral weight loss program. Based on outcome data, the majority of people who lose weight, as a result of dietary and behavioral therapy, regain all of the lost weight within 3 to 5 years (Atkinson, et al., 1994, Garner & Wooley, 1991, Zelitch Yanovski, 1993). Those undergoing treatment using pharmacotherapy typically regain weight within 1-year (Cummings, Goodrick, & Foreyt, 1997). Some investigators conclude that, based on current research, there is “virtually no evidence that clinically significant weight loss can

be maintained over the long-term by the vast majority of people” (Garner & Wooley, 1991, p. 733). Consequently, weight loss programs should be considered invalidated or experimental treatment.

The most common approach used for weight loss, particularly among women, is chronic dieting or voluntary food restriction (Kratina, King, & Hayes, 1999). Germov & Williams (1996) have stated that “for many women it is now ‘normal’ to be on a diet; to be a professional dieter, to watch one’s fat and kilojoule intake, to plan each meal, to be in a perpetual state of ‘disordered eating’” (p. 631). This so-called “normal” dieting behavior is now considered an epidemic in the United States (Robison, 1997). It has been reported that approximately 50% of adolescent and young women are dieting at any one-time (Robison, 1997) and that individuals above “normal” weight are particularly vulnerable to these behaviors (Harris, Walters, & Waschull, 1991). Based on recent national surveys, approximately 25% of adult men and 40% of adult women are trying to lose weight (Brownell 1991b, Brownell & Rodin, 1994, Cummings, Goodrick, & Foreyt, 1997, Levy & Heaton, 1993). These findings represent a substantial increase from 1950 to 1966, when 7% of men and 14% of women were trying to lose weight (Brownell & Rodin, 1994). Based on findings from a questionnaire administered nationally among high school students, 44% of female and 15% of male students were trying to lose weight and 26% of female and 15% of male students were trying to prevent weight gain (Technology Assessment Conference Panel, 1992).

Dieting is not only unsuccessful in producing long-term weight loss but it is often harmful both physically and psychologically (Feldman, Feldman, & Goodman, 1988, Hawks & Richins, 1994, Kassirer & Angell, 1998, Polivy, 1996). Dieting has been

associated with numerous deleterious effects such as delayed puberty and “short-stature” syndrome in children (Garner & Wooley, 1991), preoccupation with food, body weight and shape (Brownell & Rodin, 1994, Garner & Wooley, 1991, Wooley & Wooley, 1979), self-hatred, impaired concentration, social withdrawal (Wilson, 1996), anxiety, personality changes (Garner & Wooley, 1991), bingeing, and an increased risk for developing eating disorders (Garner & Wooley, 1991, Kirschenbaum & Fitzgibbon 1995, Polivy & Herman, 1985, Wooley & Wooley, 1979). Most experts also agree that weight regain, which is typically experienced by dieters following weight loss, has negative effects on self-efficacy (Sobal & Devine, 1997), self-esteem, self-confidence, happiness, and other aspects of physical and psychological health (Garner & Wooley, 1991, Wooley & Garner, 1991). Such effects are largely due to the fact that obese individuals tend to “attribute their failure to character weaknesses, such as poor self-discipline, low self-image, and emotional problems” (Garner & Wooley, 1991, p. 758) rather than interpret weight regain as a failure of the diet program.

Dieters also learn to disengage from internal cues of hunger and rely on external controls to regulate food intake. This external control contributes to the moralization of foods in which food is categorized as either “off-diet/bad food” or “on diet/good food.” Subsequently, dieters frequently experience feelings of guilt and depression as a result of eating tempting foods (i.e. “bad food”) and/or failing to lose weight and achieve the desired body shape (Germov & Williams, 1996, Tribole & Resch, 1995).

It is evident that weight loss efforts, such as voluntary food restriction, present physical and psychological health risks. The biomedical model supports weight loss efforts despite these risks and despite the fact that it is currently unknown whether lasting

weight loss even influences longevity (Garner & Wooley, 1991, Herrin, Parham, Ikeda, White, & Branen, 1999, Wilson, 1996). Although researchers have demonstrated that a weight loss of 10 to 15% in mild to moderately obese individuals can significantly improve various conditions such as hyperglycemia, hyperlipidemia, hypertension (Godfrey Meisler & St. Jeor, 1996b, Kassirer & Angell, 1998), heart morphology and functioning, glucose tolerance, sleep disorders, and respiratory functioning (Dwyer, 1996, Godfrey Meisler & St. Jeor, 1996b, Kirschenbaum & Fitzgibbon, 1995), follow-up studies fail to demonstrate the long-term effects of weight loss. Data demonstrating the beneficial effects of weight loss have been described as “limited, fragmentary, and often ambiguous” (Kassirer & Angell, 1998, p. 52). This criticism is because: a) much of the data are from epidemiological studies in which confounding variables are not controlled (i.e. age, body fat distribution, history of dieting behaviors, involuntarily weight loss due to illness, smoking, level of physical activity, socioeconomic level, and stresses associated with the cultural stigma of overweight) (Brownell & Rodin, 1994, Wooley & Wooley, 1979), b) few researchers extend follow-up to one year or beyond (c) long-term weight loss is very difficult for many subjects to achieve (Ciliska, 1998), and d) a high drop out rate among subjects (i.e. as high as 80%) is frequently reported which alters research results (e.g. a more positive statistical effect in regard to weight loss typically occurs) (Garner & Wooley, 1991, Technology Assessment Conference Panel, 1992).

“Non-Diet” Approach to Obesity

More recently, the biomedical model of obesity has received a growing amount of criticism from professionals in the medical and scientific communities due to its

ineffectiveness and its undue emphasis on weight loss versus optimal health. The emphasis on weight loss has also reinforced society's negative view of fatness and has subsequently strengthened the societal stigma of obesity (Robison, Hoerr, Petersmarck, & Anderson, 1995). Growing awareness of these factors as well as the degree of current controversy regarding the etiology, health risks, and treatment of obesity has caused some professionals to embrace an alternative "new weight paradigm." This "health-centered paradigm" or "non-diet approach" focuses on self-acceptance (i.e. accept diversity among body size and shapes and improve body image), better nutrition, normalized eating, and increased physical activity for enhanced mental and physical health (Ciliska, 1998, Miller & Jacob, 2001, Neumark-Sztainer, 1999, Parham, 1996, Robison, 1997). It reflects the sociological model of obesity which considers the problem of obesity a result of "societal reaction to obese individuals and that solutions other than weight loss may be useful" (Sobal, 1991, p. 127).

Unlike the biomedical model, the "non-diet approach" does not assume that weight loss is the solution to the problem of obesity (Sobal, 1991). The alternative paradigm considers equating ideal weight with health as an "oversimplification of a very complex and poorly understood set of relationships" (Wooley & Wooley, 1979, p. 75). The "non-diet" paradigm emphasizes that people have different body shapes and sizes by nature and that fat people "may already be at the right weight, given their genetic inheritance, metabolic functioning, and history of weight loss attempts" (Ciliska, 1998, p. 120). Hence, the alternative paradigm does not view thinness as "intrinsically healthy and beautiful" and at the same time, does not view fatness as "intrinsically unhealthy and unappealing" (Robison, 1997, p. 29).

The general focus of the paradigm is to reduce the emphasis placed on body weight and image (Wilson, 1996) and to define health as an integration and balance of the mental, emotional, spiritual, and physical aspects of life. Hence, “weight is only one component of physical health and physical health is only one component of total health” (Robison, 1997, p. 30). Attainment of physical health may be determined using outcome measures (i.e. serum cholesterol, blood pressure, blood glucose, joint pain, etc.) as well as a sense of well-being, rather than a specified amount of weight loss (Bacon, et al., 2002, Harris, Hamaday, & Mochan, 1999, Zelitch Yanovski, 1993). In other words, assessment is based on whether health risks have been reduced instead of whether an individual has achieved a goal weight (Brownell & Rodin, 1994, Cassell, 1995, Harris, Hamaday, & Mochan, 1999). The American Health Foundation’s Expert Panel on Healthy Weight supports this concept. More specifically, the Panel believes that fat cell function is more important to health than a recommended body weight or percent body fat. Normal fat cell function is considered particularly important because it helps to regulate blood concentrations of insulin, glucose, and lipids, which are critical determinants of chronic disease. The Expert Panel on Healthy Weight believes that “it is wrong to proclaim that health can be attained only by those within statistically best ranges for weight and percentage body fat. A focus on good health practices is likely to yield better results for most than would a focus on weight” (Abernathy & Black, 1996, p. 450S).

The Expert Panel on Healthy Weight has described healthy weight as a weight that “becomes the upper limit beyond which morbidities of obesity are identifiable and weight-related disease risk becomes a concern” (Godfrey Meisler & St. Jeor, 1996b, p. 475S). In those instances when physical health can be enhanced by weight loss, the

American Dietetic Association recommends “collecting baseline health parameters, and rechecking them at every 5 to 10 pound weight lost, [in order to] identify at what weight health risks are reduced” (Cummings, Goodrick, Foreyt, 1997, p. 72). A treatment approach such as this, obviously reflects an individualized assessment rather than a standardized approach to the treatment of obesity. The latter is an important consideration since not all obese persons experience an increased health risk but all weight loss methods, based on the traditional paradigm, are associated with health risks (Wooley & Wooley, 1979).

Size acceptance is considered a unique and particularly important component of the “health-centered paradigm” (Parham, 1996). Size acceptance represents personal acceptance of body weight and shape as well as social acceptance of body size diversity (Neumark-Sztainer, 1999). Therefore, the paradigm supports the notion that society should view variation in body weight and shape as no different than variation in other physical attributes such as height, eye, and hair color. It is expected that by adopting an increased tolerance for fatness and developing coping skills to better deal with weight stigmatization and discrimination, the current “weight hysteria” seen in the U.S. would lessen. Diminished “weight hysteria” would have numerous beneficial effects such as a reduction in dieting behaviors, dysfunctional eating, eating disorders, and obesity.

A number of studies have been conducted to evaluate the effectiveness of the “non-diet approach” in regard to self-acceptance, normalized eating patterns, self-esteem, physical activity, depression, assertion, and eating attitudes. Several researchers have demonstrated positive effects in relation to a number of these factors. For instance, Omichinski & Harrison (1995) determined a significant improvement in measures of self

acceptance and normalized eating patterns in subjects (n=208) following a 10 week non-diet lifestyle program that addressed dietary restriction, self-acceptance, recognition of internal cues of hunger, and physical activity. Carrier, Steinhardt, & Bowman (1993) evaluated the effectiveness of a six month non-diet approach (n=79). The non-diet program included techniques to overcome overeating, addressed relaxation of restrained attitudes toward food and eating, encouraged recognition of internal hunger and activity cues, and addressed issues pertaining to societal pressures in relation to eating behavior. Measurements were completed at pre-program and 3-years post-program. Results indicated a significant decrease in restrained eating behavior and a significant increase in self-acceptance, self-esteem, and physical activity.

Polivy and Herman (1992) conducted a 10-week group “undieting” pilot program to evaluate its effect on self-esteem, depression, restraint, and eating pathology in mostly overweight women (mean percent above ideal weight was 56.6%) who inquired about help with dieting (n=18). The intervention addressed issues related to dieting, normal eating patterns, and recognition of internal cues and feelings. Improvements were seen in dieting behaviors, eating pathology, feelings of inadequacy, depression, and self-esteem. A statistically significant improvement in measures of depression was observed at post-intervention and at a 6-month follow-up. Roughan, Seddon, & Vernon-Roberts (1990) also conducted a non-diet program (10 group sessions) to determine its effectiveness on self-esteem, depression, self-image, eating attitude, body image, assertion, and body weight in women who demonstrated a preoccupation with food (n=87). The intervention was designed to increase awareness of internal cues, abandon restrictive dieting behavior, identify social pressures in relation to body image and eating habits, encourage body size

acceptance, and develop strategies to normalize eating behaviors. Significant improvements were seen in self-esteem, depression, self-image, eating attitude, body image, and assertion at the end of the program and at a 2-year follow-up. A mean weight loss of 3.1 kg was also noted at the 2-year follow-up. Although empirical studies are still needed to compare the “non-diet approach” with traditional therapies, researchers conducting preliminary studies suggest numerous beneficial effects particularly in relation to psychological function and improved eating behaviors.

Stigmatization of Obesity

Cultural ideals of body size and shape and the biomedical model of obesity are largely responsible for the “weight hysteria” (Cahnman, 1968) observed in the United States today. Fear of fatness exhibited by Americans is largely attributed to the fear of social stigma (Cash & Hicks, 1990) and weight loss is a means to escape or prevent social stigma. This attempt to avoid social stigma has serious consequences since many children, as young as seven, diet to avoid the stigma “lazy, dirty, stupid, and mean” (Ikeda, 1995, p. 109) and many women have a greater fear of being fat than dying (Crocker, Cornwell, & Major, 1993). As described by Butters and Cash (1987), “it appears that the pursuit of strategies for weight loss is perhaps less for the purpose of shedding pounds than for shedding social stigma and a negative body image” (p. 896).

As Americans become more preoccupied with weight, the social stigma of obesity becomes more pervasive. Obesity is stigmatized not only medically as sickness but also aesthetically as ugliness, religiously as sinfulness, and criminally as badness (Allon, 1973). The obese individual is considered indulgent, lazy, lacking willpower (Brownell,

1991b, Germov & Williams, 1996, Neumark-Sztainer, 1999), morally and emotionally impaired (Crandall & Biernat, 1990, National Education Association, 1994), socially handicapped (Crandall & Biernat, 1990), asexual, unhappy (National Education Association, 1994), less intelligent, less successful in marriage, less likely to acquire prestigious occupations, and more likely to have poorer mental health than a thin person (Czajka-Narins & Parham, 1990). According to DeJong (1980), fat individuals are also viewed as “not quite human” (p. 75). Furthermore, reports indicate that obese individuals have lower acceptance rates into prestigious colleges (Neumark-Sztainer, 1999), often receive less financial support from colleges, receive lower wages, are discriminated against when renting apartments, are less likely to receive promotions (Sobal, 1999), and are more likely to live in poverty (National Education Association, 1994). Thin individuals, on the other hand, are associated with more positive characteristics and moral values. In the United States, the “perfect body” symbolizes self-control, discipline, hard work, ambition, success (Brownell, 1991b), goodness, wealth (National Education Association, 1994), as well as youth, beauty, health, and vitality (Germov & Williams, 1996). These qualities are particularly desirable in a culture that values self-control, self-determination, independence (Crandall & Martinez, 1996), and the delay of gratification (Brownell, 1991b).

Unfortunately, the negative social stereotypes associated with obesity tend to be internalized and become a part of one’s self-identity. Some experts believe that this results in a “self-fulfilling prophecy” in which fat people learn to expect and accept social and personal limitations (Sobal, 1999). Individuals who are socially cast as “deviant” soon learn that it is more difficult to resist the “role assignment” than to accept it. As

described by Bruch (1957), “the deviant career, therefore, involves finding some satisfaction in the role, developing some protective justification for continuing to play the role, and devising ways of minimizing punishment” (pp. 52,53).

The obese population is considered the most frequently and severely stigmatized group in the United States (Crandall & Biernat, 1990, Garner & Wooley, 1991). The stigma of obesity has been described as “extraordinary in its magnitude and pervasiveness” (Garner & Wooley, 1991, p. 732). Stigmatizing acts are observed among nearly all ages, races, socioeconomic levels, and gender (Crandall & Biernat, 1990). Even fat individuals reportedly stigmatize other fat people (Maiman, Li Wang, Becker, & Finlay, 1979). The highly pervasive nature of this stigma has been attributed to numerous factors including: a) the cultural preference for thinness (Crandall & Martinez, 1996), b) the increasing prevalence of obesity as well as an increase in those who perceive themselves to be fat (Cash & Hicks, 1990, Crocker, Cornwell, & Major, 1993), c) the inability to conceal obesity (e.g. unlike other stigmatized conditions such as religious affiliation, physical handicaps, and sexual preference) (Crocker, Cornwell, & Major, 1993), and d) the fact that stigmatizing acts toward obesity are not only tolerated by society but are considered socially acceptable (Crandall & Biernat, 1990, Sobal, 1999, Sobal & Devine, 1997, Neumark-Sztainer, Story, & Faibisch, 1998). Fitzgerald (1981) notes that “Public derision and condemnation of fat people is one of the few remaining social prejudices.... allowed against any group based solely on appearance” (p. 230).

The psychological disturbances associated with social prejudice and discrimination against obesity (i.e. “fattism”) (Czajka-Narins & Parham, 1990, Foreyt & Goodrick, 1993), have been considered among the most disabling features of obesity

(Hirsch, 1973). Czajka-Narins and Parham (1990) noted that “with less severe obesity, these psychological effects are even greater than those associated with the physical complications of obesity. For the severely obese, the prejudice and discrimination are more pervasive and damaging than for those who are less obese” (p. 26). Maddox and Liederman (1969) have indicated that “whatever medical implications overweight may have, fatness is first and foremost a social disability” (p. 214) and Weil (1977) has noted that “the greatest hazards from excessive adiposity are psychological and social” (p. 183).

Obese individuals often exhibit psychological as well as behavioral disturbances such as body image dissatisfaction, binge eating, guilt and embarrassed feelings about eating (Hill & Williams, 1998). Negative body image, dysfunctional eating, and poor psychosocial well-being has also been observed in normal weight individuals who perceive themselves to be fat (Cash & Hicks, 1990). Sullivan et al. (1993) evaluated the psychosocial functioning and perceived health of 800 severely obese men and 943 severely obese women (mean BMI was 37.3 and 40.3 respectively) and compared the findings to a reference group (i.e. chronic patients and population samples). Obese subjects, particularly females, scored higher on anxiety and depressive symptoms (i.e. a level indicating psychiatric morbidity) compared to the reference groups. The obese subjects also demonstrated poor mental well-being, comparable to cancer survivors with recurrence, and reported less positive mood states than the reference groups (i.e. the latter findings were particularly evident among women). Similar findings have been reported by other researchers, in which the level of depressive symptoms increases as the BMI increases among women (Istvan, Zavela, & Weidner, 1992).

Society's discriminatory behavior toward obese people is primarily based on the assumption that body weight is controllable and that obese people are responsible for their condition (Crandall & Biernat, 1990, Crocker, Cornwell, & Major, 1993, DeJong, 1980, Garner & Wooley, 1991, Hecht, 1990, Maddox, Back, & Liederman, 1968, National Education Association, 1994). Individuals who possess a "characterological stigma" such as obesity (i.e. acquired through deviant behavior), are held responsible for their deviant status and are emphatically derogated. However, those with a "physical stigma" (i.e. acquired through genetic or physical forces) are not held personally responsible and subsequently are not derogated. Support for this "theory" is evident in a study conducted by DeJong (1980), who examined girls' attitudes of obesity based on various supposed causal factors. In this study, high school girls (n= 162) were asked to view a photograph of an unknown obese girl and read an accompanying description. The obese girl was described as having either a thyroid condition, no thyroid condition, or recently lost weight. After reviewing the material, the subject's first impression was evaluated. The target without a thyroid disorder was considered "less self-disciplined and more self-indulgent" (p. 85) than the target with a thyroid disorder. When the target description indicated a recent 25-pound weight loss, the measure of self-control was viewed more favorably than the target without weight loss. However, the former was not viewed as favorably as the target with a thyroid condition. Such results support the notion that when obesity is interpreted as an uncontrollable condition (i.e. due to a thyroid disorder), the obese individual is less derogated. Based on these findings, it appears that if people are better educated regarding the complex etiology of obesity, they would be

less likely to blame the obese individual for his/her condition and subsequently would stigmatize the obese individual less.

The tendency for Americans to blame obese individuals for their condition is attributed to personal fears of vulnerability. “Americans tend to see in fat people the loss of control that they fear in themselves” (National Education Association, 1994, p. 1). Stigmatizing attitudes tend to enhance a person’s sense of “well-being, safety, and superiority [and therefore], allows us to dissociate or deny our common condition of vulnerability with the afflicted” (Kalisch, 1972, p. 1125). In addition, the American social ideology or cultural worldview is one in which individuals are considered responsible for all outcomes in life (Crandall & Martinez, 1996). Hence, individuals are motivated “to believe the world is just and ‘people get what they deserve and deserve what they get.’”(Brownell, 1991b, p. 306). Consequently, obese people are not only held responsible for a condition that is virtually “uncontrollable” but they are stigmatized for a condition that is socially feared.

Negative Attitudes Among Children

Children, like adults, exhibit negative attitudes toward fat people. These negative perceptions are established in children by at least age seven (Feldman, Feldman, & Goodman, 1988, Maroney & Golub, 1992) and are evident among both fat and normal weight children (Counts, Jones, Frames, Jarvie, & Strauss, 1986). Fat children are described by their peers as lazy, lying, cheating (Feldman, Feldman, & Goodman, 1988), more self-indulgent, less active (DeJong, 1993, Neumark-Sztainer, Story, & Faibisch, 1998), less strong, less-disciplined (DeJong, 1993), being “unclean,” being passive, and

not being able “to get a boyfriend” (Neumark-Sztainer, Story, & Faibisch, 1998, p. 267). On the other hand, normal weight children are described as friendly, kind, happy, and polite (Feldman, Feldman, & Goodman, 1988). A classic study by Richardson, Goodman, Hastorf, and Dornbusch (1961) was conducted to examine children’s (ages 10 to 11) preferences toward pictures of a non-handicap child, children with various handicaps (i.e. child with crutches and a brace, child in a wheel chair, child with a missing hand, and a child with a facial disfigurement), and an obese child. The sample (n=646) included children with and without physical handicaps from various ethnic and socioeconomic backgrounds. The subjects demonstrated a consistent rank order in which the obese child was least preferred and the non-handicapped child was the most preferred.

Obese children report a lower self-concept, are less accepted by their peers, and are viewed less positively by their teachers than non-obese children. Strauss, Smith, Frame, and Forehand (1985) evaluated teacher ratings, self-report measures, and measures of peer popularity among obese (n=18) and non-obese (n= 18) students (mean grade level was 3.7 for each group). Teachers perceived obese students as having more conduct problems than non-obese students. The obese children were also less liked, were rejected more often by their peers, indicated more depression, and reported a lower self-concept than non-obese children. Negative attitudes expressed by peers can have long-term effects, particularly in regard to body image. Grilo, Wilfley, Brownell, and Rodin (1994) evaluated the effect of teasing history on body image among a clinical sample (n= 40) of adult obese females (a mean excess weight of 60% above ideal weight for height). A significant positive correlation between frequency of being teased about size and weight while growing up and body dissatisfaction was evident. Furthermore, subjects

with early-onset obesity reported significantly greater body dissatisfaction than subjects with adult-onset obesity. The authors concluded that stigmatizing acts may be considered risk factors for the development of a negative body image.

Unfortunately, a negative body image not only affects self-concept but also presents an increased risk for aberrant eating behaviors. These factors pose serious concerns for child development, particularly adolescent females. For instance, investigators have reported that overweight adolescent girls perceive “food intake [as] sinful” (Hoover, 1984, p.132). They also frequently obsess about their weight (Canning & Mayer, 1967, Hoover, 1984), feel inadequate and inferior, (Hoover, 1984), and express greater dissatisfaction with their weight and figure than non-obese girls (Wadden, Brown, Foster, & Linowitz, 1991, Wadden, Foster, Stunkard, & Linowitz, 1989).

Negative Attitudes Among Health Care Professionals

Negative attitudes toward obese people have also been observed among various health care professionals including physicians (Allon, 1973), nurses (Czajka-Narins & Parham, 1990, Maroney & Golub, 1992, Sobal & Devine, 1997), counselors (Sobal & Devine, 1997), dietitians, and health administrators (Sobal, 1999). Maiman, Li Wang, Becker, and Finlay (1979) surveyed 52 health care professionals to examine their attitudes toward obesity. Approximately 75% of participants indicated that nutrition was their specialty field. The majority of participants identified the causes of obesity as “eating as a form of compensation for the lack of love or attention” and “emotional problems” (i.e. 88% and 70% respectively). The majority of participants also shared disparaging images in which obese persons were viewed as self-indulgent and had family problems (i.e. 87%

and 74% respectively). The authors hypothesized that these findings may reflect more societal evaluations of obesity rather than the knowledge and skill acquired through professional education.

Young and Powell (1985) demonstrated that obese clients were evaluated more negatively than normal weight individuals by mental health professionals (n=120). Mental health professionals examined a photograph of a phantom female client that was depicted as “best weight,” “overweight” (i.e. 20% over “best weight”), or “obese” (i.e. 40% over “best weight”). The same descriptive case study accompanied each photograph and was evaluated accordingly. Measures of psychological functioning were more severe among the “obese” client than the “best weight” or “overweight” client. For instance, there was a significant difference between the “obese” client and the “overweight” or “best weight” clients on the dimension of agitation, emotional behavior, impaired judgment, inadequate hygiene, inappropriate behavior, and obsessive-compulsive behavior. The authors concluded that obese female clients “receive negative judgments for characteristics that have no clear relationship to obesity” (p. 241).

Harris, Hamaday, and Mochan (1999) surveyed 278 osteopathic family physicians to evaluate their attitudes toward obesity. The majority of participants indicated that lifestyle and motivational factors (i.e. lack of will power, physical inactivity, and poor diet) were the major contributory factors of obesity compared to metabolic and genetic factors. These findings most likely reflect social as well as therapeutic influences, since treatment is generally directed toward lifestyle and behavior change. As noted by Wooley and Garner (1991) “the fundamental activities of therapy- helping patients eat less, exercise more, identify emotional determinants of eating, and make environmental

changes that augment control over eating – inevitably tend, as a result of cognitive dissonance, to strengthen the beliefs that obese people eat more, exercise less, are more emotionally immature or unstable, and are less disciplined than others”(p. 1249).

Negative Attitudes Among Schoolteachers

Although there is very little information on weight-related attitudes among schoolteachers (National Education Association, 1994, Neumark-Sztainer, Story, & Harris, 1999), reports are that teachers “fail to respond appropriately to fat children” (National Education Association, 1994, p. 5). For instance, teachers offer prizes to fat students for losing weight, fail to encourage fat students to participate in physical activity at recess, inform parents to place their children on diets, are less likely to place fat students on the honor roll, and are more likely to refuse to write a letter of recommendation for a fat student than a non-fat student (National Education Association, 1994).

Anti-fat attitudes among secondary school professionals have been examined in two doctoral dissertations. Schroer (1986) determined that pre- and in-service teachers perceived obese children as having less energy, lower leadership ability, lower self-esteem, less attractiveness, and not as outgoing socially, compared to normal weight children. Quinn (1987) evaluated attitudes toward normal weight, overweight, and obese teenage girls (110 pounds, 160 pounds, and 210 pounds, respectively) among school nurses, school psychologists, school counselors, and English teachers. Each school professional reviewed the same phantom student essay and respective photograph of a normal weight, overweight, or obese student. The professional rated the case for

likelihood of receiving a scholarship, risk to experience serious personal problems, referral for psychological consultation, and personal attributes including “goodness,” “strength,” and “activity.” The obese student was rated the most negative on risk for personal problems, recommendation for psychological referral, and received a significantly lower rating on personal attribute factors than normal and overweight students. In addition, the normal weight student received the highest ratings for a scholarship award compared to the overweight and obese students.

In a more recent study, researchers examined obesity-related attitudes and beliefs among junior and senior high school teachers in science, health, home economics, physical education, as well as school nurses, and school social workers (n=115). The school staff selection was based on those who were most likely to discuss health-related issues with adolescent students. Seventy-six percent of the sample represented schoolteachers, 10% were school nurses, and 14% were social workers. Approximately half of the subjects believed that obesity is caused by overeating and poor eating habits and approximately one-third of the subjects believed that obese individuals consume more calories than non-obese individuals. Evaluation of attitudes indicated that 59% of subjects disagreed with the statement “obese people are just as healthy as non-obese persons,” 66% of subjects indicated that “most obese persons are more self-conscious than other people,” 57% indicated that “most obese people feel that they are not as good as other people,” 43% indicated that “most people feel uncomfortable when they associate with obese people,” 27% indicated that “obese people tend to have family problems,” 27% also indicated that “one of the worst things that could happen to a person would be for him/her to become obese,” and approximately 20% indicated that obese

individuals are “more emotional, less tidy, less likely to succeed at work, and have different personalities than non-obese individuals” (Neumark-Sztainer, Story, & Harris, 1999).

Price, Desmond, and Ruppert (1990) examined the perception of obesity among elementary school physical education teachers. Teachers (93%, n=321) believed that normal weight is important in the health of children, 45% of teachers believed that obese children can intentionally lose significant amounts of weight, 39% of teachers believed obese children can maintain weight loss with proper guidance, and approximately 70% of subjects believed that schools should provide weight control programs to treat obesity. The majority of teachers identified poor eating behaviors, excess calorie consumption, sedentary lifestyle, and a lack of parental concern as the top four contributing factors of childhood obesity. Furthermore, an evaluation of resources used by the subjects indicated that 59% of teachers relied on mass media for information pertaining to obesity and 49% relied on personal experience. These findings indicate the need to further educate teachers on the topic of obesity/weight management.

Need for Nutrition Education

Educating prospective K-8 teachers about issues of obesity is especially important because weight-related stigmatization occurs in the elementary and junior high school more than any other setting (Neumark-Sztainer, Story, & Faibisch, 1998, Neumark-Sztainer, Story, & Harris, 1999). Adolescents also demonstrate the greatest concern regarding weight and appearance compared to any other age groups (Sobal & Devine, 1997). As a result, youth are particularly vulnerable to the negative societal attitudes

toward obesity (Dwyer & Mayer, 1973). Since educators are important role models to students (Berg, 1998, Ikeda, 1995, Nagel & Jones, 1993), teachers have the responsibility to model sound nutritional principles and project non-discriminatory attitudes toward body weight. It is essential that teachers realize that negative attitudes toward weight can “inadvertently model body dissatisfaction or promote size discrimination” (Ikeda, 1995, p. 109). This potential affect is particularly important to instill upon prospective teachers.

Although few researchers have examined preservice training in nutrition/health education (United States Department of Agriculture Food and Consumer Service, 1994, Wood, 1996), teachers do not receive adequate preservice training in nutrition education (Jackson, Proulx, & Pelican, 1991). In fact, it has been reported that “preservice (college level) preparation of teachers of all levels rarely includes nutrition” (Nestor, 1981, p. 58). Based on a national survey, only three states in the United States require nutrition in elementary teacher certification (Shannon, Mullis, Bernardo, Ervin, & Poehler, 1992). Unfortunately, the lack of teacher preparation deters teachers from implementing nutrition education programs (Nestor, 1981, p. 58). The latter is particularly disconcerting because teachers have had to assume a larger role in nutrition education (Collins et al., 1995, Penner & Kolasa, 1983), particularly those at the elementary level (Shannon, Mullis, Bernardo, Ervin, & Poehler, 1992).

The lack of training in nutrition among school teachers has been documented in numerous studies (Penner & Kolasa, 1983). Penner and Kolasa (1983) assessed the nutrition knowledge, attitudes, and practices of 518 secondary health and physical education, science, home economics, and social science teachers and found that 5% of home economics teachers, 68% of science teachers, and 72% of social science teachers

had never taken a food or nutrition course. Byrd-Bredbenner (1981) surveyed nutritionists, home economics, nurses, health and physical educators, college graduates, and elementary educators (n = 576) to examine differences in nutrition knowledge and training among the groups. Most elementary educators (83%) reported no formal coursework in nutrition and data from a nutrition knowledge test indicated that all other groups scored significantly higher than the elementary educators.

Although teachers lack adequate training in nutrition, prospective teachers value health education. Wood (1996) assessed the opinions of prospective elementary/middle and high school teachers (n=110) regarding the importance of preservice health education. The survey included 55 school health topics that were categorized into broad subjects of comprehensive health education (i.e. health content knowledge, promoting wellness, teaching strategies, identifying and managing student health problems, and healthy school environment). Although all of the prospective teachers rated preservice training in health education important, elementary/middle school teachers rated health content knowledge, teaching strategies, and identifying and managing student health problems as significantly more important than the high school teachers. The authors speculated that these findings may be due to the fact that, unlike high school teachers, elementary/middle school teachers are more likely to teach “all or a variety of subjects, including health” (p. 487).

Rationale for Study

Although researchers have indicated that school professionals, like health care professionals, share societal bias toward obesity (Schroer, 1986, Quinn, 1987), no known

research has been conducted to alter negative attitudes among this group. Numerous investigators have suggested that providing education programs that address the complex etiology and treatment of obesity, as well as the dietary and psychosocial effects associated with the stigma of obesity, may help to decrease negative attitudes (DeJong, 1980, Harris & Smith, 1982, Harris, Washull, & Walters, 1990, Maroney & Golub, 1992, Sobal, 1991). More specifically, education can facilitate a successful change in attitude when the information counters existing attitudes (Mantle-Bromley & Miller, 1991, Cafferty, 1992, Wiese, Wilson, Jones, & Neises, 1992). Hence, negative attitudes toward obesity can be corrected if individuals learn that their attitude is biased. “If a possible bias is made salient and people find this bias to be illegitimate, people will often engage in some corrective action” (Petty & Wegener, 1999, p. 44). Despite this understanding, there have been very few researchers who have utilized educational interventions to alter negative attitudes toward obesity (Czajka-Narins & Parham, 1990).

Attitudes Defined

Throughout the long history of attitude research, numerous conceptual definitions have evolved. For instance, Allport’s (1967) highly influential definition of attitude is a “mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual’s response to all objects and situations with which it is related” (p. 8). Triandis (1971) defined attitude as “an idea charged with emotion which predisposes a class of actions to a particular class of social situations” (p. 2). Petty and Cacioppo (1981c) defined attitude as a “general and enduring positive or negative feeling about some person, object, or issue” (p. 7) and Eagly and Chaiken

(1993a) defined attitude as “a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (p. 1).

Although theorists fail to agree on a universal definition of “attitude,” there is a general consensus that attitudes are global and relatively enduring (i.e. stored in long-term memory) evaluations of objects, issues, or persons [and that] these evaluations can be based on behavioral, cognitive, and affective information and experiences, and they are capable of guiding behavioral, cognitive, and affective responses (Petty, Unnava, & Strathman, 1991, p. 242).

Despite the fact that attitudes are considered relatively enduring (i.e. not momentarily transient), it is well recognized that they are susceptible to change (Zimbardo & Effesen, 1969).

Theoretical Orientation to Attitude Change

Persuasion is one of the most interesting topics in the field of social psychology (Cafferty, 1992) and it represents the largest area of study within the attitudes literature (Olson & Zanna, 1993). Olson and Zanna, (1993) describe persuasion as “attitude change resulting from exposure to information from others. Such exposure typically occurs via written or spoken messages, delivered by a source to a recipient” (p. 135).

Numerous theories have been used to account for attitude change. Many of the traditional or established theories of attitude change were developed in the 1950’s and 1960’s. Some of the major theories include the cognitive consistency theories (e.g. balance theory, congruity theory, and dissonance theory), learning theories (e.g. the Yale

communication-persuasion paradigm and classical/operant conditioning), Fishbein's expectancy-value model, self-perception theory, and the social judgment theory (Eagly & Chaiken, 1993a, Himmelfarb & Eagly, 1974a). Although many of these theories have been empirically explored for decades, none are recognized as clearly dominant. In fact, many of the traditional theories have been criticized for their limitations in predicting attitude formation and change and for their lack of empirical generalization (Himmelfarb & Eagly, 1974a).

The theoretical framework selected for this project was the Elaboration Likelihood Model of Persuasion (ELM). Petty and Cacioppo's ELM is a dual process theoretical approach to message-based persuasion, which was first introduced over a decade ago to help explain many inconsistent findings reported in the literature (Petty & Wegener, 1999).

The ELM represents an attempt to integrate the many seemingly conflicting findings in the persuasion literature under one conceptual umbrella by specifying a finite number of ways in which source, message, and other variables have an impact on attitude change (Petty, Unnava, & Strathman, 1991, p. 243).

During the 1970's, researchers directed their attention to information processing mechanisms to better understand how people process and integrate information in communication (Himmelfarb & Eagly, 1974b). The process theories of attitude formation and change eventually led to the development of contemporary theories of attitude change such as the ELM (Eagly & Chaiken, 1993b). Since its inception, the ELM has been supported in more than 100 empirical studies (Ernst & Heesacker, 1993)

and is highly regarded in its ability to predict when and how persuasion variables work (Petty & Cacioppo, 1986, Petty, Heesacker, & Hughes, 1997).

A brief description of some of the major theories of persuasion are provided. These theories are widely recognized in the literature and have greatly contributed to the study of attitude change. An overview of the ELM is detailed below, as well as several studies demonstrating application of the model.

Cognitive-Consistency Theories

The cognitive-consistency theories include widely recognized models such as Heider's (1946, 1958) balance theory, Osgood's and Tannenbaum's (1968) congruity theory, and Festinger's (1957) dissonance theory. Cognitive-consistency theories postulate that attitude change occurs as a result of reducing inconsistencies among "related beliefs, bits of knowledge, and/or evaluations about an object or an issue" (Himmelfarb & Eagly, 1974a, p.9). Himmelfarb and Eagly (1974a) describe cognitive-consistency theories as

all of the theories have in common the idea that inconsistency is unpleasant and that the psychological tension created by this unpleasant state leads to attempts at reducing the inconsistency. These theories, then, are drive-reduction models of behavior in which the motivating force for change is inconsistency, a noxious state. Attitude change is one important way inconsistency is reduced (p. 9).

The **balance theory** holds that a state of "balance" occurs when a person agrees with someone they like and disagrees with someone they don't like. "Imbalance" occurs when a person agrees with someone they don't like and disagrees with someone they like.

The theory postulates that when a state of imbalance exists, it causes psychological tension which motivates a person to “restore balance cognitively by changing the relations” (Himmelfarb & Eagly, 1974a, p. 11). Although it is not possible to quantitate the degree of attitude change using the balance theory (Himmelfarb & Eagly, 1974a), it is possible to quantitate attitude change based on the **congruity theory** (an extension of the balance theory) (Eagly & Chaiken, 1993c). Unlike the balance theory and congruity theory, which are “concerned with consistency in the judgment of people and/or issues that are linked by some form of relationship,” the **dissonance theory** proposes that “inconsistency among elements in one’s cognitive system produces dissonance” (Petty, Wegener, & Fabrigar, 1997, p. 619). This means that dissonance exists when cognitions, or bits of knowledge, are contradictory. For example, in the case of an informed smoker, the knowledge that he/she does smoke is dissonant with the cognition that he/she should not smoke. “Dissonance may be reduced by changing elements (or the behavior related to an element), by changing the importance of elements, by adding consonant elements, and by making dissonant elements irrelevant to each other” (Himmelfarb & Eagly, 1974a, p. 17-18). Although the cognitive dissonance theory has had a tremendous impact on the study of attitudes, the dissonance theory has been criticized for numerous limitations including its “failure to generate a cumulative body of knowledge,” pseudo-methodological problems, and “isolated,” “counterintuitive” hypotheses (Fishbein & Azjen, 1975, p. 517).

Learning Theory Approach

Learning theories have also greatly contributed to the study of attitude change. These theories include models such as Staats's application of the classical conditioning paradigm to attitude acquisition, the Yale framework of Hovland, Janis, and Kelly (1953), Fishbein's expectancy-value model (1967), and Bem's self-perception theory (1965) (Eagly & Chaiken, 1993a, Himmelfarb & Eagly, 1974a). The learning paradigm is based on the principle that attitude change occurs as a result of learning. In other words, persuasion is a learning process (Petty, Unnava, & Strathman, 1991). The learning paradigm predicts "that any communication variable will be related to attitude change as it is related to learning and that any communication factor that enhanced learning would tend to enhance attitude change" (McGuire, 1973, p. 227).

Classical and operant conditioning have demonstrated dominance as two basic learning paradigms (Eagly & Chaiken, 1993e). Results from operant conditioning studies suggest that subjects' attitudes can be influenced via positive or negative reinforcement (verbal or nonverbal) and it is likely that "attitudes can be shaped by response-reinforcement contingencies that people are largely unaware of" (Eagly & Chaiken, 1993e, p. 398). Based on classical conditioning studies, attitudes can be affected when neutral objects are paired with something that is already perceived either positively or negatively (Petty, Unnava, & Strathman, 1991). While it is known that classical conditioning can influence attitudes, the explanation of why classical conditioning works is unknown (Eagly & Chaiken, 1993e).

The Yale Communication-Persuasion paradigm is a classic approach to the analysis of attitude change. Although the framework is not considered a formal theory, it

has contributed to much empirical research on communication and persuasion (Fishbein & Ajzen, 1975, Himmelfarb & Eagly, 1974b). Using the Yale approach, variables that influence attitude change (e.g. source credibility, type of appeal, order of arguments) are identified and manipulated in an attempt to understand the persuasion process. It is assumed that these independent variables (i.e. source, message, medium and audience factors) influence the degree of attitude change via intervening variables (attention/comprehension and acceptance/yielding) (Fishbein & Azjen, 1975). Attitude change is seen as a function of receiving and accepting message content (Fishbein & Azjen, 1975) and thus manipulation of independent variables will effect persuasion (Cafferty, 1992). While the effectiveness of the communication can be measured (Cafferty, 1992), the Yale approach does not adequately account for the persuasion process (Fishbein & Azjen, 1975).

Fishbein's **expectancy-value model** (Fishbein's summative model of attitude) is based on the premise that "attitude is a function of belief strength (that is, the strength with which one holds one's salient beliefs about the object) and belief evaluation (the evaluation one has of these beliefs)" (O'Keefe, 1990a, p. 46). Since attitudes are based on beliefs regarding an object, the model holds that attitude change occurs as a result of altering beliefs about an object, or the characteristics associated with the object, or by creating new beliefs (Davidhizer & Farabaugh, 1994, Himmelfarb & Eagly, 1974a). Although the model predicts attitudes reasonably well, the model has been criticized because it "does not speak directly to the roles played by such factors as communicator credibility, message organization, and receiver personality traits" (O'Keefe, 1990a, p. 55). The model supports the notion that such factors indirectly influence attitude and that

these factors are mediated by belief strength and evaluation. Based on empirical research, variables other than message content which are not mediated by belief strength and evaluation effect attitudes. O'Keefe (1990a) suggested that this attitude model may best describe attitudes that are relatively well-defined, stable, and internally coherent.

Bem's **self-perception theory** is an attributional approach to attitude change. Bem's theory postulates that people "act as observers of their own behavior and merely infer their attitudes from their actions. The attitudes of these subjects change because they use their recent behavior, which differs from their earlier attitudes, to infer their current attitudes" (Eagly & Chaiken, 1993f, p. 538). Hence, external cues (behavior) are relied on to formulate attitudes, particularly when internal cues are weak, ambiguous, or uninterpretable (Eagly & Chaiken, 1993f, Petty & Cacioppo, 1981a). However, empirical research indicates that there are many other variables, other than behavior, that relate to attitude change (Petty & Cacioppo, 1981a).

Social judgment theory is based on the premise that "the initial attitude of the recipient might influence the judgment of persuasive messages and that such judgmental factors, in turn, might affect the amount of attitude change" (Himmelfarb & Eagly, 1974a, p. 37). Communications that are judged to be within the range of opinions that the recipient finds acceptable (within the recipient's latitude of acceptance), result in changes toward the message. The theory postulates that when the message is within the latitude of acceptance and the discrepancy between the recipient's initial position and the position advocated in the message is large, greater attitude change ensues. On the other hand, if the message is perceived as objectionable (within the latitude of rejection) and the discrepancy between the recipient's initial position and the position advocated in the

message is large, less attitude change ensues (Himmelfarb & Eagly, 1974a). A more favorable attitude change coincides with increasing discrepancy up to the point of the latitude of rejection (e.g. the relationship between discrepancy and attitude change is similar to an inverted-U-shape curve). Beyond the point of the latitude of rejection, increasing discrepancy results in less favorable attitude change (O’Keefe, 1990b). The theory also postulates that latitude widths depend on ego-involvement (i.e. when the issue is important to the recipient). Subsequently, recipients with high ego involvement are expected to have a relatively small latitude of acceptance and a large latitude of rejection.

Thus for low-involvement receivers, a persuader might be able to advocate a very discrepant viewpoint without entering the (small) latitude of rejection; but for high-involvement receivers, a very discrepant message will almost certainly fall into the (large) latitude of rejection (O’Keefe, 1990b, p. 37).

Although the social judgment theory has made some positive contributions to the study of attitude change, mediational assumptions have not fared well in empirical tests and there is a considerable amount of concern regarding the measures and confounding variables associated with ego-involvement (O’Keefe, 1990b). Questions have also been raised regarding the effect of ego-involvement on latitude width and whether ego-involvement has “a reliable impact on message perception” (Eagly & Chaiken, 1993g, p.380).

Greenwald’s **cognitive response approach** (1968) holds that people spontaneously generate thoughts in response to message presentations (Petty, Unnava, & Strathman, 1991) and “attempt to relate the information in the message to preexisting knowledge that the person has about the topic” (Petty & Cacioppo, 1981b, p. 225). The

cognitive response approach posits that “cognitions that are generated in response to persuasive messages determine both the direction and magnitude of attitude change” (Eagly & Chaiken, 1993d, p. 282). For instance, messages that evoke favorable thoughts are considered persuasive (e.g. the recipient tends to agree with the message) and messages that evoke unfavorable thoughts are not considered persuasive (e.g. the recipient tends to disagree with the message) (Eagly & Chaiken, 1993d, Petty & Cacioppo, 1981b). Much of the cognitive response research has been directed toward determining how certain factors influence persuasion (Petty & Cacioppo, 1981b). Although the cognitive response approach has provided invaluable insight into the role of distal variables in persuasion (i.e. distraction, message repetition, and personal relevance), the predictive utility of the model has been described as “somewhat limited” (Eagly & Chaiken, 1993d, p.292).

Petty & Cacioppo’s **elaboration likelihood model** (1981, 1986) is a dominant theoretical approach to message-based persuasion (Tesser & Shaffer, 1990) and is an outgrowth of the cognitive response model research. Although the cognitive response model is similar to the ELM in many respects, with the ELM persuasion extends beyond the cognitive response framework. For instance, authors of the ELM postulate that persuasion is not always “dependent on recipients’ processing of persuasive message content” (e.g. peripheral mechanisms may account for persuasion) (Eagly & Chaiken, 1993d, p. 296) and unlike the cognitive response model, it “specifies the conditions under which persuasion should be mediated by message-related thinking” (Eagly & Chaiken, 1993b, p. 306) or cognitive processing of the message.

The ELM uses two dominant theoretical orientations to explain the underlying psychological antecedent and consequences of attitude change (Petty, Heesacker, & Hughes, 1997). These processes include a central and a peripheral route of persuasion. Researchers have described these two routes to persuasion as “providing impressive explanatory power in relation to otherwise apparently contradictory results” (Neimeyer, Guy, & Metzler, 1989). Development of this dual process theory is based on the fact that existing attitude theories exemplify either a central route perspective (i.e. attitude change is mediated by argument-based thinking) or a peripheral route perspective (i.e. attitude change is mediated by psychological factors that do not implicate argument processing). Hence, Petty and Cacioppo’s ELM “represents an attempt to place existing persuasion theory and research under one conceptual umbrella” (Eagly & Chaiken, 1993b, p. 306).

The ELM posits that when an individual is motivated by a message (e.g. the message is relevant or the person “enjoys thinking”) and has the ability to think about and scrutinize a persuasive message (e.g. the person is intellectually capable or there are no distractions), then attitude change will occur via the central route. Attitude change via the central route requires considerable cognitive effort or “elaboration” (i.e. scrutiny of issue-relevant arguments within the message) (Petty, Heesacker, & Hughes, 1997, Petty & Wegener, 1999). Under such high elaboration conditions, the individual critically examines all pertinent information (i.e. message quality and/or credibility of the source) to evaluate the merit of the position advocated. According to the ELM, variables (i.e. credibility and/or attractiveness) that add merit to the persuasive message will have a greater impact on attitudes under high elaboration than low elaboration conditions (Eagly & Chaiken, 1993b, Petty & Wegener, 1999).

Variables that enable recipients to elaborate upon messages include the absence of situational distractions, knowledge of the message topic, experience with the attitude object, repeated exposures to the persuasive message (Tesser & Shaffer, 1990), recipient intelligence, and message comprehensibility (Petty & Cacioppo, 1986). Factors that affect motivation to process a message include the need for cognition, personal relevance, and personal responsibility. Thus when personal relevance, responsibility, and need for cognition are high, “people become more motivated to process the issue-relevant arguments presented” (Petty & Cacioppo, 1986, p. 109).

Contrary to central route processing, attitudes changed via the peripheral route occur when an individual is not motivated (e.g. the message is not relevant or the person does not enjoy thinking) and/or the individual is unable to think about the persuasive communication (e.g. the person is not intellectually capable or there are distractions present). For instance, the peripheral route is utilized to process a message if ability is high but motivation is low or if motivation to process the message is high but ability is low (Petty & Cacioppo, 1986). Attitude change via the peripheral route is attributed to peripheral cues in the persuasion setting (i.e. expertise and/or attractiveness of the message source, message length and/or number of arguments), rather than argument processing or scrutiny of the message that occurs in central route processing (Tesser & Shaffer, 1990) (Appendix A).

Petty and Cacioppo, (1986) postulated that “as argument processing is reduced, whether objective or biased, peripheral cues become more important determinants of persuasion. Conversely, as argument scrutiny is increased, peripheral cues become relatively less important determinants of persuasion” (p. 20). For instance, an individual

with a negative attitude toward obesity could decide to process a message regarding size acceptance and demonstrate a favorable change in attitude (e.g. central route processing). On the other hand, an individual with a negative attitude toward obesity could demonstrate a favorable change in attitude that is associated with appearance/attractiveness of the source rather than the quality of the message (e.g. peripheral route processing). According to the ELM, when subjects are either unmotivated or unable to evaluate message arguments, “a positive source tends to enhance persuasion and a negative source tends to reduce persuasion regardless of the message quality” (Petty & Cacioppo, 1986, p. 205). Hence, variables that act via the peripheral route act as “simple acceptance or rejection cues” (Petty & Cacioppo, 1984, p. 669) and therefore have a greater persuasive impact under low versus high elaboration conditions (Eagly & Chaiken, 1993b, Petty & Wegener, 1999).

Attitude change via central route processing is advantageous because the changed attitudes are generally more: a) persistent over time, b) resistant to counter persuasive attempts, c) accessible in memory, d) integrated into the person’s belief structure, and e) likely to influence or predict behavior (Eagly & Chaiken, 1993b, Petty, Heesacker, & Hughes, 1997) than attitudes changed via the peripheral route (Cafferty, 1992, Petty, Unnava, & Strathman, 1991, Scott, 1996). When using peripheral route processing, “the person is less likely to personalize or internalize the message arguments into a core position within the context of his or her attitudes schema” (Scott, 1996, p. 189). The weak change in attitude is primarily due to the fact that there is little cognitive effort involved (low elaboration) in the peripheral route. Lower elaboration conditions cause fewer implications to be generated toward the persuasive message, which results in a

weaker attitude change (Petty & Wegener, 1999). Although the latter is well recognized, theorists also support the notion that in time peripheral route processing may “lead to attitudes that are persistent, resistant, and predictive of future behavior” (Petty & Cacioppo, 1986, p. 23). Petty and Cacioppo (1986), indicated that

it may be possible to produce attitudes via the peripheral route that have some of the same characteristics (e.g., persistence, accessibility) as those produced via the central route, but more message and cue exposures should be required to achieve the same results (p. 22).

Application of the Elaboration Likelihood Model (ELM): An Educational/Nutritional Context

Wiese, Wilson, Jones, and Neises (1992) conducted a study designed to reduce obesity stigma among first-year medical students (n= 75) via an educational intervention using the ELM. Eight attitude dimensions were measured including: the genetic basis of obesity, socio-economic conditions as determinants of obesity, resistance of obese individuals to change lifestyle in order to reduce weight, negative characteristics associated with obesity, blame placed on obese individuals for their condition, accuracy of beliefs regarding the genetic influence of obese and non-obese parents to produce obese off-spring, knowledge regarding differences in caloric intake among obese and non-obese individuals, and stereotypes associated with obese individuals (i.e. lazy/energetic, sloppy/neat, sharp/dull, self-controlled/lacking self-control). Attitude dimensions were measured pre-test, post-test, and one-year post-test. The intervention included a videotaped interview with an obese woman, informative materials related to

etiological factors of obesity, and role-playing activities. The intervention (persuasive message) was developed to facilitate central route processing. The intervention addressed message quality, peripheral cues, argument repetition, and elaboration. Students in the intervention group were less likely to support negative stereotypes associated with obesity and less likely to blame obese individuals for their condition compared to the control group. Students in the intervention group were also more likely to: a) identify genetics as a determinant of obesity, b) indicate minimal difference between the caloric intake of obese and non-obese individuals, and c) indicate the likelihood of obese offspring from obese parents than students in the control group. At the one-year follow-up, students in the intervention group continued to demonstrate a diminished sense of blame toward obese individuals and recognized the socio-economic determinants of obesity. They found that education may be effective in helping to reduce bias among health professionals and that the ELM provided criteria for effective persuasive interventions.

Gilbert, Gannon, and Heesacker (1991) conducted a study to determine the magnitude of attitude change among subjects participating in a psychoeducational intervention pertaining to women's safety using the ELM. The study was designed to determine if attitudes toward sexual assault prevention would improve as a result of exposure to an intervention and if the central-route components of the ELM (motivation and ability) would significantly predict attitude change. Undergraduate men at two state universities (n=61) participated in a one hour psychoeducational intervention. The subjects were randomly assigned to either the control or treatment group and completed a pretest, posttest, and a follow-up evaluation. The pretest involved completion of four attitude scales (i.e. the Acceptance of Interpersonal Violence, Adversarial Sexual Beliefs,

Rape Myth Acceptance, and Sex Role Stereotyping), and Cacioppo and Petty's Need for Cognition Scale (a trait measure of motivation). Following the intervention, the treatment group completed the four attitude scales, the Need for Cognition Scale, a state measure of subject motivation, and a measure of ability. Motivation was determined by measuring:

- how motivated the subject felt to think about the arguments presented and
- how personally relevant the arguments/topic were to the subject.

Ability was determined by measuring:

- how easy the presentation was to understand and
- how difficult it was to concentrate on the presentation because of distractions.

The treatment group demonstrated significantly more positive change in attitude at post-test than the control group. The treatment group was also significantly more likely to listen and make positive comments regarding the women's safety project at follow-up than the control group. Furthermore, attitude change was significantly predicted by at least one measure of the central-route components of attitude change. For instance, there was a significant positive correlation between the Need for Cognition scores and attitude change scores. How motivated the subject felt to think about the arguments presented (i.e. measure of motivation) and how easy the presentation was to understand (i.e. measure of ability) also significantly predicted attitude change. The authors concluded that participant motivation and ability are important process variables that determine attitude change and that the ELM can improve the effectiveness of psychoeducational programs.

Neimeyer, Guy, and Metzler (1989) used the ELM to examine the effect of intervention quality (i.e. central characteristics) and credibility (i.e. peripheral

characteristics) on attitudes regarding the treatment of disordered eating. The researchers hypothesized that source credibility would have a greater effect on subjects demonstrating low involvement (i.e. low eating restraint) than subjects demonstrating high involvement (i.e. high eating restraint) and that message quality would have a greater effect on subjects demonstrating high involvement than subjects demonstrating low involvement. The researchers expected that subjects with high eating restraint would demonstrate more active cognitive processing of food-related information than subjects demonstrating low eating restraint. Subsequently, the former group would experience attitude change via the central route to persuasion and the latter group would experience attitude change via the peripheral route to persuasion. The subjects (n=107) completed the Herman-Mack Eating Restraint Questionnaire to assess disordered eating (e.g. determine the level of involvement) and listened to an audiotape that delivered either a strong, sound argument or a weak, specious argument in regards to a treatment technique for eating disorders (i.e. cognitive restructuring). Source credibility was manipulated by informing the subjects that the intervention was delivered by an individual with a Ph.D. in counseling psychology or an undergraduate student in education. After listening to the audiotape, the subjects completed: (1) the Thought Listing Task to evaluate message processing (e.g. documentation of thoughts that occurred during the intervention), (2) an attitude survey to determine outcome expectation and self-efficacy, and (3) a one-week cognitive restructuring exercise to predict behavioral compliance (e.g. the percentage of relevant applications and the range of applications across the week).

Based on cognitive response, subjects in the low quality intervention had significantly more negative thoughts than subjects in the high quality intervention (e.g.

lower levels of agreement regarding the effectiveness of cognitive restructuring for the treatment of eating disorders). Based on attitudinal data, subjects exposed to the high quality intervention rated the cognitive restructuring technique as significantly more effective than subjects exposed to the low quality intervention. Although these findings did not support predicted interactions (e.g. involvement level and message quality or effectiveness), the measures of behavioral compliance demonstrated obvious support for the ELM. For instance, source credibility had appreciable effects among subjects that demonstrated low-involvement versus high-involvement (e.g. low-involvement subjects demonstrated a significantly greater percentage of relevant applications and a wider range of applications when exposed to high versus low credibility sources). Unlike subjects that demonstrated low-involvement, credibility had no effect on highly involved subjects. These findings support the ELM in that low-involvement subjects “were less attentive to the content of the interventions, appealing instead to an available source cue (credibility) to determine their behavior.” On the other hand, the highly involved subjects “engaged in greater message scrutiny, and consequently their behavior was more affected by the quality of the intervention than by the credibility of the source” (p. 84). The authors concluded that the model may be particularly useful in predicting processes of educational/therapeutic influence.

Other researchers have described application of the ELM in prevention-oriented programs in schools. For instance, Scott (1996) described the ELM as an appropriate framework for educational programs on substance abuse for adolescents. Although substance abuse is a pertinent topic to adolescents, most young people are not responsive to persuasive forms of communication that address the negative consequences associated

with substance abuse. Adolescents tend to perceive such messages as not personally relevant (e.g. something that happens to other people). Therefore, even though the message is comprehended, the message fails to serve as a successful intervention because the adolescents do “not engage in the cognitive elaboration necessary to personalize or internalize these positions” (p. 192). The ELM postulates that the message recipient is more likely to respond to peripheral cues than central cues if the issue has low relevancy and low personal involvement. Subsequently, adolescent programs about substance abuse may have a more positive impact on the formation or change of attitudes when the message is directed toward peripheral cues (i.e. credibility and/or attractiveness of the source) rather than central cues (i.e. quality of the message). For example, sources such as celebrities, or peers that adolescents are attracted to, may be associated with a more successful message intervention than an intervention that addresses the negative consequences of substance abuse. The author concluded that program and policy decision makers could strengthen prevention programs and policies by “using the ELM as a template through which to consider adolescents’ choices about alcohol and other drug use” (p. 193).

In summary, the school is a highly stigmatized environment for fat children (Neumark-Sztainer, Story, & Faibisch, 1998, Neumark-Sztainer, Story, & Harris, 1999). Negative attitudes of obesity have been reported among schoolteachers (National Education Association, 1994, Schroer, 1986, Quinn, 1987) and children (Latner & Stunkard, 2003, Maroney & Golub, 1992) alike. Since schoolteachers are important role models to students, negative attitudes can promote size discrimination and body dissatisfaction (Ikeda, 1995). A fear of social stigma and body dissatisfaction often

results in weight loss efforts (i.e. dieting) which can have a profound effect on child development (Brownell & Rodin, 1994, Garner & Wooley, 1991, Wilson, 1996), including an increased risk for eating disorders (Garner & Wooley, 1991, Kirschenbaum & Fitzgibbon 1995). Although the etiology and treatment of obesity are not well understood, the non-diet approach to obesity is recognized as a promising alternative model for destigmatizing fatness by promoting size acceptance, normalized eating, and a healthy lifestyle (Ciliska, 1998, Miller & Jacob, 2001, Neumark-Sztainer, 1999). Educational programs designed to address the complex etiology and treatment of obesity, as well as the dietary and psychosocial effects associated with the stigma of obesity, may help to decrease negative attitudes (DeJong, 1980, Harris & Smith, 1982, Harris, Washull, & Walters, 1990, Maroney & Golub, 1992, Sobal, 1991). Attitudes and their change processes are highly predicted by the Elaboration Likelihood Model (Petty & Cacioppo, 1986, Petty, Heesacker, & Hughes, 1997), which is recognized as a dominant theoretical approach to message-based persuasion (Tesser & Shaffer, 1990).

Objectives

The objectives of this study were to:

1. Examine attitudes toward obesity among teacher credential candidates and certified schoolteachers.
2. Evaluate processes of attitude change using the Elaboration Likelihood Model (ELM).
3. Determine attitude change as a result of reviewing a Web-based educational module.

4. Evaluate the effect of subject BMI on attitude.
5. Examine the effect of source (presenter) appearance and credibility on attitude change.

METHODS

Subjects

The target sample was graduate and undergraduate students enrolled in Elementary Education programs (K-8) at the University of Maine in Orono, Farmington, Fort Kent, Machias, and Southern Maine.

Recruitment

The target sample was intended to be graduate and undergraduate students enrolled in Elementary Education programs (K-8) at the University of Maine in Orono, Farmington, Fort Kent, Machias, and Southern Maine. To enlarge the sample size, other education majors (i.e. health/fitness, special, secondary, etc.) and certified teachers who were enrolled in the courses along with elementary education majors were included. Teachers not enrolled in graduate courses also participated to earn continuing education units. Human Development majors enrolled in “CHF 433: Adolescence” at the Orono campus were included in the study because of their training/work in early child care.

Faculty from programs of Education at the University of Maine in Orono, Farmington, Fort Kent, Machias, and Southern Maine were informed about the study via a letter (Appendix B) and/or informal presentations at departmental meetings. Faculty were asked to invite their students to participate in the study via their respective classes. An introductory script, providing an overview of the project, was read to each class by their respective faculty (Appendix B). Student handouts were distributed in classes to provide further information about the project (Appendix B). Participation was voluntary, not a course requirement. Students were offered course credit (i.e. professional service

project, optional assignment, or extra credit), as a result of their participation, per discretion of the course professor.

Certified teachers were recruited via presentations and/or by distribution of handouts (Appendix B) at numerous schools and professional conferences including the New Hampshire National Education Association at Merrimack Valley High School, the Maine Schoolsite Health Promotion Conference at SugarLoaf USA, the Association of Teachers of Math in Portland, Maine and the Maine Association for Health, Physical Education, Recreation and Dance at Samoset in Rockport, Maine, Maine Nutrition Network - Mainely Teachers Program, Campaign for Healthy Maine, and the 92nd Annual Meeting and Exposition of the American Association of Family and Consumer Sciences in Providence, R.I. Announcements regarding the project were also posted on various professional Web sites. Participation in the project entitled teachers to five hours or 0.5 continuing education units as approved by the University of Maine Conference Services Division. Teachers received a "Program Completion Form" to verify completion of the project (Appendix B).

Recruitment occurred during each semester, including the summer, from Spring 2001 through Spring 2002. Inquiries regarding participation were made to the principal investigator (PI) via e-mail. The PI responded to each inquiry by forwarding appropriate instructions. Subjects submitted their responses to an informed consent electronically prior to beginning the study (Appendix C). Names of subjects were entered into a raffle for a \$25.00 gift certificate to L.L. Bean. A gift certificate drawing was held for every 25 subjects that completed the program. Approval to conduct research with human subjects

was obtained from the University of Maine Protection of Human Subjects Review Board in Orono, Farmington, Fort Kent, Machias, and Southern Maine.

Group Assignment

The subjects were randomly assigned into one of five Web-based groups (control or treatment groups 1-4). Subjects received instructions based on whether they were in the control group or a treatment group (Appendix D). Six-weeks after completion of the posttest, subjects were sent instructions to complete a follow-up survey (Appendix D).

Research Design

The research design was a pre/post/follow-up assessment with an educational intervention. It was a single “within subject” factor (i.e. time) and five “between subject” factors. WebCT was used to deliver the educational module (i.e. intervention) and questionnaires. The subjects were randomly assigned to the following groups using rolling enrollment:

- A) **Control** (i.e. questionnaires only)
- B) **Treatment group one:** Intervention only (i.e. no exposure to source credibility or attractiveness)
- C) **Treatment group two:** Intervention with exposure to a highly credible source and no exposure to attractiveness (i.e. no photo/image provided)
- D) **Treatment group three:** Intervention with exposure to a highly credible “non-fat” source

E) **Treatment group four:** Intervention with exposure to a highly credible “fat” source

Research Instruments

Antifat Attitudes Test

The Antifat Attitudes test (AFAT) ($\alpha=.95$) is a 47 item questionnaire designed as a 5-point Likert-type scale (ranging from strongly agree to strongly disagree) to measure cognitive, affective, & behavioral disposition toward fat people (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997). The range of possible scores is 47-235. The test includes three subscales: social/character disparagement, physical/romantic unattractiveness, and weight control/blame. The AFAT was completed by subjects at pretest, posttest, and follow-up (Appendix E).

Short Obesity Knowledge Scale

Eagly & Chaiken (1993b) indicated that a person’s knowledge level influences the ability to process a persuasive message and that ability to process a message is an important determinant of central route processing in attitude change. For purposes of this investigation, knowledge of obesity was measured using the Short Obesity Knowledge scale to evaluate the ability of the subject to process the message (Price, O’Connell, & Kukulka’s, 1985). The Short Obesity Knowledge scale is a norm-referenced 12-item test using a 5-point Likert-type scale (ranging from strongly agree to strongly disagree). The range of possible scores is 12-60. The instrument measures four aspects of obesity including etiology, related chronic diseases, weight loss techniques, and general

information. Documentation for validity of the test has been previously published (Price, O'Connell, & Kukulka, 1985). The test demonstrates a stability reliability of 0.62 and an internal reliability of 0.12 using a Likert Scale format. The low reliability, reported by the authors, has been attributed to the low number of test items. The Knowledge of Obesity instrument was scored as follows: 2=strongly agree, 1=slightly agree, 0=uncertain, 0=slightly disagree, and 0=strongly disagree for true statements and 2=strongly disagree, 1=slightly disagree, 0=uncertain, 0=slightly agree, and 0=strongly agree for false statements. The scoring system was derived from discussions with a statistician and the instrument author as well as reliability calculations (α .56). The Short Obesity Knowledge Scale was completed by subjects at pretest, posttest, and follow-up (Appendix F).

Need for Cognition Scale

The Need for Cognition scale was used to measure subjects' motivation to assess and elaborate upon the central merits of the educational module (persuasive message) (Cacioppo & Petty, 1982). The Need for Cognition Short (NCS) scale (α =.90) is an 18-item 5-point Likert-type rating scale, ranging from extremely uncharacteristic to extremely characteristic (Cacioppo, Petty, Feinstein, & Jarvis, 1996, Cacioppo, Petty, & Kao, 1984). The range of possible scores is 18-90. The NCS exhibits strong internal consistency and a stable factor structure. Discriminant validity indicates that the single construct is distinguishable from cognitive style and is unrelated to test anxiety and social desirability. Furthermore, test items suggest good content validity and evidence of

predictive validity exists (Cacioppo & Petty, 1982). The NCS was completed by subjects at the posttest (Appendix G).

Counselor Rating Form

The Counselor Rating Form (CRF) was used to measure source attractiveness, credibility, and trustworthiness (Barak & LaCrosse, 1975). The CRF consists of the latter three dimensions with 12 items per dimension (36 items total) (Atkinson & Wampold, 1982) and uses a 7-point bipolar scale for each item pair (i.e. attractive - unattractive). A score of one represents a low rating and a score of 7 represents a high rating (Ponterotto & Furlong, 1985). The range of possible scores is 36-252. As noted by Atkinson & Wampold (1982), “the CRF has been subjected to extensive empirical and practical verification” (p. 22) and “has been the most frequently used counselor rating instrument” (Ponterotto & Furlong, 1985, p. 600). The instrument has demonstrated both construct and predictive validity as well as acceptable internal consistency. The split-half coefficient and the alpha coefficient for expertness, attractiveness, and trustworthiness was 0.87, 0.85, 0.91 (Ponterotto & Furlong, 1985) and 0.82, 0.98, and 0.91 respectively (Atkinson & Wampold, 1982). The CRF was completed by subjects at the posttest (Appendix H).

Theory Application

To test support for the Elaboration Likelihood Model (ELM), questions were asked about the topic relevance and personal interest in the educational module, possible situational distractions while reviewing the module, ease of interpreting the educational

material, and approach used to review the module (i.e. monitor versus printed hard copy) (Appendix I ; see questions 10-14).

Demographics

The subjects' age, sex, Nationality, major program of study, year of school, teacher candidacy status, previous completion of an education exceptionality course, previous completion of a college level nutrition-related course, and sources of nutrition-related information were examined. Height and weight were reported as part of the questionnaire in order to calculate BMI (ratio of weight (kg) divided by the square of the height (m²) (Lee & Nieman, 1996). BMI categories (i.e. high, desirable, and low) were adapted from the Panel on Energy, Obesity, and Body Weight Standards (Lee & Nieman, 1996). Subjects were also asked to provide comments/suggestions regarding future use of the module for sensitivity training. The demographic questionnaire was completed by subjects at the posttest (Appendix I).

Students were given approximately one to two weeks to complete the pretest questionnaires, module, and posttest questionnaires. Follow-up questionnaires were completed at six-weeks post-intervention to measure persistence of attitude change and knowledge. The control group completed the questionnaires within a similar time frame as the treatment groups. After completion of the follow-up survey, subjects in the control group were given the opportunity to review the educational module.

The intervention (module) was the same for all treatment groups. Groups differed by information received at the introduction and conclusion of the module (Appendix J). For treatment group 1, the introduction and conclusion were written in the third person

stance since it did not include a source. The introduction for treatment group two included phantom credentials without a picture of the source to test the effect of high source credibility on attitude change. High credibility was indicated by expert credentials and a description of extensive professional experience in the field of nutrition. The introduction for treatment group three included phantom credentials along with a “non-fat” phantom source image and treatment group four included phantom credentials plus a “fat” phantom source image. The phantom source images were used to determine the effect of source appearance on attitude change. The conclusion for treatment groups three and four also included the appropriate phantom source image to further convey source appearance. The concluding remarks were the same for treatment groups two, three, and four.

Development of Source Images

The original full-body source image was obtained from a Web-based clothing catalog for large women. The model selected was a full-figured, middle age, Caucasian female wearing professional attire. Permission was obtained to download the image and use it for research purposes. The “fat” source was depicted by enlarging the original image by 20% to 25%. The original image was digitally reduced by 20% to 25% to depict the “non-fat” source. Adobe Photoshop 6.0 computer software was used to alter the body image size.

The original and digitally altered images of the “fat” and “non-fat” source were pilot tested to evaluate subject perception of body size. Graduate students in education (n= 20), at the University of Southern Maine, were asked to complete a body image/size

scale after reviewing the images of the unaltered original source (photo A), and digitally altered "fat" source (photo B), and "non-fat" source (photo C) (Appendix K, Figure K.1). The body image scale consisted of 12 different body sizes ranging from extremely thin to extremely fat (Appendix K, Figure K.2). The majority of subjects (n= 19) selected body size 8, 9, or 10, toward the right of the scale, for photo A (i.e. unaltered source). The majority of subjects (n= 18) selected body size 11 or 12, toward the right of the scale, for photo B ("fat" source). And the majority of subjects (n= 19) selected body size 7, 8, or 9, toward the right of the scale, for photo C ("non-fat" source) (Table 3.1).

Table 3.1 Selection Frequency from the Body Size (BS)¹ Scale (12 sizes) with Multiple Sources

| | BS 6 | BS 7 | BS 8 | BS 9 | BS 10 | BS 11 | BS 12 |
|--|------|------|------|------|-------|-------|-------|
| Number of students ² responding to photo A (unaltered source) | 0 | 0 | 5 | 4 | 10 | 1 | 0 |
| Number of students ² responding to photo B ("fat" source) | 0 | 0 | 0 | 0 | 2 | 7 | 11 |
| Number of students ² responding to photo C ("non-fat" source) | 1 | 5 | 10 | 4 | 0 | 0 | 0 |

1 BS = body size ranging from 1 = extremely thin to 12 = extremely fat

2 n=20

Based on these results, subjects perceived the body size in photo B as noticeably fat and therefore this image was used to portray the "fat-source." Since subjects perceived the body size in photo C to be above average weight, this image was further reduced digitally to try to portray an average weight female (i.e. a body size approximating the center of the scale) (Appendix K, Figure K.3). To test the perception

of the body size of the re-altered “non-fat” source, graduate and undergraduate students (n= 25) enrolled in education classes, at the University of Maine, completed a body image scale (i.e. 12 or 9 body size scale). Fifteen of the subjects completed the 12 body size scale described earlier. The remaining 10 subjects completed a 9 body size scale (Appendix K, Figure K.4). For the 12 body size scale, the majority of subjects (n=13) selected either body size 6 or 7, in the center of the scale (Table 3.2).

Table 3.2 Selection Frequency from the Body Size (BS)¹ Scale (12 sizes) with a Single Source

| | BS 5 | BS 6 | BS 7 | BS 8 | BS 9 |
|---------------------------------|------|------|------|------|------|
| Number of students ² | 1 | 6 | 7 | 0 | 1 |

1 BS = body size ranging from 1 = extremely thin to 12 = extremely fat

2 n = 15

Based on the 9 body size scale, the majority of subjects (n=9) selected body size 4 or 5, toward the center of the scale (Table 3.3). Since it appeared that the subjects perceived the digitally re-altered body size as relatively average, it was used to represent the “non-fat” source.

Table 3.3 Selection Frequency from the Body Size (BS)¹ Scale (9 sizes) with a Single Source

| | BS 3 | BS 4 | BS 5 |
|---------------------------------|------|------|------|
| Number of students ² | 1 | 6 | 3 |

1 BS = body size ranging from 1 = extremely thin to 9 = extremely fat

2 n = 10

Research Questions and Null Hypotheses

Research Question (A): Are attitudes of obesity among prospective and certified teachers affected by: 1) a Web-based intervention promoting size acceptance, 2) credibility of the presenter, and 3) appearance of the presenter?

To answer the above questions the following null hypotheses were tested:

H1 : Mean attitude scores (i.e. pre, post, follow-up) are not different within groups.

H2: Mean attitude scores (i.e. pre, post, follow-up) are not different between the control and treatment group one (i.e. intervention with no exposure to source credibility or appearance).

H3: Mean attitude scores are not different between treatment groups 1 and 2 (i.e. intervention with exposure to a highly credible source and no exposure to appearance).

H4: Mean attitude scores are not different between treatment groups 2 and 3 (i.e. intervention with exposure to a highly credible “non-fat” source).

H5: Mean attitude scores are not different between treatment groups 2 and 4 (i.e. intervention with exposure to a highly credible “fat” source).

Research Question (B): Does subject body mass index (BMI) affect attitude change towards obesity? Are attitudes among subjects with a low or high BMI influenced by appearance of source (i.e. a credible “non-fat” versus a credible “fat” source)?

To answer the above questions the following null hypotheses were tested:

H6: Differences in mean attitude scores (i.e. pre, post, follow-up) are not explained by subject BMI (i.e. continuous or categorical measure).

H7: Differences in mean attitude scores (i.e. pre, post, follow-up) are not explained by subject BMI (i.e. categorical measure) when exposed to a credible “non-fat” or credible “fat” source.

Research Question (C): As hypothesized by the Elaboration Likelihood Model (ELM), does rating/perception of the source influence attitude change?

To answer the above question, the following hypotheses were tested:

H8: Differences in mean attitude scores (i.e. pre, post, and follow-up) are not explained by subjects’ rating/perception of a credible source (i.e. without exposure to appearance).

H9: Differences in mean attitude scores (i.e. pre, post, follow-up) are not explained by subjects’ rating/perception of a credible “non-fat” source.

H10: Differences in mean attitude scores (i.e. pre, post, follow-up) are not explained by subjects’ rating/perception of a credible “fat” source.

Research Question (D): As hypothesized by the Elaboration Likelihood Model (ELM), is a Need for Cognition associated with a favorable change in attitude when exposed to a high quality persuasive message (educational module)?

To answer the above question, the following null hypothesis was tested:

H11: Differences in mean attitude scores (i.e. pre, post, follow-up) are not explained by the subjects’ Need for Cognition when exposed to a high quality persuasive message/educational module (indicating central route processing).

Research question (E): As hypothesized by the Elaboration Likelihood Model (ELM), is obesity knowledge, prior to the intervention, associated with a favorable change in attitude when exposed to a high quality persuasive message (i.e. educational module)? Does the Web-based educational module increase knowledge of obesity?

To answer the above questions, the following null hypotheses were tested:

H12: Differences in mean attitude scores (i.e. pretest, posttest, and follow-up) are not explained by the subjects knowledge of obesity (i.e. prior to the intervention), when exposed to a high quality persuasive message/educational module (indicating central route processing).

H13: Mean knowledge scores (i.e. pre, post, and **follow-up**) are not different between or within groups.

Research question (F): *As hypothesized by the **Elaboration of Likelihood Model (ELM)**, do the following variables influence attitude change: module's relevance to teaching, high personal interest in the topic of the module, ease of understanding the module, and distraction during review of the module?*

To answer the above questions, the following hypotheses were tested:

H14: Differences in mean attitude scores (i.e. pretest, posttest, and follow-up) are not explained by motivation variables (i.e. relevance or personal interest in the module) when exposed to a high quality persuasive message/educational module (indicating central route processing).

H15: Differences in mean attitude scores (i.e. pretest, posttest, and follow-up) are not explained by ability variables (i.e. ease of understanding module and distraction while reviewing the module) when exposed to a high quality persuasive message/educational module (indicating central route processing).

Educational Intervention

All treatment subjects reviewed the same self-study educational module (Appendix L). The self-study design facilitated meaningful learning in that students could pace themselves to accommodate their own learning needs.

The module was developed based on the objectives listed below. Each of the module segments (I-XIII) represented a Web page. The pages were created using Macromedia Dreamweaver 4 and the files were uploaded onto WebCT. The site was designed so that subjects viewed each page in chronological order. Two video clips (approximately 3.5 and 7 minutes in length) pertaining to size acceptance/prejudice were digitalized and included in the module. The module images were created via Power Point or were obtained from outside resources. Copyright permission was granted to use the images/videos for research purposes. Various resources were used to develop the module content including; peer-reviewed journals, texts, professional organizational reports, Internet, newsletters, and brochures (see Appendix L; see module reference list). Experts in the areas of nutrition, obesity, metabolism, nutrition education, and size acceptance reviewed the educational module for accuracy, ability to meet objectives, and clarity of point. Additional resources related to the module content (i.e. suggestions for classroom activities that promote size acceptance) were also available to subjects after completion of the follow-up survey (see Appendix L; see additional resources).

Objectives

The module objectives were

- Describe and identify the advantages of the “health-centered” model versus the medical model.
- Identify the relationship between body image and self-esteem.
- Recognize that body size diversity is normal and respect for diversity is crucial.

- Recognize the importance of modeling a healthy body image and healthy lifestyle behaviors.
- Recognize contributing factors associated with the increased prevalence of obesity and individuals at increased risk of obesity.
- Recognize the association between morbidity/mortality and obesity and the current controversy surrounding these relationships.
- Identify physical, psychological, and social effects of the obesity stigma.
- Recognize etiological factors associated with obesity and the related controversy.
- Identify the health risks and physiological changes associated with dieting.
- Recognize professional responsibility to confront size discrimination when observed.
- Recognize the consequences associated with the fear of fat and sociocultural pressures to obtain thinness among children and adolescents.
- Describe appropriate intervention techniques that can be used to promote bias free behavior in the school setting.
- Describe strategies that can be used to help children deal with the social stigma of obesity.

Obesity Defined

The term “obesity,” used in the educational module, was defined “as an excess of body fat in relation to lean body mass” (Lee & Nieman, 1996, p. 232). This definition reflects a sociological perspective in which obesity is described as a “relatively high amount of body fat” (Sobal, 1999, p. 188). The social assessment of obesity (e.g. the examination of knowledge, attitudes, and beliefs of weight and obesity) varies

considerably from the physiological assessment of obesity (i.e. body weight, percent body fat, BMI, waist-to-hip ratio, etc.) (Sobal & Devine, 1997). From the sociological perspective, researchers use the terms “fat,” “overweight,” and “obesity” interchangeably. This is primarily because peoples perception of body weight varies significantly. As a result, one individual may label someone as “overweight” and yet another individual may label the same person as “average.” At the same time, an individual who is slightly overweight (e.g. ten to fifteen pounds) may experience the same degree of stigmatization as an individual who is more severely overweight (i.e. fifty pounds) (Hirsch, 1973). As Sobal (1999) describes,

quantitative definitions that specify exactly the levels of fat that constitute obesity are not necessary for examining sociological patterns and processes, despite their emphasis in biomedical work. A relative definition of obesity permits variation among different groups in their evaluations about how much body fat is excessive (p. 188).

For purposes of this investigation, it is important that the subjects’ perception of obesity is not influenced by a pre-determined definition. A biomedical definition of obesity may alter one’s personal perception of obesity, especially since the idea of normal and abnormal body weight/fatness varies considerably among individuals (Sobal, 1999). Consequently, defining obesity from a physiological stand point may confound results, particularly in the measure of attitudes.

Pilot Test

The Web site was pilot-tested in the early semester of Spring 2001 to test the

process and improve usability of the site. Undergraduate students (n=20) enrolled in an education course, at the University of Maine, participated in the test. The students were given approximately one week to complete the pre and posttest questionnaires and review the educational module. No problems with the process were identified. Student comments regarding the Web-site and module content were generally quite favorable (Appendix M). Based on student comments, images were enlarged to improve viewing and a minor formatting change was made.

Statistical Analysis

Power analysis was used to determine a statistically appropriate sample size. It was determined that a minimum of 45 subjects per group was necessary, at a power level of .8, to detect a significant difference of .375 at the 5% level. One-way repeated measures analysis of variance (ANOVA) was used to compare mean scores between groups at the pretest, posttest, and at the six-week follow-up (Appendix N). Possible concomitant variables were added to the repeated measures ANOVA to investigate the relationship (Analysis of covariance - ANCOVA) between attitude change and Need for Cognition, Counselor Rating Form, Knowledge of Obesity, and subject BMI (Appendix N). Model parameters along with Pearson correlations were inspected to determine the direction and significance of associations. A general post hoc analysis was performed to further investigate significant findings from the ANOVA and ANCOVA. Two-way analysis of variance was used to examine the relationship between attitude and select demographic data as well as BMI and gender (Appendix N). The Tukey test was used for

post hoc analysis of significant factors from the two-way analysis of variance. Data were analyzed using SYSTAT.

RESULTS

Descriptive Statistics of Subjects

The target sample included undergraduate and graduate students from within the University of Maine System in Orono, Farmington, Fort Kent, Machias, and Southern Maine and schoolteachers from the New England region (n=258). The sample distribution represented 85% female (n=219) and 15% male (n=39) with a mean age \pm SD of 26.8 ± 10.2 . Subject nationality represented 96% American, 2% Canadian, and 2% other. The mean body mass index (BMI \pm SD) for males and females was 23.3 ± 5.5 and 24.0 ± 4.5 respectively. As shown in Table 4.1, approximately half of the subjects had a desirable BMI. Approximately 42% of subjects had a high BMI (n=105) and 8% had a low BMI (n=21). Of the males who participated, approximately 51% (n=20) were in the high BMI category.

Table 4.1 Mean BMI Category (\pm SD) by Gender

| | Low BMI ¹ | n | Desirable BMI ² | n | High BMI ³ | n |
|--------|----------------------|----|----------------------------|-----|-----------------------|----|
| Male | 18.48 (\pm 2.409) | 2 | 22.86 (\pm 0.826) | 17 | 28.65 (\pm 0.762) | 20 |
| Female | 18.97 (\pm 0.782) | 19 | 22.55 (\pm 0.326) | 109 | 30.54 (\pm 0.370) | 85 |

1 Low BMI = <20

2 Desirable BMI = \geq 20 and <25

3 High BMI = \geq 25

As shown in Table 4.2, most subjects with student status (61%) were at the junior level or above. Approximately 11% of the subjects were graduate students and 10% were certified teachers.

Table 4.2 School Status and Mean Age (\pm SD) of Sample

| School Status | n | % | Mean Ages (\pm SD) |
|-------------------|----|--------|-----------------------|
| First year | 23 | 8.95% | 22.39 (\pm 8.014) |
| Sophomore | 52 | 20.23% | 22.16 (\pm 8.013) |
| Junior | 75 | 29.18% | 22.47 (\pm 8.009) |
| Senior | 53 | 20.62% | 28.23 (\pm 8.015) |
| Graduate student | 28 | 10.89% | 33.78 (\pm 8.012) |
| Certified teacher | 26 | 10.12% | 42.30 (\pm 8.010) |

As shown in Table 4.3, the majority of student subjects (71.5%, n=184) were health/fitness education or elementary education majors. Approximately 36% (n=93) of the subjects were either enrolled in, or had previously taken, an Education Exceptionality course at the time of the study. This course is a required course for teacher certification in which diversity issues are addressed. Approximately 23% (n=59) of students had advanced to teacher candidacy status.

Table 4.3 Subjects' College Major

| Major | n | % |
|--|-----|--------|
| Health/Fitness Education | 107 | 41.44% |
| Elementary Education | 77 | 30.08% |
| Secondary Education | 14 | 5.47% |
| Human Development | 13 | 5.08% |
| Special Education | 13 | 5.08% |
| Art Education | 5 | 1.95% |
| Dual Certification (elementary/middle and high school) | 2 | 0.78% |

Half of the subjects (50%) had taken a college-level nutrition course. Subjects indicated that the most commonly used sources of nutrition information were books (62%), doctor (55%), and magazines (52%). Least used sources were peer-reviewed journals (20.5%) and a relative not working in the health care field (10%) (Appendix O, Table O.1).

Pretest Scores

The Knowledge of Obesity (KOB) Scale (α .56) (2=strongly agree/disagree, 1=slightly agree/disagree for true statements, 0=uncertain or incorrect), a measure of ability, total mean pretest score \pm SD was 10.620 ± 3.286 . The KOB mean score indicated that subjects were either uncertain/incorrect about their responses. The scores ranged from 2.00-22.00 out of a possible range of 0-24. The Anti-Fat Attitudes Test (AFAT) (α .941) (1=definitely disagree to 5=definitely agree) total mean pretest score \pm SD was 91.415 ± 22.184 , indicating subjects mostly disagreed with negative attitudes about fat. The scores ranged from 51-167 out of a possible range of 47-235. The Need for Cognition (NC) (α .870) (1=extremely uncharacteristic of subject to 5=extremely characteristic of subject), a measure of motivation, total mean score \pm SD was 63.630 ± 11.286 . The NC mean score indicated subjects were uncertain about their need for cognition. The scores ranged from 32-90 out of a possible range of 18-90. The Counselor Rating Form (CRF) (α .944) (1=low rating to 7=high rating) total mean score \pm SD was 209.124 ± 27.864 , indicating subjects rated the presenters high. The scored range was 132-251 out of a possible range of 36-252. Analyses are presented with the mean Likert scale rating rather than the total mean score for each instrument.

Based on Analysis of Variance (ANOVA), no significant group effect was found for the AFAT pretest, the KOB pretest, or the NC mean indicating that there were no differences among groups at pretest.

Feedback About Module (Quantitative and Qualitative)

Based on feedback from all treatment group subjects, 85% of subjects thought the module was personally interesting. Subjects (96%) found the module relevant and/or applicable to the field of teaching. Most subjects (65%) were not distracted while participating in the module, which suggests the potential to process the persuasive message. Over half of the subjects (53%) thought the module was very easy to understand and only 2% of subjects found the module somewhat difficult to understand. Approximately 87% (n=224) of subjects reviewed the module via a computer monitor, 1% (n=3) of subjects chose to review the module via a printed copy, and the remainder of subjects used a combination of monitor and a printed copy.

A feature of WebCT includes tracking information to determine the frequency of accessing program components for each subject. WebCT data for all treatment groups indicated that approximately 70% of subjects accessed the module once, 22% of subjects accessed the module twice, and 8% of subjects accessed the module three or more times. Based on the ELM, attitudes changed via peripheral route processing may become persistent and accessible (i.e. comparable to central route processing) when the subject is exposed to more cues (Petty & Cacioppo, 1986). However, the number of subjects accessing the module three or more times per treatment group was insufficient for reliable analysis. Thus, the association between the number of times subjects were exposed to source credibility/appearance (cues) and attitude change could not be evaluated.

Approximately 79% of subjects who viewed the module provided feedback (Appendix P). In general, comments regarding the module were quite favorable. Subjects felt the module was informative, interesting, and well organized. Topics of

particular interest included: a) appropriate intervention techniques when dealing with issues of “weightism,” b) increased awareness/insight regarding body size diversity, c) use of the module as a professional resource, and d) use of the Internet to communicate educational programs. Select student comments pertaining to these topics are provided below.

A. Information pertaining to size discrimination (“weightism”) in the school setting and suggestions regarding appropriate intervention techniques were found particularly helpful, as indicated by the following subject comments:

“I thought the classroom activities were the most beneficial. I know that there is a stereotype for obese children but I couldn't think of ways to combat it so being able to see the ideas in the module was very helpful.”

“.....The suggestions for teachers will be very helpful to me when I am in my own classroom. I am doing a field experience right now, and I have seen some of this sort of discrimination/teasing at play. I have a better idea of what to do to remedy the situations now.”

“The module brought up many interesting points that I had never taken into consideration regarding obesity. It has given me a broader understanding of how to deal with situations of obesity in the classroom and has also made me more sensitive to these issues especially in regards to children.”

B. Many subjects indicated that they gained greater insight about issues of body size diversity and increased awareness regarding “weightism.” Such observations are indicated by the following comments:

“I was amazed that I did not know much of the information presented and that I had bought into a lot of myths that I now know are incorrect. The manner this information was presented was excellent.”

“.....I thought I knew more than I did about some aspects of obesity. I have done nutrition education and never focused on what one looks like, but instead, the benefits of healthy eating and eating all things in moderation.....”

“I already teach a unit about self acceptance and work strongly on self-esteem. This gave me added knowledge and an understanding about obesity that I didn't have before. We often think of diversity in so many areas, and I had never thought about it with body size. That has changed.”

C. Subjects also indicated that they thought the module was a valuable nutrition education resource and that it would be especially useful for teacher, and student teacher, sensitivity training. Subject comments depicting these observations include the following comments:

“I think this is useful for sensitivity training for teachers. I learned quite a few facts I was unaware of. It was nicely done and easy to understand. I enjoyed the personal stories that were added and the graphs that were also used to visualize a point. I feel the module was easy and would use it again if I needed information on this topic.”

“It is important for teachers to learn about good nutrition to help educate the students in their class to lead them on a better lifestyle. I thought this was helpful because it gave me a new perspective on how to deal with nutrition in the classroom! :)”

“I think this would be a great module to use for sensitivity training. This is a sensitive issue that many teachers tend to ignore, with this module they will have the resources to help the issue.”

D. Subjects also appreciated the use of Web-based distance education. Internet advantages such as convenience and compatibility with learning styles (i.e. self-paced) were particularly attractive. Select comments regarding this observation included the following:

“I enjoyed this method of learning and would be interested in updating my knowledge in this way in the future. I appreciated that I could work on the module at my own pace and on my own schedule.....”

Suggestions to improve the Web-site included points such as: a) the inclusion of handouts (i.e. “fact sheets”), b) increasing the size of font/images and c) shortening the length of the module. Some subjects also indicated some technical difficulties such as an inability to view the videos due to incompatible software (Appendix P).

Research Question (A)

Are attitudes of obesity among prospective and certified teachers affected by: 1) a Web-based intervention promoting size acceptance, 2) credibility of the presenter, and 3) appearance of the presenter?

To answer the above question the following null hypotheses (H) were tested:

H1 : Mean attitude scores (i.e. pre, post, follow-up) are not different within groups.

H2: Mean attitude scores (i.e. pre, post, follow-up) are not different between the control and treatment group 1, intervention with no exposure to source credibility or appearance.

H3: Mean attitude scores are not different between treatment groups 1 and 2, intervention with exposure to a highly credible source and no exposure to appearance.

H4: Mean attitude scores are not different between treatment groups 2 and 3, intervention with exposure to a highly credible “non-fat” source.

H5: Mean attitude scores are not different between treatment groups 2 and 4, intervention with exposure to a highly credible “fat” source.

Antifat Attitudes Test Analysis

Based on univariate repeated measures analysis for Antifat Attitudes Test means (i.e. all groups combined), a within group effect ($p=0.002$) was noted. Post hoc analysis indicated a significant difference between pretest to posttest and pretest to follow-up for treatment groups 1 through 4 (Table 4.4). Negative attitudes of obesity decreased as a result of exposure to the educational module and a more favorable change in attitude was sustained six weeks post intervention.

Table 4.4 Antifat Attitudes Test¹: Time by Treatment Mean Scores² (\pm SE)

| | n | Pretest mean | Posttest mean | Follow-up mean |
|---|----|-----------------------------------|-----------------------------------|-----------------------------------|
| Control group | 51 | 1.939 (\pm 0.069) | 1.954 (\pm 0.074) | 1.923 (\pm 0.075) |
| Module ³ | 50 | 1.949 (\pm 0.070) ^a | 1.724 (\pm 0.072) ^b | 1.721 (\pm 0.070) ^b |
| Module + source credentials ³ | 50 | 1.928 (\pm 0.062) ^a | 1.729 (\pm 0.075) ^b | 1.747 (\pm 0.077) ^b |
| Module + credible "non-fat" source ⁴ | 53 | 1.995 (\pm 0.067) ^a | 1.815 (\pm 0.074) ^b | 1.871 (\pm 0.078) ^b |
| Module + credible "fat" source ⁵ | 54 | 1.912 (\pm 0.062) ^a | 1.753 (\pm 0.079) ^b | 1.785 (\pm 0.075) ^b |

1 Antifat Attitudes Test (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997)

2 Scores ranged from 1=definitely disagree to 5=definitely agree with negative attitudes of obesity

3 $p=0.000$ negative attitudes decreased from pre to post, pre to follow-up for treatment groups 1 and 2

4 $p=0.000$ negative attitudes decreased from pre to post, $p=0.006$ pre to follow-up for treatment group 3

5 $p=0.000$ negative attitudes decreased from pre to post, $p=0.004$ pre to follow-up for treatment group 4

Note: Means followed by a, b illustrate time by group (control and four treatment groups) interactions.

Although there was no between group effect for test means, a significant difference was detected between groups for individual test items using an adjusted p value ($p=0.000$). As shown in Table 4.5, AFAT item differences occurred between the control group and treatment group receiving the module only for items 1, 22, and 42. In the treatment group, mean scores for item 22 decreased between pretest to posttest ($p=0.000$) and pretest to follow-up ($p=0.000$). Mean scores for items 1 and 42 decreased

between pretest to posttest ($p=0.000$). Viewing the Web-based educational module resulted in decreased negative attitudes pertaining to item 1, 22, and 42 compared to subjects not exposed to the module.

Table 4.5 Antifat Attitudes Test¹ Items: Time by Treatment Mean Scores² (\pm SE)

| Time of group testing | Item 1 - There's no excuse for being fat. ³ | Item 22 - If fat people really wanted to lose weight they could. ⁴ | Item 42 - Fat people should be encouraged to accept themselves the way they are. ³ |
|-----------------------------|--|---|---|
| Control Pretest | 2.412 (\pm 0.149) | 3.294 (\pm 0.126) | 2.373 (\pm 0.148) |
| Control Posttest | 2.412 (\pm 0.138) | 3.275 (\pm 0.140) | 2.431 (\pm 0.141) |
| Control Follow-up | 2.235 (\pm 0.142) | 3.196 (\pm 0.116) | 2.471 (\pm 0.141) |
| Treatment group 1 Pretest | 2.440 (\pm 0.157) ^a | 3.660 (\pm 0.133) ^a | 2.720 (\pm 0.159) ^a |
| Treatment group 1 Posttest | 1.640 (\pm 0.130) ^b | 2.840 (\pm 0.163) ^b | 1.840 (\pm 0.132) ^b |
| Treatment group 1 Follow-up | 1.820 (\pm 0.117) ^{ab} | 2.735 (\pm 0.172) ^b | 2.200 (\pm 0.148) ^{ab} |

1 Antifat Attitudes Test (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997)

2 Scores ranged from 1=definitely disagree to 5=definitely agree with negative attitudes of obesity

3 $p=0.000$ negative attitudes decreased from pre to post

4 $p=0.000$ negative attitudes decreased from pre to post and pre to follow-up

Note: Means followed by a, b illustrate time by treatment (group one) interactions (compared to control group).

Subscale Analysis

The Anti-Fat Attitudes Test subscales include: social/character disparagement (Subscale 1), physical/romantic unattractiveness (Subscale 2), and weight control/blame (Subscale 3). No significant difference between or within groups for subscale 1 or subscale 2 was noted. However, there were significant differences within subjects for subscale 1 ($p=0.000$) and subscale 2 ($p=0.000$) (i.e. all groups combined). Post hoc analysis indicated

differences between pretest to posttest ($p=0.000$) and pretest to follow-up ($p=0.000$) for both subscales (Table 4.6).

Table 4.6 Antifat Attitudes Test, Social/Character Disparagement and Physical/Romantic Unattractiveness¹: Time by Treatment Mean Scores² (\pm SE)

| | Pretest mean score | Posttest mean score | Follow-up mean score |
|-------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Subscale 1 ³ | 1.728 (\pm 0.092) ^a | 1.453 (\pm 0.119) ^b | 1.469 (\pm 0.121) ^b |
| Subscale 2 ⁴ | 2.756 (\pm 0.098) ^a | 2.234 (\pm 0.134) ^b | 2.232 (\pm 0.132) ^b |

1 Antifat Attitudes Test, Subscales 1 and 2 (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997)

2 Scores ranged from 1=definitely disagree to 5=definitely agree with negative attitudes of obesity

3 $p=0.000$ negative attitudes pertaining to social/character disparagement decreased from pre to post and pre to follow-up

4 $p=0.000$ negative attitudes pertaining to physical/romantic unattractiveness decreased from pre to post and pre to follow-up

Note: Means followed by a, b illustrate time by combined group (control and 4 treatment groups) interactions.

Significant differences were observed between ($p=0.032$) and within ($p=0.000$) groups for subscale 3 (weight control and blame). Post hoc analysis (i.e. between group) indicated a significant interaction between the module only group and the control group from pre to post and pre to follow-up ($p=0.000$). Post hoc analysis (i.e. within group) indicated differences between pretest to posttest within treatment groups 1-4 ($p=0.000$) and pretest to posttest within the control group ($p=0.001$). A significant difference was also observed between pretest to follow-up within the control and treatment groups ($p=0.000$) and posttest to follow-up within treatment group 3 ($p=0.006$) (Table 4.7). Although mean differences were noted for all groups over time, the magnitude of differences were greater for the treatment groups than the control group (i.e. mean pretest to posttest and pretest to follow-up).

Table 4.7 Antifat Attitudes Test, Weight Control/Blame¹: Time by Treatment Mean Scores² (\pm SE)

| | n | Pretest mean | Posttest mean | Follow-up mean |
|---|----|------------------------------------|-------------------------------------|-------------------------------------|
| Control group | 51 | 2.673 (\pm 0.216) ^{af} | 2.442 (\pm 0.274) ^{bff} | 2.342 (\pm 0.295) ^{bff} |
| Module ³ | 50 | 2.718 (\pm 0.238) ^{af} | 1.946 (\pm 0.278) ^{bff} | 1.926 (\pm 0.272) ^{bff} |
| Module + source credentials ³ | 50 | 2.689 (\pm 0.244) ^a | 1.991 (\pm 0.325) ^b | 2.016 (\pm 0.314) ^b |
| Module + credible “non-fat” source ⁴ | 53 | 2.771 (\pm 0.213) ^a | 2.098 (\pm 0.282) ^b | 2.260 (\pm 0.291) ^c |
| Module + credible “fat” source ⁵ | 54 | 2.669 (\pm 0.219) ^a | 2.006 (\pm 0.266) ^b | 2.113 (\pm 0.254) ^b |

1 Antifat Attitudes Test, Subscale 3 (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997)

2 Scores ranged from 1=definitely disagree to 5=definitely agree with negative attitudes of obesity

3 $p=0.001$ negative attitudes pertaining to weight control/blame decreased from pre to post, $p=0.000$ pre to follow-up for treatment groups 1 and 2

4 $p=0.000$ negative attitudes pertaining to weight control/blame decreased from pre to post, pre to follow-up, $p=0.006$ post to follow-up for treatment group 3

5 $p=0.000$ negative attitudes pertaining to weight control/blame decreased from pre to post and pre to follow-up for treatment group 4

Note: Means followed by a, b, c illustrate time by group (control and four treatment groups) interactions. Means followed by “f or ff” illustrate the between group (control and treatment group 1) differences.

Association of Antifat Attitudes Test (AFAT) with Demographics

Based on analysis of the covariate “gender” with AFAT means (i.e. all groups combined), a between subjects effect ($p=0.000$) was seen. Post hoc analysis indicated that women had lower AFAT pretest means \pm standard error (1.888 ± 0.031), posttest means \pm standard error (1.734 ± 0.036), and follow-up means \pm standard error (1.743 ± 0.035) compared to males at pretest, posttest, and follow-up (2.242 ± 0.076 , 2.126 ± 0.087 , 2.177 ± 0.086 , respectively) ($p=0.000$). Although gender was associated with AFAT, it was not associated with differences in AFAT means over time by group.

Based on analysis of the covariate “college status” with AFAT means (i.e. all groups combined), a between subjects effect ($p=0.001$) was seen. Post hoc analysis

indicated first year students had more negative attitudes toward obesity, as depicted by the higher AFAT pretest means (2.310 ± 0.105), compared to juniors (1.950 ± 0.053) ($p=0.027$), seniors (1.819 ± 0.065) ($p=0.001$), graduate students (1.782 ± 0.121) ($p=0.012$), and teachers (1.872 ± 0.092) ($p=0.021$). First year students had higher AFAT posttest means (2.148 ± 0.119) compared to seniors (1.697 ± 0.074) ($p=0.017$), graduate students (1.569 ± 0.137) ($p=0.018$), and teachers (1.685 ± 0.104) ($p=0.041$). First year students also had higher AFAT follow-up means (2.160 ± 0.120) compared to seniors (1.691 ± 0.075) ($p=0.012$), graduate students (1.580 ± 0.138) ($p=0.019$), and teachers (1.615 ± 0.105) ($p=0.008$) (Appendix O, Table O.2). Although “college status” was associated with AFAT means, it was not associated with differences in AFAT means over time by group.

Based on analysis of the covariate “enrollment in an Exceptionality course” with AFAT means (i.e. all groups combined), a between subjects effect ($p=0.010$) was seen. Post hoc analysis indicated subjects who had taken an Exceptionality course, or were currently enrolled in such a course, had more positive attitudes as seen in the lower AFAT pretest means \pm standard error (1.842 ± 0.051), posttest means \pm standard error (1.682 ± 0.058), and follow-up means \pm standard error (1.692 ± 0.058) compared to subjects at pretest, posttest, and follow-up who had not taken a course (1.996 ± 0.037 , 1.858 ± 0.042 , 1.868 ± 0.042 , respectively) ($p \leq 0.015$). Although “enrollment in an Exceptionality course” was favorably associated with AFAT, it was not associated with differences in AFAT means over time by group.

Based on analysis of the covariates “college major,” “enrollment in a college nutrition course” (i.e. all groups combined) and “review method for the module text” (i.e. treatment groups 1-4) with AFAT means, no subject or group effect was observed. Antifat Attitudes Test means were not associated with college major or whether subjects had taken, or were currently enrolled in, a nutrition course. Antifat Attitude Test means were also not associated with how subjects reviewed the module (from a computer monitor, a printed copy, or a combination of both print and screen).

Response to Testing H1 – 5

It appears that attitudes of obesity among prospective and certified teachers were positively influenced by the Web-based intervention promoting size acceptance. Attitude change was maintained six weeks post intervention. The module particularly influenced attitudes pertaining to weight control/blame as compared to the control group. No between group effect (i.e. treatment groups 1 and 2, treatment groups 2 and 3, and treatment groups 2 and 4) for AFAT means suggests that negative attitudes of obesity decreased regardless of the presenter’s credibility or appearance. Therefore, the hypothesis #1 was rejected and it was concluded that negative attitudes decreased within treatment groups. The researcher failed to reject hypotheses #2 through #5 and it was concluded that mean attitude scores were not different between groups.

Although the covariates “gender,” “college status,” and “enrollment in an exceptionality course” were associated with AFAT means, they did not explain mean differences over time by group. Thus, differences in AFAT means over time by group (i.e. treatment groups 1-4) were not confounded by the covariates tested.

Research Question (B)

Does subject body mass index (BMI) affect attitude change towards obesity? Are attitudes among subjects with a low or high BMI influenced by appearance of source (i.e. a credible “non-fat” versus a credible “fat” source)?

To answer the above questions the following null hypotheses were tested:

H6: Differences in mean attitude scores (i.e. pre, post, follow-up) are not explained by subject BMI (i.e. continuous or categorical measure).

H7: Differences in mean attitude scores (i.e. pre, post, follow-up) are not explained by subject BMI (i.e. categorical measure) when exposed to a credible “non-fat” or credible “fat” source.

Association of Antifat Attitudes Test (AFAT) with Body Mass Index (BMI)

Based on analysis of the covariate BMI (i.e. continuous variable) with AFAT means (i.e. all groups combined), no effect for subject or group over time was observed. When BMI was categorized as low (<20), desirable (≥ 20 and <25), and high (≥ 25), covariate analysis of BMI with AFAT means also indicated no effect for subjects or groups over time.

Response to Testing H6 – 7

The lack of covariate BMI effect occurred throughout the range of BMI values. Subject BMI (i.e. continuous or categorical measure) did not appear to explain differences in mean attitude scores indicating that attitude change was independent of BMI. Subject BMI (i.e. low or high) also did not explain differences in mean attitude scores relative to treatment exposure (i.e. credible “non-fat” or credible “fat” source). Thus, attitudes of

subjects with a low or high BMI were not influenced by either the credible “non-fat” source or the credible “fat” source. The researcher failed to reject hypotheses #6 and #7 and it was concluded that BMI was not associated with AFAT means.

Research Question (C)

As hypothesized by the Elaboration Likelihood Model (ELM), does rating/perception of the source influence attitude change?

To answer the above question, the following hypotheses were tested:

H8: Mean attitude scores (i.e. posttest and follow-up) are not explained by the subjects’ rating/perception of a credible source (i.e. without exposure to appearance).

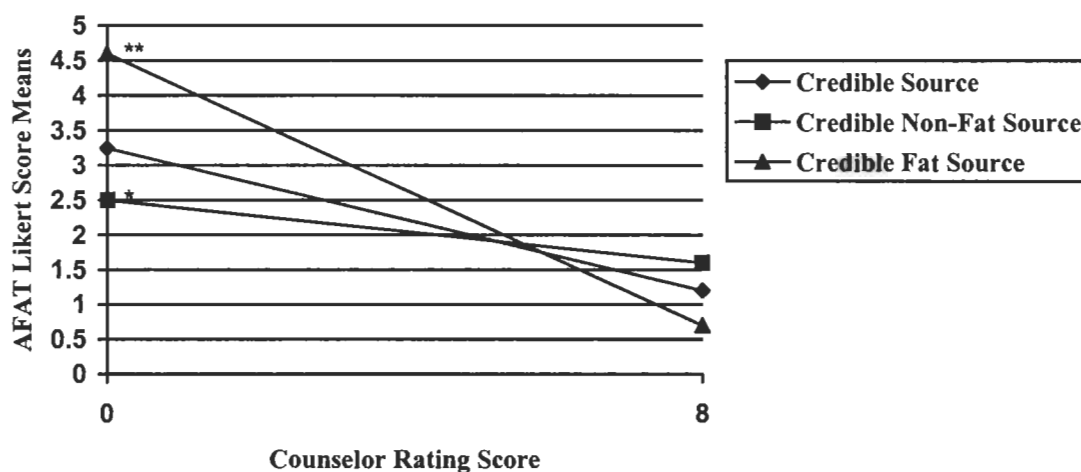
H9: Mean attitude scores (i.e. posttest and follow-up) are not explained by the subjects’ rating/perception of a credible “non-fat” source.

H10: Mean attitude scores (i.e. posttest and follow-up) are not explained by subjects’ rating/perception of a credible “fat” source.

Association of Antifat Attitudes Test (AFAT) with Counselor Rating Form (CRF)

Based on analysis of the covariate Counselor Rating Form (CRF) mean with AFAT means (i.e. treatment groups 2, 3, and 4), a time by treatment interaction ($p=0.031$) was seen. No covariate effects were observed at pretest but adjustments differed between groups at posttest and follow-up. As shown in Figure 4.1, the covariate adjustment at posttest differed between treatment group 3 (-.126) (i.e. intervention with exposure to a credible “non-fat” source) and treatment group 4 (-.485) (i.e. intervention with exposure to a credible “fat” source) ($p= 0.009$).

Figure 4.1 Effect of Counselor Rating¹ on Antifat Attitudes Test (AFAT)² Posttest Mean Scores: Treatment Group Slopes



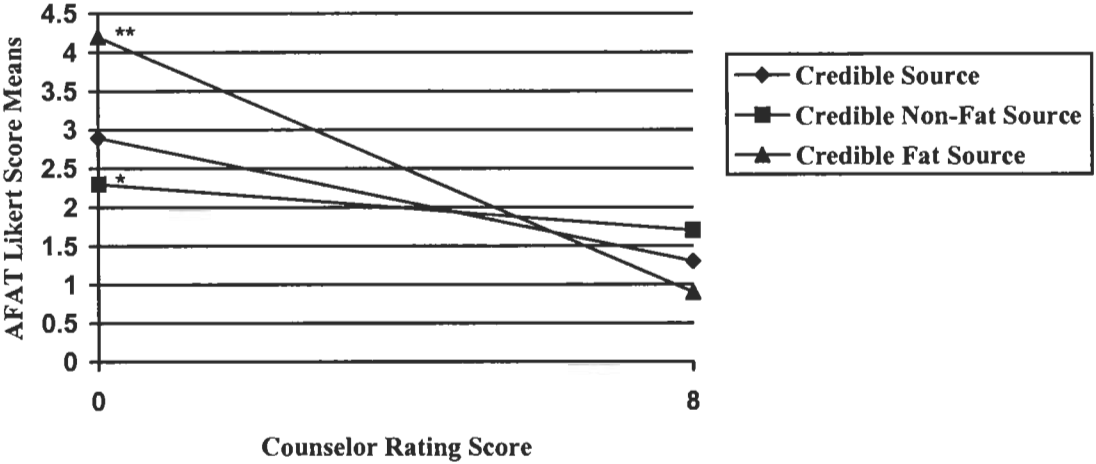
1 Counselor Rating Form (Barak & LaCrosse, 1975), mean scores ranged from 1 to 7, bipolar rating

2 Antifat Attitudes Test (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997), scores ranged from 1=definitely disagree to 5=definitely agree with negative attitudes of obesity

Key: *,** illustrates differences between group slopes (i.e. credible “non-fat” source and credible “fat” source).

As shown in Figure 4.2, the covariate adjustment at follow-up differed between treatment group 3 (-.075) (i.e. intervention with exposure to a credible “non-fat” source) and treatment group 4 (-.400) (i.e. intervention with exposure to a credible “fat” source) ($p=0.025$) (Appendix O, Table O.3). Perception of the credible “fat” source had a more favorable effect on attitudes of obesity at posttest compared to perception of the credible “non-fat” source. This difference was maintained at follow-up.

Figure 4.2 Effect of Counselor Rating¹ on Antifat Attitudes Test (AFAT)² Follow-up Mean Scores: Treatment Group Slopes

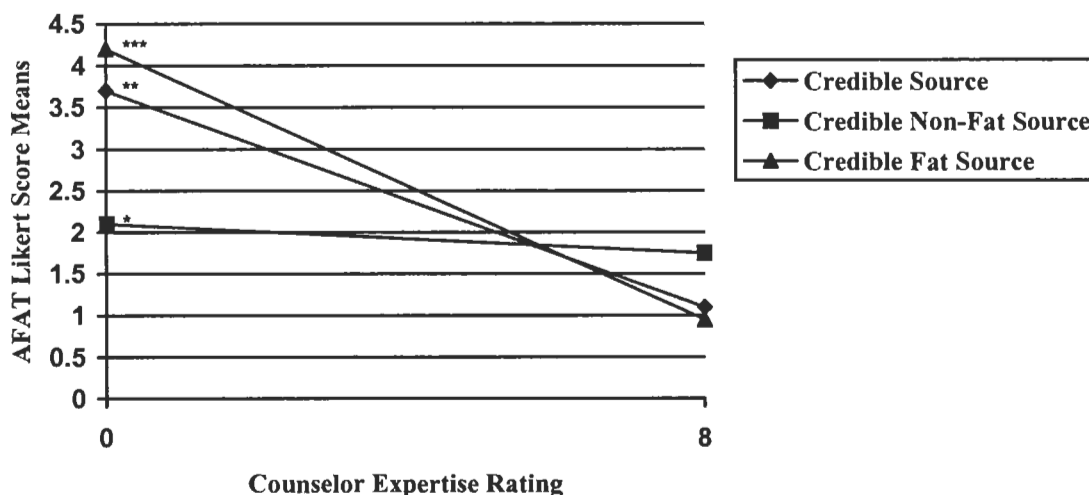


1 Counselor Rating Form (Barak & LaCrosse, 1975), scores ranged from 1 to 7, bipolar rating
 2 Antifat Attitudes Test (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997), scores ranged from 1=definitely disagree to 5=definitely agree with negative attitudes of obesity
 Key: *,** illustrates differences between group slopes (i.e. credible “non-fat” source and credible “fat” source).

Subscale Analysis

Subscales for the Counseling Rating Form instrument include expertness (Subscale 1), trustworthiness (Subscale 2), and attractiveness (Subscale 3). Based on analysis of the covariate CRF subscale 1 with AFAT means (i.e. treatment groups 2, 3, and 4), a time by treatment interaction (p=0.015) was seen. No covariate effects were observed at pretest but adjustments differed between groups at posttest and follow-up. As shown in Figure 4.3, the covariate adjustment at posttest differed between treatment group 2 (-.329) (i.e. intervention with exposure to a credible source and no exposure to appearance) and treatment group 3 (-.043) (i.e. intervention with exposure to a credible “non-fat” source) (p=.017) and treatment group 3 and treatment group 4 (-.399) (i.e. intervention with exposure to a credible “fat” source) (p= 0.003).

Figure 4.3 Effect of Counselor Expertise Rating¹ on Antifat Attitudes Test (AFAT)² Posttest Mean Scores: Treatment Group Slopes



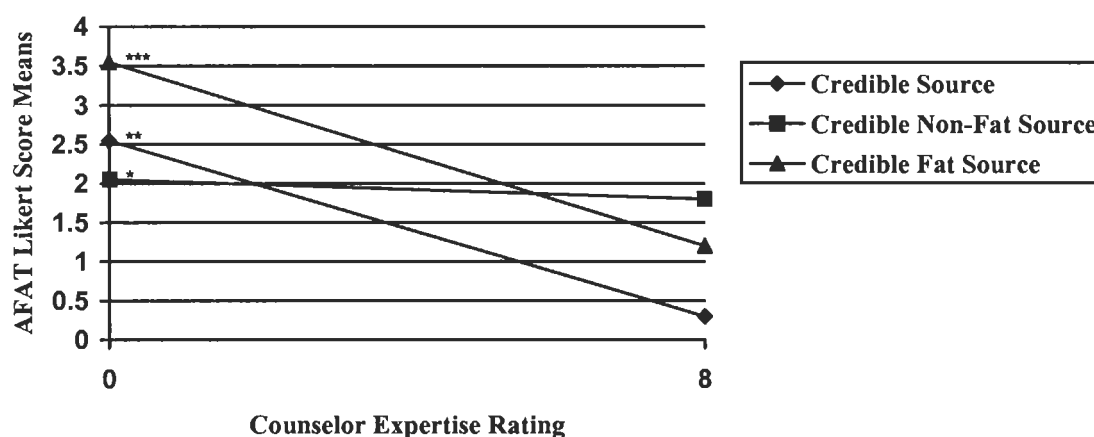
1 Counselor Rating Form (Barak & LaCrosse, 1975), scores ranged from 1 to 7, bipolar rating

2 Antifat Attitudes Test (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997), scores ranged from 1=definitely disagree to 5=definitely agree with negative attitudes of obesity

Key: *,** illustrates differences between group slopes (i.e. credible “non-fat” source and credible source without appearance) *,*** illustrates differences between group slopes (i.e. credible “non-fat” source and credible “fat” source).

As shown in Figure 4.4, the covariate adjustment at follow-up differed between treatment group 2 (-.279) (i.e. intervention with exposure to a credible source and no exposure to appearance) and treatment group 3 (-.026) (i.e. intervention with exposure to a credible “non-fat” source) ($p=.045$) and treatment group 3 and treatment group 4 (-.295) (i.e. intervention with exposure to a credible “fat” source) ($p= 0.034$) (Appendix O, Table O.4). Expertise rating of the credible source without appearance and the credible “fat” source had a more favorable effect on attitudes of obesity at posttest compared to expertise rating of the credible “non-fat” source. This difference was maintained at follow-up.

Figure 4.4 Effect of Counselor Expertise Rating¹ on Antifat Attitudes Test (AFAT)² Follow-up Mean Scores: Treatment Group Slopes



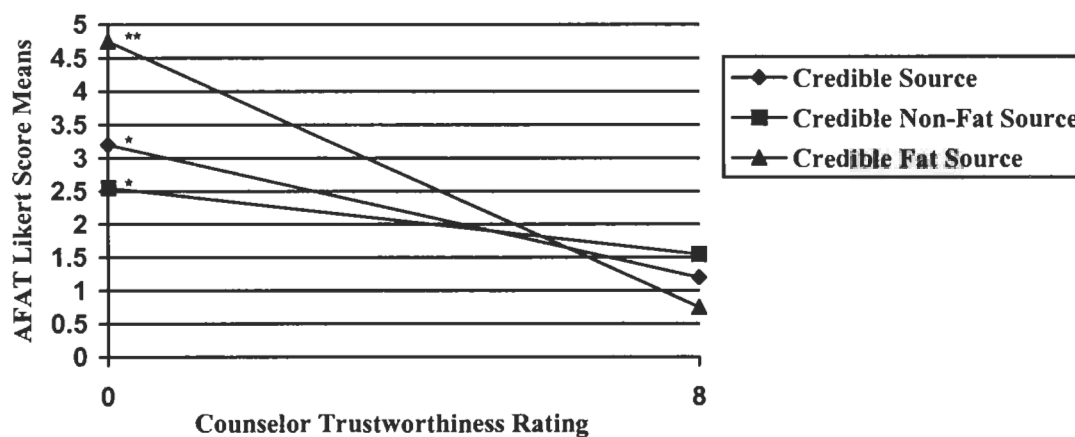
1 Counselor Rating Form (Barak & LaCrosse, 1975), scores ranged from 1 to 7, bipolar rating

2 Antifat Attitudes Test (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997), scores ranged from 1=definitely disagree to 5=definitely agree with negative attitudes of obesity

Key: *,** illustrates differences between group slopes (i.e. credible “non-fat” source and credible source without appearance), *,*** illustrates differences between group slopes (i.e. credible “non-fat” source and credible “fat” source).

Based on analysis of the covariate CRF subscale 2 with AFAT means (i.e. treatment groups 2, 3, and 4), a time by treatment interaction ($p=0.004$) was seen. No covariate effects were observed at pretest but adjustments differed between groups at posttest and follow-up. As shown in Figure 4.5, the covariate adjustment at posttest differed between treatment group 2 (-.256) (i.e. intervention with exposure to a credible source and no exposure to appearance) and treatment group 4 (-.503) (i.e. intervention with exposure to a credible “fat” source) ($p=.030$) and treatment group 3 (-.120) (i.e. intervention with exposure to a credible “non-fat” source) and treatment group 4 ($p=0.005$).

Figure 4.5 Effect of Counselor Trustworthiness Rating¹ on Antifat Attitudes Test (AFAT)² Posttest Mean Scores: Treatment Group Slopes



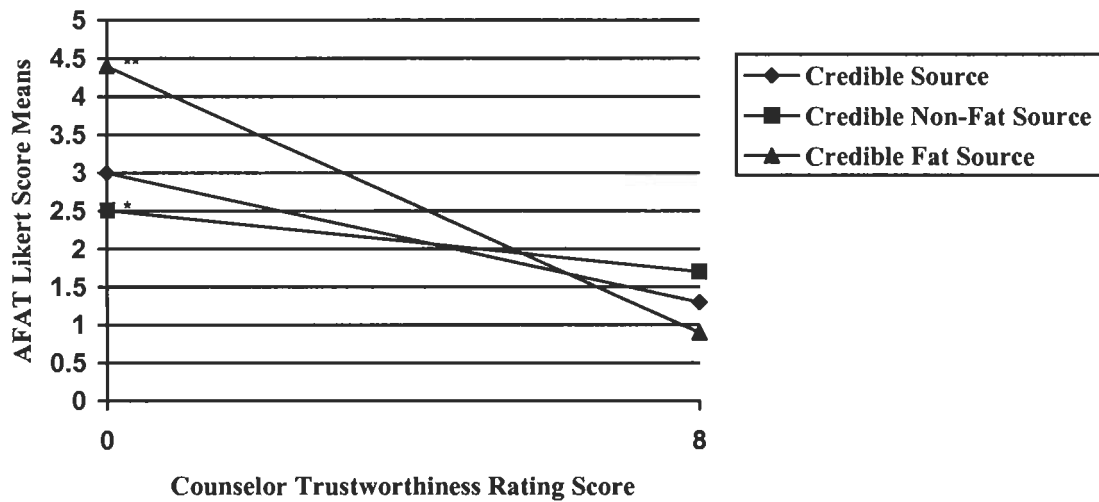
1 Counselor Rating Form (Barak & LaCrosse, 1975), scores ranged from 1 to 7, bipolar rating

2 Antifat Attitudes Test (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997), scores ranged from 1=definitely disagree to 5=definitely agree with negative attitudes of obesity

Key: *,** illustrates differences between group slopes (i.e. credible “non-fat” source and credible “fat” source, and credible source without appearance and credible “fat” source).

As shown in Figure 4.6, the covariate adjustment at follow-up differed between treatment group 3 (-.103) (i.e. intervention with exposure to a credible “non-fat” source) and treatment group 4 (-.436) (i.e. intervention with exposure to a credible “fat” source) ($p = 0.019$) (Appendix O, Table O.5). Trustworthy rating of the credible “fat” source had a more favorable effect on attitudes of obesity at posttest compared to the trustworthy rating of the credible source without appearance and the credible “non-fat” source. The more favorable effect of the trustworthy rating of the credible “fat” source on attitudes, compared to the credible “non-fat” source, was maintained at follow-up.

Figure 4.6 Effect of Counselor Trustworthiness Rating¹ on Antifat Attitudes Test (AFAT)² Follow-up Mean Scores: Treatment Group Slopes



1 Counselor Rating Form (Barak & LaCrosse, 1975), scores ranged from 1 to 7, bipolar rating

2 Antifat Attitudes Test (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997), scores ranged from 1=definitely disagree to 5=definitely agree with negative attitudes of obesity

Key: *,** illustrates differences between group slopes (i.e. credible “non-fat” source and credible “fat” source).

Analysis of the covariate CRF subscale 3 with AFAT means (i.e. treatment groups 2, 3, and 4) indicated a within subjects effect ($p=0.004$). Post hoc analysis indicated a significant difference between pretest mean \pm standard error (1.949 ± 0.063) to posttest mean \pm standard error (1.773 ± 0.070) ($p=0.000$) and pretest mean to follow-up mean \pm standard error (1.804 ± 0.073) ($p=0.000$). As shown in Table 4.8, there was a negative correlation between CRF mean subscale 3 and AFAT pretest mean ($p=0.001$), posttest mean ($p=0.000$), and follow-up mean ($p=0.000$). A high rating of source attractiveness (i.e. treatment groups 2, 3, and 4) was associated with a decrease in negative attitudes of obesity. However, a lack of group effect indicated that the subjects’ perceived the attractiveness of the “non-fat” and “fat” source as comparable and both sources were associated with a favorable change in attitude means.

Table 4.8 Correlation of Rating of Counselor Attractiveness (CRFsub3)¹ Mean and Antifat Attitudes Test (AFAT)² Mean Scores for Treatment Groups 2³, 3⁴, & 4⁵

| | AFAT pretest mean ⁶ | AFAT posttest mean ⁷ | AFAT follow-up mean ⁸ |
|--------------|--------------------------------|---------------------------------|----------------------------------|
| CRFsub3 mean | -0.308 | -0.426 | -0.335 |

1 Counselor Rating Form, Subscale 3 (CRFsub3 mean) (Barak & LaCrosse, 1975)

2 Antifat Attitudes Test (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997)

3 Intervention with exposure to a credible source and no exposure to appearance

4 Intervention with exposure to a credible “non-fat” source

5 Intervention with exposure to a credible “fat” source

6 $p=0.001$ CRFsub3*AFAT pretest

7 $p=0.000$ CRFsub3*AFAT posttest

8 $p=0.000$ CRFsub3*AFAT follow-up

Comparative Analysis of Subscales

Univariate analysis of Counselor Rating Form subscales indicated a between group effect for subscale 3 ($p=0.037$). Post hoc analysis indicated a difference between treatment groups 2 and 3 ($p=0.035$) and treatment groups 2 and 4 ($p=0.019$). Subjects perceived the attractive qualities of the credible “non-fat” and “fat” source as comparable and both the credible “non-fat” and “fat” source were perceived as significantly more attractive than the credible source without exposure to appearance (i.e. treatment group 2).

Response to Testing H8 – 10

Favorable ratings for the credible source without exposure to appearance (i.e. treatment group 2) and the credible “fat” source (i.e. treatment group 4) were associated with a decrease in negative attitudes of obesity. In particular, expert and trustworthy qualities of the credible source without exposure to appearance and with exposure to the credible “fat” source were associated with favorable changes in attitude means. Subjects’

perception of source attractiveness was associated with a favorable change in attitude but perception of attractiveness did not differ between the “non-fat” and “fat” source.

Hypothesis #8 was rejected because mean attitude scores were partially explained by the subjects’ perception of the credible source. Since mean attitude scores were not explained by the subjects’ perception of the credible “non-fat” source, hypothesis #9 failed to be rejected. Hypothesis #10 was rejected because mean attitude scores were partially explained by the subjects’ perception of the credible “fat” source.

Research Question (D)

As hypothesized by the Elaboration Likelihood Model (ELM), is a Need for Cognition (NC) associated with a favorable change in attitude when exposed to a high quality persuasive message (educational module)?

To answer the above question, the following null hypothesis was tested:

H11: Differences in mean attitude scores (i.e. pre, post, follow-up) are not explained by the subjects’ Need for Cognition when exposed to a high quality persuasive message/educational module (indicating central route processing).

Association of Antifat Attitudes Test (AFAT) with Need for Cognition (NC)

Based on analysis of the covariate Need for Cognition (NC) mean (i.e. a measure of motivation) with AFAT means (i.e. all groups combined), a within subjects effect ($p=0.043$) was seen. A significant difference was observed between AFAT pretest mean \pm standard error (1.942 ± 0.062) to posttest mean \pm standard error (1.792 ± 0.069) ($p=0.000$) and pretest mean to follow-up mean (1.808 ± 0.070) ($p=0.000$). As shown in Table 4.9, there was a negative correlation between NC mean and AFAT pretest mean

($p=0.000$), AFAT posttest mean ($p=0.000$), and AFAT follow-up mean ($p=0.000$). Thus, a moderate Need for Cognition mean score was correlated with a decrease in negative attitudes of obesity. However, the lack of group effect indicated that the subjects' Need for Cognition was not associated with the persuasive message (i.e. treatment group 1).

Table 4.9 Correlation of Need for Cognition¹ (NC) Mean and Antifat Attitudes Test² (AFAT) Mean Scores

| | AFAT pretest mean ³ | AFAT posttest mean ⁴ | AFAT follow-up mean ⁵ |
|---------|--------------------------------|---------------------------------|----------------------------------|
| NC mean | -0.309 | -0.352 | -0.349 |

1 Need for Cognition Short Scale (Cacioppo & Petty, 1982)

2 Antifat Attitudes Test (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997)

3 $p=0.000$ NC*AFAT pretest

4 $p=0.000$ NC*AFAT posttest

5 $p=0.000$ NC*AFAT follow-up

Association of Need For Cognition (NC) with College Status

Based on analysis of the covariate “college status” with Need for Cognition mean (i.e. all groups combined), a between subject effect ($p=0.000$) was seen. Post hoc analysis indicated first year students had a lower NC mean \pm standard error (3.371 ± 0.139) compared to graduate students (4.060 ± 0.160) ($p=0.000$) and teachers (3.708 ± 0.122) ($p=0.020$). Sophomores had a lower NC mean \pm standard error (3.307 ± 0.085) compared to seniors (3.613 ± 0.086) ($p=0.014$), graduate students ($p=0.000$), and teachers ($p=0.005$). Juniors had a lower NC mean \pm standard error (3.484 ± 0.071) than graduate students ($p=0.000$) and seniors had a lower NC mean than graduate students ($p=0.011$) (Appendix O, Table O.6).

Response to Testing H11

Need for Cognition (NC) was not associated with differences in AFAT means relative to treatment (i.e. module) exposure providing evidence that central route processing was not used. Differences in NC means were partially explained by college status. Graduate students had a higher NC mean compared to the college status of others. The researcher failed to reject hypothesis #11 and it was concluded that attitude change did not occur via central route processing.

Research Question (E)

As hypothesized by the Elaboration Likelihood Model (ELM), is obesity knowledge, prior to the intervention, associated with a favorable change in attitude when exposed to a high quality persuasive message (i.e. educational module)? Does the Web-based educational module increase knowledge of obesity?

To answer the above questions, the following null hypotheses were tested:

H12: Differences in mean attitude scores (i.e. pretest, posttest, and follow-up) are not explained by the subjects knowledge of obesity (i.e. prior to the intervention), when exposed to a high quality persuasive message/educational module (indicating central route processing).

H13: Mean knowledge scores (i.e. pre, post, and follow-up) are not different between or within groups.

Association of Antifat Attitudes Test (AFAT) with Knowledge of Obesity (KOB)

Based on analysis of the covariate “pretest mean for KOB” (i.e. a measure of ability) with AFAT means (i.e. all groups combined), no subject or group effect was seen.

Short Obesity Knowledge Scale Analysis

Univariate repeated measures analysis KOB means (i.e. all groups combined) indicated a significant difference within subjects effect ($p=0.001$). Post hoc analysis indicated a significant difference between scored pretest \pm standard error (0.885 ± 0.017) to posttest \pm standard error (0.947 ± 0.018) ($p=0.000$). Although the test means for all treatment groups increased from pretest to posttest and pretest to follow-up, there was no significant difference between groups ($p=0.274$) or within groups ($p=0.144$) (Table 4.10).

Table 4.10 Knowledge of Obesity Test¹: Time by Treatment Mean Scores² (\pm SE)

| | n | Pretest mean | Posttest mean | Follow-up mean |
|------------------------------------|----|----------------------|----------------------|----------------------|
| Control group | 51 | 0.897 (\pm 0.037) | 0.868 (\pm 0.038) | 0.868 (\pm 0.031) |
| Module | 50 | 0.892 (\pm 0.043) | 1.027 (\pm 0.041) | 0.963 (\pm 0.041) |
| Module + source credentials | 50 | 0.915 (\pm 0.044) | 0.965 (\pm 0.042) | 0.972 (\pm 0.042) |
| Module + credible “non-fat” source | 53 | 0.882 (\pm 0.036) | 0.940 (\pm 0.038) | 0.903 (\pm 0.038) |
| Module + credible “fat” source | 54 | 0.843 (\pm 0.032) | 0.937 (\pm 0.043) | 0.878 (\pm 0.040) |

1 Short Obesity Knowledge Scale (Price, O’Connell, & Kukulka, 1985)

2 Scores included: 2=strongly agree, 1=slightly agree, and 0=uncertain

Although no significant difference was detected between group test means, a significant difference was detected between groups for individual test items using an adjusted p value ($p<0.001$). As shown in Table 4.11, KOB mean item differences occurred between the control and treatment group 1 (i.e. module only) for items 2 and 3. Mean item scores for treatment group 1 demonstrated an increase in knowledge between pretest to posttest for item 2 ($p=0.000$) and between pretest to posttest and pretest to follow-up for item 3 ($p=0.000$). The Web-based educational module increased knowledge pertaining to items 2 and 3 compared to subjects not exposed to the module.

Table 4.11 Knowledge of Obesity Test¹ Items: Time by Treatment Mean Scores² (\pm SE)

| | Item 2 - People from higher social class are less likely to be overweight than people of lower social status. ³ | Item 3 - Dieting over a long period of time causes a measurable decrease in the number of fat cells. ⁴ |
|-----------------------------|--|---|
| Control pretest | 0.392 (\pm 0.089) | 0.882 (\pm 0.130) |
| Control posttest | 0.353 (\pm 0.088) | 0.843 (\pm 0.132) |
| Control follow-up | 0.294 (\pm 0.076) | 0.804 (\pm 0.125) |
| Treatment group 1 pretest | 0.500 (\pm 0.104) ^a | 0.780 (\pm 0.125) ^a |
| Treatment group 1 posttest | 1.100 (\pm 0.132) ^b | 1.500 (\pm 0.115) ^b |
| Treatment group 1 follow-up | 0.640 (\pm 0.113) ^{ab} | 1.480 (\pm 0.119) ^b |

1 Short Obesity Knowledge Scale (Price, O'Connell, & Kukulka, 1985)

2 Scores included: 2=strongly agree, 1=slightly agree, and 0=uncertain

3 $p=0.000$ negative attitudes decreased from pre to post for test item 2, treatment group 1

4 $p=0.000$ negative attitudes decreased from pre to post and pre to follow-up for test item 3, treatment group 1

Note: Means followed by a, b illustrate time by treatment (group one) interactions (compared to control group).

Association of Knowledge of Obesity (KOB) with College Status

Analysis of the covariate “college status” and KOB means (i.e. all groups combined) indicated a between subjects effect ($p=0.002$). Post hoc analysis indicated that teachers had higher KOB pretest scores (1.024 ± 0.053) compared to juniors (0.846 ± 0.031) ($p=0.041$). Graduate students had higher KOB posttest scores (1.179 ± 0.074) compared to first year students (0.862 ± 0.064) ($p=0.015$), sophomores (0.909 ± 0.039) ($p=0.015$), and juniors (0.862 ± 0.033) ($p=0.001$) (Appendix O, Table O.7). Although “college status” was associated with Knowledge of Obesity means, it was not associated with differences in KOB means over time by group.

Response to Testing H12 – 13

Knowledge of Obesity (KOB), prior to the intervention, was not associated with differences in AFAT means relative to treatment (i.e. module) exposure providing evidence that central route processing was not used. Differences in Knowledge of Obesity means were partially explained by “college status.” Teachers had higher KOB pretest means and graduate students had higher KOB posttest means than undergraduate students. The researcher failed to reject hypothesis #12 and it was concluded that attitude change did not occur via central route processing.

Although the educational module significantly improved Knowledge of Obesity on select quiz items, no significant difference in test means was detected within or between groups. It was concluded that change in the Knowledge of Obesity Scale means (i.e. within subjects pretest to posttest) was independent of the treatments and therefore hypothesis #13 failed to be rejected.

Research Question (F)

As hypothesized by the Elaboration of Likelihood Model (ELM), do the following variables influence attitude change: module’s relevance to teaching, high personal interest in the topic of the module, ease of understanding the module, and distraction during review of the module?

To answer the above questions, the following null hypotheses were tested:

H14: Differences in mean attitude scores (i.e. pretest, posttest, and follow-up) are not explained by motivation variables (i.e. relevance or personal interest in the module) when exposed to a high quality persuasive message/educational module (indicating central route processing).

H15: Differences in mean attitude scores (i.e. pretest, posttest, and follow-up) are not explained by ability variables (i.e. ease of understanding module and distraction while reviewing the module) when exposed to a high quality persuasive message/educational module (indicating central route processing).

Association of Antifat Attitudes Test (AFAT) with Demographics

The Antifat Attitudes Test was analyzed using demographic data as a covariate to further evaluate message processing (i.e. central route). Based on analysis of the covariate “module relevance to teaching” (i.e. a motivation variable) with AFAT means (i.e. treatment groups 1-4), a within subjects effect was observed ($p=0.044$). A significant difference was noted between pretest \pm standard error (2.012 ± 0.186) to posttest \pm standard error (1.950 ± 0.210) ($p=0.000$) and pretest to follow-up \pm standard error (1.859 ± 0.213) ($p=0.000$). There was a negative association between “module relevance” and AFAT posttest means, as determined by parameter estimates (-0.230) ($p=0.001$). Thus, as perceived module relevance increased, negative attitudes of obesity decreased at posttest. However, the lack of group effect observed indicated that the subjects’ perception of module relevance was independent of treatment (i.e. module) exposure.

Analysis of the covariate “personal interest in the module” (i.e. a motivation variable) with AFAT means (i.e. treatment groups 1-4) indicated no subject or group effect. Analysis of the covariates “ease of understanding the module” (i.e. an ability variable) with AFAT means (i.e. treatment groups 1-4) and “distraction while reviewing module” (i.e. an ability variable) with AFAT means (i.e. treatment groups 1-4) also indicated no subject or group effect.

Response to Testing H14 – 15

Relevance and personal interest are recognized by the authors of the Elaboration Likelihood Model (ELM) as motivational variables (i.e. motivation to process a message). Although “relevance of the module” was a significant covariate, it did not explain differences in AFAT means relative to treatment (i.e. module) exposure. The covariate, “personal interest in the message topic,” was not associated with subject or group AFAT means. Since neither of the motivational variables (i.e. “relevance” or “interest in the topic”) were associated with differences in AFAT means relative to treatment (i.e. module) exposure, it was concluded that central route processing was not used and hypothesis #14 failed to be rejected.

Ease of understanding a message and distraction while reviewing a message are recognized by the authors of the ELM as ability variables (i.e. ability to process a message). However, neither variable was associated with differences in AFAT means relative to treatment (i.e. module) exposure providing further evidence that central route processing was not used. The researcher failed to reject hypothesis #15 and it was concluded that attitude change did not occur via central route processing.

DISCUSSION

Overview

The purpose of this study was to examine change in attitudes of obesity among education students and teachers as a result of viewing a Web-based educational module on size acceptance. The Elaboration Likelihood Model (ELM) was used to evaluate the processes of attitude change and the effect of source appearance (“non-fat” and “fat”) and credibility on attitudes.

The sample included undergraduate and graduate students from the University of Maine System as well as schoolteachers from the New England area (n=258). Most of the subjects were women majoring in health/fitness education or elementary education. Four treatment groups were used to evaluate the effect of the module (control versus module only), credibility (module versus credible source without image), credible “non-fat” source (credible source without image versus credible “non-fat” source), and credible “fat” source (credible source without image versus credible “fat” source) on attitude change. Change in attitude relative to subject BMI was also investigated.

It was hypothesized that subjects would demonstrate negative attitude towards obesity and that participation in the Web-based educational module would result in favorable attitude change. However, on average, subjects mostly disagreed with negative attitudes about fat at the pretest. Exposure to the module increased disagreement with negative attitudes about fat and the more favorable change in attitude was sustained six-weeks post intervention. It was also hypothesized that source credibility and the “non-fat” source would have favorable effects on attitudes independent of subject BMI. Contrary to what was hypothesized, more favorable attitudes were explained in part by

the subjects' perception of the credible "fat" source, independent of BMI, than the credible "non-fat" source. Finally, it was hypothesized that attitude change would occur via central route processing. However, moderate scores (i.e. Need for Cognition and Short Obesity Knowledge Scale) and source effects (i.e. credibility and "fat" appearance) indicated moderate elaboration (co-occurrence of central and peripheral route processing) rather than central route processing.

Effect of the intervention on attitudes and knowledge, source effects, support for the ELM, methodological considerations, need for teacher training, implications, limitations, and future research directions will be examined. Only effects (i.e. group) ($p < .05$) that address the stated research questions will be discussed.

Effect of the Educational Intervention

Attitude

Numerous investigators have suggested that providing education programs to address the complex etiology and treatment of obesity, as well as the dietary and psychosocial effects associated with the stigma of obesity, may help to decrease negative attitudes (DeJong, 1980, Harris & Smith, 1982, Harris, Waschull, & Walters, 1990, Maroney & Golub, 1992, Sobal, 1991). The current results clearly support these findings. The time by treatment (groups 1-4) interaction for Antifat Attitude Test means suggests that the educational module, and its message of size acceptance, was effective in reducing negative attitudes of obesity long-term (i.e. six-weeks post intervention).

The module was particularly effective in reducing negative attitudes related to weight control and blame, as compared to the control group. The latter effect may be

attributed to the module's in-depth discussion about the complex etiology of obesity including uncontrollable etiological factors (i.e. genetic and biochemical influences) and the lack of current success in obesity treatment. It appears that when people are more informed about the complex etiology of obesity, including the genetic and biochemical influences, they are less likely to blame the obese individual for his/her weight. Wiese, Wilson, Jones, and Neises (1992) reported similar findings when using an educational intervention to reduce obesity stigma among first-year medical students. The intervention topics included various issues of obesity (i.e. etiological factors and stereotypes) and was effective in a) reducing blame toward obese people for their condition (i.e. increasing awareness of the uncontrollable etiological factors of obesity) and b) decreasing negative stereotypes associated with obesity.

Several researchers have demonstrated that society's discriminatory behavior toward obese people is primarily based on the assumption that body weight is controllable (Crandall & Biernat, 1990, Crocker, Cornwell, & Major, 1993, DeJong, 1980, Garner & Wooley, 1991, Hecht, 1990, Maddox, Back, & Liederman, 1968, National Education Association, 1994). Subsequently, obese people are derogated less when obesity is viewed as an uncontrollable condition (i.e. due to a thyroid disorder) than when obesity is considered controllable (i.e. acquired through deviant behavior) (DeJong, 1980). A comparison of Antifat Attitudes Test item mean scores between the control and module only group indicated that the module was particularly effective in 1) decreasing the perception that body weight can be controlled voluntarily (i.e. "There's no excuse for being fat" and "If fat people really wanted to lose weight they could"), and 2) increasing a

sense of size acceptance (i.e. “Fat people should be encouraged to accept themselves the way they are”).

Knowledge

The educational module was ineffective in improving subject performance on the Short Obesity Knowledge Scale. This finding may have been attributed to relatively detailed questions regarding different aspects of obesity and the volume of information delivered via the module. For instance, several participants indicated that the module was quite thorough and lengthy, suggesting that subjects may have been overwhelmed by the amount of information delivered (Appendix P, comment #78).

Although there was no time by group interaction for quiz means, mean scores for select quiz items (i.e. between the control and module only group) indicated that the module was effective in increasing knowledge about the relationship between socioeconomics and rate of obesity and the physiological effects of dieting (i.e. “People from higher social class are less likely to be overweight than people of lower social status” and “Dieting over a long period of time causes a measurable decrease in the number of fat cells,” respectively). Improved knowledge regarding these select items may have been attributed to the large attractive graphics that were used to convey this specific information.

Effect of Source

Although the average rating of the sources (i.e. credible source without image, credible “non-fat,” and credible “fat”) were favorable, the credible “fat” source and the

perceived expertise of the credible source without appearance were more associated with decreased negative attitudes of obesity than the credible “non-fat” source. Based on these findings, attitudes of obesity were more favorably influenced by a source who demonstrates expertise in the field of nutrition as well as one who appears “fat,” compared to one who appears “non-fat.” These variables (i.e. source credibility and a “fat” appearance) also more favorably influenced attitudes long-term (i.e. six-weeks post intervention) compared to the credible “non-fat” source.

Since stigmatizing acts toward obese individuals are highly prevalent (Crandall & Biernat, 1990), it was hypothesized that the credible “non-fat” source would be more persuasive than the credible “fat” source and/or the “non-fat” source would be perceived as more attractive than the “fat” source. However, subjects were not only favorably influenced by the credible “fat” source but source attractiveness was perceived the same for the “fat” and “non-fat” source. McKee and Smouse (1983) reported similar findings in that subjects rated the attractiveness of high status obese and non-obese counselors the same (with facial attractiveness controlled across conditions). However, subjects rated the low status obese counselor less expert and trustworthy than the low status non-obese counselor. The author concluded that a high counselor status may “mask” negative stereotypes associated with obesity. Thus, it is possible that perceived attractiveness of the obese source (same as the non-obese source) may have been influenced by the perception of source expertise and/or the persuasive appeal of the size acceptance message.

Perceived expertise and trustworthiness of the presenter influenced attitudes in that: a) expertise of the credible source without appearance and the credible “fat” source

influenced attitudes more favorably than expertise of the credible “non-fat” source, and b) trustworthiness of the credible “fat” source more favorably influenced attitudes than trustworthiness of the credible source without appearance and the credible “non-fat” source. Thus, it appears that nutrition expertise and trust from a “fat” source more favorably influence attitudes of obesity (posttest and follow-up) than a source who is of average weight (i.e. “non-fat”). Presence of the “fat” source may have lent further credibility to the size acceptance message and may have persuaded subjects to believe that he or she can trust the source to know what she is talking about because she is “fat.” Keating (2001) reported similar findings in her dissertation in which the effects of speaker characteristics (i.e. body weight and expertise) on the processing of an anti-dieting message were evaluated. Although the overweight speakers (expert and nonexpert) were not perceived as more persuasive than the underweight speakers (expert and nonexpert), the overweight speakers were rated as more trustworthy and favorable than the underweight speakers. The researcher concluded that speaker credibility is enhanced when “a speaker’s weight-related message is congruent with a speaker’s appearance” (pg. 84).

Since researchers have noted negative attitudes of obesity among both obese and non-obese subjects (Counts, Jones, Frames, Jarvie, & Strauss, 1986, Glenn & Chow, 2002, Maiman, Li Wang, Becker, & Finlay, 1979), it was hypothesized that subject BMI would not influence attitude change and that the credible source without an image and the credible “non-fat” source would have favorable effects on attitudes independent of subject BMI (i.e. negative views of obesity would be shared by desirable, non-obese, and obese subjects and that attitude change would occur regardless of body size). Although

the findings indicated that subject BMI did not influence attitude change, the credible “fat” source and perceived expertise of the credible source without appearance influenced attitudes more favorably than the credible “non-fat” source. The lack of association between attitude change and BMI (i.e. time by group interaction) suggests that the persuasive effect of the credible “fat” source and the perceived expertise of the credible source without appearance is the same for individuals with low, desirable, and high BMI.

Although researchers have studied subject perception of an obese source in relation to subject body size (i.e. obese versus non-obese) (Counts, Jones, Frames, Jarvie, & Strauss, 1986), counselor perception of obese and non-obese clients in relation to the body size of the counselor (Young & Powell, 1985), and counselor perception of obese clients based on perceived versus actual body weight of counselor (McArthur & Ross, 1997, Oberrieder, Walker, Monroe, & Adeyanju, 1995), no known researcher has examined the effect of source appearance (i.e. obese versus non-obese) on attitude change in relation to subject BMI.

Counts, Jones, Frames, Jarvie, and Strauss (1986) demonstrated a favorable perception toward a picture of a facially attractive obese source (i.e. perceived as a student teacher) among both obese and non-obese subjects (students). However, attitude change was not investigated, source expertise was not specified, and the subjects’ perception of a facially attractive obese source was not compared to a facially attractive non-obese source. Thus, it is not known if the subjects would have perceived the obese and non-obese source differently or if perceived authority/expertise of the source may have confounded subject perception of source body size. Although the authors concluded that facial attractiveness of an obese source may negate the negative stereotypes

associated with obesity, it is not likely that facial attractiveness of the obese source used in this study confounded source effect (i.e. since facial attractiveness was controlled for the “non-fat” and “fat” source).

Support for the Elaboration Likelihood Model (ELM)

Authors of the ELM stipulate that when a person has predominantly favorable thoughts about an advocated position, a strong message will be relatively successful in eliciting desirable attitude change (O’Keefe, 1990c, Petty & Cacioppo, 1986). Although researchers have reported that schoolteachers demonstrate less favorable views toward obese children compared to non-obese children (National Education Association, 1994, Puhl & Brownell, 2001, Quinn, 1987, Schroer, 1986, Strauss, Smith, Frame, & Forehand, 1985), the current findings were that subjects had relatively favorable attitudes toward obesity at the pretest. Based on the ELM, it appears that the favorable change in attitudes was attributed to the favorable thoughts expressed by subjects at the pretest and the strong size acceptance message.

Attitude change via central route processing requires a high degree of motivation and ability to process a persuasive message. Current findings were moderate to high scores for motivation (Need for Cognition, relevance, and personal interest in the module) and ability (Obesity Knowledge, ease of understanding the module, and distraction while reviewing the module) variables. Mean scores for Need for Cognition and Short Obesity Knowledge Scale measured mid-range. Personal interest and relevance of the module (motivation) were rated relatively high and ease of understanding the module and

distraction were rated moderate (ability). These findings indicated that subjects did not demonstrate a high degree of motivation and ability.

Covariate analysis of motivation and ability variables with Antifat Attitudes Test means indicated no time by group interaction. No association of the motivation and ability variables with the educational module (treatment group 1) indicated the variables were unrelated to message scrutiny. Since motivation and ability variables failed to predict attitude change as a result of message scrutiny, it is concluded that attitude change did not occur via central route processing. According to the theorists, attitude change via central route processing is difficult to achieve since the message recipient must not only be motivated to attend to and think about the message presented but also have the ability to process the message. At the same time, the message arguments must elicit favorable cognitive responses (i.e. arguments must be perceived as compelling), which are stored in long-term memory (Petty & Cacioppo, 1981d).

The current findings also suggest that it is unlikely that attitude change occurred via peripheral route processing since time by group (treatment group 1) interactions indicated that attitude change occurred as a result of processing the message rather than response to peripheral cues (i.e. source expertise and/or attractiveness or message length and/or number of arguments). Further evidence of non-peripheral route processing is the persistence of attitude change (i.e. six-weeks posttest) observed among all treatment groups over time. Persistence of attitudes is recognized by researchers as attitudes that endure over time (Petty & Cacioppo, 1989, Petty, Haugtvedt, & Smith, 1995). Persistence of attitude change as a result of cognitive activity, versus peripheral cues, has been demonstrated by several researchers (Chaiken, 1980, Boninger, Brock, Cook,

Gruder, & Romer, 1990, Lassiter, Pezzo, & Apple, 1993). Although the “exact decay functions of attitude changes induced by the central versus the peripheral routes are not known” (Petty & Cacioppo, 1986, p. 175), researchers have demonstrated support for the elaboration-persistence hypothesis with attitudes assessed at times ranging from 2 to 20 weeks (Boninger, Brock, Cook, Gruder, & Romer, 1990, Chaiken, 1980, Downing, 1994).

Although the present findings do not appear to support either central (high elaboration) or peripheral (low elaboration) route processing, the findings do support moderate elaboration (i.e. co-occurrence of peripheral and central route processing). Moderate elaboration is based on the premise that high and low elaboration represent extremes on an elaboration continuum. The authors of the ELM indicate that the point along the continuum is determined by how motivated or able a person is to evaluate the central merits of the message (i.e. degree of elaboration) (O’Keefe, 1990c, Petty & Wegener, 1999). Thus, the lower the elaboration (i.e. less ability and/or motivation to process the message), the more peripheral processing accounts for variance in attitude formation (i.e. peripheral cues have a larger impact on persuasion) and the higher the elaboration (i.e. more ability and/or motivation to process the message), the more central processing accounts for variance in attitude formation (i.e. persuasive message or arguments have a greater impact on persuasion) (O’Keefe, 1990c, Petty, 1994).

Although moderate elaboration has been studied less than elaboration at the extreme ends of the continuum (Petty & Wegener, 1998), the theorists propose that under moderate conditions people use source factors to determine whether the message is worth thinking about, that is to determine the extent of message processing (Kirby, Ureda, Rose,

& Hussey, 1998, Petty & Cacioppo, 1986, Tesser, & Shaffer, 1990, Petty, Unnava & Strathman, 1991). For instance, when topic relevant knowledge is uncertain, characteristics of the message source (i.e. expertise, trustworthiness) help to determine whether or not a message is worth careful scrutiny. Thus, a person may reason that it is more worthwhile to evaluate a strong message presented by an expert than a non-expert (Heesacker, Petty, & Cacioppo, 1983, Petty & Cacioppo, 1986, Petty, Heesacker, & Hughes, 1997). Tesser and Shaffer (1990) stated that:

“When either the motivation or the ability for systematic processing is intermediate (or uncertain), recipients carefully scrutinize the message (and are persuaded more by strong arguments than by weak ones) only if the peripheral cues available to them (e.g. high source expertise) make it seem worthwhile to do so” (p. 511).

Based on the current findings, the credible “fat” source (treatment group 4), and perceived expertise and trustworthiness, more favorably influenced attitudes of obesity (posttest and follow-up) compared to the credible “non-fat” source. The perceived expertise of the credible source without appearance (treatment group 2) also influenced attitudes (posttest and follow-up) more favorably than the credible “non-fat” source. Based on moderate elaboration, it appears that source credibility and a “fat” appearance may have influenced attitude change by increasing attention to the size acceptance message.

Methodological Considerations

The Internet was used as the primary communication medium for this study. The Internet is a valid medium to conduct research (Krantz, Ballard, & Scher, 1997) and

demonstrates numerous strengths including the opportunity to: a) administer questionnaires/surveys to specific populations (Hewson, Laurent, & Vogel, 1996), b) access large sample sizes (Hewson, Laurent, & Vogel, 1996, Pasveer & Ellard, 1998), c) save time and money in the administration of instruments (Pasveer & Ellard, 1998, Schmidt, 1997), and d) reduce data entry errors (Pasveer & Ellard, 1998).

Use of the Internet as a medium to change attitudes is not a new concept. It has demonstrated considerable success in advertising, marketing, communicating political advocacy, and promoting public relation campaigns (Duthler, 2001). However, based on review of the literature, research evaluating attitude change using the ELM on the Internet has been conducted only once prior to this study. Duthler (2001) in his dissertation, examined the effect of high peripheral cue complexity (i.e. use of a considerable amount of graphics, clip art, and color) and low peripheral cue complexity (i.e. use of a white background, with black text and no graphics or color) with high and low issue involvement subjects (i.e. high versus low personal relevance of the message) using strong or weak messages. As predicted by the ELM, high issue involvement subjects were not affected by peripheral cue complexity but were affected by strength of the message. Based on these findings, it appears that even sophisticated peripheral cues delivered via the World Wide Web influence attitude change similar to cues not delivered via the Internet, and that the ELM can be easily adapted to the Internet and maintain some of its predictability.

Use of the Internet was particularly beneficial for this study. It enabled the researcher to: a) randomly recruit an adequate sample size from numerous college campuses and schools within the New England area, that would have otherwise been

prohibitive, b) communicate with subjects via e-mail (i.e. for purposes of enrollment, instruction, and technical assistance when needed), c) access subject accounts from any computer with Internet connection, and d) download all data into files eliminating possible transfer error. Internet use also enabled subjects to participate in the study from the convenience of their home, office, or school and they could complete the module at their own pace. Such benefits were evident in the comments of several subjects (Appendix P, comments #63, #66, #68, #70).

Use of the Internet also ensured subject anonymity, reducing the effects of demand characteristics (i.e. the need to please the experimenter or pressure to conform to social norms) (Hewson, Laurent, & Vogel, 1996, Pasveer & Ellard, 1998), which was especially important due to the sensitive nature of obesity attitudes. Maintaining experimenter anonymity also helped to prevent possible confounding effects due to different biosocial attributes (e.g. body size, sex, age, race) (Hewson, Laurent, & Vogel, 1996). Subjects were also able to complete the surveys without any time constraints. As noted by one subject, such flexibility was particularly appreciated (Appendix P, comment #69).

A final advantage to Internet use was the opportunity to demonstrate the integration of education and technology for learning purposes. Although it is reported that many teacher training programs greatly value such integration (Turner, 1989), many teachers are only taught how to use the technology and are not adequately trained in how to use the technology to teach students (Kearsley, 1998). The Web-based module was an example of how to integrate technology and education for teachers and prospective teachers.

Need for Teacher Training

Weight-related stigmatization occurs in the elementary and junior high school more than any other setting (Neumark-Sztainer, Story, & Faibisch, 1998, Neumark-Sztainer, Story, & Harris, 1999). As the incidence of childhood obesity continues to increase (Briggs, Safaii, & Lane Beall, 2003, Racette, Deusinger, & Deusinger, 2003) and “weightism” in our society fails to decrease (Garner & Wooley, 1991), the serious consequences associated with fat phobia are likely to get worse, particularly in the school setting. In fact, Latner & Stunkard, 2003 found that the stigmatization of obesity by children has increased significantly over the past 40 years.

Based on these challenges, it is imperative that teachers’ communicate healthy lifestyles to their students and create an environment that fosters an appreciation for all aspects of diversity (Harris, 1983, Latner & Stunkard, 2003). By communicating the size acceptance paradigm, teachers may help deter fat phobia and disordered eating (i.e. dieting behaviors) among students, and at the same time discourage further increase in the incidence of childhood obesity (Higgins & Gray, 1999, Miller & Jacob, 2001). Unfortunately, few educators are well informed on the subject of diversity and childhood obesity. In fact, many teachers do not even recognize diversity as including issues of body size and shapes (Jalongo, 1999) or recognize the seriousness of “weightism” (Harris, 1983, Jalongo, 1999). Qualitative data (i.e. subject comments) seems to support these same observations (Appendix P, comments #22, #25, #30, #53, #59, #60).

Unfortunately, myths and misinformation about weight control and obesity are rampant. Subsequently, it is critical that teachers and student teachers have access to reliable sources of nutrition information. However, consistent with other published

findings (Jalongo, 1999, O'Dea & Abraham, 2001), nutrition information was obtained from magazines by more than half of the subjects (i.e. 52%) and from peer-reviewed journals by less than a quarter of the subjects (i.e. 20.5%). Furthermore, only half of the subjects had taken or were currently enrolled in a college nutrition course suggesting that many subjects had no formal nutrition background.

O'Dea and Abraham (2001) recently reported the lack of sound nutrition information among home economics and physical education majors (n=216) in regard to the nutritional needs of adolescents, weight control, and fad diets. For instance, subjects advised overweight students ages 11-14 to lose weight by: a) choosing only low-calorie food (97% of subjects), b) going on a strict weight-reducing diet (85% of subjects), c) cutting out all between meal snacks (67% of subjects), d) weighing yourself every day (37% of subjects), and e) talking to your pharmacist about diet products (11% of subjects). Subjects also demonstrated inappropriate eating behaviors, body image distortion, and use of dangerous weight loss methods (i.e. vomiting, laxative abuse, and cigarette smoking). The authors concluded that more training is needed to address both instructional and personal weight-related issues.

Despite the fact that teachers lack adequate training in nutrition, prospective teachers from elementary through high school value training in health education (Wood, 1996). Based on current findings (i.e. qualitative data), it appears that prospective and current teachers are eager to obtain information regarding weight issues and they recognize the importance of such information (Appendix P, comments #17, #21, #24, #27, #34, #38, #40, #54, #56).

Implications

The current findings demonstrated the effectiveness of a Web-based educational module, on size acceptance, in increasing relatively favorable attitudes of obesity.

Theorists recognize that attitudes are “capable of guiding behavioral, cognitive, and affective responses” (Petty, Unnava, & Strathman, 1991, p. 242). Thus, it is possible that more favorable attitudes of obesity among teachers may facilitate improved responses in the classroom in regard to issues of “weightism,” size acceptance, healthy eating, and physical activity. Improvements such as these can have profound effects on children’s health and their development.

Pre and inservice training on size acceptance can also help teachers communicate sound nutrition information to children, foster healthy role model behaviors, and increase awareness to the psychosocial aspects of childhood obesity. Based on current findings, such training programs should take into consideration the presenter’s credentials and body weight. The favorable influence of the credible “fat” presenter on attitudes of obesity suggests that sensitivity training programs on size acceptance should include a nutrition expert who is fat. Thus, efforts should be made to include above average weight experts to deliver such programs.

The lack of course work in nutrition reported by subjects, use of less reliable sources of nutrition information, and subject comments (Appendix P, comment #23) indicated a strong need for nutrition education. At the same time, the qualitative data (i.e. student comments) suggested that subjects greatly appreciated the module content and indicated an interest to obtain more information (i.e. lesson plans and handouts). These findings demonstrate a need for existing education curriculums to incorporate objectives

that address issues of healthy eating/lifestyles, body weight regulation, and size acceptance. Such awareness will help prevent the spread of “weightism,” deter bullying in the school system, and foster good nutrition and healthy lifestyles.

The findings demonstrated that the Internet provided a viable medium to deliver nutrition education and that most subjects were receptive to its use. Consideration should be given to utilizing the Internet for sensitivity training, particularly among working professionals who seem to appreciate its convenience. Use of this medium would also provide the opportunity to reach an unlimited number of professionals.

The data provides further evidence that the Internet can also be successfully used for research purposes. In fact, this is the first known study in persuasion research to rely entirely on the Internet for data collection, subject recruitment, and delivery of the intervention. The effectiveness of networked research demonstrated in this study should encourage other researchers to utilize the technology and its many advantages.

It is evident that the ELM provided an effective framework for nutrition education research. Application of the theory in other areas of nutrition should be considered as well as its use in nutrition education programming. The current study also contributes further support and understanding of moderate elaboration.

Limitations

Although covariate analysis of gender, school status, and enrollment in an Education Exceptionality course with Antifat Attitudes Test means did not demonstrate a time by group interaction, Antifat Attitudes Test means (i.e. pretest, posttest, and follow-up) were associated with these factors. For instance, more negative attitudes were

observed among: a) males than females, b) first year students than upper class/graduate students or teachers, and c) students who did not take an Education Exceptionality course compared to those who did take an Exceptionality course. Other researchers have reported similar findings that women have more favorable attitudes towards obesity than men (Glenn & Chow, 2002, Morrison & O'Connor, 1999) and individuals with more years of professional education have more favorable attitudes of obesity than those less educated (Bagley, Conklin, Isherwood, Pechiulis, & Watson, 1989, Glenn & Chow, 2002). Thus, it appears that the unequal distribution of males (15%) to females (85%) and subjects with varying amounts of professional education may have confounded attitude measurements and may explain the unexpected favorable attitudes of obesity observed at pretest (i.e. the majority of subjects were female students who were at the junior level or above). Furthermore, it appears that enrollment in an Exceptionality course also contributed to more favorable attitudes of obesity (as compared to those not enrolled), further confounding attitude measurements.

Researchers have reported that ethnicity also affects attitudes of obesity (Harris, Walters, & Waschull, 1991). Although a high degree of ethnic diversity was not characteristic of the region where the sample was drawn, a measure of ethnicity would have allowed for the evaluation of possible confounding effects. Furthermore, without representation of other racial groups and/or people from other geographic locations, the generalizability of these findings is unknown. Since researchers have noted that Mexican Americans and African Americans do not idealize thinness like Euro-Americans do (Morrison & O'Connor, 1999) and speculate that people residing in small Northern communities may have less negative views of obese people compared to those who reside

in larger metropolitan areas (Glenn & Chow, 2002), the present findings have limited external validity.

Researchers have also indicated that athletes tend to demonstrate unfavorable attitudes towards obesity (Brook & Tepper, 1997). Although there was no association between Antifat Attitudes Test means and college major (i.e. health/fitness education), a specific measure of sports involvement would also have allowed for the evaluation of possible confounding effects.

External validity may also have been threatened due to the self-selection of subjects. It is likely that many subjects participated in the study due to a personal interest in the topic or interest in course credit or continuing education units. Therefore, survey responses may not be indicative of all teachers in the New England area and/or all student teachers within the University System.

Although it is evident from the time by treatment group interactions (i.e. treatment group one) that the subjects processed the message, it is also evident that performance on the Short Obesity Knowledge Scale did not significantly increase after completion of the module (i.e. no time by treatment group interaction). It is uncertain if the lack of effect was due to an overwhelming amount of information in the module and/or if the instrument was not specific enough to the message content. Furthermore, researchers have reported a low internal consistency and stability reliability (i.e. test-retest) for the instrument, which has been attributed to the large differences in item difficulty (Harris, Waschull, & Walters, 1990) and the low number of test items, respectively (Price, O'Connell, & Kukulka, 1985). Thus, it is possible that the development of an instrument

specific to the module may more accurately indicate ability of the subject to process the message.

The time by control group interaction (i.e. pretest to posttest and pretest to follow-up) that was observed for Antifat Attitudes Test Subscale 3 may have been attributed to contamination of the control group. Since subjects from the University System campuses were randomly assigned to the control or treatment groups (i.e. one campus was not designated as a control group), it is possible that students enrolled in a treatment group may have inadvertently exchanged or shared information with students in the control group. Although this may have biased results pertaining to the control group, the present design was necessary in order to maintain randomness and a statistically adequate number of subjects per group.

Petty and Cacioppo (1986) have noted that repetitive assessment can encourage subjects to either commit to their attitudinal positions or rationalize their reported attitudes. For instance, greater attitude change has been observed among no-pretest groups than pretested groups when subjects were exposed to a message that presents opposing points of view (bi-directional) (i.e. the subject commits to his/her opinion when confronted with an opposed argument). However, it is presumed that pretest conditions do not influence attitudes when subjects are exposed to a uni-directional message that is non-counterattitudinal (i.e. the subject is in agreement with), since the argument supports the subjects' initial commitment (Lana, 1967). Since the current findings indicated that subjects demonstrated favorable attitudes of obesity at pretest, it is quite possible that the effects of attitude change were not attenuated by the pretest conditions. However, the qualitative data (Appendix P, comments #76, #79) suggests that the repeated measures

design may have caused some subjects to rationalize their attitudes, thus influencing their responses.

Future Directions

Based on current findings, the module was effective in improving **relatively** favorable attitudes of obesity among the sample studied (i.e. teachers and students teachers). However, it is uncertain whether the module would be persuasive (i.e. perceived as a strong argument) when subjects have relatively unfavorable attitudes of obesity or if the module would be persuasive among subjects in other fields of study (i.e. other than education). For instance, it is presumed that a counterattitudinal message is likely to evoke unfavorable thoughts but that elaboration direction can be changed (i.e. toward a more favorable direction) when the arguments are perceived as strong (O'Keefe, 1990c). Since negative attitudes of obesity have been reported among various professionals (i.e. health and fitness professionals) (Allon, 1973, Czajka-Narins & Parham, 1990, Hare & Price, 2000, Maroney & Golub, 1992, Sobal & Devine, 1997), further research is needed to determine if the Web-based module, when appropriately modified, is effective in changing negative attitudes of obesity among these groups.

Furthermore, it is not known whether subjects with predominantly negative attitudes of obesity (i.e. counterattitudinal) would be favorably persuaded by the credible "fat" source or if facial attractiveness of the "fat" source may confound the source effect when attitudes are negative. For instance, researchers have reported that facial attractiveness may negate negative stereotypes associated with obesity (Counts, Jones, Frame, Jarvie, & Strauss, 1986). However, it is evident from the current findings that

attitudes were influenced by the size of the source, independent of facial attractiveness, when thoughts were proattitudinal. Thus, further research should be conducted to examine if size of the source favorably influences negative attitudes of obesity while controlling for facial attractiveness.

Although researchers propose that subject perception of source expertise may mask the negative stereotypes associated with obesity (McKee & Smouse, 1983), this researcher did not examine the effect of a non-credible source on attitudes of obesity. Thus, it is not known whether a non-credible “fat” source would favorably influence attitudes of obesity when presenting a size acceptance message. Furthermore, if it is determined that a non-credible “fat” source is persuasive, is the non-credible “fat” source more persuasive than the non-credible “non-fat” source (i.e. is the message more persuasive when source body size is congruent with the message despite no expertise)? Further research is needed to differentiate the effect of source credibility (i.e. non-credible versus credible) and body size on attitudes of obesity when delivering a non-diet message.

Although computer assisted instruction has demonstrated effectiveness in facilitating learning and retention of health-related messages (Achterberg & Miller, 1995), further research should be designed to examine various styles of presenting the information in order to optimize cognitive processing of the message (i.e. smaller units presented on the Web, use of a hard copy or videotape). For example, researchers have reported that easily comprehended messages evoke the most attitude change when the message is videotaped and the least amount of attitude change when the message is communicated via print (Petty & Cacioppo, 1981e). Since the majority of subjects thought the module was easy to understand, communicating the module content with a

presenter who is credible and fat via a videotape may result in attitude change that is more favorable compared to other mediums.

Need for Cognition (motivational variable) and Knowledge of Obesity at pretest (ability variable) were associated with “college status.” The results indicated that teachers were more motivated and had a higher ability to process the message (module) than undergraduate students. Based on the ELM, higher motivation and ability indicate a greater likelihood of central route processing. Thus, processes of attitude change may be different among teachers than undergraduate students. It is difficult to ascertain if these differences may be attributed to professional status, years of education, or subjects’ age. Thus, further research should consider control for these variables in order to evaluate differences in message processing. Control for these variables would also help explain differences in attitudes of obesity based on “college status.”

Additional measures of motivation (i.e. personal relevance and interest in the topic of the persuasive message) and ability (i.e. ease of understanding the message and external distraction while reviewing the message) were evaluated as part of the demographic questionnaire (i.e. using a simple response format), primarily for exploratory purposes. Although the demographic data supported findings obtained from the tested instruments (i.e. Need for Cognition and Short Obesity Knowledge Scale), the development and testing of instruments that are specific to the persuasive message may provide further insight and understanding of the Elaboration Likelihood Model.

The current study suggests that moderate elaboration evokes long-term attitude change that may be comparable to central route processing. However, further research is needed to determine if the change is characteristic of other aspects of central route

processing such as resistance to counterpersuasive attempts, integration into the person's belief structure, and likeliness to influence or predict behavior (Eagly & Chaiken, 1993b, Petty, Heesacker, & Hughes, 1997).

CONCLUSION

Attitudes of obesity among education students and schoolteachers favorably changed as a result of viewing a Web-based module promoting size acceptance. Although subjects mostly disagreed with negative attitudes about fat at the pretest, exposure to the module increased disagreement particularly in regard to weight control/blame. The favorable change in attitudes was sustained six-weeks post intervention.

Attitudes were influenced more favorably by the credible “fat” source than the credible “non-fat” source (posttest and follow-up). Perceived expertise of the credible source without appearance and the credible “fat” source more favorably influenced attitudes (posttest and follow-up) compared to the credible “non-fat” source and perceived trustworthiness of the credible “fat” source more favorably influenced attitudes compared to the credible source without appearance (posttest) and the credible “non-fat” source (posttest and follow-up). Consistent with the size acceptance message, perceived attractiveness of the credible “non-fat” and “fat” source was the same and did not influence attitude change. Subject body mass index was not associated with attitudes of obesity and did not influence attitude change when exposed to a credible “non-fat” or credible “fat” source.

The Elaboration Likelihood Model (ELM) was used to evaluate attitude change processes. The findings support moderate elaboration and suggest that source credibility and a “fat” appearance may have increased attention to the size acceptance message.

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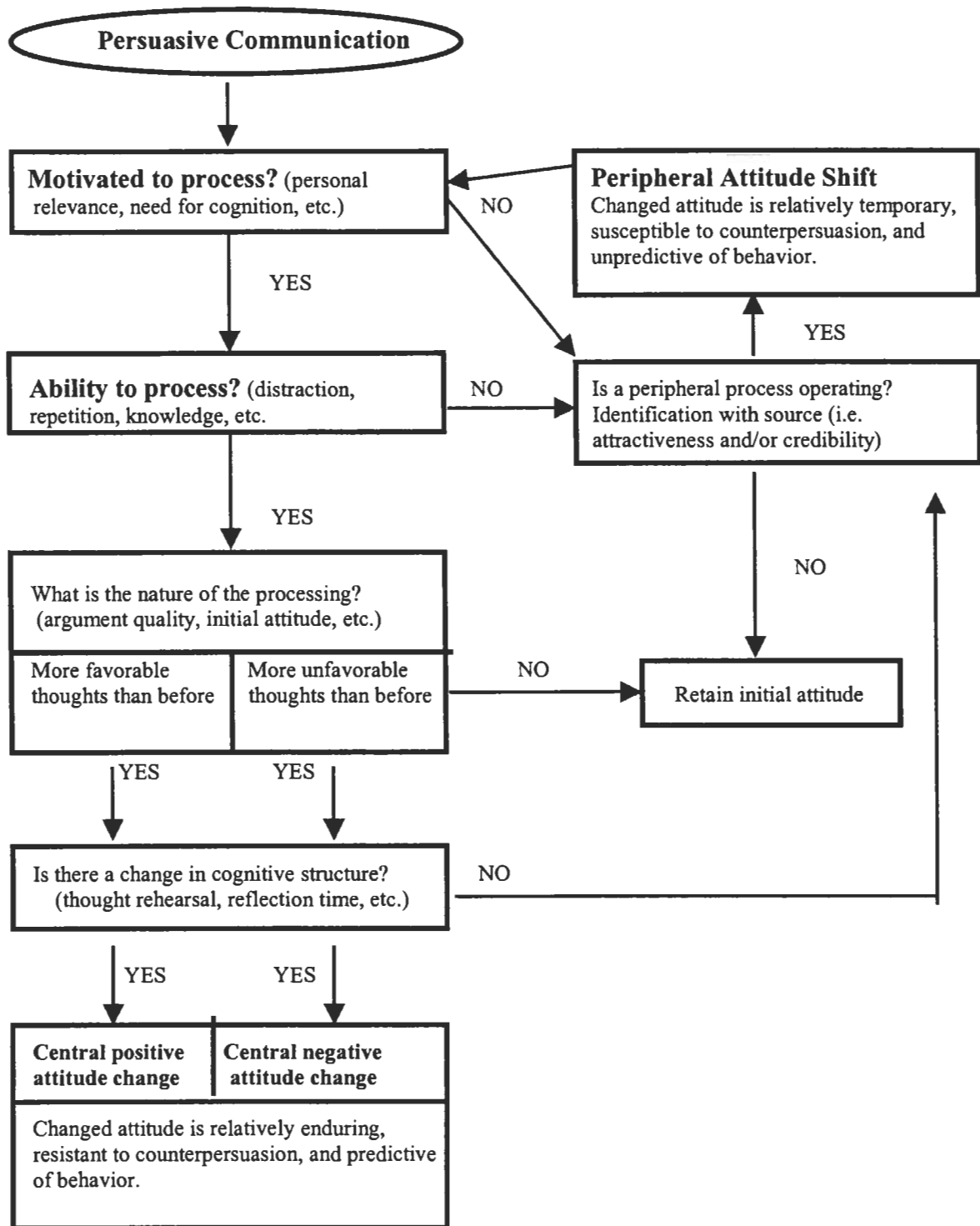
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APPENDICES

Appendix A
The Elaboration Likelihood Model

Figure A.1 The Elaboration Likelihood Model of Persuasion



Source: Petty, R. E. & Wegener, D. T. (1999). The elaboration likelihood model: Current status and controversies. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 41-72). New York, NY: The Guilford Press.

Appendix B
Recruitment Materials



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207-581-1621
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Human Nutrition
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March 9, 2001

Dear Professor,

I am a doctoral candidate in Food Science and Human Nutrition at the University of Maine conducting a research project within the University of Maine System, in Orono, Farmington, Fort-Kent, Machias, and Southern Maine. The project has received Human Subjects Review Committee approval.

The purpose of this study is for teachers, and prospective teachers, to learn about specific topics related to childhood obesity and to examine opinions of obesity. Childhood obesity is an especially pertinent issue to address due to its significant increase within the last couple of decades. The research project is designed as a Web-based educational module and it is currently available via WebCT. Graduate level and undergraduate students in education (elementary, secondary, health, physical, special education, and literacy) are eligible to participate.

Students will have the opportunity to review various issues pertaining to childhood obesity including: causal factors, nutritional and psychosocial effects, health factors, concerns regarding weight loss and body image, diversity issues, and excellent resource materials that can be used in the classroom.

I am asking for your help to announce this project and distribute the enclosed handouts at your next class meeting. Please find the enclosed "Introductory Script" to use when announcing the project to students. The handout for students provides further information regarding the project and how to begin participation. For participating, students' names will be included in raffle drawings for \$25.00. Many faculty have also offered course credit for this project in order to encourage participation.

The educational module will be available on the Internet until Friday, March 23, 2001. Based on the pilot test data, the project should take 1 ½ - 2 hours to complete (i.e. educational module, pretest, posttest, and six-week follow-up surveys). Your students will be enrolled in the project as soon as they forward an e-mail to the researchers indicating their request to participate.

Thank you in advance for your support of this project. It is greatly appreciated. If you have any questions, please contact either of us.

Sincerely yours,

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Introductory Script

(read by the course instructor)

Students.....

I would like to take this moment to inform you about a research project that is being conducted by researchers at the University of Maine. **Education and human development students at the University of Maine in Orono, Farmington, Fort-Kent, Machias, and the University of Southern Maine have been invited to participate.** The purpose of the study is to inform prospective and certified teachers about specific topics related to childhood obesity and to examine opinions about obesity. The educational module can be easily accessed from the Internet and it provides a valuable learning experience for prospective and certified teachers.

Participation in this study involves completion of the educational module as well as pretest, posttest, and six-week follow-up questionnaires. Your full participation entitles you to a raffle drawing for \$25.00 to L.L. Bean, Inc. **(and course credit per your discretion).** A \$25.00 gift certificate will be awarded to every twenty-fifth student whose name is randomly drawn. **(For course credit, I will _____).** **(If you would like to give course credit, please insert the amount of credit earned as a result of full participation).** Certified teachers may also receive Continuing Education Units (.5) for their participation in this project. However, it is important to note that eligibility for the raffle drawing and CEUs **(and course credit)** is possible **ONLY** upon completion of the module and all of the questionnaires. The module is expected to take you approximately one to two hours to complete. The pretest and posttest questionnaires will take you approximately 30 minutes to complete. The six-week follow-up questionnaire will take you approximately 10 minutes to complete. All of the questionnaires can be completed on-line and your responses will be confidential.

Your participation in this study is entirely voluntary and you can willingly terminate your participation at any time without penalty to your class grade and/or status. The researcher's e-mail address is provided in the handout that I will distribute. Please include your name, major, home address, course name/number and my name in the message. Thank you for your attention and I hope you enjoy this valuable learning experience!



Attention Students:

Would you like to be part of a research study?

Introduction

Hello, my name is Anne Hague. I am a doctoral candidate in Food Science and Human Nutrition at the University of Maine. My research project is designed as a Web-based educational module for individuals who work with children or plan to work with children in a professional capacity. The research addresses issues and opinions pertaining to obesity, specifically childhood obesity.

How do I qualify?

All education (elementary, secondary, health, physical, special education, art, music, etc.), human development, and health/fitness majors, at the graduate and undergraduate level, are invited to participate in this research project.

What can I learn?

The *Weighty Insights Teaching Module* is a Web-based educational module developed especially for teachers, prospective teachers, and others who intend to work with children. Issues addressed include:

I. Obesity Issues

- A. Prevalence**
- B. Causal factors**
- C. Physical health risks**
- D. Psychosocial effects**
- E. Weight loss efforts**

II. Diversity Issues

- A. School environment**
- B. Teacher's role**
- C. Intervention techniques**
- D. Classroom activities**
- E. Educational resources**

What are the benefits to participation in this project?

- An excellent learning experience.
- Possible course credit.
- Continuing Education Units (.5 CEU or five hours) for certified teachers.
- An opportunity to qualify for raffle drawings (a twenty-five dollar gift certificate to L.L. Bean, Inc. will be awarded to every 25 participants).
- Convenience of the WebCT format (provides "24/7" access).

What do my peers say about the project?

"I thought that the information contained in the teaching module was very informative and important information that everyone should read."

“This really hasn’t been an issue we’ve addressed concerning our future students, and I found it very helpful.”

“I have gained a wealth of knowledge from this experience and I am certain I will be able to use this information in the classroom. I think it is wonderful that this topic of obesity is being addressed and there is no better place to start than in the classroom.”

“The project is set up so neatly and well documented. Nice use of technology and traditional research.”

How long will it take?

The research project involves participation in the *Weighty Insights Teaching Module*, pretest, posttest, and six-week follow-up surveys. The teaching module will take about one to two hours to review and the pretest and posttest will take approximately 30 minutes to complete. The six-week follow-up survey will take approximately 10 minutes to complete. **Please note:** The module and surveys must be completed to qualify for the course credit, continuing education units, and raffle drawings.

How can I participate?

If you are interested in participating, please e-mail a message ASAP to Anne Hague at: hague@adelphia.net. Include your name, home and e-mail address, phone number, major, professor’s name, course number, and course name in the message.

How do I start the project?

When you e-mail your request to participate in the study, you will receive step-by -step instructions, via e-mail, that indicate how to access the project. Thank you!

The University of Maine
Food Science and Human Nutrition Program
Merrill Hall
Orono, ME 04469
207-581-3134 FAX 207-581-3111



Attention Teachers:

Would you like to be part of a research study and receive free Continuing Education Units?

Introduction

Hello, my name is Anne Hague. I am a doctoral candidate in Food Science and Human Nutrition at the University of Maine. My research project is designed as a Web-based educational module for individuals who work with children in a professional capacity. The research addresses issues and opinions pertaining to obesity, specifically childhood obesity.

How do I qualify?

Schoolteachers in all disciplines (health, physical, special education, art, music, etc.), at the elementary and secondary levels, are invited to participate in this research project.

What can I learn?

The *Weighty Insights Teaching Module* is a Web-based educational module developed especially for teachers. Issues addressed include:

- | | |
|---|--|
| <p>I. Obesity Issues</p> <ul style="list-style-type: none"> A. Prevalence B. Causal factors C. Physical health risks D. Psychosocial effects E. Weight loss efforts | <p>II. Diversity Issues</p> <ul style="list-style-type: none"> A. School environment B. Teacher's role C. Intervention techniques D. Classroom activities E. Educational resources |
|---|--|

What are the benefits to participation in this project?

- An excellent learning experience.
- Continuing education units (.5 CEU or five hours) for certified teachers.
- An opportunity to qualify for raffle drawings (a twenty-five dollar gift certificate to L.L. Bean, Inc. will be awarded to every 25 participants).
- Convenience of the WebCT format (provides "24/7" access).

What do my colleagues say about the project?

"I have gained a wealth of knowledge from this experience and I am certain I will be able to use this information in the classroom. I think it is wonderful that this topic of obesity is being addressed and there is no better place to start than in the classroom."

“I thought that the information contained in the teaching module was very informative and important information that everyone should read.”

“The project is set up so neatly and well documented. Nice use of technology and traditional research.”

How long will it take?

The research project involves participation in the *Weighty Insights Teaching Module*, pretest, posttest, and six-week follow-up surveys. The teaching module will take about two hours to review and the pretest and posttest will take approximately 30 minutes to complete. The six-week follow-up survey will take approximately 10 minutes to complete. **Please note:** The module and surveys must be completed to qualify for the continuing education units and raffle drawings.

How can I participate?

If you are interested in participating, please e-mail a message ASAP to Anne Hague at: hague@adelphia.net. Please include your name, home and e-mail address, phone number, and area of teaching (i.e. level and discipline).

How do I start the project?

When you e-mail your request to participate in the study, you will receive step-by-step instructions, via e-mail, which indicate how to access the project. Thank you!

The University of Maine
Food Science and Human Nutrition Program
Merrill Hall
Orono, ME 04469
207-581-3134 FAX 207-581-3111

Please make a \$5.00 check payable to the University of Maine

**University of Maine
Continuing Education Unit
Program Completion Form**

Section 1: (To be completed by Participant)

NOTE: All items **MUST** be completed to receive a transcript.

Social Security #: _____

Name (last, first, M.I.) _____ Date of Birth: _____

Address _____

Section 2: (To be completed by Conference Services Office)

Program No: 124*01

Program Title: "WEIGHTY INSIGHTS"

Program Date: SPRING THROUGH FALL 2001 – WEB-BASED (DISTANCE EDUCATION)

Approval Granted for: 0.5 CEU UNITS

Section 3: (To be completed by Program Instructor)

Evaluation of Participation Program Completion: _____ Satisfactory _____ Unsatisfactory

If Unsatisfactory – Why? _____

Instructor's Signature _____ Date _____

NOTE: The Program Instructor should have each participant complete Section 1 of this form. At the conclusion of the program activity, the instructor should complete Section 3, sign, and date. Participants should then return their form along with \$5.00 to: CONFERENCE SERVICES DIVISION, University of Maine, 5723 D.P. Corbett Business Building, Orono, ME, 04469-5723. Phone 207/581-4092 or 4094. Fax 207/581-4097.

Appendix C
Informed Consent

INFORMED CONSENT

What is this research project about?

Thank you for visiting this Web-site to learn more about our research project. The purpose of this study is to inform certified and prospective teachers about issues pertaining to obesity and to examine opinions about obesity. The educational module will present specific topics related to child obesity with emphasis on the nutritional and psychosocial aspects of obesity.

What are the benefits to participating?

The benefits obtained from participating in this study include:

- **Valuable learning experiences** that are specific to certified and prospective teachers. For instance, the module provides an opportunity for you to develop skills that can be used to promote a more favorable school environment and it demonstrates how technology and education can be integrated for learning purposes.
- Completion of the pretest, posttest, and six-week follow-up surveys, and review of the teaching module, will entitle you to a **raffle drawing** for a \$25.00 gift certificate to L.L. Bean, Inc., **course credit (if applicable)**, and/or **professional continuing education units (.5 CEUs)**. A \$25.00 gift certificate will be awarded to every twenty-fifth person whose name is randomly drawn. Eligibility for the raffle drawing, course credit, and continuing education units is possible **ONLY** upon review of the teaching module and completion of all the surveys (pretest, posttest, and six-week follow-up).

What do I do?

As a participant in this study, you will review the teaching module and complete the pretest, posttest, and the follow-up surveys. The module will take you approximately two hours to complete. The pretest and posttest surveys will take you approximately 30 minutes to complete. The follow-up survey will take you approximately 10 minutes to complete. The pretest will be completed immediately prior to the module and the posttest will be completed immediately following the module. The follow-up survey will be completed approximately six-weeks after you finish the module. The surveys will evaluate opinions and knowledge of obesity as well as assess cognitive processes and opinions pertaining to the module presenter. Examples of the statements/questions will include: "If I were single, I would date a fat person," "Dieting over a long period of time causes a measurable decrease in the number of fat cells," and "I prefer to think about small, daily projects to long-term ones." The surveys will be completed on-line and your responses will remain confidential. The data obtained will be used for research purposes only and we will only summarize the entire group's answers, not any individual's.

Although you may refuse to answer any of the questions without penalty, each answer provides valuable information to us and we greatly appreciate all of your feedback.

Your participation in this study is entirely voluntary and you may willingly terminate your participation in this study at any time. Your agreement to participate in this study will not pose any risk to you beyond that which is normally encountered in every day living.

Thank you in advance for your willingness to participate in this study. We greatly appreciate your time and your interest in this project. Please note that the details regarding the research hypotheses will be available upon your request once the study has ended.

Who do I contact if I have questions?

If you have any questions, feel free to call collect to Adrienne A. White, Ph.D., R.D. at the University of Maine in the Department of Food Science and Human Nutrition at (207) 581-3134 or Anne L. Hague, M.S., R.D., R.D.H. at (207) 985-3850. The researchers can also be reached via e-mail at: ahague@cybertours.com or awhite.nfa.umaine@apollo.umenfa.maine.edu.

Appendix D
Instruction to Access WebCT “Weighty Insights” Program

CONTROL GROUP – INSTRUCTIONS TO ACCESS PROGRAM

Hi _____,

Great to hear from you and thanks for your interest in this project! I have added your name to the "Weighty Insights1" course so that you can begin today if you would like. The instructions for "Weighty Insights1" are provided below. Please let me know if you have any questions at all. Enjoy the course and thanks again for your interest in this project. I look forward to your participation! :)

Best wishes, Anne

WELCOME TO “WEIGHTY INSIGHTS 1”

How do I log into WebCT?

1. Go to <http://webct.ume.maine.edu>

2. If you do not have a WebCT ID already, you need to create one. The WebCT ID allows you to log into the WebCT system. You will be able to access the module after you have created your WebCT ID (if you already have a WebCT ID, then proceed to part 3).
 - A. **If you do not have a WebCT ID, create one, as follows:**
 - a. From the WebCT entry page, click “Create my WebCT.” The “create my WebCT” page appears.
 - b. Follow the on screen instructions. You must complete every field.
 - c. Create your own WebCT ID and password and store it in a safe place. Please write down your WebCT ID and password now, you will need to refer to it at different times (including six weeks from now).
 - d. Click on “continue.” The password window appears.
 - e. In the user name box, enter the WebCT ID that you just created and in the password box, enter the password that you just created.
 - f. Click on “O.K.” Your “my WebCT” page appears. You are now logged into the WebCT system.
 - g. Proceed to 3.

3. You will see a “my WebCT” page. As noted by Information Technologies, this page can be considered “as a hallway with many doors (courses) that are locked for you at this moment.”
 - A. While you are on my WebCT page, click “Add course” in the upper left part of the screen.

- B. Choose the course entitled “**Weighty Insights1**” to add to your account (the courses are alphabetically listed).
- C. Under “User Name,” type in the first letter of your first name and your complete last name using lower case (i.e. “jsmith”). Under “Password,” type in the word “newuser “ (use lower case and enter it as one word, no space in between words). **Please note: VERY IMPORTANT!!** You **must** use the course ID and password described here when adding the course. **Your WebCT ID and password are different from the course ID and password**, your own WebCT ID will not work to enter this research project (course). Click “continue” and then click “go to course.”
- D. If you have any questions, please do not hesitate to contact Anne Hague at: hague@adelphia.net

What do I do after I log into WebCT and add the course?

1. Please read the course introduction and review the instructions carefully on the home page. Click the icon towards the bottom of the page to begin.
2. The “Quizzes and Surveys” page will appear. Click on the **Informed Consent** segment.
3. The standard WebCT quiz instructions will appear. Please review these instructions and then click “begin quiz.” Please read the questions and respond appropriately. Click “save answer” for each question. Click “finish” at the end of the quiz and then click “O.K.” to submit the quiz. Make a note of the password for the initial surveys, which is located at the bottom of the informed consent page. **Please note: None** of the “Weighty Insights” quizzes will be graded. There are no right or wrong answers. Therefore, please ignore the points indicated next to each question.
4. Return to the “Quizzes and Surveys” page. Click on the **Initial Surveys**. Enter the password from the Informed Consent. Review the instructions for each of the surveys as you proceed. Answer the questions appropriately and click “save answer” after each response. **Please note:** There is no need to click “save answer” for the instructions. At the end of the Initial Surveys, click “finish” and then click “O.K.” to submit the quiz. Log out of WebCT.
5. Please return to “Weighty Insights1” in one week to complete the **Second Set of Surveys**. You will receive a gentle reminder via e-mail to complete the Second Set of Surveys in a few days. When you return to Weighty Insights1, click the Second Set of Surveys. Review the instructions for each of the surveys as you proceed. Answer the questions appropriately and click “save answer” after each response. **Please note:** There is no need to click “save answer” for the instructions. At the end of the Second Set of Surveys, click “finish” and then click “O.K.” to submit the quiz. Log out of WebCT.

6. You will receive further instructions to complete the **Third Set of Surveys** (follow-up surveys) in approximately six weeks. The instructions will be sent via e-mail. The Third Set of Surveys will provide the password to enter the **Teaching Module** and **Additional Resources**. Thank you!

TREATMENT GROUPS – INSTRUCTIONS TO ACCESS PROGRAM

Hi _____,

Great to hear from you and thanks for your interest in this project! I have added your name to the "Weighty Insights __" course so that you can begin today if you would like. The instructions for "Weighty Insights __" are provided below. Please let me know if you have any questions at all. Enjoy the course and thanks again for your interest in this project. I look forward to your participation! :)

Best wishes, Anne

WELCOME TO “WEIGHTY INSIGHTS __”

How do I log into WebCT?

1. Go to <http://webct.ume.maine.edu>
2. If you do not have a WebCT ID already, you need to create one. The WebCT ID allows you to log into the WebCT system. You will be able to access the module after you have created your WebCT ID (if you already have a WebCT ID, then proceed to part 3).
 - A. **If you do not have a WebCT ID, create one, as follows:**
 - a. From the WebCT entry page, click “Create my WebCT.” The “create my WebCT” page appears.
 - b. Follow the on screen instructions. You must complete every field.
 - c. Create your own WebCT ID and password and store it in a safe place. Please write down your WebCT ID and password now, you will need to refer to it at different times (including six weeks from now).
 - d. Click on “continue.” The password window appears.
 - e. In the user name box, enter the WebCT ID that you just created and in the password box, enter the password that you just created.
 - f. Click on “O.K.” Your “my WebCT” page appears. You are now logged into the WebCT system.
 - g. Proceed to 3.

3. You will see a “my WebCT” page. As noted by Information Technologies, this page can be considered “as a hallway with many doors (courses) that are locked for you at this moment.”
 - A. While you are on my WebCT page, click “Add course” in the upper left part of the screen.
 - B. Choose the course entitled “**Weighty Insights __**” to add to your account (the courses are alphabetically listed).
 - C. Under “User Name,” type in the first letter of your first name and your complete last name using lower case (i.e. “jsmith”). Under “Password,” type in the word “newuser “ (use lower case and enter it as one word, no space in between words). **Please note: VERY IMPORTANT!!** You must use the course ID and password described here when adding the course. **Your WebCT ID and password are different from the course ID and password**, your own WebCT ID will not work to enter this research project (course). Click “continue” and then click “go to course.”
 - D. If you have any questions, please do not hesitate to contact Anne Hague at: hague@adelphia.net.

What do I do after I log into WebCT and add the course?

1. Please read the course introduction and review the instructions carefully on the home page. Click the icon towards the bottom of the page to begin.
2. The “Quizzes and Surveys” page will appear. Click on the **Informed Consent** segment.
3. The standard WebCT quiz instructions will appear. Please review these instructions and then click “begin quiz.” Please read the questions and respond appropriately. Click “save answer” for each question. Click “finish” at the end of the quiz and then click “O.K.” to submit the quiz. Make a note of the password for the pretest surveys, which is located at the bottom of the informed consent page. **Please note: None** of the “Weighty Insights” quizzes will be graded. There are no right or wrong answers. Therefore, please ignore the points indicated next to each question.
4. Return to the “Quizzes and Surveys” page. Click on the **Pretest Surveys**. Enter the password from the Informed Consent. Review the instructions for each of the surveys as you proceed. Answer the questions appropriately and click “save answer” after each response. **Please note:** There is no need to click “save answer” for the instructions. At the end of the pretest, click “finish” and then click “O.K.” to submit the quiz. Make note of the password to access the Teaching Module, which is found at the end of the pretest surveys.
5. Return to the “Quizzes and Surveys” page. Click on the **Teaching Module**. Enter the password from the Pretest Surveys. Review the “Table of Contents”

and then click to begin. **Please note:** You do not need to click “save answer” or “finish” for the Table of Contents.

6. Review the Teaching Module at your own pace. Unlike the surveys, you may access the module as many times as you would like. Continue to the last page of the module, which provides the password to the Posttest Surveys. Make a note of the password for the posttest surveys and close the last page.
7. Return to the “Quizzes and Surveys” page. Click on the **Posttest Surveys**. Enter the password from the Teaching Module. Review the instructions for each of the surveys as you proceed. Answer the questions appropriately and click “save answer” after each response. **Please note:** There is no need to click “save answer” for the instructions. At the end of the posttest, click “finish” and then click “O.K.” to submit the quiz. Log out of WebCT.
8. You will receive further instructions to complete the **Follow-up Surveys** in approximately six weeks. The instructions will be sent via e-mail. The Follow-up Surveys will provide the password to enter the **Additional Resources**. Thank you very much!

CONTROL GROUP – INSTRUCTIONS TO ASSESS FOLLOW-UP SURVEY AND ADDITIONAL RESOURCES

Hi _____,

I hope you are doing well. Thank you for your participation in the Weighty Insights I Project. I received your responses from the informed consent, initial set of surveys, and the second set of surveys. Thank you very much. Your participation in the Weighty Insights Project is greatly valued and it is critical to the success of this research project.

The “six-week follow-up survey,” “teaching module,” and “additional resources” are now available to you. The follow-up survey will take approximately 10 minutes to complete. The “teaching module” and “additional resources” are provided for your own professional use (there are no questions to respond to under the teaching module or resource section). The “teaching module” reviews various issues on childhood obesity, with particular emphasis on the nutritional and psychosocial aspects of obesity. The “additional resources” includes classroom activities, advice to parents, and a listing of resources and references (i.e. videos, programs and lesson plans, books, organizations, and web addresses). Please feel free to make copies of the resources for your professional files. They will be handy references for teaching and when working with parents.

Please complete your 10-minute follow-up survey ASAP. The instructions to access the follow-up survey and resources are provided below. After I receive your responses from the six-week follow-up survey, I will forward your name to your professor to make sure that you receive course credit, if applicable. I will also enter your name into a raffle for a \$25.00 gift certificate to LL Bean. ☺ Thanks again and I look forward to hearing from you soon. Please don’t hesitate to contact me if you have any questions. Best wishes, Anne

Instructions:

1. Go to <http://webct.ume.maine.edu> and log into WebCT using your username “ ” and the secret password that you created. Please note that WebCT is case sensitive.
2. Click on your “Weighty Insights” class from the “my WebCT” page.
3. Click the icon towards the bottom of the Weighty Insights introductory page.
4. The “Quizzes and Surveys” page will appear. Click on “Click here for the Third Set of Surveys” (six-week follow-up surveys).
5. The standard WebCT quiz instructions will appear. Please review these instructions and then click “begin quiz.” Please read the questions and respond appropriately. Click “save answer” for each question. Click

“finish” at the end of the survey and then click “O.K.” to submit the quiz (same procedure used for the initial and second set of surveys). **Please note:** The survey will not be graded. There are no right or wrong answers. Therefore, please ignore the points indicated next to each question.

6. At the end of the survey, please note the password that is used to access the “Teaching Module” section.
7. Return to the “Quizzes and Surveys” page. Click on “click here for Teaching Module.” Enter the password from the follow-up survey and enjoy the module! At the end of the module, please make note of the password to access the “additional resources” section.
8. Return to the “Quizzes and Surveys” page. Click on “click here for Additional Resources” and enjoy the multitude of classroom activities, ideas, references, and professional contacts!

TREATMENT GROUPS – INSTRUCTIONS TO ACCESS FOLLOW-UP SURVEY AND ADDITIONAL RESOURCES

Hi _____,

I hope you are doing well. Thank you for your participation in the Weighty Insights Project. I received your informed consent, pretest, module, and posttest responses. Thank you very much. Your participation in the Weighty Insights Project is greatly valued and your responses are critical to the success of this research project.

The “six-week follow-up survey” and “additional resources” are now available to you. The follow-up survey will take approximately 10 minutes to complete. The “additional resources” are provided for your own professional use (there are no questions to respond to under the resource section). The “additional resources” includes classroom activities, advice to parents, and a listing of resources and references (i.e. videos, programs and lesson plans, books, organizations, and web addresses). Please feel free to make copies of the resources for your professional files. They will be handy references for teaching and when working with parents.

Please complete your 10-minute follow-up survey ASAP. The instructions to access the follow-up survey and resources are provided below. After I receive your responses from the six-week follow-up survey, I will forward your name to your professor to make sure that you receive course credit, if applicable. I will also enter your name into a raffle for a \$25.00 gift certificate to LL Bean. ☺ Thanks again and I look forward to hearing from you soon. Please don’t hesitate to contact me if you have any questions. Best wishes, Anne

Instructions:

1. Go to <http://webct.ume.maine.edu> and log into WebCT. When you log into WebCT, please use the WebCT ID " " and the secret password that you created (please note that WebCT is case sensitive).
2. Click on your “Weighty Insights” class from the “my WebCT” page.
3. Click the icon towards the bottom of the Weighty Insights introductory page.
4. The “Quizzes and Surveys” page will appear. Click on “Click here for six-week follow-up surveys.”
5. The standard WebCT quiz instructions will appear. Please review these instructions and then click “begin quiz.” Please read the questions and respond appropriately. Click “save answer” for each question. Click “finish” at the end of the survey and then click “O.K.” to submit the quiz (same procedure used for the pretest and posttest). **Please note:** The survey will not be graded. There are no right or wrong answers. Therefore, please ignore the points indicated next to each question.
6. At the end of the survey, note the password that is used to access the “additional resources” section.

7. Return to the “Quizzes and Surveys” page. Click on “ Additional Resources.” Enter the password from the follow-up survey and enjoy the multitude of classroom activities, ideas, references, and professional contacts!

Appendix E
Antifat Attitudes Test

Opinion Survey

INSTRUCTIONS - PLEASE READ CAREFULLY

The following pages contain a series of statements or opinions about fat people. On this questionnaire you are asked to indicate your own personal opinions. In other words, you should indicate honestly how much you agree or disagree with **each of the opinion** statements listed below.

In order to complete the questionnaire, read each statement carefully and decide how much you personally disagree or agree. Using a scale like the one below, indicate your answer in the space to the left of each item.

There are no right or wrong answers – only opinions. Just give the answer that most accurately states your opinion. Remember, your responses are anonymous, so please be completely honest. Please give an answer to all of the items.

| 1 | 2 | 3 | 4 | 5 |
|------------------------|--------------------|----------------------------------|-----------------|---------------------|
| Definitely Disagree | Mostly Disagree | Neither Agree Nor Disagree | Mostly Agree | Definitely Agree |

- _____ 1. There's no excuse for being fat.
- _____ 2. If I were single, I would date a fat person.
- _____ 3. Jokes about fat people are funny.
- _____ 4. Most fat people buy too much junk food.
- _____ 5. Fat people are physically unattractive.
- _____ 6. Fat people shouldn't wear revealing clothing in public.
- _____ 7. If someone in my family were fat, I'd be ashamed of him or her.
- _____ 8. I can't stand to look at fat people.
- _____ 9. If fat people don't get hired, it's their own fault.

- | | 1 | 2 | 3 | 4 | 5 |
|--|------------------------|--------------------|----------------------------------|-----------------|---------------------|
| | Definitely Disagree | Mostly Disagree | Neither Agree Nor Disagree | Mostly Agree | Definitely Agree |
-
- _____ 10. Fat people are disgusting.
- _____ 11. If I have the choice, I'd rather not sit next to a fat person.
- _____ 12. Fat people don't care about anything except eating.
- _____ 13. I'd lose respect for a friend who started getting fat.
- _____ 14. Most fat people are boring.
- _____ 15. I can't believe someone of average weight would marry a fat person.
- _____ 16. Society is too tolerant of fat people.
- _____ 17. When fat people exercise, they look ridiculous.
- _____ 18. I hate it when fat people take up more room than they should in a theater, or on a bus or plane.
- _____ 19. Most fat people are lazy.
- _____ 20. Most fat people don't care about anyone but themselves.
- _____ 21. Fat people are just as competent in their work as anyone.
- _____ 22. If fat people really wanted to lose weight they could.
- _____ 23. Being fat is sinful.
- _____ 24. It's disgusting to see fat people eating.
- _____ 25. Fat people have no will power.
- _____ 26. I prefer not to associate with fat people.
- _____ 27. Fat people don't care about their appearance.

- | | 1 | 2 | 3 | 4 | 5 |
|--|------------------------|--------------------|----------------------------------|-----------------|---------------------|
| | Definitely Disagree | Mostly Disagree | Neither Agree Nor Disagree | Mostly Agree | Definitely Agree |
- _____ 28. Most fat people are moody and hard to get along with.
- _____ 29. If bad things happen to fat people, they deserve it.
- _____ 30. Most fat people don't keep their surroundings neat and clean.
- _____ 31. Society should respect the rights of fat people.
- _____ 32. It's hard not to stare at fat people because they are so unattractive.
- _____ 33. If I owned a business, I would not hire fat people because of the way they look.
- _____ 34. I'd feel self-conscious being seen in public with a fat person.
- _____ 35. The idea that genetics cause people to be fat is just an excuse.
- _____ 36. I would not want to continue in a romantic relationship if my partner became fat.
- _____ 37. The existence of organizations to lobby for the rights of fat people in our society is a good idea.
- _____ 38. I don't understand how someone could be sexually attracted to a fat person.
- _____ 39. If fat people knew how bad they looked, they would lose weight.
- _____ 40. People who are fat have as much physical coordination as anyone.
- _____ 41. Fat people are unclean.
- _____ 42. Fat people should be encouraged to accept themselves the way they are.
- _____ 43. Most fat people will latch onto almost any excuse for being fat.
- _____ 44. It's hard to take fat people seriously.

| 1 | 2 | 3 | 4 | 5 |
|------------------------|--------------------|----------------------------------|-----------------|---------------------|
| Definitely Disagree | Mostly Disagree | Neither Agree Nor Disagree | Mostly Agree | Definitely Agree |

- _____ 45. Fat people do not necessarily eat more than other people.
- _____ 46. Fat people obviously have a character flaw, otherwise they wouldn't become fat.
- _____ 47. It makes me angry to hear anybody say insulting things about people because they are fat.

Appendix F
Short Obesity Knowledge Scale

Obesity Knowledge Scale

Please read each statement below. Select the value that best describes your point of view and indicate it to the left of the statement. For instance, if you **strongly agree** with the statement, please indicate a "1" next to the statement; if you **strongly disagree** with the statement, please indicate a "5" next to the statement. If you **slightly agree** with the statement, please indicate a "2" next to the statement; if you **slightly disagree** with the statement, please indicate a "4" next to the statement. If you are **uncertain** about the statement, please indicate a "3" next to the statement.

| | | | | | |
|--|-------------------|-------------------|-----------|----------------------|----------------------|
| | 1 | 2 | 3 | 4 | 5 |
| <hr style="border-top: 3px double #000;"/> | | | | | |
| | Strongly Agree | Slightly Agree | Uncertain | Slightly Disagree | Strongly Disagree |

- _____ 1. People who are overweight tend to eat more than people of average weight.
- _____ 2. People from higher social class are less likely to be overweight than people of lower social status.
- _____ 3. Dieting over a long period of time causes a measurable decrease in the number of fat cells.
- _____ 4. Most obese people suffer from a hormone problem that causes them to be obese.
- _____ 5. People who are slightly overweight tend to live shorter lives.
- _____ 6. In America, people have negative attitudes towards obese children and obese adults.
- _____ 7. Excess body weight can be reduced through regular (20-23 minutes/3 times a week) aerobic exercise.
- _____ 8. Obese people are at a greater risk of developing heart disease.
- _____ 9. Obese people are at a greater risk of developing cancer.
- _____ 10. If a person eats more calories per day than he burns he will gain weight.

- _____ 11. Obesity is more common in men than in women.
- _____ 12. Most people who are obese inherit (genetic) the problem from their parents.

Appendix G
Need for Cognition Short Scale

Need For Cognition Short (NCS) Scale

Instructions: For each of the statements below, please indicate to what extent the statement is characteristic of you. If the statement is extremely **uncharacteristic** of you (not at all like you) please write a “1” to the left of the question; if **the statement** is extremely characteristic of you (very much like you) please write a “5” next to the question. Of course, a statement may be neither extremely uncharacteristic nor extremely characteristic of you; if so, please use the number in the middle of the scale that describes the best fit. Please keep the following scale in mind as you rate each of the statements below: **1= extremely uncharacteristic; 2= somewhat uncharacteristic, 3= uncertain; 4= somewhat characteristic; 5= extremely characteristic.**

Item
number

1. I would prefer complex to simple problems.
2. I like to have the responsibility of handling a situation that requires a lot of thinking.
3. Thinking is not my idea of fun.
4. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.
5. I try to anticipate and avoid situations where there is likely chance I will have to think in depth about something.
6. I find satisfaction in deliberating hard for long hours.
7. I only think as hard as I have to.
8. I prefer to think about small, daily projects to long-term ones.
9. I like tasks that require little thought once I've learned them.
10. The idea of relying on thought to make my way to the top appeals to me.
11. I really enjoy a task that involves coming up with new solutions to problems.
12. Learning new ways to think doesn't excite me very much.
13. I prefer my life to be filled with puzzles that I must solve.

14. The notion of thinking abstractly is appealing to me.
15. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.
16. I feel relief rather than satisfaction after completing a task that requires a lot of mental effort.
17. It's enough for me that something gets the job done; I don't care how or why it works.
18. I usually end up deliberating about issues even when they do not affect me personally.

Appendix H
Counselor Rating Form

| | | |
|----------------|---|--------------|
| agreeable | _____ : _____ : _____ : _____ : _____ : _____ | disagreeable |
| unalert | _____ : _____ : _____ : _____ : _____ : _____ | alert |
| analytic | _____ : _____ : _____ : _____ : _____ : _____ | diffuse |
| unappreciative | _____ : _____ : _____ : _____ : _____ : _____ | appreciative |
| attractive | _____ : _____ : _____ : _____ : _____ : _____ | unattractive |
| casual | _____ : _____ : _____ : _____ : _____ : _____ | formal |
| cheerful | _____ : _____ : _____ : _____ : _____ : _____ | depressed |
| vague | _____ : _____ : _____ : _____ : _____ : _____ | clear |
| distant | _____ : _____ : _____ : _____ : _____ : _____ | close |
| compatible | _____ : _____ : _____ : _____ : _____ : _____ | incompatible |
| unsure | _____ : _____ : _____ : _____ : _____ : _____ | confident |
| suspicious | _____ : _____ : _____ : _____ : _____ : _____ | believable |
| undependable | _____ : _____ : _____ : _____ : _____ : _____ | dependable |
| indifferent | _____ : _____ : _____ : _____ : _____ : _____ | enthusiastic |
| inexperienced | _____ : _____ : _____ : _____ : _____ : _____ | experienced |
| inexpert | _____ : _____ : _____ : _____ : _____ : _____ | expert |
| unfriendly | _____ : _____ : _____ : _____ : _____ : _____ | friendly |
| honest | _____ : _____ : _____ : _____ : _____ : _____ | dishonest |
| informed | _____ : _____ : _____ : _____ : _____ : _____ | ignorant |
| insightful | _____ : _____ : _____ : _____ : _____ : _____ | insightless |
| stupid | _____ : _____ : _____ : _____ : _____ : _____ | intelligent |
| unlikeable | _____ : _____ : _____ : _____ : _____ : _____ | likable |
| logical | _____ : _____ : _____ : _____ : _____ : _____ | illogical |

| | | |
|---------------|---|-----------------|
| open | _____ : _____ : _____ : _____ : _____ : _____ : _____ | closed |
| prepared | _____ : _____ : _____ : _____ : _____ : _____ : _____ | unprepared |
| unreliable | _____ : _____ : _____ : _____ : _____ : _____ : _____ | reliable |
| disrespectful | _____ : _____ : _____ : _____ : _____ : _____ : _____ | respectful |
| irresponsible | _____ : _____ : _____ : _____ : _____ : _____ : _____ | responsible |
| selfless | _____ : _____ : _____ : _____ : _____ : _____ : _____ | selfish |
| sincere | _____ : _____ : _____ : _____ : _____ : _____ : _____ | insincere |
| skillful | _____ : _____ : _____ : _____ : _____ : _____ : _____ | unskillful |
| sociable | _____ : _____ : _____ : _____ : _____ : _____ : _____ | unsociable |
| deceitful | _____ : _____ : _____ : _____ : _____ : _____ : _____ | straightforward |
| trustworthy | _____ : _____ : _____ : _____ : _____ : _____ : _____ | untrustworthy |
| genuine | _____ : _____ : _____ : _____ : _____ : _____ : _____ | phony |
| warm | _____ : _____ : _____ : _____ : _____ : _____ : _____ | cold |

Appendix I
Demographic Questionnaire

Demographic Survey

Please respond to the following statements/questions with an "X" next to the appropriate answer. Where applicable, please indicate your answer based on the selection provided (i.e. scroll down menu).

1. Gender:
 1. M
 2. F

2. Age:

3. Height (inches):

4. Weight (pounds):

5. What is your nationality?
 1. American
 2. Canadian
 3. Other

6. Year in college:
 1. First year student
 2. Sophomore
 3. Junior
 4. Senior
 5. Graduate student
 6. I am no longer a student

7. College major:
 1. elementary education
 2. secondary education
 3. dual certification
 4. health education
 5. literacy education
 6. special education
 7. physical education
 8. art education
 9. music education
 10. human development
 11. other

8. Have you taken, or are you taking, an education exceptionality course (a required course for teacher certification)?
 1. Yes
 2. No

9. Have you advanced to teacher candidacy status?
 1. Yes
 2. No
 3. I am already a certified teacher

10. Did you find the topic of this module personally interesting?
 1. Yes
 2. No

11. Did you find this module relevant and/or applicable to the field of teaching?
 1. Yes
 2. No

12. Was the information in the module easy to understand?
 1. very easy
 2. relatively easy
 3. somewhat difficult
 4. very difficult

13. Were you distracted while you were participating in the module?
 1. Yes
 2. No

14. How did you review the module text?
 1. Entirely from a printed copy
 2. Entirely from a computer module
 3. Combination (computer module and printed copy)

15. Have you taken, or are you currently taking, a college-level nutrition course?
 1. Yes
 2. No

16. What types of sources do you rely on for nutrition information (choose more than one source if applicable)?
1. newspapers
 2. popular magazines
 3. peer-reviewed journals
 4. Internet
 5. books
 6. media
 7. teacher
 8. dietitian
 9. doctor
 10. nurse
 11. relative working in the health care field
 12. relative not working in the health care field
 13. other

Appendix J
Module Introductions and Conclusions

TREATMENT GROUP 1 – INTRODUCTION

WEIGHTY INSIGHTS TEACHING MODULE

Module Overview

by Jean Richards

What topics will be covered in the module and what questions will be addressed?

- **Prevalence, etiology, and health risks associated with obesity.**
 What is the prevalence of child and adolescent obesity?
 What are the contributing factors of obesity and why are Americans getting fatter?
 What are the health risks associated with obesity?
- **The psychosocial effects of obesity.**
 How do fat phobic attitudes affect youngsters?
- **Concerns associated with body image among children/adolescents.**
 Why do our youth express such discontent with their body size and shape?
 What are the dangers associated with a negative body image?
 What can teachers do to foster self-esteem among students and encourage size-acceptance?
- **Failures of weight loss.**
 What methods are being used by youngsters to lose weight?
 Do any “diets” work?
 What are the health risks associated with dieting?
- **Size-Acceptance**
 What does this paradigm represent?
 What are the messages that teachers should be sending to their students?
- **“Weightism” in the school setting.**
 What can teachers do to promote a bias-free environment?
 What should teachers do when they witness discriminatory behavior?
 How should students respond when they are bullied?

Module instructions

The teaching module consists of 13 topics. Each of the topics represents a single Web page and is presented in a set sequence. In other words, it is **necessary** for you to proceed in the order given. After you have reviewed a topic, click the “**continue**” button at the bottom of the page to continue to the next topic. Refer to **the outline** below for an overview of the module content.

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 - A. genetics
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 - A. weight loss
 - B. exercise
 - C. pediatric population
- V. Psychosocial Effects**
 - A. discrimination
 - B. consequences
- VI. Weight Loss Efforts**
 - A. physiological changes
 - B. health risks
 - C. methods
- VII. Fear of Fat**
- VIII. Size Acceptance**
- IX. Discrimination in Schools**
 - A. recognition
- X. Teacher’s role**
 - A. role model
 - B. teach size diversity
 - C. teach cultural awareness
 - D. create a positive environment
 - E. teach self-esteem
 - F. advocate for students
- XI. Appropriate intervention**
 - A. guidelines
- XII. Teachers make a difference**
- XIII. Closing Remarks**

Please be sure to complete the posttest surveys at the end of the module. Completion of the surveys will help you to qualify for raffle drawings, possible course credit, and/or continuing education units, if applicable. Completion of the surveys is a critical component to this study. Your time and interest in the project is greatly appreciated. Thank you!

Please Note: About the term “fat”

Throughout the module the terms “fat,” “overweight,” and “obese” will be used interchangeably. For purposes of this module, the terms are synonymous and simply refer to an “excess of body fat over a particular norm” (1). Unfortunately, our society considers the term “fat” a four-letter word and interprets use of the word a “moral indictment” (2). Unlike society’s view, use of the word “fat” in this module is not intended to be derogatory. Instead, I will be using the word “fat” as a descriptive term, or an adjective, much like the words tall, short, thin, etc. It is important to realize that size is just a physical description and it is not a judgment. As noted by Dawn Atkins, from the Body Image Task Force, “terms like fat or large are only bad if we think being fat is bad” (3).

TREATMENT GROUP 2 – INTRODUCTION

Greetings!

Hello everyone! Welcome to the *Weighty Insights Teaching Module*. Thank you for visiting and participating in the module. My name is Jean Richards and I am your presenter. I am a cooperative extension nutrition education specialist and a professor at Penn State University in the Food Science and Human Nutrition program. I have been a licensed dietitian for 18 years, specializing in child obesity. I have had an interest in this field for many years and speak to many professional groups, both locally and nationally. Recently, I developed several school health curricula and assisted with numerous local and state health programs dealing with pediatric obesity. I teach various courses on nutrition and child obesity to college students and diverse professionals (i.e. schoolteachers and administrators, coaches, and health-care professionals). I currently reside in Happy Valley, Pennsylvania with my husband and two teenage children. I enjoy volunteering for various youth groups and spending time with my family.

Educational background and previous work experience. I received my Bachelors (B.S.) and Masters degree (M.S.) in the Food Science and Human Nutrition Program at Michigan State University. Shortly after, I became a registered dietitian (R.D.) by successfully completing the national dietetic examination. I worked for several years as a clinical dietitian at an area hospital where I developed a special interest in eating behaviors, weight management, and size acceptance. Later, I accepted a position as a nutrition consultant at a pediatric facility that specializes in dysfunctional eating, body image dissatisfaction, and obesity. My interest in this field grew and I later returned to graduate school to further research these topics. I received my doctoral degree (Ph.D.) from The Pennsylvania State University.

On a personal note...

I appreciate your participation in this learning experience and I hope you will find the information especially helpful in your teaching career. The module has been designed specifically for certified and prospective schoolteachers, and I am excited to have the opportunity to share this new program with you. I hope that you will find it interesting, and I hope you enjoy the convenience of the Web-based format. I frequently teach using the Internet, and I've found that it has been well received by many participants. Although I certainly appreciate the many benefits of distance education, I do miss the "real time" interaction with students. Therefore, I've provided an opportunity for you to e-mail your comments and/or suggestions at the end of the module under the "demographics" category. I greatly value your feedback and I look forward to hearing from you. Thanks again, Jean

What topics will be covered in the module and what questions will be addressed?

- **Prevalence, etiology, and health risks associated with obesity.**
 What is the prevalence of child and adolescent obesity?
 What are the contributing factors of obesity and why are Americans getting fatter?
 What are the health risks associated with obesity?
- **The psychosocial effects of obesity.**
 How do fat phobic attitudes affect youngsters?
- **Concerns associated with body image among children/adolescents.**
 Why do our youth express such discontent with their body size and shape?
 What are the dangers associated with a negative body image?
 What can teachers do to foster self-esteem among students and encourage size-acceptance?
- **Failures of weight loss.**
 What methods are being used by youngsters to lose weight?
 Do any “diets” work?
 What are the health risks associated with dieting?
- **Size-Acceptance**
 What does this paradigm represent?
 What are the messages that teachers should be sending to their students?
- **“Weightism” in the school setting.**
 What can teachers do to promote a bias-free environment?
 What should teachers do when they witness discriminatory behavior?
 How should students respond when they are bullied?

Acknowledgements

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A very special thank you is also extended to Andrei Strukov, Alexander Tyunin, and Jared White at the Faculty Center, University of Maine, for their technical expertise and assistance in the development of this Web-site.

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 - B. exercise
 - C. pediatric population
- V. Psychosocial Effects**
 - A. discrimination
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- VI. Weight Loss Efforts**
 - A. physiological changes
 - B. health risks
 - C. methods
- VII. Fear of Fat**
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- IX. Discrimination in Schools**
 - A. recognition
- X. Teacher’s role**
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 - D. create a positive environment
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 - F. advocate for students
- XI. Appropriate intervention**
 - A. guidelines
- XII. Teachers make a difference**
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TREATMENT GROUP 3 - INTRODUCTION

Greetings!

Hello everyone! Welcome to the *Weighty Insights Teaching Module*. Thank you for visiting and participating in the module. My name is Jean



Richards and I am your presenter. I am a cooperative extension nutrition education specialist and a professor at Penn State University in the Food Science and Human Nutrition program. I have been a licensed dietitian for 18 years, specializing in child obesity. I have had an interest in this field for many years and speak to many professional groups, both locally and nationally. Recently, I developed several school health curricula and assisted with numerous local and state health programs dealing with pediatric obesity. I teach various courses on nutrition and child obesity to college students and diverse professionals (i.e. school teachers and administrators, coaches, and health-care professionals). I currently reside in Happy Valley, Pennsylvania with my husband and two teenage children. I enjoy volunteering for various youth groups and spending time with my family.

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TREATMENT GROUP 4 – INTRODUCTION

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 - B. environment
 - C. social and cultural
 - D. psychological
- IV. Physical Health Risks**
 - A. weight loss
 - B. exercise
 - C. pediatric population
- V. Psychosocial Effects**
 - A. discrimination
 - B. consequences
- VI. Weight Loss Efforts**
 - A. physiological changes
 - B. health risks
 - C. methods
- VII. Fear of Fat**
- VIII. Size Acceptance**
- IX. Discrimination in Schools**
 - A. recognition
- X. Teacher’s role**
 - A. role model
 - B. teach size diversity
 - C. teach cultural awareness
 - D. create a positive environment
 - E. teach self-esteem
 - F. advocate for students

- XI. Appropriate intervention**
 - A. guidelines
- XII. Teachers make a difference**
- XIII. Closing Remarks**

Please be sure to complete the posttest surveys at the end of **the module**. Completion of the surveys will help you to qualify for raffle drawings, **possible** course credit, and/or continuing education units, if applicable. Completion of the surveys is a critical component to this study. Your time and interest in the project is greatly appreciated. Thank you!

Please Note: About the term “fat”.....

Throughout the module the terms “fat,” “overweight,” and “obese” will be used interchangeably. For purposes of this module, the terms are synonymous and simply refer to an “excess of body fat over a particular norm” (1). Unfortunately, our society **considers the term “fat”** a four letter word and interprets use of the word a “moral indictment” (2). Unlike society’s view, use of the word “fat” in this module is not intended to be derogatory. Instead, I will be using the word “fat” as a descriptive term, or **an adjective**, much like the words tall, short, thin, etc. It is important to realize **that size is just** a physical description and it is not a judgment. As noted by Dawn Atkins, **from the Body Image Task Force**, “terms like fat or large are only bad if we think being fat is bad” (3).

TREATMENT GROUP 1 - CONCLUSION

XIII. Closing Remarks.....

A person's worth is not determined by how much he/she weighs. It's time we communicate this message to our children so that they learn to value their inner beauty, talents, and accomplishments. Children need to learn to stop hating their bodies and risking their health to gain social acceptance. As a teacher, you will be invaluable in helping students develop positive self-esteem, appreciate and accept diversity, and cope with social stigmas.

The following poem is entitled "The Promise." It is written by a woman who has endured years of pain as a result of her body size. Despite such negativity, she has learned tenacity and self-acceptance. Her character is inspirational.

The Promise by Lynnda Collins



"Today I cried.
I heard again the whispers
and taunts.
I felt again the hate
And I cried.

Fat, they called me, fat
and ugly,
Unworthy, less than
Human.
And I cried.

No one would want
To be near someone like
you.
They shout over and over.
And I cried.

Tomorrow, I promise
I will laugh. I will not
listen.
I will love myself
For who I am
And I will laugh.

Tomorrow I will not
Hear them. I will not
Accept their words
And I will laugh.

Today will become
yesterday
Tomorrow will arrive
And I will get past the
hate, the
Scorn, the tears.
Tomorrow, I will laugh" (126).

The very best to you in your teaching careers. Best wishes in helping your students to "laugh" and in conveying many of these weight-related issues. The hope is that this module has provided some valuable insight.

Please Note.....

As part of this module, it is necessary to complete the next posttest surveys. They will take approximately 30 minutes to complete. Please refer to the demographics questionnaire (part of the posttest surveys) to forward your comments and suggestions regarding the module.

In six weeks you will be sent a reminder (via e-mail) and instructions to complete the follow-up survey. When you have completed the survey, you will be entitled to raffle drawings, course credit, and/or continuing education units, if applicable. At the end of the study, I will forward your name to your course instructor for purposes of course credit, if applicable. If your name is drawn in one of the raffles, I will forward the winning gift certificate to your mailing address. If you are interested in receiving continuing education units (.5 CEUs) for your participation, please contact Anne L. Hague at: hague@adelphia.net. Thank you!

TREATMENT GROUP 2 - CONCLUSION

XIII. Closing Remarks.....

A person's worth is not determined by how much he/she weighs. It's time we communicate this message to our children so that they learn to value their inner beauty, talents, and accomplishments. Children need to learn to stop hating their bodies and risking their health to gain social acceptance. As a teacher, you will be invaluable in helping students develop positive self-esteem, appreciate and accept diversity, and cope with social stigmas.

In closing, I would like to share a poem with you. The poem is entitled "The Promise," written by a woman who has endured years of pain as a result of her body size. Despite such negativity, she has learned tenacity and self-acceptance. Her character is inspirational.

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Tomorrow, I will laugh” (126).

I wish you all the very best in your teaching careers. I hope that you will have much success in helping your students to “laugh” and in conveying many of the weight-related issues that I have discussed. I have enjoyed the opportunity to share this information with you and I hope that this module has provided some valuable insight.

Please Note.....

As part of this module, it is necessary to complete the next posttest surveys. They will take approximately 30 minutes to complete. Please refer to the demographics questionnaire (part of the posttest surveys) to forward your comments and suggestions regarding the module. I look forward to hearing from you!

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TREATMENT GROUP 3 – CONCLUSION

XIII. Closing Remarks.....

A person's worth is not determined by how much **he/she weighs**. It's time we communicate this message to our children so that they learn to **value their inner** beauty, talents, and accomplishments. Children **need to learn** to stop hating their bodies and risking their **health to gain social** acceptance. As a teacher, you will be **invaluable in** helping students develop positive self-esteem, appreciate and accept diversity, and cope with social stigmas.



Jean Richards, Ph.D., R.D.

In closing, I would like to share a poem with you. The poem is entitled "The Promise," written by a woman who has endured years of pain as a result of her body size. Despite such negativity, she has learned tenacity and self-acceptance. Her character is inspirational.

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I wish you all the very best in your teaching careers. I hope that you will have much success in helping your students to "laugh" and in conveying many of the weight-related issues that I have discussed. I have enjoyed the opportunity to share this information with you and I hope that this module has provided some valuable insight.

Please Note.....

As part of this module, it is necessary to complete the next posttest surveys. They will take approximately 30 minutes to complete. Please refer to the demographics questionnaire (part of the posttest surveys) to forward your comments and suggestions regarding the module. I look forward to hearing from you!

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TREATMENT GROUP 4 - CONCLUSION

XIII. Closing Remarks.....

A person's worth is not determined by how much he/she weighs. It's time we communicate this message to our children so that they learn to value **their inner beauty, talents, and accomplishments.** Children need to learn to stop hating their bodies and risking their health to gain social acceptance. As a teacher, you will be invaluable in helping students develop positive self-esteem, appreciate and accept diversity, and cope with social stigmas.



In closing, I would like to share a poem with you. The poem is entitled "The Promise," written by a woman who has endured years of pain as a result of her body size. Despite such negativity, she has learned tenacity and self-acceptance. Her character is inspirational.

Jean Richards, Ph.D., R.D.

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 Tomorrow, I will laugh" (127).

I wish you all the very best in your teaching careers. I hope that you will have much success in helping your students to "laugh" and in conveying many of the weight-related issues that I have discussed. I have enjoyed the opportunity to share this information with you and I hope that this module has provided some valuable insight.

Please Note.....

As part of this module, it is necessary to complete the next posttest surveys. They will take approximately 30 minutes to complete. Please refer to the demographics questionnaire (part of the posttest surveys) to forward your comments and suggestions regarding the module. I look forward to hearing from you!

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Appendix K
Source Images and Body Image Scales

Figure K.1 Source Images

**Photo A
(unaltered source)**



**Photo B
("fat" source)**



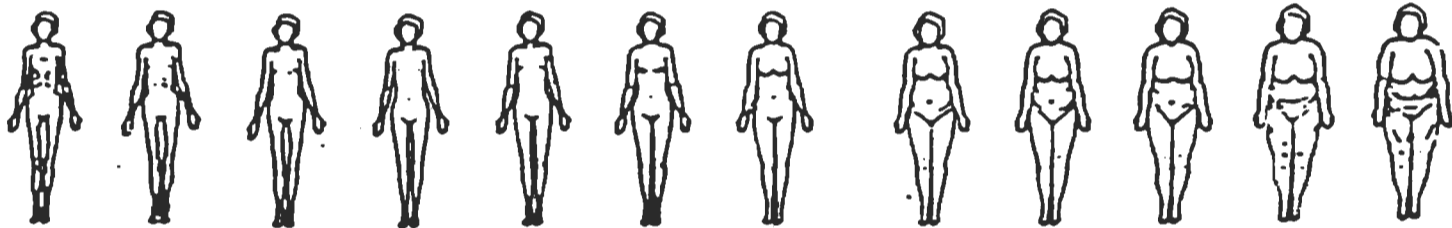
**Photo C
("non-fat" source)**



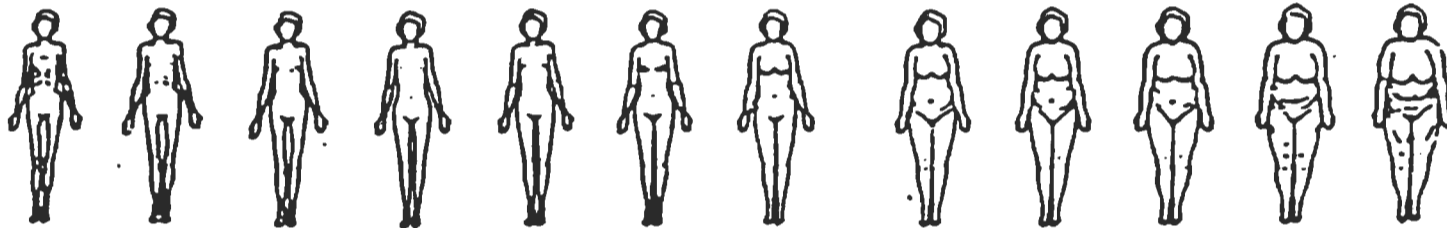
Figure K.2 Body Image Scale: Range 1 – 12

Instructions: The scales below correspond with the photographs on the next three pages. On each scale, please circle the body size that you think best represents the body size in the corresponding photograph. Please be sure to circle only one body size per scale. Thank you.

Body image scale for photo A:



Body image scale for photo B:



Body image scale for photo C:

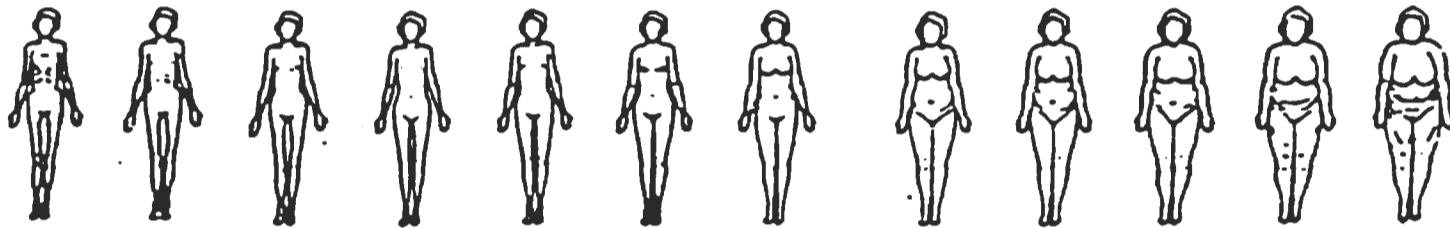
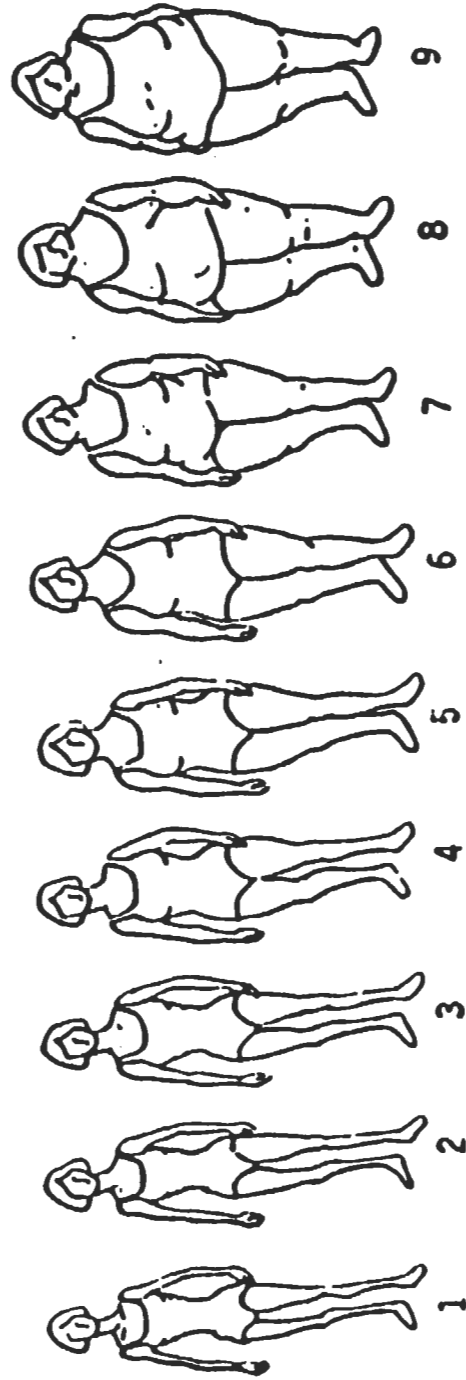


Figure K.3 Re-altered “Non-Fat” Source Image



Figure K. 4 Body Image Scale: Range 1 -9

Instructions: The scale below corresponds with the photograph on the next page. On the scale, please circle the body size that you think best represents the body size in the photograph. Please be sure to circle only one body size. Thank you.



Appendix L
Intervention – Web-based Educational Module

I. Introduction

Have you ever been an outcast or bullied about your appearance? Unfortunately, many children like Rebecca Schafer have been. Rebecca Schafer is a thirteen year old girl who lives in Palo Alto, California. Rebecca is fatter than other children in her eighth grade. Many of her classmates and peers frequently make disparaging comments and jokes about her size. Rebecca tries to avert the comments and the glares. She tries to stand up for herself when she can. Rebecca explains, "Usually, if someone teases me, I try to think of something snappy to say back. When people say stuff like, 'You're fat like a cow', I'll say, 'What, like I don't know I'm fat?' And sometimes that will keep them quiet." But sometimes the teasing is so relentless and Rebecca is so emotionally distraught that she is speechless. Rebecca recalls one incident in particular. "At my swim practice, there were these guys who just pounded on me day after day, and it made me feel really sad. I couldn't think of anything to say back to them because I was so upset. Every day I came home wanting to cry" (4).

Taunting and bullying of fat children is widespread and it is extremely hurtful. According to a report compiled by the National Education Association (NEA), fat students are ostracized, harassed, discouraged, and discriminated against in school regularly. These negative behaviors are exhibited primarily by peers, however, education employees are not free from blame. Fat students report:

...being left out of parties and dances, being ridiculed in gym class, not being chosen for school sports, being left off the honor roll, feeling isolated, having food thrown at them, being told to sit in the back of the class, and not fitting on the small school chairs (5).

Fat students are also threatened with violence and are physically assaulted because of their weight. Sometimes, they choose to take their own life because the pain is too great. In 1994, Brian Head shot himself at his high school in response to relentless teasing. A teacher on hall duty was in proximity when Brian exclaimed, "I'm tired of it!" Brian was only 16 years old when he died. Another tragedy occurred in 1996 when Samuel Graham hung himself from a tree in his backyard. He was supposed to start middle school the next day but he couldn't bear the taunting and ridicule for being "the fat kid." Samuel was only 12 years old when he died. In 1997, Kelly Teomans died from an overdose of pain killers. She had been teased for years. The week before her suicide, bullies threw butter and eggs at her family's house shouting insults like "smelly Kelly." Kelly was only 13 years old when she died (6).

What can be done to change size-bias attitudes in our schools? What can school teachers do to deter derogatory behaviors and promote size-acceptance among students? How can schoolteachers instill appreciation for diversity? What skills do students need to help them cope with discriminatory behavior and what types of intervention should be used by teachers? How do fat phobic attitudes effect our youngsters? We will examine each of these questions in depth. However, before we begin this discussion, it is important that we review some important issues pertaining to obesity. In order to be effective in de-stigmatizing claims about fat children, it is essential that we discern fact

from fiction. This is especially important since stigmas and discriminatory actions against fat people often stem from various myths and stereotypes about fat people (7). I hope these facts will be useful with your students.

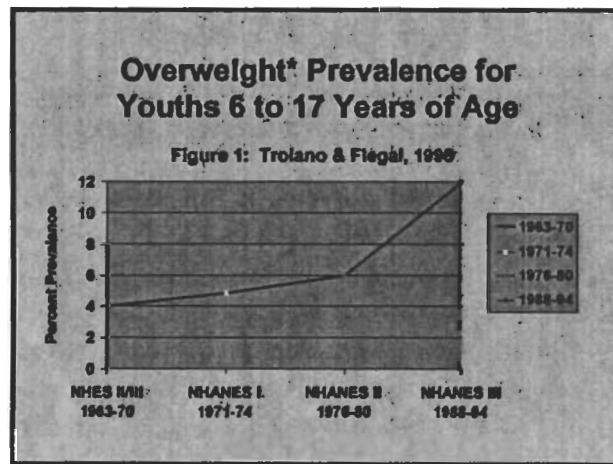
II. The Prevalence Of Child And Adolescent Obesity In The U.S.

The prevalence of overweight among all races and both genders of U.S. children and adolescents has increased significantly in the past few decades. All indications suggest that this trend is likely to continue (8). In light of this dramatic increase, it is imperative that teachers, and other professionals who work with children, recognize the enormity and severity of the different problems facing fat children.

Body Mass Index Defined

Body mass index (BMI) is a height weight index that is used to assess body weight and fatness. BMI is calculated by dividing weight in kilograms by height in meters squared (Lee & Nieman, 1996).

A recent estimate indicates that 4.7 million American youths (aged 6 through 17 years) are overweight (8). The National Health Examination Survey III (NHANES III), conducted from 1988-94 by the National Center for Health Statistics of the Centers for Disease Control and Prevention, indicated that approximately 14% of children ages 6-11 and 12% of adolescents ages 12-17 were overweight. These findings represent approximately a 100% increase in the percent prevalence between the end of NHANES II (1976-80) and the end of NHANES III (1988-94) (9, 10) (see Figure 1).



*Overweight was defined by the age and sex-specific 95th percentile of body mass index from the National Health Examination Survey II and III (1963-70).



Did you know?

- American children have a 50% chance of becoming overweight at some point in their lifetime (11).
- More children are becoming obese at younger ages (Holtz, Smith, & Winters, 1999).
- In recent years, extreme obesity has increased more than 95% in **children** between the ages of 6 and 11 years (1).

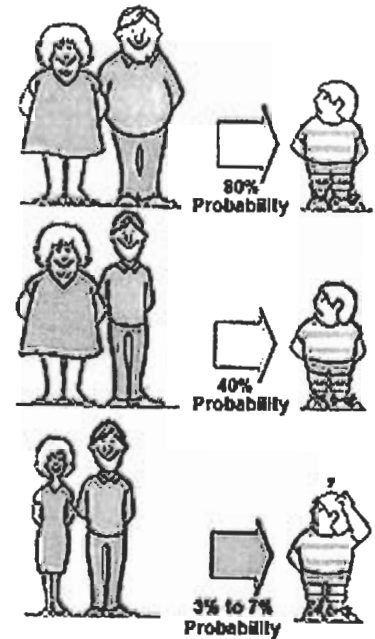
III. Causal Factors Of Obesity: Why Are Americans Getting Fatter?

The cause of obesity is extremely complex and it is not clearly understood (12 - 14). In the past, it was believed that the cause of obesity was due to excess food consumption. Today, we know that this model is overly simplistic, particularly since dieting is ineffective in treating obesity (15). A newer biopsychosocial model recognizes that obesity is actually multifactorial in origin (16). Primary causal factors include: 1) genetic, 2) environmental, 3) social and cultural, and 4) psychological influences (11, 17). Although scientists are not in agreement with how much each variable contributes to obesity, researchers have suggested that our hereditary factors and biological mechanisms play a much larger role than previously thought. Let's turn our attention to the four primary causal factors of obesity, beginning with the role of genetics.

A. Causal factors of obesity: The role of genetics - “Nature’s Influence”

Obesity runs in families. A child with no obese parent has a 3% to 7% chance of being obese. A child with one obese parent has a 40% chance of being obese. When both parents are obese, the child has an 80% chance of being obese (18, 19).

Scientists believe that body fatness is inherited and that each person has a natural weight range (13, 20). It is estimated that genetics may account for as much as 70% of the variance in our body mass index (BMI) (21, 22). The genetic influence is particularly evident among identical twins. Identical twins share a similar body size, shape, and weight even when they are raised apart and are not sharing the same living environment. Twins also share a similar weight gain pattern and subsequently, tend to accumulate body fat in the same areas (23).



Source: Hegarty (1988). Obesity, Eating Disorders, and Starvation. In A. Trump, K. Sedovic, & R. A. Kelly (Eds.), *Decisions in Nutrition* (p. 303). St. Louis, MO: Times Mirror/Mosby College Publishing. Adapted with permission.

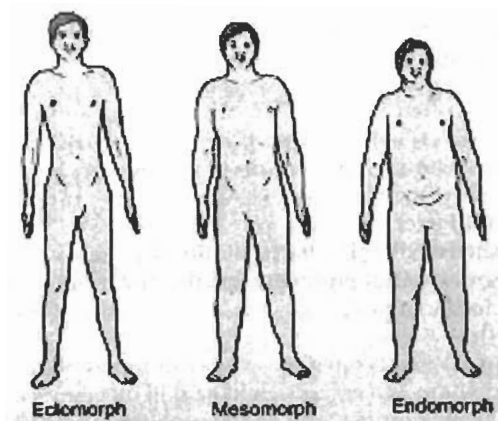


Researchers have also examined the BMI of adopted children and compared the BMI of their biologic and adoptive parents. It has been repeatedly demonstrated that the BMI of the adopted child resembles that of the biological parents rather than the BMI of adoptive parents. Therefore, an adopted child that is raised by thin parents is more likely to be fat if his/her biological parents are fat (18).

Source: Wardlaw, G. M. (1997). In V. Malinee, J. Russell, & R. Spencer (Eds.), *Contemporary nutrition issues and insights* (p. 372). Dubuque, IA: Brown & Benchmark. Copyright permission granted.

1. Differences are normal

We inherit certain features from our parents such as eye, hair, and skin color. Similarly, our genetic make-up helps to determine our body size and shape (23, 24). For instance, people may inherit either a tall, thin build (i.e. an ectomorph body type), a medium, muscular build (i.e. a mesomorph body type), or a stocky build (i.e. an endomorph body type) (23).



Source: Wardlaw, G. M. (1997). In V. Malinee, J. Russell, & R. Spencer (Eds.), *Contemporary nutrition issues and insights* (p. 371). Dubuque, IA: Brown & Benchmark. Copyright permission granted.

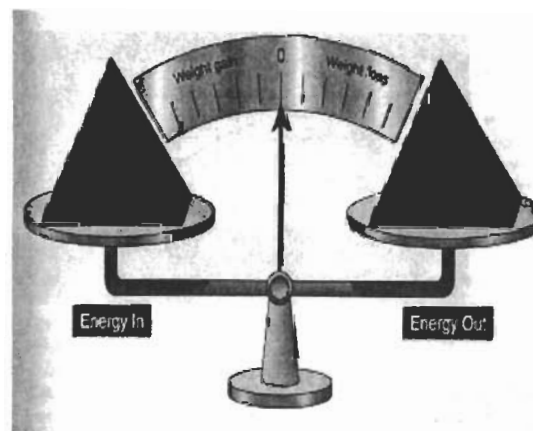
MYTH: Body shape can be changed at will.

FACT: Body shape cannot be changed at will (24).

It is well recognized that we have limited control in regard to our body size and weight (25). Kathy Kater, author of *Healthy Body Image: Teaching Kids to Eat and Love Their Bodies Too!*, has noted that “even if eating and activity were identical for all, we would collectively still be vastly different in shape, ranging from fat to thin” (25). Others have noted that “some children are going to end up stockier, or heavier, than others even if they eat relatively small amounts of food and engage in a fair amount of vigorous physical activity” (26).

MYTH: “Fat people become fat from overeating and under-exercising. They can become thin by eating less and exercising” (7).

FACT: Scientists agree that over time, weight is gained when a person consumes more calories than he/she expends or burns. The latter is referred to as a positive energy balance. A positive energy balance may occur as a result of excess calorie consumption, or decreased energy expenditure, or a combination of both. In other words, body weight increases when energy output is less than energy intake, or energy intake is greater than energy output (27). Subsequently, a person can become fat if he/she overeats and under-exercises. However, contrary to the myth that fat people can become



Source: McArdle, W.D., Katch, F. I., & Katch, V. L. (1996). Obesity and weight control. In D. Balado (Ed.), *Exercise Physiology* (p. 617). Baltimore, MD: Williams & Wilkens. Adapted with permission.

thin by eating less and exercising more, experts believe that most forms of obesity are due to “biochemical defects at one or more points in the system responsible for the control of body weight” and that these “defects” can not simply be corrected by eating less and exercising more (28).



What does an expert say about the role of genetics?

Dr. Rudolph Leibel

Division of Molecular Genetics, Columbia University

“From mice and rats, we have learned that there are single genes that can cause very profound obesity, and we have found in every instance that there is a corresponding gene in humans. If we went out on the street right now, and I showed you a group of adults with heights ranging from four and a half feet to six and a half feet or seven feet, you would make no comment about this. It’s expected. We all expect to see wide variations in height. We accept that this is due to very strong genetic influences. My perception of this is that there are equally potent genetic influences on body weight as there are on height. But the population, because of our lack of understanding of all the mechanisms, simply has not come to accept this yet” (29).

2. How do our genes and physiology effect our body weight?

Scientists believe that our appetite drive (i.e. brain chemistry) and our rate of metabolism are primarily determined by our genes (17, 23). For example, our genes help determine our brain chemistry and our brain chemicals influence our appetite. Those individuals with bigger appetites are likely to consume more calories on a daily basis and may be more likely to gain weight than those with smaller appetites (17). In addition, resting metabolism (the amount of energy used at rest) varies from person to person and those that inherit a more efficient or “thrifty” metabolism are more likely to gain weight (17, 23).

3. Set-point theory: why our body weight resists change.

Many researchers believe that humans have a genetically predetermined amount of body fat that the body will attempt to defend during periods of starvation and overeating. This internal control mechanism is referred to as “set-point” (15, 23). Proponents of the set-point theory believe that the regulation of body weight is attributed to complex biochemical and metabolic processes. For example, metabolic changes occur in response to caloric intake. When a person consumes too few calories (i.e. dieting) the metabolic rate slows. When a person attempts to gain weight by overeating, the body resists the weight change by increasing the metabolic rate (23). Metabolic changes also occur in response to physical activity. For instance, when weight is lost, our skeletal muscles increase energy efficiency in order to use fewer calories per unit of work. Conversely, when weight is gained, our skeletal muscles use more calories per unit of work due to diminished energy efficiency. The “set-point” theory explains why it is so

difficult for most people to maintain weight loss for a long period of time and why people do not gain the expected amount of weight when they consume a certain number of excess calories (13).



Set-point has been likened to a coiled spring.
 “The further you stray from your usual weight, the harder the force acts to pull you back to that weight” (23).

B. Causal factors of obesity: The role of environment - “Nurture’s Influence”

Our environment provides an overabundance of food choices (particularly high fat and fast foods) and at the same time dissuades Americans from physical activity (30). Preliminary data suggest that inactivity may contribute more to the development of obesity than excess calorie consumption (15, 31, 32). Recent national data indicate that, despite the increased prevalence of obesity among children and adolescents, there is no increase in their consumption of calories (10, 33). Instead evidence suggests that obese children and adolescents tend to be less active than their average weight peers (15). Factors that have been identified as contributing to the decline in physical activity among children and adolescents include:

- less outdoor play due to concern regarding child safety (1, 11).
- a lack of after school programs featuring physical activities (1).
- a decline in physical education participation (10).
- an increase in television viewing and the availability of video games (1, 10).



Did you know?

- More than 35% of students in grades 9 through 12 watch three or more hours of television each school day (8, 10).
- Based on national reports, approximately half of all students in grades 9 through 12 are enrolled in physical education, and fewer than half of school children receive daily physical education (8, 10).

Many fat children and adolescents choose not to participate in physical activities because they fear being teased about their body size. Fat youngsters try to avoid taunting by limiting their participation to activities that do not involve obvious movement of their bodies. Hence, fat children often stop running and playing because the ridicule from their peers is too painful (34). Even well-meaning adults send negative messages to large children. For example, physical education teachers often “consider fat children less skillful in athletics and assume they are too embarrassed to wear gym suits” (5). Negative attitudes/behaviors have serious repercussions:

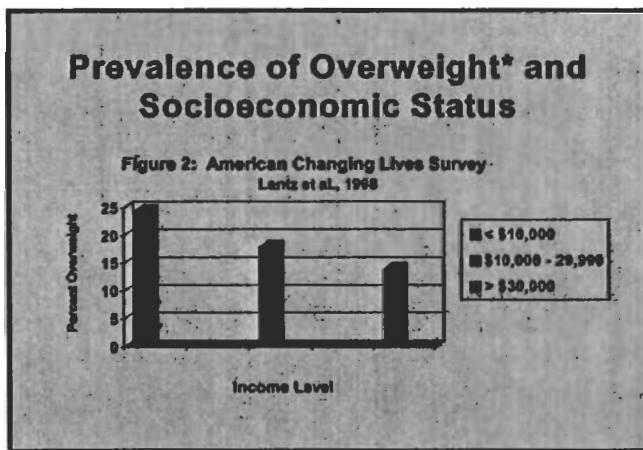
- The child’s sense of failure increases and his/her self-esteem decreases (5).
- The child learns to accept discriminatory attitudes/behaviors.

- The child is deprived of opportunities to learn about him/herself and develop athletic skills.
- The child is deprived of team-building skills.
- The child does not develop healthy exercise habits.

C. Causal factors of obesity: The role of social and cultural factors

The prevalence of obesity varies in relation to socioeconomic status (SES) as well as cultural and ethnic differences (13). The distinct differences in the prevalence of obesity among these groups highlights the “powerful influence of social and cultural factors in the causation of obesity” (17).

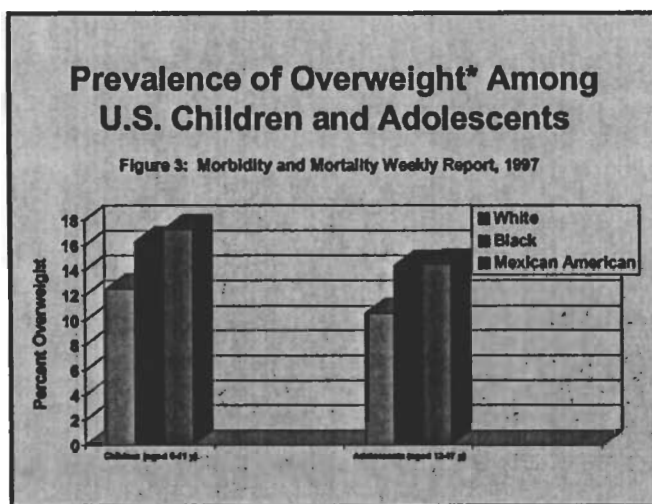
Americans of lower SES, versus upper SES, are more likely to be obese (23, 35). A national survey of 3,617 adult women and men indicated that a lower income level was associated with a significantly higher prevalence of overweight (see Figure 2) (36).



*The highest 15% of the weighted sex-specific BMI distributions were coded as overweight.

In the U.S. and Western Europe, affluent people consider obesity undesirable. In fact, the higher prevalence of eating disorders traditionally found among this group is associated with the social pressures to avoid weight gain (17).

U.S. ethnic populations, such as Blacks and Hispanics, not only demonstrate a greater prevalence of obesity but also tend to exhibit a greater acceptance toward a larger body size than non-Hispanic Whites (see Figure 3) (35, 37).



*Overweight was defined by the age and sex-specific 95th percentile of body mass index from the National Health Examination Survey II and III (1963-70).



Did you know?

- Childhood obesity is more common in families of lower SES than families of higher SES (1, 35, 38).
- In developing countries, where food is much less abundant, obesity is a prized condition that symbolizes wealth. A fat person in a country that has few resources means that he/she has ample money to purchase food (19).

D. Causal factors of obesity: The role of psychological factors

Obesity may also be attributed to psychological factors such as emotional conditions or an unfavorable body image that often initiates “diet-induced” obesity.

1. Emotional Expression: In some instances, obesity may not be directly attributed to genetics or societal influences. Instead, children may gain weight from excess calories in response to emotional duress (i.e. loneliness, pain, rejection, or anger) (26, 39). In this sense, children use food to “medicate” or “sedate” themselves in order to cope with family turmoil (i.e. death, divorce, or lack of acceptance) (26). In other instances, food becomes a symbol of love and caring from parents that may be emotionally reserved. In this regard, the parent tries “to compensate by overfeeding or allowing the child to overfeed himself” (26).

Dieting Defined

Dieting is a voluntary restriction of calories and essential nutrients for the purpose of losing weight.

2. **A Negative Body Image:** Fat people, and average size people who think they are fat, often suffer from a negative body image (40, 41). Unfortunately, individuals with a negative body image are especially vulnerable to weight loss behaviors such as dieting (42). However, dieting often contributes to obesity rather than weight loss, “diet-induced obesity” (43). In fact some researchers believe that “dieting is the leading cause of obesity in the U.S.” (3).

- **How does dieting promote obesity?**

Approximately 95% to 98% of people who lose weight, as a result of dietary and behavioral therapy, regain all of the lost weight within 3 to 5 years (12, 43, 44) and many diets result in weight gain. “Diet-induced obesity” is attributed to the fact that the body interprets a “diet” as a period of starvation. The body responds to low calorie intake by slowing down its metabolism and by sending messages to the dieter to increase food intake (7, 27). When the “diet” is over, the slowed metabolism encourages weight gain. The long-term effect of “yo-yo dieting” (the diet-and-regain cycle) is not only weight gain but an increase in the amount of body fat (45). Consequently, if children and adolescents weight cycle, they may predispose themselves to weight gain and obesity (16, 46).

Summary: Is nature or nurture responsible for causing obesity?

Although more research is needed, most experts do agree that both “nature” and “nurture” exert influences on body weight. Therefore, a child has a particularly high risk of being fat if he/she possesses:

- a genetic predisposition towards obesity (17, 43).
- a sedentary lifestyle (15, 31, 43).
- lives in an environment where calorie rich foods are easily accessible (13, 43).



What do experts say about nature versus nurture?

Scott Grundy, Ph.D.

University of Texas Southwestern Medical Center

“Whereas external [environmental] influences undoubtedly create a pressure for development of obesity, genetic factors seemingly affect the response to external factors and influence the ultimate body weight of an individual” (17).

Michael Rosenbaum, M.D.

Rudolph L. Leibel, M.D.

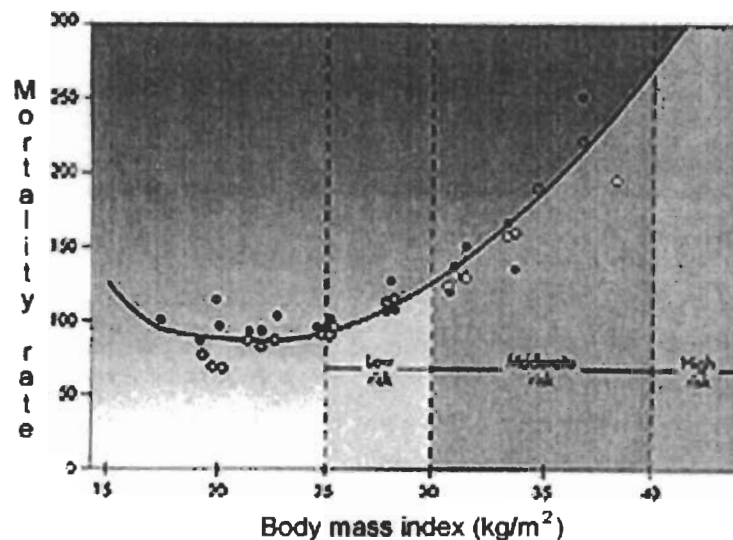
College of Physicians and Surgeons at Columbia University

“The observation that the prevalence of obesity increased substantially over a single decade, a period much too brief for any significant change to have occurred in the genetic makeup of the population of the United States, indicates that the current relative adiposity [fatness] is a product of the interaction between genetic predisposition with regard to the storage of body fat and an environment (low physical activity, high availability of calorically dense foods) that is increasingly permissive to the expression of that genetic tendency” (13).

IV. Are There Health Risks Associated With Being Fat?

Although obese people can be healthy, most experts agree that severe obesity (> 40% over ideal body weight) is a health risk (47, 48). Some of the more common health risks associated with obesity include heart disease, high blood pressure, diabetes, and certain kinds of cancer (33, 38, 49). As the BMI increases, the risk of mortality from chronic disease increases. At the same time, there is also an increased risk of chronic disease for those who are underweight (refer to Figure 4) (27, 50, 51, 52).

Figure 4: *The relationship between BMI and death rate (100 equals normal death rate). Solid circles depict men and open circles depict women.*



Source: Wardlaw, G. M. & Insel, P. M. (1996) Energy balance. In V. Malinee, J. R. Livingston, J. Babrick & M. Martin (Eds.), *Perspectives in nutrition* (p. 273). St. Louis, M): Mosby-Year Book. Copyright permission granted.

Although obesity is associated with a number of diseases, it is important to note that the association between obesity and mortality is extremely complex and is far from cause and effect. In fact, a considerable amount of controversy exists in regard to which factors actually cause the disease. For example, some researchers indicate that “just

because people who are fat are more likely to die of cancer doesn't mean that their fatness caused the cancer" (53). The cause of the disease may actually be due to a lack of exercise, a high-fat diet, (12) or dieting behaviors (7, 45) rather than the fatness itself.

A. Is weight loss beneficial?

Although several studies have demonstrated that a weight loss of 10 to 15% in mild to moderately obese individuals can significantly improve various conditions (i.e. high blood pressure and diabetes), follow-up studies fail to demonstrate the long-term effects of weight loss (54). Currently, there is no reliable, long-term evidence to suggest that a reduction in weight will result in a reduced risk of disease (55, 56). Long-term evidence does not exist because few people are able to maintain long-term weight loss (57) and because few well designed, long-term clinical trials have been conducted (30, 48, 55).

B. What about the role of exercise?

Although the association between weight loss and longevity is controversial, there is clear evidence that exercise promotes longevity. Consequently, obese people who are fit tend to live longer than lean people who aren't fit (32, 53, 58). As noted by Dr. Levitsky, at Cornell University, "if you're overweight, but you exercise, then you could be as healthy as someone 40 or even 60 pounds lighter" (4).

Some of the physical and psychological benefits associated with exercise include:

- a reduced risk of heart disease
- the prevention and control of diabetes
- reduced blood pressure
- the prevention of obesity
- a decreased risk of osteoporosis
- reduced depression, anxiety, and mental stress
- increased psychological well-being and mental cognition (23).



What does an expert say about associated health risks?

David Levitsky
Cornell University

"Nobody ever dies of obesity. Obesity is often a marker for other health problems caused by a sedentary lifestyle, but is itself not necessarily dangerous. If you're a large person and you do not suffer from any other health problems, then there is no reason for you to lose weight" (53).

C. Are fat children at an increased health risk?

It is evident that we still have a lot to learn about the health risks associated with obesity in adults. Unfortunately, even less is known about the health risks associated with child obesity. For instance, we don't know how much excess body fat poses a health risk in children. As noted by researchers at the National Institutes of Health,

“levels of adiposity [fatness] that can be linked to current or future disease or mortality in children do not exist” (59). Furthermore, researchers are uncertain how to interpret a child’s weight because of “marked changes in fat distribution” during child development (60). Such uncertainty has contributed to a number of myths regarding childhood obesity:

MYTH: The earlier a child develops obesity the more serious the lifelong effects.

FACT: Although it has been estimated that 25% of overweight adolescents may be at an increased risk for developing adverse health effects as an adult, “the magnitude of its lifelong effects” and “the age at which overweight confers excess risk” is unknown (61).

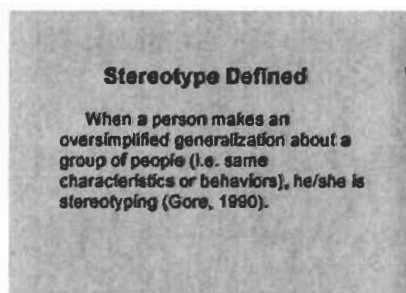
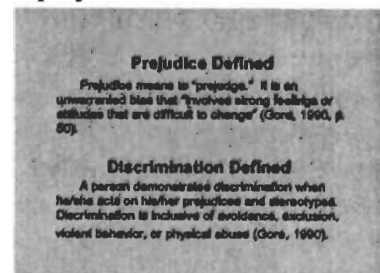
MYTH: All obese children develop obesity-related diseases.

FACT: Obesity related risk factors (i.e. elevated serum cholesterol, blood pressure, and plasma-insulin) can begin in childhood (60-63). However, not all obese children develop obese-related diseases (61) and “not all obese children remain obese” (59).

Although more research is needed to evaluate the physiological effects of child obesity, many experts agree that the greatest consequence of obesity are the psychosocial and emotional effects (1, 38, 64, 65). As noted by Deb Burgard, Ph.D., a licensed psychologist and co-author of *Great Shape: The First Fitness Guide For Large Women*, “there is evidence that [obesity] is or will be problematic medically for some of them, and is or will be problematic socially for most of them” (66).

V. Emotional and Psychosocial Effects of Obesity

The psychological disturbances associated with social prejudice and discrimination against obesity (“weightism”) have been considered among the most disabling features of obesity (67). The obese child is often considered lazy, stupid, self-indulgent (68), bad, sick (69), dirty, sloppy, and ugly (70) and is frequently harassed with words like “Shamu,” “Bubble Butt,” and “Lard Ass” (68). On the other hand, the thin child is generally considered good, healthy (69), friendly, kind, happy, and polite (71).



Children establish negative perceptions of fatness by at least age seven (71, 72). In fact, children as young as preschool age are known to “accept stereotypes about and develop prejudices against fat people” (70). Children prefer pictures of a disfigured or handicapped child rather than a fat child (73) and prefer to play with thin friends and dolls rather than fat friends

and dolls. Even fat children demonstrate aversions toward fatness (70).

Unfortunately, adults also tend to perceive thin children as possessing more positive characteristics than fat children. For instance, teachers often perceive thin students as “more intelligent, more interested in school, and more likely to succeed academically and socially” than fat students (74). Teachers also perceive obese students as having more conduct problems than non-obese students (75) and tend to “respond less negatively to attractive transgressors than unattractive transgressors” (74).

Some parents also favor thin children over fat children, and subsequently place pressure on their **child(ren)** to conform to a certain body size. In fact, “many of the pressures placed on children and adolescents come from family members who think they [children and adolescents] also have to emulate the thin ideal” (76). The latter is most unfortunate since parents are particularly influential in the development of their child’s body image (20). It is especially disturbing to note the cruelty and insensitivity that some children experience from family members, simply because of their body size. Nancy Summer, a founding director of the Council on Size and Weight Discrimination, Inc., frequently conducts workshops in schools entitled *Kids Come In All Sizes*. In the workshops, many personal stories are shared. A story that students often respond to strongly, was when Nancy moved to a new neighborhood at age 14:

“after the movers left, she discovered her bicycle was missing. Her mother told her that it hadn’t been left behind by mistake; in fact she had given it to one of the movers. When Nancy became upset about this, her mother yelled that she ‘didn’t want the neighbors to see [Nancy’s] fat ass riding up and down the block!’” (77).

A. Why do people discriminate?

Many people believe that fat people are not healthy and that fat people are to blame for their condition. Unfortunately, our society uses this stance as justification to discriminate against fat people. The general attitude is that “if you’re mean enough [to overweight people], then maybe they’ll do something about their size” (4). Thus, stigmatizing acts toward obesity are not only tolerated by society but are considered socially acceptable (78-81).

Children learn to discriminate by observing other people around them and from stereotypical messages received from the media and literature. Children are often taught at an early age that attractive people are synonymous with “goodness, pleasure and status” and that unattractive people are considered “bad, frightening, and inferior” (74). In fact, many well-known children’s stories are based on these analogies (82). As a result, children validate their own value system (being good) and enhance their own status by choosing to be friends with thin or attractive children rather than fat or unattractive children (74, 82).

Discriminatory behavior may also be attributed to frustration, anger, insecurity, a need to belong (74), low self-esteem (83), and/or personal fears of vulnerability (5). For instance, stigmatizing attitudes enable children to enhance their sense of “well-being,

safety, and superiority” over their fat peers and deny or dissociate their sense of vulnerability towards fatness (84).



Did you know?

- “Weightism” is considered the last socially accepted form of discrimination (85). Therefore, it is socially acceptable to demonstrate prejudicial attitudes and discriminatory behavior against people based on their size. Unfortunately, it is not only accepted but it is legal! While there are laws to protect against discrimination for such things as race, sex, or religion, “weight discrimination is still technically legal in 49 states” (85).



Body Talk: Teens Talk About Their Bodies, Eating Disorders and Activism

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(Video clip is approximately 3.5 minutes in length)

B. What are the consequences of stigmatizing acts?

The emotional scars that a child carries as a result of social stereotypes and discrimination can last a lifetime. These experiences negatively influence the way the child thinks and views him/herself (1) and how he/she behaves:

1. **Negative self-image and low self-esteem:** Many fat children suffer from body image dissatisfaction (40) and have a poor self-concept (75).

2. **Social and personal limitations:** Some experts believe that internalizing negative effects results in a “self-fulfilling prophecy” in which fat children learn to expect and accept social and personal limitations (80). The latter is very distressing considering the long-term effect.

3. **Eating behavior:** Children who experience discrimination based on appearance are also at an increased risk for aberrant eating behaviors. Fat children are often embarrassed about eating. Investigators have reported that overweight adolescent girls perceive “food intake [as] sinful” (86) and frequently obsess about their weight (86, 87). “Weightism” also affects the eating behaviors of average size children. As noted by Nancy Summer, (founding director of the Council on Size and Weight Discrimination, Inc.), “as long as fat is hated, everyone will be afraid of becoming fat” (68). Nancy and her colleagues teach this critical message to students as part of their *Kids Come in all Sizes* Workshop. The following is a dialog that she had with sixth-grade girls at an area school:

Nancy: "Imagine you are sitting in the lunchroom and a bully starts making fun of a fat kid a few tables away. We can imagine that the fat kid feels bad about being picked on, but what about all the other kids who hear it?"

Response 1: "I'd be afraid that he'd pick on me next."

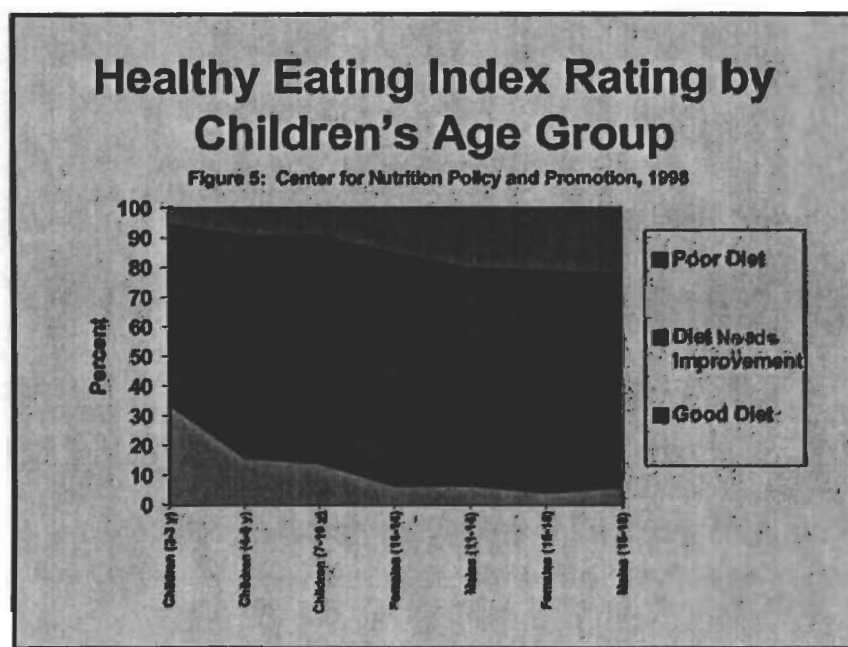
Response 2: "I'd be afraid that if I got fat, people would pick on me too."

Response 3: "I wouldn't eat my dessert" (68).

VI. An Epidemic of Dieters and Weight Hysteria

In our culture, social acceptance is often dependent upon body size.

Consequently, children are turning to weight loss as a means to escape or prevent the social stigma and rejection that is associated with obesity. Children as young as seven are dieting to **avoid** the stigma "lazy, dirty, stupid, and mean" (88). Even children and adolescents who are underweight for their height are dieting (89). The latter poses serious concerns in regard to adequate nutrition and normal child development. Based on national surveys, "most children have a diet that needs improvement or is poor" (see Figure 5) (90) and more than half of all teen-age girls in America "are not getting the nutrition they need for healthy growth and development" (37).

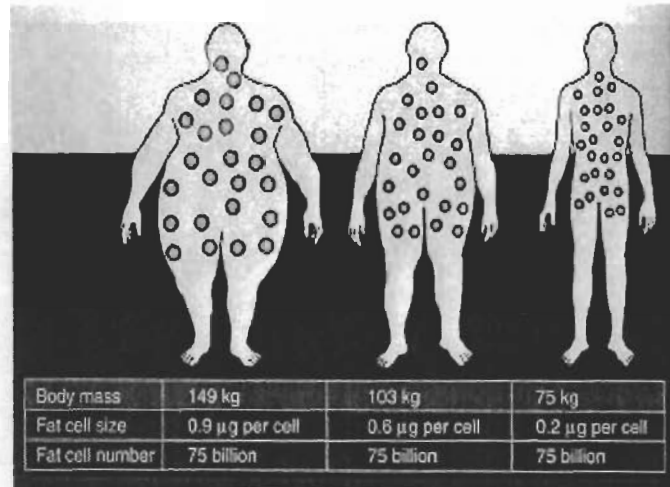


A. What physiological changes occur when a person goes on a diet?

When a person goes on a weight loss diet, the body consumes itself to compensate for the lack of calories ingested. Long and severe restriction of calories results in a breakdown of muscle, bone, and even brain tissue (3). Subsequently, very little of the weight loss represents body fat (3, 23) and no change occurs in the number of body fat cells as a result of dieting. Despite popular opinion, dieting among adults can only

reduce the size of fat cells not the number of fat cells (15, 24) (see Illustration 1). Hence, even when an obese person loses weight, he/she is not “cured” of obesity in terms of the total number of fat cells (15). Consequently, an obese person must be realistic about trying to achieve a certain body size via dieting.

Illustration 1:



Source: McArdle, W.D., Katch, F. I., & Katch, V. L. (1996). **Obesity and weight control.** In D. Balado (Ed.), *Exercise Physiology* (p. 612). Baltimore, MD: Williams & Wilkens. Copyright permission granted.

B. What are the health risks associated with dieting?

Many people consider weight loss via dieting “a health enhancing behavior” because **fatness or obesity** is associated with chronic disease. However, nothing could be further **from the truth**. As mentioned earlier, dieting is not only ineffective in producing long-term **weight loss**, but it is also associated with serious physical and psychological effects including:

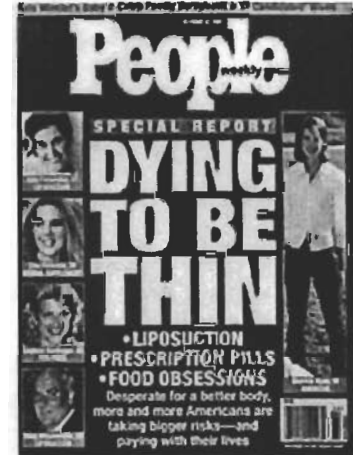
- **nutritional deficiencies** (16, 37, 46)
- **preoccupation** with food, body weight, and shape (12, 30, 48)
- **bingeing and an increased risk** for developing eating disorders (12, 48, 50, 91).
- **self-hatred and social withdrawal** (92)
- **impaired concentration and memory** (93).
- **anxiety and personality changes** (12)
- **low self-esteem and feelings of depression** (93).
- **disengagement from internal cues of hunger** (94, 95).

Dieting can be dangerous for people of all ages but it is especially deleterious for children. Children who diet can experience delayed puberty and “short-stature” syndrome (12), delayed psychosocial development (46), retardation of mental development, and hormonal disturbances (18). Dieting also perpetuates a sense of body

dissatisfaction and obsession that can lead to an eating disorder (20, 93). In fact, it has been noted that “most eating disorders begin with a diet” (20). Based on recent statistics, “up to 35% of normal dieters advance to pathological dieting” and 20% to 25% of pathological dieters “progress to partial or full syndrome eating disorders” (37).

As the **social fear of fatness** continues to intensify and **dieting behaviors increase**, more and more children fall victim to **eating disorders**. Conservative estimates are that “**five to ten million adolescent girls and women struggle with eating disorders or borderline conditions**” and “**one million boys and men struggle with eating disorders or borderline conditions**” (96). Eating disorders present a **very serious health concern**. Not only are eating disorders an **epidemic among females in middle school, high school, and college**, but the mortality rate associated with **eating disorders is as high as 20 percent** (54).

Children who diet learn to be afraid of food and to moralize food (37). As a result, food is categorized as either “**off-diet/bad food**” or “**on diet/good food.**” Subsequently, **dieters frequently experience feelings of guilt and depression** when they eat tempting foods (i.e. “**bad food**”). These feelings reinforce the notion that “**I’m bad when I eat certain foods and good when I eat others**” (16). Feelings of guilt and depression also stem **from failing to lose weight and achieve the desired body shape** (45, 94, 95).



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Did you know?

- Americans spend over \$40 billion on dieting and diet-related products each year. This figure is comparable to the amount of money that the Federal Government spends on education each year (93).
- The desire for girls to lose weight and/or control weight often begins at or around the third grade (97, 98).
- “By fourth grade, 40 percent or more of girls ‘diet’ at least occasionally. Those [girls] who do not are gathering information and forming values and opinions about body shape and weight management” (37).



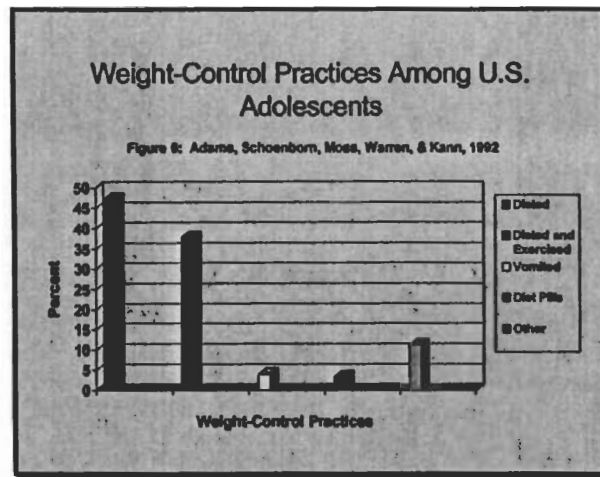
C. What is normal eating?

For many children and adolescents, dieting is considered “normative” behavior. Consequently, children are often unfamiliar with the concept of “normal” eating. We need to encourage our children and adolescents to eat normally by responding to and trusting their internal cues of hunger. The following description was written by Ellyn Satter, M.S., R.D., C.I.C.S.W., B.C.D., author of *Child of Mine: Feeding With Love and Good Sense, How to Get Your Kid to Eat... But Not Too Much*, and *Secrets of Feeding a Healthy Family*. It may help you to communicate the concept of normal eating to your students.

“Normal eating is being able to eat when you are hungry and continue eating until you are satisfied. It is being able to choose food you like and eat it and truly get enough of it - - not just stop eating because you think you should. Normal eating is being able to use some moderate restraint on your food selection to get the right food, but not being *so* restrictive that you miss out on pleasurable foods. Normal eating is giving yourself permission to eat sometimes because you are happy, sad, or bored, or just because it feels good. Normal eating is three meals a day, or four or five, or it can be choosing to munch along the way. It is leaving some cookies on the plate because you know you can have some again tomorrow, or it is eating more now because they taste so wonderful. Normal eating is overeating at times and wishing you had more. Normal eating is trusting your body to make up for your mistakes in eating. Normal eating takes up some of your time and attention, but keep its place as only one important area of your life. In short, normal eating is flexible. It varies in response to your hunger, your schedule, your proximity to food, and your feelings” (99).

D. What other methods of weight loss are children and adolescents using?

In a recent U.S. survey, over one-third of adolescents (ages 12 to 21) tried to lose or prevent weight gain via dieting, diet and exercise, vomiting, diet pills, and other methods (see Figure 6) (100).



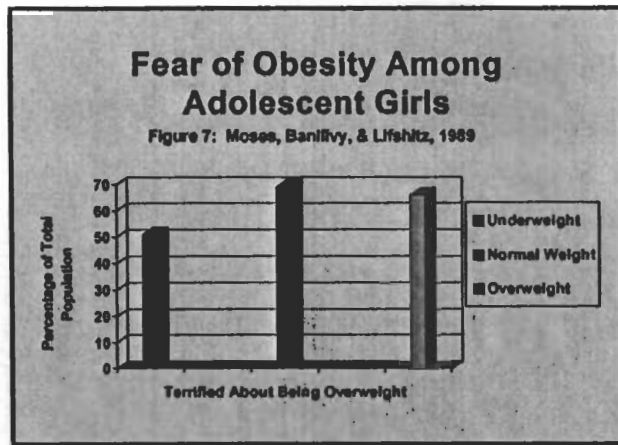
Other destructive methods of weight loss used by children, particularly white girls, include drugs and cigarette smoking. One of the most popular drugs used by teenage girls to lose weight is methamphetamines, more specifically cocaine. Young girls also abuse over-the-counter diet pills, laxatives, and diuretics to control their weight (37). At the same time, boys abuse steroids in an attempt to gain weight and muscle (98, 103). Steroid abuse by adolescent boys is at a record high and the rate continues to climb (20).

In a recent study of 659 high school students, 39% of white females and 12% of white males reported using smoking to control their appetite and weight (101). Adolescent girls also start smoking in an effort to lose weight (102) or prevent weight gain.

VII. Why Are Children So Afraid Of Being Fat?

Today, the ideal body weight and shape for females is an extremely thin, fit body and the ideal for males is an extremely muscular body (11). Our perception of the ideal body weight and shape is largely influenced by images portrayed via television, clothing catalogues, advertisements, and even toys (104). Unfortunately, these images teach children that "if [they] want to be pretty, popular, and successful, [they] have to be thin" (105). More importantly, these images encourage children of all sizes to be afraid of fatness. In fact, fat and thin children alike, are scared of having a fat body (89, 106). Young girls report that they are more afraid of becoming fat than they are of nuclear war, cancer, or losing their parents" (107).

In a study of 457 fourth grade boys and girls, approximately 61% of the children reported that they were worried about being fat and that they weighed themselves everyday (108). In another study of 326 adolescent girls, 51% of underweight girls, 69% of normal weight girls, and 66% of overweight girls reported extreme anxiety about being overweight (see Figure 7)(89).



Although girls do experience greater social pressure than boys in regard to physical appearance (101), boys are becoming increasingly aware of the social value placed on **body appearance** (37, 103). Consequently, the fear expressed by girls in wearing a **bathing suit in public** is matched by boys expressing an “impending horror of going to **camp or the beach** and having to appear in public **without a shirt**” (103). These attitudes and values are most unfortunate and need to **change**. **Children need** to learn that appearance and image projection are not more important than who **they are** and how they can contribute to their community.



Did you know?

- The Barbie doll, has often been considered the ideal female body shape and size. However, few people realize that in real life, the doll’s proportions would represent 38”-18”-32” and she would be seven feet tall! (11).
- Male action toys sport huge chests as well as shoulder and arm muscles. At five feet ten inches, the dolls would have chest measurements of 46” to 62” and biceps of 18” to 32” (109).



Breaking Size Prejudice

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(Video clip is approximately 7 minutes in length)

VIII. Size-Acceptance

A new “unified health approach” toward obesity is growing in popularity among numerous professionals and organizations. The new paradigm is an international movement that discourages weight hysteria and fat phobia. It encourages healthy/normalized eating, increased physical activity, and self-acceptance (i.e. accept diversity

among body size and shapes and improve body image) (5, 110, 111, 112). As described by Francie Berg, LN, author of *Afraid to eat* (1997):

The new paradigm is about wellness and being healthy at every weight. It's about eating in normal, healthy ways, and living actively. It's about self-acceptance, self respect and appreciation of diversity in others. Everyone qualifies. Most especially, every child qualifies (37).

Unlike the "health centered approach," the traditional or old paradigm is based on the premise that weight loss is the solution to the problem of obesity (113) and that "large people must lose weight to be healthy" (37). Given that body weight is largely determined by a biogenetic component and that weight loss techniques are ineffective and often harmful, **body size diversity** should be universally accepted. Unfortunately, our national health policy still supports the old paradigm and recommends weight loss for persons above their "ideal" body weight. In fact, several of the federal health organizations (i.e. National Task Force on Prevention and Treatment of Obesity, the Institute of Medicine, National Academy of Sciences and the National Institute of Diabetes & Kidney Disease) support **school health education programs that screen for obesity and get large children and adolescents on weight loss programs (37)**. Such efforts will certainly perpetuate "fat phobia" and **discrimination against fat people**. At the same time, weight loss programs are ineffective and present serious concerns in regard to the physical and psychological health of our youngsters.

IX. Discrimination In The School Setting

The National Education Association (NEA) recently evaluated antifat discrimination in schools. The findings were that "the school experience for fat children is one of ongoing prejudice, unnoticed discrimination, and almost constant harassment, while fat teachers experience socially acceptable yet outrageous insensitivity and rudeness" (6). Such conditions negatively effect academic performance and deter fat students from participation in social and athletic activities.



Unfortunately, few schools have policies for teasing/bullying and few schools consider the problem a priority. How can we get schools to consider antifat discrimination a serious problem? One approach is to have schools develop and enforce a "No Tolerance for Teasing" policy, support size diversity teaching, and adopt a "No-Taunting Pledge."

- **"No Tolerance for Teasing" policy:** Deb Burgard, Ph.D., suggested schools enforce a "No Tolerance for Teasing" policy much like an organization would enforce a sexual harassment policy for adults. As Dr. Burgard notes, "why should kids have to endure a hostile work environment? (66)."
- **Support size-diversity teaching:** Schools should support the position of the NEA, which is to "foster an improved teaching and learning environment for colleagues

and students who have special needs due to physical size” (5). The latter can be addressed by adapting existing diversity programs to include, not exclude, discrimination based on body size (66).

- **Adopt a “No Taunting Pledge”:** The NEA and the National Association for Fat Acceptance (NAAFA) encourage schools throughout the country to adopt a “No-Taunting Pledge.” The pledge is recited by the school body at the beginning of each school year. The intent of the pledge is to “sensitize staff and youngsters to the importance of accepting diversity. Accepting diversity is one key to ending violence (6).”

No Taunting Pledge

“I will pledge to be part of the solution.
I will eliminate taunting from my own behavior.
I will encourage others to do the same.
I will do my part to make my community a safe place by being more sensitive to others.
I will set the example of a caring individual.
I will eliminate profanity towards others from my language.
I will not let my words or actions hurt others.
And if others won’t become part of the solution, I will (6).”

A. Recognize acts of discrimination

Recognition of prejudicial behaviors is the first step to appropriate intervention. The following provides some examples of possible discrimination, which may be helpful when you teach your students about issues of diversity.

1. “There is a fat girl on your school bus. Every time she gets on, some boys make oink noises, and no one wants to sit next to her. Is it discrimination?”

Yes. Making fun of someone because of their appearance is wrong. Oinking noises are based on the stereotype that fat people are messy pigs who eat too much. The fact is that you can’t tell how much someone eats just by looking at their size. (We all know thin people who eat a lot and never gain weight.) And being a slob has nothing to do with your size. Slobs come in all sizes and so do neat, clean people (114).”

2. “The principal announces that every kid who is more than 10 pounds overweight has to stay after school every Tuesday for a special weight loss class with the school nurse. Thin and average-sized kids don’t have to stay after school. Is this discrimination?”

Yes. It singles out one group of kids based on a physical characteristic and says they are not okay. A better way would be to teach all kids nutrition and good exercise habits (114).”

3. Jane, a fat student, is a terrific soprano singer. The school is putting on a musical play. Jane auditioned for the lead role but did not get it because the teacher said she was looking for someone who can sing alto. Is it discrimination?

No. Although Jane is a wonderfully talented singer, the lead role required someone who could sing **alto not soprano**. The teacher explained this to Jane and she was asked to play another role **that required** a soprano singer.

“Is it discrimination?”

“If you see or **hear something** that seems to be size discrimination, but you’re not sure, here’s an easy way to tell: Imagine the same situation, but instead of a fat person, imagine the person is black, or speaks with a foreign accent, or is in a wheelchair. If you think it would be discrimination against any of those people, it’s probably discrimination against the fat person, too” (114).

B. Recognize size discrimination in educational materials

Unfortunately, educational materials often reinforce stereotypes such as “fat and lazy” or “big and stupid.” When you are reviewing educational materials, consider the impact that these messages may have on children of all sizes. The following are some guidelines to help teachers identify size discrimination in educational materials:



1. Illustrations should not depict fat people in an unattractive manner. Pictures should not be used of fat people wearing ill-fitting clothing, eating enormous amounts of food, or unable to ambulate because of extreme body size. These are generally false stereotypes.
2. Examples or stories of fat children or adults should not be used if at the end of the story the fat person gains acceptance by losing weight. No African-American child would be asked to change his color to achieve acceptability, nor would any female be asked to change her sex to be considered worthwhile. People come in all shapes, sizes, and colors. If a person is considered unacceptable because of size, sex, or color, then it is time to change society, not the body any individual lives in.
3. Textbooks and educational materials have made great strides in the past two decades to include positive pictures and examples of men and women of varying backgrounds and ethnic groups. These materials should also endeavor to include positive images of fat people. Pictures of children should not only include thin Asian, Hispanic, and African-American children, but an occasional fat child in all

these groups as well (115). (Adapted with permission from Russell & Deleen Williams, International Size Acceptance Association).

X. What Is The Teacher's Role?

A. Be a good role model

Teachers are very important adults in the lives of children. Teachers not only have the responsibility to guide and support students but also serve as very important role models. As a role model, a teacher can help children accept and appreciate themselves for who they are and the talents that they possess. At the same time, a teacher can play a vital role in deterring "weightism" in the classroom and in promoting a bias-free school.

One of the most effective ways that a teacher can communicate size-acceptance is by eating and exercising sensibly and by not criticizing his/her body (116, 117). Children watch the behaviors of adults and listen to their attitudes. When children hear adults talk disparagingly about their own bodies, or praising others for weight loss, children learn that appearance is important. It reinforces the social value that thinness is good and fatness is bad. Although body discontent is widespread in our country, teachers have the responsibility to inform colleagues and staff members that it is inappropriate to voice negative opinions about body size and shape in front of students. By not condoning body discontent, students receive a consistent message that "everybody is a good body" (118).

1. What do I say if I hear someone say "I'm too fat, I need to go on a diet!"?

- "Don't self-criticize, character is more important than appearance" (69) or
- "I think you look fine the way you are. You should appreciate yourself for who you are" (119) or
- "Please don't because dieting is not healthy" (119) or
- "Don't diet! Eat a variety of foods and get some exercise" (119) or
- "Remember, being 'thinner' is not the same thing at all as being healthier and happier" (119).
- "The goal should be good health, not a certain body size."
- "Healthy bodies come in all sizes."

2. We all need to self-reflect

To be successful at promoting size-acceptance, we need to be honest with ourselves. We need to realize that we are "products" of a weight conscious society and that we were raised with cultural bias and myths. Thus, we may unknowingly give subtle messages to children about the value of appearance or we may harbor negative feelings toward fatness. At any rate, it is essential that we deal with these personal issues so that we can effectively teach children to stop hating their bodies. Here are some questions suggested by Deborah Byrnes, Ph.D, Assistant Professor at Utah State University, to help you self-reflect:

- 1) "Am I more likely to develop special relationships with thin or attractive children? Do these children receive more smiles and other nonverbal reinforcers? Are thin children more likely to receive a handshake, pat on the back or hug? Do I have higher academic, social or behavioral expectations for

thin/attractive children? Do I feel sorry for children (especially females) who do not meet cultural expectations of beauty?

2) Do I compliment individual children (especially girls) on their appearance in ways that may encourage comparisons among children? 'Look how pretty Carol looks today!' (complimenting healthful grooming habits is certainly more appropriate). Do I relate beauty to goodness? 'You look so pretty - just like an angel' (74).

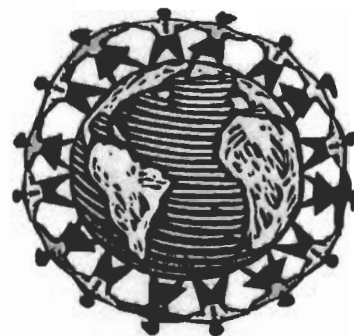


Did you know?

When a dieter says "I was good today because I didn't eat much," a child interprets the comment as "avoiding food is a good behavior." At the same time, when a child hears a dieter say "don't eat that, it will make you fat," the child learns that fat is unappealing and will make you unlikeable (120).

B. Teach students about size diversity

Teaching students about size diversity is just as important as teaching them about exercise and healthy food choices (4). Students need to understand that people have different body shapes and sizes by nature and that fat people "may already be at the right weight, given their genetic inheritance, metabolic functioning, and history of weight loss attempts" (57). In this regard, we communicate that thinness is not "intrinsically healthy and beautiful" and that **fatness is not "intrinsically unhealthy and unappealing"** (112). Helping students develop an increased tolerance for fatness may help to diminish their fear of fatness and may subsequently reduce dieting behaviors, dysfunctional eating, eating disorders, and obesity.



Instruction in size diversity, when discussing other types of diversity (i.e. skin color, culture, and religion), is a valuable lesson that is likely to last a lifetime. Such instruction can help students to:

- correct myths associated with obesity.
- recognize that health is not based on a percentage of body fat or a "best range" for weight.
- appreciate the importance of sensible, healthy exercise and normal, healthy eating.
- recognize the dangers of trying to alter one's body shape and size through dieting or other weight loss methods.
- value the beauty and talents within a person rather than pre-judge a person based on appearance.

C. Teach students cultural awareness

We live in a culture where physical appearance is overly valued and people feel pressured to conform to unrealistic images of beauty. Much of this hype is instigated and propagated by mass media. Media messages, like advertising, communicate the cultural ideal of beauty at the expense of the consumer. Unfortunately, this expense represents a financial as well as emotional and physical cost. For instance, images that portray “standards of beauty” promote insecurity about our own physical appearance. Who wouldn’t feel insecure about their body when they compare themselves to images that have been airbrushed to remove “imperfections” and to models that have been surgically reconstructed? Nevertheless, consumers are quick to purchase products to try to remedy their sense of inadequacy. Often times, these advertisers not only make misleading claims, but their products present associated health risks. As noted by Jean Rubel, Ph.D., President of Anorexia Nervosa and Related Eating Disorders, Inc. (ANRED):

“they [manufacturers] exploit our insecurities by suggesting that in our natural state we are inadequate. They insist that we need their product to be happy, self-confident, popular, and successful. Of course we’ll never look like their model who is six feet tall and wears size three jeans. The ads, however, suggest that we just might if we keep buying the product. So we do” (116).



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It is evident that media has a very strong influence over the development of our self-esteem and body image. It is important for teachers to help students recognize how the media manipulates self-esteem and how much this manipulation costs us.

D. Create a positive environment

A positive environment is needed to successfully raise issues of diversity. The Anti-Defamation League (ADL) recommends creating a positive environment by establishing ground rules and by defining terms:

The ground rules serve as community norms that everyone in the class agrees to abide by. Ask students to develop these norms by thinking about what classroom conditions would have to exist in order for them to feel they can share their ideas and feelings openly. Keep these guidelines posted in your room at all times, and remind students that every person, not just the teacher, is responsible for seeing that the ground rules are adhered to. Define terms so that students develop an appropriate vocabulary for discussing equity issues (121).

E. Teach students self-esteem

Self-esteem is something that is learned, it “isn’t something we are born with” (122). Subsequently, teachers can play an invaluable role in helping children to develop positive self-esteem. How do we teach self-esteem? Self-esteem can be learned by helping students to “take pride in themselves, feel good about themselves when they do the right thing (and own responsibility when they don’t), celebrate their achievements (both tangible and intangible), know what they stand for (and what they won’t stand for), and strive to be their best, inside and out” (122).



The benefits of a high self-esteem are many. Students who have a positive self-esteem feel good about themselves and their bodies. A healthy body image means students are less inclined to diet and are more likely to respect their bodies by adopting healthy behaviors (123). Students with high self-esteem also feel “secure and confident inside themselves” (122). They have no need to bully or ridicule other children and they are better able to cope when they are the target of bullies.



Did you know?

- “Children have higher self-esteem in school environments that foster security, acceptance, independence, and responsibility and where warmth, praise and appropriate limits are consistently present” (82).
- “The most important gift adults can give children is self-esteem. When adults show children they value and love them unconditionally, children can withstand the perils of childhood and adolescence with fewer scars and traumas” (120).

F. Be an advocate and help children stand up for themselves

When children are teased or bullied about their appearance, it is important that we “support them in telling them that they are fine the way they are” (20). Children need reassurance that “what is wrong, are the children who are being cruel” (2) and that “it is not okay for other children to harass them” (20). Unfortunately, many fat children think that harassment is permissible. Amanda Patterson, a sixteen year old from Phoenix, recalls endless taunting when she was in seventh grade. She remembers a boy maliciously saying



Source: Newsweek Magazine, July 3, 2000.
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“I just love it when people are so fat they hang off the edges of their chair!” Amanda explained, “I actually thought that they kind of had a right to say what they wanted to about me, because I was one of the lowest forms of life (you know, a fat person)” (124).

The old adage “sticks and stones may break my bones but names will never hurt me” is far from truthful. The fact is, name calling does hurt and it hurts children of all ages. Teachers need to be advocates for children and should recognize that even older students appreciate and need their support. Thirteen year old Rebecca Schafer once remarked, “I’m in eighth grade, and even though teasing is still a big issue, teachers think we’re more mature, I guess, so they don’t do much about it” (4). Instead of minimizing instances of name calling and bullying, we should seize these opportunities “to educate students about prejudice, discrimination, respect for all persons, and personal integrity” (74).

When children are victims of abuse, they need support to “speak up” for themselves. Teachers can help students figure out how to respond and “stand up” to bullies. For instance, children can reply:

“Yes, I’m fat. So what? Why is that a problem? I don’t like the tone of voice you’re using. I think you’re trying to make fun of me, and I don’t like it. Just because I’m fat? Do I make fun of your height or the grade you got yesterday? I don’t do that and I don’t like what you’re doing” (2).

XI. Appropriate Intervention Techniques

When children are taunted, it is essential that teachers address and confront harassment quickly and directly. If teachers do not address an incident, then children learn that discrimination is acceptable or is not worthy of attention (125). “Children learn by acts of omission as well as commission” (74). Jane Hirschmann, M.S.W., a well-known psychotherapist and eating disorder specialist, recommends that teachers intervene with comments such as:

- “We don’t speak that way here. We don’t like to see children attacked. Any kind of attack hurts” **or**
- “Yeah, that’s right, Susie’s fat. It’s part of who she is. You’re short. He’s tall. This one has blue eyes. This one has brown hair. What do you think is wrong with being fat? The kids might reply, ‘Well, it’s not good to be so fat. She can’t run like we can.’ And the teacher might say, ‘Maybe she can’t run like you can. Can you do math like she can? Can you spell like he can? You know, we’re all different here. We all have different qualities” (2).

A. “10 Tips For Dealing With Prejudice In The Classroom”

The following are some general guidelines that may be helpful when an incident of name-calling occurs in your classroom:

1. **“Don’t ignore it!** Do not let an incident pass without remark. To do so sends the message that you are in agreement with the behavior or attitudes. The intervention may not always take place at the exact time or place of the incident if to do so would jeopardize the safety of the children. But it must be brought up as soon as appropriate.
2. **Explain and engage** when raising the issue - don’t preach or be self-righteous.
3. **Don’t be afraid of possible tension or conflict.** In certain situations it may be unavoidable. These are sensitive and deep-seated issues that won’t change without some struggle.
4. **Be aware of your own attitudes.** We are all victims of our misconceptions to some degree, and none of us remains untouched by the discriminatory images and behaviors we have been socialized to believe. Look at your own stereotypes and expectations and be open to discovering the limitations they place.
5. **Project a feeling of understanding,** love, and forgiveness when events occur. Don’t guilt trip.
6. **Recognize that it is a long-struggle,** so try not to get too frustrated. The “isms” won’t be eradicated in a day or through one multicultural presentation. It is a constant process of change.
7. **Be aware of your own hesitations to intervene** in these situations. Confront your own fears.
8. **Be a role model.** Always reflect and practice the positive values you are trying to teach. Don’t compartmentalize your responses to “multicultural time.”
9. **Distinguish between categorical thinking and stereotyping.** For example, “red heads” is a category, but “redheads have fiery tempers” is a stereotype.
10. **Be non-judgmental but know the bottom line.** Issues of human dignity, equality, and safety are non-negotiable (83).”

XII. Teachers Make A Difference

I’d liked to share a story with you. This story was told by Dr. Mary Pipher, author of *Reviving Ophelia*. It is an inspiring story that demonstrates how important you as future teachers will be in the lives of your students and your community. As an educational leader, you will play a large role in helping children develop positive self-esteem and respect for others. These are essential ingredients in creating a school environment that successfully challenges the social stigma of obesity. As Dr. Pipher poignantly notes, “cultural change is a million individual acts of kindness and courage” (126).

Dr. Pipher: “I went and spoke in this town, and a teacher in this town had heard the saying—you know that saying of practice random acts of kindness and senseless beauty. Well, she’d heard that saying, so she was teaching a third grade class, and she told them that saying, and she said, from now on, whenever you do anything kind or beautiful, come tell me. She started giving them awards at the end of the week. Well, the

other classes heard about it, they started doing it, all the kids at the school got caught up in it. So the school paper started publishing things, the city paper picked it up, a town of about 10,000 people. Then, the city paper started offering an award in the community, to whoever did the best random act of kindness or senseless beauty that week. Well, this town must have had a lot of competitive people, because everybody starts trying to out-do themselves. And people started being so nice to each other, they'd do stuff like bake up a bunch of brownies and walk around their neighborhood handing them out, or – when I was in this town, it was a funny town to be in, because you could hardly open your own car door. You'd pull up some place, somebody's come run open the car, carry your groceries for you, ask if you needed umbrella over your head. People had just gotten socialized because of this little tiny thing, into knocking themselves out to see who could be the nicest. And it had stayed long beyond the original teacher in the story" (126).

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Additional Resources

Classroom Activities That Promote Size-Acceptance

Educators can involve children in various activities and discussions that encourage size-acceptance and respect for diversity. The following activities are just a few examples of how teachers can help students learn to value character versus appearance and discourage “weightism” in the classroom:

A. Pre-teen activities:

1. Creative badges. Have the students make personal badges that describe or depict themselves. Encourage students to include positive characteristics that make them unique including their size and shape. Have the students proudly wear the badges for the day (1) (©ETR Associates. All Rights Reserved. Reprinted with permission from ETR Associates, Santa Cruz, CA. For information about this and other related materials call 1-800-321-4407).



2. A lesson in stereotypes and prejudice. The following activity can be used to help students understand the meaning of “stereotype” and “prejudice.” The arguments listed below demonstrate how overgeneralizations (stereotypes) can lead to prejudice. Have children read the statements and ask them if they think the arguments are fair or valid. Ask them if they can think of other examples of stereotypes. Are *they* fair? Ask them if they can think of factors that influence our opinions (i.e. media, parents, friends, etc.).

“Beets taste awful.
Beets are red.
All red foods taste awful.

I saw Tony steal a bicycle.
Tony lives on Washington Street.
All people who live on Washington Street steal.

Jamie cheated on his test.
Jamie is in the third grade.
All third graders cheat.

Sally uses bad language.
Sally is poor.
All poor people use bad language” (2).

Help students understand that generalizations can influence our actions. For example, using the exercise above, a fellow student may avoid third graders because he/she thinks that all third graders cheat. Ask students how they would feel if they were in third grade.

3. An activity for the class. Help create a positive classroom environment by having students decorate a bulletin board with book jackets, magazines, wrapped boxes, and pictures of people. Add the following captions to the board: “Don’t judge a book by it’s jacket. [Don’t judge a magazine by its cover.] Don’t judge a gift by its wrapping. Don’t judge people by their appearance” (3).

4. Hold a class election. Collect pictures of children and mount them on a board. Choose pictures of anonymous boys and girls of various races, sizes, shapes, traits (i.e. hair and eye color, complexion, etc.), height, degrees of attractiveness, clothing etc. Create a ballot and have the students vote for class officials (i.e. president, secretary, treasurer, etc.). Ask them who they think would be the “best person” for the different positions. Tally the votes and discuss with the students how they arrived at their decisions. Ask them if they think this was a fair election? “Do you think people judge others by their appearance sometimes? What kinds of things should you know about persons before you vote for them? What is it called when you think you know something about persons just by the way they look?” (3).

5. Share experiences. Invite a fat person into the classroom to talk to students. Have the person share personal stories and encourage the students to ask questions. See if the school can offer workshops such as *Kids Come in all Sizes*, by the Council on Size and Weight Discrimination (CSWD). These workshops are presented to middle school students by a “visiting” large person (professional or nonprofessional) and a school counselor or teacher (4). The workshops are intended to teach students about size bias and learn ways to help fight size discrimination.



B. Teen activities:

6. Body image. Have students identify physical attributes that were considered attractive during different periods of history. Review pictures of people from various texts and works of art. Discuss how a larger body size was favored and considered attractive during earlier periods. Discuss how this contrasts with today’s ideal image. Ask students to write about their perception of the ideal body image in the year 2040 (1) (©ETR Associates. All Rights Reserved. Reprinted with permission from ETR

Associates, Santa Cruz, CA. For information about this and other related materials call 1-800-321-4407).

7. A collage of advertisements. Have students collect advertisements from different magazines and newspapers. Ask the students to select ads that depict models advertising different products such as clothing, cosmetics, diet-aids, food, hair care, etc. Make a collage with the pictures. Discuss body size similarities among the different models. Have the students identify stereotypes and marketing techniques that are being used. Discuss the different messages that the advertisers are trying to convey. Ask the students if the advertisements are misleading or honest. For example, will you look like or be as happy as the model if you use their product? List the class findings and mount them with the collage. Display the collage in a visible area for other students to enjoy (1) (©ETR Associates. All Rights Reserved. Reprinted with permission from ETR Associates, Santa Cruz, CA. For information about this and other related materials call 1-800-321-4407).

8. A collage of athletes. Have the students collect pictures of male and female athletes from magazines and newspapers. Ask the students to select pictures that depict athletes of all sizes, shapes, ages, races, and abilities (i.e. non-handicapped and handicapped). Include athletes such as swimmers, gymnasts, wrestlers, basketball and football players, baseball and softball players, jockeys, etc. Label the collage with a statement such as “athletes are fit and they come in all sizes and shapes” (1) (©ETR Associates. All Rights Reserved. Reprinted with permission from ETR Associates, Santa Cruz, CA. For information about this and other related materials call 1-800-321-4407).

9. Critical thinking. Examine the media’s over emphasis on body appearance. Have students identify offensive advertisements and/or TV shows that either perpetuate the stereotypes associated with fat people or promote the nearly unattainable narrow definition of beauty. Discuss how these images affect a person’s body image and how they lend profit to the diet industry. Help students critically evaluate and counter the media’s messages. For example, “rather than feeling bad about my body, I’m going to criticize the media and people who tell me I’m supposed to look a certain way.’ Or ‘I’m going to be offended by weight loss ads, instead of thinking I should use their products. I’d rather be strong than skinny.’ Or ‘I feel bad about my looks after watching this sitcom; I’m not going to watch it anymore” (5). Encourage students to write a letter of complaint to the advertisement company and/or television station and share the letter with their parents. Have the students collect signatures of support and promote a boycott of the product(s) (5).



C. Develop a peer support program

With appropriate guidance and support, children can be encouraged to form a peer support program. Cathi Rodgveller, M.Ed. is a school counselor who helped girls in her New York school develop a sexual harassment peer support program. In a recent article, the program is described as a possible model to help fight “weightism:”

“The girls from her [Cathi Rodgveller] groups organized and developed a plan to combat sexual harassment, and then took it to the girls’ gym class and got other girls to sign up. In effect, almost all the girls in the school committed to support each other whenever they saw a girl being harassed. Instead of one girl having to fend off comments about her breast size, for example, a group of girls would come to her defense and they would all tell the boys to stop. Cathi Rodgveller’s peer support program for at-risk kids was featured in a PBS special” (4).

This type of peer support program could be easily adapted to help fight size-bias. Implementation of such programs would certainly benefit school communities.

Advice to Parents

It should come as no surprise that children labeled overweight learn very early that this is not a good thing to be. When nine-year old kids were asked to rate silhouettes of thin and heavy boys and girls, they attributed all sorts of negative characteristics to the heavier silhouettes. The researchers concluded that “pre-adolescent children’s perception of thinness and overweight echo the prejudices against overweight voiced by society.” Experts believe that the psychological trauma of being overweight is more severe than the physical effects. The loss of self-esteem for above average weight children starts very early. Health professionals need to advise parents of larger children that their attitudes toward their own bodies and their children’s weight will have a direct and major impact on whether these children grow up with their self-esteem intact. Following is a list of “do’s and don’ts” for parents of large children.

DO:

- Do love and accept your child unconditionally. This will help them to love and accept themselves. Remember – you love your child not for how they look but for who they are.

- Do treat size and weight as a characteristic that contributes to their uniqueness. Teach them that diversity is what makes the world so interesting. Nature provides many examples. Flowers, for instance, come in all shapes, colors and sizes – and yet all are beautiful.
- Do examine your own biases and ask yourself whether your concern is for yourself or you child. A larger child may make some parents feel embarrassed, and some may feel that having an “overweight” child signifies a family’s lack of self-discipline. As with most forms of prejudice, these feelings stem from myths and misinformation.
- Do educate yourself about what causes some people to be larger than others so you can separate myths from facts for your children. Books that will help you do this are *Self-Esteem Comes In All Sizes* by Carol Johnson (Doubleday, 1996) and *Big Fat Lies* by Glenn Gaesser (Fawcett Columbine, 1996). Then educate your children. Have a discussion about heredity. Explain that body size is an inherited characteristic much the same as hair and eye color.
- Do emphasize your child’s positive attributes and talents and teach them that these are the things that count. Help them to develop the thing they’re good at.
- Do make an extra effort to help them find clothes similar to what their friends are wearing. It’s real important at this age to “blend in.” JC Penney has a catalog called “Big Kids.” Call 1-800-222-6161 and ask for a copy.
- Do arm your children for dealing with the outside world and our culture’s obsession with thinness. Tell them that many groups of people have suffered discrimination and prejudice, and that larger people are one of these groups. Help them plan how they would react to negative comments about their weight. Do some role-playing.
- Do make your home and family a safe haven for them where they can always count on your support and encouragement. They’ll have enough to deal with outside the home in our fat phobic society.
- Do be a good role model. Don’t criticize your own body. You’re the most important person in your child’s life. If they see that you like your own body, they’ll find it easier to like theirs. Consider reading *Like Mother, Like Daughter* by Deborah Waterhouse (Hyperion, 1997), who writes extensively about the influence mothers have over their daughters with regard to body image.
- Do provide examples for them of attractive and successful larger people, both current and historical. Also give them an anthropology lesson and inform them that many other cultures value and desire bodies of amply proportion.

- Do help your larger child to unravel the “thin is in” media hype. There are about 400 top fashion models, and less than one percent of the female population has the genetic potential to look like them. Attractive people can come in assorted shapes, sizes and colors.

DON'T:

- Don't EVER say or imply that your child's weight makes him/her less attractive or less acceptable in any way. This can cause lifelong **damage to self-esteem**. There is **NO** connection between weight and self-worth and **you are responsible for helping your child realize this**. And for heaven's sake, **don't tell your child she has “such a pretty face”- if only she'd lose weight**. **Shaming or teasing a child about their weight or body has the opposite effect and will make them hate their bodies even more.**
- Don't tell your child that no one will want to date them unless they're thin. First of all, it's not true. Plenty of plus-size girls have boyfriends. Tell your child that lasting affection **looks beneath the surface** and is not bound by narrow definitions of beauty.
- Don't ever put a **child** on a diet. Most dietitians now agree that this is not the way to help them manage **their** weight. In the long run dieting will only make them fatter. Maintaining a **stable** weight has shown through research to be safer than continual yo-yo **dieting**. Focus on development of a healthy lifestyle. Make physical activity a **family** affair – go for a family walk, but family swimming passes to a community pool, have a family “dancing party,” go biking together or “go fly a kite!”
- Don't become the “food police.” Continually nagging your child about what he/she is eating will surely backfire. Children can always find ways of getting “forbidden” foods. In the worst-case scenario, you could be contributing to development of an eating disorder such as anorexia or bulimia. Besides, foods should not be categorized as “good” or “bad.” All food has a place in normal eating. This is the view of registered dietitian Ellyn Satter in her book *How To Get Your Kid To Eat, But Not Too Much* (Bull Publishing, 1987).

Despite all your child's best efforts, your child may never be thin. **THIS IS NOT THE WORST THING THAT COULD HAPPEN**. Many heavy children become heavy adults – and still live satisfying, fulfilling lives. Researchers will tell you that there is much to learn yet about obesity and what causes it, and that there is no permanent cure for most people. Teach you child that a rich, rewarding life has nothing to do with their weight and everything to do with their own attitude and self-image.

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Videos

Body Talk: Teens Talk About Their Bodies, Eating Disorders and Activism

The Body Positive
2417 Prospect St., Suite A
Berkeley, CA 94704
Phone/Fax: 510-841-9389

Breaking Size Prejudice

WIN Wyoming
University of Wyoming Cooperative Extension Service, Albany County
P.O. Box 1209, Laramie, WY 82073
wardlaw@uwyo.edu

Killing Us For Our Own Good: Dieting and Medical Misinformation

By Dawn Atkins
Body Image Task Force
PO Box 360196
Melbourne, FL 32936-0196
dawn_atkins@earthlink.net

Slim Hopes

By Jean Kilbourne
Healthy Weight Network
402S 14th St., Hettinger, ND 58639
hwj@healthyweight.net

Still Killing Us Softly

By Jean Kilbourne
Healthy Weight Network
402S 14th St., Hettinger, ND 58639
hwj@healthyweight.net

Programs

A 5 Day Lesson Plan on Eating Disorders: Grades 7-12

By Michael Levine and Laura Hill
(available from Eating Disorders Awareness and Prevention, Inc., 206-382-3587 or
Gurze Books, 800-756-7533).

Full of Ourselves

By Catherine Steiner-Adair and Lisa Sjostrom
Lesson plans and activities for middle school girls
Harvard Eating Disorder Center (HEDC)
Boston, MA.

Girls in the 90's

By Sandra Susan Friedman

Eating Disorders prevention program for pre- and early adolescent girls; group format

Salal Books, Box 309, 101-1184 Denman St.

Vancouver, BC, Canada V6G 2M9 (604)-689-8399

Healthy Body Image: Teaching Kids to Eat and Love Their Bodies Too!

By Kathy J. Kater

Prevention curriculum for grades 4-6

(available from Eating Disorders Awareness and Prevention, Inc., 206-382-3587 or

Gurze Books, 800-756-7533).

Just for Girls

By Sandra Susan Friedman

A facilitator's manual for helping adolescent girls avoid eating disorders and weight preoccupation. Includes a section for boys.

(available via Gurze Books, 800-756-7533).

Kids Come In All Sizes

Kids' Curriculum and Outreach Project

Cathi Rodgvell, Project Manager

Council on Size & Weight Discrimination, Inc.

PO Box 305, Mt. Marion, NY 12456

914-679-1209

Teens & Diets – No Weigh: Building the road to healthier living

By Linda Omichinski

Eight lesson plans, scripts, resources, teen journal, and parent guidebook.

Manitoba, Canada (204) 428-3432; (800) 565-4847; fax (204) 428-5072

NEDSP: The National Eating Disorders Screening Program

A program of the National Mental Health Illness Screening Project, Inc.

1 Washington St., Suite 304

Wellesley Hills, MA 02181

(781) 239-0071

Vitality Leader's Kit

Health Promotion materials focused on prevention of eating and weight problems

Health Services and Promotion, Health and Welfare, Canada, Ottawa, Ontario, Canada

(613) 957-8331; fax (613) 941-2399

Books

Am I Fat? Helping Young Children Accept Differences in Body Size

By Joanne Ikeda and Priscilla Naworski

(available via Gurze Books, 1-800-756-7533)

Are You Too Fat, Ginny?

By Karin Jasper, 1988

Toronto: Is Five Press

Children and Teens Afraid to Eat: Helping Youth in Today's Weight-Obsessed World

By Francis M. Berg, 2001 (3rd edition)

(available in your local bookstore, online, and through your library).

Children and Weight: What's A Parent to do? And Family Choices for Good Health

By Joanne Ikeda and Rita Mitchell

Low literacy booklets for parents

ANR Pub., Oakland, CA (415) 642-2431

Everything You Need to Know about Eating Disorders

By Rachel Kubersky, 1992

New York: Rosen Publishing

Fat Chance

By Leslea Newman, 1994

(available via <http://www.naafa.org>)

Foxy Fables And Facts About Dieting

Toronto INDD Coalition, 1996

(available via <http://www.naafa.org>)

How to Get Your Kid to Eat... But Not Too Much

By Ellyn Satter

(available in your local bookstore, online at www.ellynsatter.com, and through your library).

If My Child is Overweight What Should I Do About it?

By Joanne Ikeda, 1998

(available via <http://www.naafa.org>)

Life in the Fat Lane

By Cherie Bennett, 1998

(available via <http://www.naafa.org>)

Preventing Childhood Eating Problems: A Practical, Positive Approach to Raising Children Free of Food & Weight Conflicts

By Jane Hirschmann, 1993
(available via Gurze Books, 1-800-756-7533)

Reviving Ophelia: Saving the Selves of Adolescent Girls

By Mary Pipher, 1994
New York, N.Y.: Ballantine Books

You Count, Calories Don't

By Linda Omichinski
Order toll free 1-800-565-4847

Organizations

ANAD: National Association of Anorexia & Associated Disorders
P.O. Box 7
Highland Park, IL 60035
(847) 831-3438

Body Image Task Force (BITF)
P.O. Box 360196
Melbourne, FL 32936-0196

Council on Size & Weight Discrimination, Inc.
PO Box 305
Mt. Marion, NY 12456
914-679-1209
<http://www.cswd.org>

Eating Disorders and Awareness Prevention (EDAP)
603 Stewart St., Suite 803
Seattle, WA 98101
Phone: (206) 382-3587
<http://www.edap.org>

Eating Disorder Referral and Information Center
International Eating Disorder Referral Organization
2923 Sandy Pointe, Suite 6
Del Mar, CA 92014-2052
858-481-1515
<http://www.edreferral.com>

Gurze Books
PO Box 2238
Carlsbad, CA 92018
1-800-756-7533
<http://www.bulimia.com>

Healthy Weight Network
Frances M. Berg
402 South 14th Street
Hettinger, ND 58639
701-567-2646
<http://www.healthyweight.net>

HUGS International
Box 102A, RR3
Portage la Prairie, Manitoba, Canada, R1N 3A3
1-800-565-4847
<http://www.hugs.com>

Largely Positive, Inc.
P.O. Box 170223
Glendale, WI 53217
414-299-9295 (voicemail)
<http://www.largelypositive.com>

National Association to Advance Fat Acceptance, Inc.
P.O. Box 188620
Sacramento, CA 95818
1-800-442-1214
<http://www.naafa.org>

Additional Web-Sites

<http://www.eskimo.com/~largesse/>

<http://www.radiancemagazine.com>

<http://www.feminist.com>

<http://www.bodypositive.com>

<http://www.ellynsatter.com>

<http://ncscatalog.com>

<http://www.size-acceptance.org>

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3. Byrnes, D. A. (1987). The physically unattractive child. Childhood Education, December, 80-85.
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5. Ericsson, S. (1999). Reviving Ophelia Study Guide: Exercises. [Online]. Available: <http://www.mediaed.org/guides/pipher/pipher2.html> [2000, August 8].

Appendix M
Pilot Test Participant Comments

PILOT TEST PARTICIPANT COMMENTS

1. "I think its great for teachers, lots of good information and an important topic to tackle."
2. "I feel this is a very important topic and it effects people everyday. I thought the module provided a lot of helpful information and would be meaningful to use in a classroom."
3. "I liked how it was offered online and you could work on it at your convenience. A few things I didn't like about it were how difficult it was to start and how some of the questions were not questions and came up that you unanswered them."
4. "This module was very personal to me. I struggle with my weight and body image everyday. Perhaps, if as teachers we can prevent adolescent "teasing" and teach all children to respect and love themselves we can eliminate and negative body image feelings."
5. "I found this module to be very informative and well worth my time to teach. It is beneficial to read the contents and hopefully those who do will learn as much as I did about weight issues. I really enjoyed reading this module!! I also loved the poem and plan to share it with friends."
6. "The essay was particularly informational and will be a great reference!"
7. "The module was good except the counselor rating form 1-37 I had no idea what I was supposed to do or what it meant. I clicked on instructions and they where not there and I didn't get points for them either even after I clicked to read them."
8. "I really enjoyed the information provided in this module, and I was surprised at some of my responses to the survey questions. My best friend is overweight, and has lost over 60 pounds in the last year! I found this module to be very applicable to my life because of my friend, and I thought of her as I took part in it! This was a very informative module that really made me think, and I definitely recommend it to EVERYONE, not just prospective teachers. Maybe it will help people to not be so critical of "fat" people! :)"
9. "This was very informative and I will really keep this information in mind when I have my own classroom."

Appendix N
Prototypical Statistical Analyses

ONE-WAY ANALYSIS OF VARIANCE - AFAT MEANS REPEATED MEASURES GROUPS 1-5

```
>CATEGORY GROUP
>COVAR
>DEPEND PREOPMEAN POSTOPMEAN V6WKOPMEAN/ REPEAT =3,NAMES='time'
```

```
>ESTIMATE
```

Effects coding used for categorical variables in model.

Categorical values encountered during processing are:

GROUP (5 levels)

1, 2, 3, 4, 5

Number of cases processed: 258

Dependent variable means

| PREOPMEAN | POSTOPMEAN | V6WKOPMEAN |
|-----------|------------|------------|
| 1.945 | 1.795 | 1.810 |

Univariate and Multivariate Repeated Measures Analysis

Between Subjects

| Source | SS | df | MS | F | P |
|--------|---------|-----|-------|-------|-------|
| GROUP | 2.449 | 4 | 0.612 | 0.855 | 0.492 |
| Error | 181.189 | 253 | 0.716 | | |

Within Subjects

| Source | SS | df | MS | F | P | G-G | H-F |
|------------|--------|-----|-------|--------|-------|-------|-------|
| time | 3.515 | 2 | 1.758 | 39.204 | 0.000 | 0.000 | 0.000 |
| time*GROUP | 1.116 | 8 | 0.140 | 3.111 | 0.002 | 0.002 | 0.002 |
| Error | 22.687 | 506 | 0.045 | | | | |

Greenhouse-Geisser Epsilon: 0.9562
Huynh-Feldt Epsilon : 0.9785

Multivariate Repeated Measures Analysis

| Test of: time | Hypoth. | df | Error df | F | P |
|----------------|---------|----|----------|--------|-------|
| Wilks' Lambda= | 0.790 | 2 | 252 | 33.539 | 0.000 |
| Pillai Trace = | 0.210 | 2 | 252 | 33.539 | 0.000 |
| H-L Trace = | 0.266 | 2 | 252 | 33.539 | 0.000 |

| Test of: time*GROUP | Hypoth. | df | Error df | F | P |
|---------------------|---------|----------------------|----------|-------|-------|
| Wilks' Lambda= | 0.917 | 8 | 504 | 2.779 | 0.005 |
| Pillai Trace = | 0.083 | 8 | 506 | 2.751 | 0.006 |
| H-L Trace = | 0.089 | 8 | 502 | 2.807 | 0.005 |
| Theta = | 0.075 | S = 2, M =125.0, N = | 0.0 | P = | 0.003 |

```
>HYPOTHESIS
>STANDARDIZE=WITHIN
>AMATRIX [ 1 1 0 0 0 ]
>CMATRIX [ 1-1 0 ]
```

```
>TEST
Hypothesis.
```

A Matrix

| | | | | | |
|--|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 |
| | 1.000 | 1.000 | 0.000 | 0.000 | 0.000 |

C Matrix

| | | | |
|--|-------|--------|-------|
| | 1 | 2 | 3 |
| | 1.000 | -1.000 | 0.000 |

Test of Hypothesis

| Source | SS | df | MS | F | P |
|------------|--------|-----|-------|-------|-------|
| Hypothesis | 0.012 | 1 | 0.012 | 0.128 | 0.721 |
| Error | 23.307 | 253 | 0.092 | | |

```
>HYPOTHESIS
>STANDARDIZE=WITHIN
>AMATRIX [ 1 1 0 0 0 ]
>CMATRIX [ 1 0-1 ]
```

```
>TEST
Hypothesis.
```

A Matrix

| | | | | | |
|--|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 |
| | 1.000 | 1.000 | 0.000 | 0.000 | 0.000 |

C Matrix

| | | | |
|--|-------|-------|--------|
| | 1 | 2 | 3 |
| | 1.000 | 0.000 | -1.000 |

Test of Hypothesis

| Source | SS | df | MS | F | P |
|------------|--------|-----|-------|-------|-------|
| Hypothesis | 0.013 | 1 | 0.013 | 0.126 | 0.723 |
| Error | 26.548 | 253 | 0.105 | | |

```
>HYPOTHESIS
>STANDARDIZE=WITHIN
>AMATRIX [ 1 1 0 0 0 ]
>CMATRIX [ 0 1-1 ]
```

```
>TEST
Hypothesis.
```

A Matrix

| | 1 | 2 | 3 | 4 | 5 |
|--|-------|-------|-------|-------|-------|
| | 1.000 | 1.000 | 0.000 | 0.000 | 0.000 |

C Matrix

| | 1 | 2 | 3 |
|--|-------|-------|--------|
| | 0.000 | 1.000 | -1.000 |

Test of Hypothesis

| Source | SS | df | MS | F | P |
|------------|--------|-----|-------|-------|-------|
| Hypothesis | 0.050 | 1 | 0.050 | 0.693 | 0.406 |
| Error | 18.205 | 253 | 0.072 | | |

```
>HYPOTHESIS
>STANDARDIZE=WITHIN
>AMATRIX [ 1 0 1 0 0 ]
>CMATRIX [ 1-1 0 ]
```

```
>TEST
Hypothesis.
```

A Matrix

| | 1 | 2 | 3 | 4 | 5 |
|--|-------|-------|-------|-------|-------|
| | 1.000 | 0.000 | 1.000 | 0.000 | 0.000 |

C Matrix

| | 1 | 2 | 3 |
|--|-------|--------|-------|
| | 1.000 | -1.000 | 0.000 |

Test of Hypothesis

| Source | SS | df | MS | F | P |
|------------|--------|-----|-------|--------|-------|
| Hypothesis | 2.533 | 1 | 2.533 | 27.498 | 0.000 |
| Error | 23.307 | 253 | 0.092 | | |

```
>HYPOTHESIS
>STANDARDIZE=WITHIN
>AMATRIX [ 1 0 1 0 0 ]
>CMATRIX [ 1 0 -1 ]
```

```
>TEST
Hypothesis.
```

A Matrix

| | 1 | 2 | 3 | 4 | 5 |
|--|-------|-------|-------|-------|-------|
| | 1.000 | 0.000 | 1.000 | 0.000 | 0.000 |

C Matrix

| | 1 | 2 | 3 |
|--|-------|-------|--------|
| | 1.000 | 0.000 | -1.000 |

Test of Hypothesis

| Source | SS | df | MS | F | P |
|------------|--------|-----|-------|--------|-------|
| Hypothesis | 2.603 | 1 | 2.603 | 24.805 | 0.000 |
| Error | 26.548 | 253 | 0.105 | | |

```
>HYPOTHESIS
>STANDARDIZE=WITHIN
>AMATRIX [ 1 0 1 0 0 ]
>CMATRIX [ 0 1 -1 ]
```

```
>TEST
Hypothesis.
```

A Matrix

| | 1 | 2 | 3 | 4 | 5 |
|--|-------|-------|-------|-------|-------|
| | 1.000 | 0.000 | 1.000 | 0.000 | 0.000 |

C Matrix

| | 1 | 2 | 3 |
|--|-------|-------|--------|
| | 0.000 | 1.000 | -1.000 |

Test of Hypothesis

| Source | SS | df | MS | F | P |
|------------|--------|-----|-------|-------|-------|
| Hypothesis | 0.000 | 1 | 0.000 | 0.007 | 0.935 |
| Error | 18.205 | 253 | 0.072 | | |

```
>HYPOTHESIS
>STANDARDIZE=WITHIN
>AMATRIX [ 1 0 0 1 0 ]
>CMATRIX [ 1-1 0 ]
```

```
>TEST
Hypothesis.
```

A Matrix

| | | | | | |
|--|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 |
| | 1.000 | 0.000 | 0.000 | 1.000 | 0.000 |

C Matrix

| | | | |
|--|-------|--------|-------|
| | 1 | 2 | 3 |
| | 1.000 | -1.000 | 0.000 |

Test of Hypothesis

| Source | SS | df | MS | F | P |
|------------|--------|-----|-------|--------|-------|
| Hypothesis | 1.981 | 1 | 1.981 | 21.504 | 0.000 |
| Error | 23.307 | 253 | 0.092 | | |

```
>HYPOTHESIS
>STANDARDIZE=WITHIN
>AMATRIX [ 1 0 0 1 0 ]
>CMATRIX [ 1 0-1 ]
```

```
>TEST
Hypothesis.
```

A Matrix

| | | | | | |
|--|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 |
| | 1.000 | 0.000 | 0.000 | 1.000 | 0.000 |

C Matrix

| | | | |
|--|-------|-------|--------|
| | 1 | 2 | 3 |
| | 1.000 | 0.000 | -1.000 |

Test of Hypothesis

| Source | SS | df | MS | F | P |
|------------|--------|-----|-------|--------|-------|
| Hypothesis | 1.644 | 1 | 1.644 | 15.670 | 0.000 |
| Error | 26.548 | 253 | 0.105 | | |

```
>HYPOTHESIS
>STANDARDIZE=WITHIN
>AMATRIX [ 1 0 0 1 0 ]
>CMATRIX [ 0 1 -1 ]
```

```
>TEST
Hypothesis.
```

A Matrix

| | | | | | |
|--|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 |
| | 1.000 | 0.000 | 0.000 | 1.000 | 0.000 |

C Matrix

| | | | |
|--|-------|-------|--------|
| | 1 | 2 | 3 |
| | 0.000 | 1.000 | -1.000 |

Test of Hypothesis

| Source | SS | df | MS | F | P |
|------------|--------|-----|-------|-------|-------|
| Hypothesis | 0.016 | 1 | 0.016 | 0.218 | 0.641 |
| Error | 18.205 | 253 | 0.072 | | |

```
>HYPOTHESIS
>STANDARDIZE=WITHIN
>AMATRIX [ 1 0 0 0 1 ]
>CMATRIX [ 1 -1 0 ]
```

```
>TEST
Hypothesis.
```

A Matrix

| | | | | | |
|--|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 |
| | 1.000 | 0.000 | 0.000 | 0.000 | 1.000 |

C Matrix

| | | | |
|--|-------|--------|-------|
| | 1 | 2 | 3 |
| | 1.000 | -1.000 | 0.000 |

Test of Hypothesis

| Source | SS | df | MS | F | P |
|------------|--------|-----|-------|--------|-------|
| Hypothesis | 1.719 | 1 | 1.719 | 18.659 | 0.000 |
| Error | 23.307 | 253 | 0.092 | | |

```
>HYPOTHESIS
>STANDARDIZE=WITHIN
>AMATRIX [ 1 0 0 0 1 ]
>CMATRIX [ 1 0-1 ]
```

```
>TEST
Hypothesis.
```

A Matrix

| | | | | | |
|--|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 |
| | 1.000 | 0.000 | 0.000 | 0.000 | 1.000 |

C Matrix

| | | | |
|--|-------|-------|--------|
| | 1 | 2 | 3 |
| | 1.000 | 0.000 | -1.000 |

Test of Hypothesis

| Source | SS | df | MS | F | P |
|------------|--------|-----|-------|-------|-------|
| Hypothesis | 0.821 | 1 | 0.821 | 7.827 | 0.006 |
| Error | 26.548 | 253 | 0.105 | | |

```
>HYPOTHESIS
>STANDARDIZE=WITHIN
>AMATRIX [ 1 0 0 0 1 ]
>CMATRIX [ 0 1-1 ]
```

```
>TEST
Hypothesis.
```

A Matrix

| | | | | | |
|--|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 |
| | 1.000 | 0.000 | 0.000 | 0.000 | 1.000 |

C Matrix

| | | | |
|--|-------|-------|--------|
| | 1 | 2 | 3 |
| | 0.000 | 1.000 | -1.000 |

Test of Hypothesis

| Source | SS | df | MS | F | P |
|------------|--------|-----|-------|-------|-------|
| Hypothesis | 0.164 | 1 | 0.164 | 2.277 | 0.133 |
| Error | 18.205 | 253 | 0.072 | | |

```
>HYPOTHESIS
>STANDARDIZE=WITHIN
>AMATRIX [ 1-1-1-1-1 ]
>CMATRIX [ 1-1 0 ]
```

```
>TEST
Hypothesis.
```

A Matrix

| | | | | | |
|--|-------|--------|--------|--------|--------|
| | 1 | 2 | 3 | 4 | 5 |
| | 1.000 | -1.000 | -1.000 | -1.000 | -1.000 |

C Matrix

| | | | |
|--|-------|--------|-------|
| | 1 | 2 | 3 |
| | 1.000 | -1.000 | 0.000 |

Test of Hypothesis

| Source | SS | df | MS | F | P |
|------------|--------|-----|-------|--------|-------|
| Hypothesis | 1.367 | 1 | 1.367 | 14.835 | 0.000 |
| Error | 23.307 | 253 | 0.092 | | |

```
>HYPOTHESIS
>STANDARDIZE=WITHIN
>AMATRIX [ 1-1-1-1-1 ]
>CMATRIX [ 1 0-1 ]
```

```
>TEST
Hypothesis.
```

A Matrix

| | | | | | |
|--|-------|--------|--------|--------|--------|
| | 1 | 2 | 3 | 4 | 5 |
| | 1.000 | -1.000 | -1.000 | -1.000 | -1.000 |

C Matrix

| | | | |
|--|-------|-------|--------|
| | 1 | 2 | 3 |
| | 1.000 | 0.000 | -1.000 |

Test of Hypothesis

| Source | SS | df | MS | F | P |
|------------|--------|-----|-------|-------|-------|
| Hypothesis | 0.869 | 1 | 0.869 | 8.279 | 0.004 |
| Error | 26.548 | 253 | 0.105 | | |

```

>HYPOTHESIS
>STANDARDIZE=WITHIN
>AMATRIX [ 1-1-1-1-1 ]
>CMATRIX [ 0 1-1 ]

```

```

>TEST
Hypothesis.

```

A Matrix

| | 1 | 2 | 3 | 4 | 5 |
|--|-------|--------|--------|--------|--------|
| | 1.000 | -1.000 | -1.000 | -1.000 | -1.000 |

C Matrix

| | 1 | 2 | 3 |
|--|-------|-------|--------|
| | 0.000 | 1.000 | -1.000 |

Test of Hypothesis

| Source | SS | df | MS | F | P |
|------------|--------|-----|-------|-------|-------|
| Hypothesis | 0.056 | 1 | 0.056 | 0.780 | 0.378 |
| Error | 18.205 | 253 | 0.072 | | |

ANALYSIS OF COVARIANCE BMI WITH AFAT MEANS GROUPS 1-5

```
>GLM
>CATEGORY GROUP / EFFECT
>MODEL PREOPMEAN POSTOPMEAN V6WKOPMEAN = CONSTANT + GROUP+BMI+GROUP*BMI/ REPEAT
=3,NAMES='time'
```

```
>ESTIMATE
```

Effects coding used for categorical variables in model.

Categorical values encountered during processing are:

GROUP (5 levels)

1, 2, 3, 4, 5

6 case(s) deleted due to missing data.

Number of cases processed: 252

Dependent variable means

| PREOPMEAN | POSTOPMEAN | V6WKOPMEAN |
|-----------|------------|------------|
| 1.947 | 1.798 | 1.811 |

Univariate and Multivariate Repeated Measures Analysis

Between Subjects

| Source | SS | df | MS | F | P |
|-----------|---------|-----|-------|-------|-------|
| GROUP | 3.442 | 4 | 0.861 | 1.193 | 0.314 |
| BMI | 1.088 | 1 | 1.088 | 1.508 | 0.221 |
| GROUP*BMI | 3.952 | 4 | 0.988 | 1.370 | 0.245 |
| Error | 174.507 | 242 | 0.721 | | |

Within Subjects

| Source | SS | df | MS | F | P | G-G | H-F |
|----------------|--------|-----|-------|-------|-------|-------|-------|
| time | 0.088 | 2 | 0.044 | 0.969 | 0.380 | 0.377 | 0.380 |
| time*GROUP | 0.378 | 8 | 0.047 | 1.043 | 0.402 | 0.402 | 0.402 |
| time*BMI | 0.009 | 2 | 0.004 | 0.099 | 0.906 | 0.899 | 0.906 |
| time*GROUP*BMI | 0.274 | 8 | 0.034 | 0.755 | 0.643 | 0.637 | 0.643 |
| Error | 21.947 | 484 | 0.045 | | | | |

Greenhouse-Geisser Epsilon: 0.9598
Huynh-Feldt Epsilon: 1.0000

Multivariate Repeated Measures Analysis

| Test of: time | Hypoth. | df | Error df | F | P |
|----------------|---------|----|----------|-------|-------|
| Wilks' Lambda= | 0.993 | 2 | 241 | 0.810 | 0.446 |
| Pillai Trace = | 0.007 | 2 | 241 | 0.810 | 0.446 |
| H-L Trace = | 0.007 | 2 | 241 | 0.810 | 0.446 |

| Test of: time*GROUP | | Hypoth. df | Error df | F | P |
|---------------------|-------|--------------------------|----------|-------|-------|
| Wilks' Lambda= | 0.969 | 8 | 482 | 0.943 | 0.480 |
| Pillai Trace = | 0.031 | 8 | 484 | 0.945 | 0.479 |
| H-L Trace = | 0.031 | 8 | 480 | 0.941 | 0.482 |
| Theta = | 0.023 | S = 2, M =119.5, N = 0.0 | P = | | 0.502 |

| Test of: time*BMI | | Hypoth. df | Error df | F | P |
|-------------------|-------|------------|----------|-------|-------|
| Wilks' Lambda= | 0.999 | 2 | 241 | 0.096 | 0.908 |
| Pillai Trace = | 0.001 | 2 | 241 | 0.096 | 0.908 |
| H-L Trace = | 0.001 | 2 | 241 | 0.096 | 0.908 |

| Test of: time*GROUP | | Hypoth. df | Error df | F | P |
|---------------------|-------|--------------------------|----------|-------|-------|
| *BMI | | | | | |
| Wilks' Lambda= | 0.977 | 8 | 482 | 0.696 | 0.695 |
| Pillai Trace = | 0.023 | 8 | 484 | 0.697 | 0.694 |
| H-L Trace = | 0.023 | 8 | 480 | 0.695 | 0.696 |
| Theta = | 0.019 | S = 2, M =119.5, N = 0.0 | P = | | 0.611 |

TWO-WAY ANALYSIS OF VARIANCE BMI AND GENDER GROUPS 1-5

Effects coding used for categorical variables in model.

Categorical values encountered during processing are:

BMICAT (3 levels)

1, 2, 3

DEM1 (2 levels)

1, 2

6 case(s) deleted due to missing data.

Dep Var: BMI N: 252 Multiple R: 0.776 Squared multiple R: 0.603

-1
Estimates of effects $B = (X'X)^{-1} X'Y$

| | | | BMI |
|----------|---|--|--------|
| CONSTANT | | | 23.675 |
| BMICAT | 1 | | -4.951 |
| BMICAT | 2 | | -0.968 |
| DEM1 | 1 | | -0.346 |
| BMICAT | 1 | | |
| DEM1 | 1 | | 0.104 |
| BMICAT | 2 | | |
| DEM1 | 1 | | 0.499 |

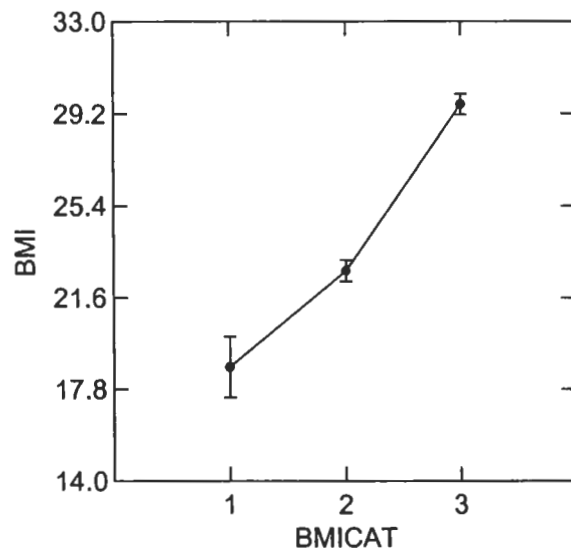
Analysis of Variance

| Source | Sum-of-Squares | df | Mean-Square | F-ratio | P |
|-------------|----------------|-----|-------------|---------|-------|
| BMICAT | 1855.765 | 2 | 927.882 | 79.954 | 0.000 |
| DEM1 | 6.300 | 1 | 6.300 | 0.543 | 0.462 |
| BMICAT*DEM1 | 37.673 | 2 | 18.837 | 1.623 | 0.199 |
| Error | 2854.888 | 246 | 11.605 | | |

Least squares means

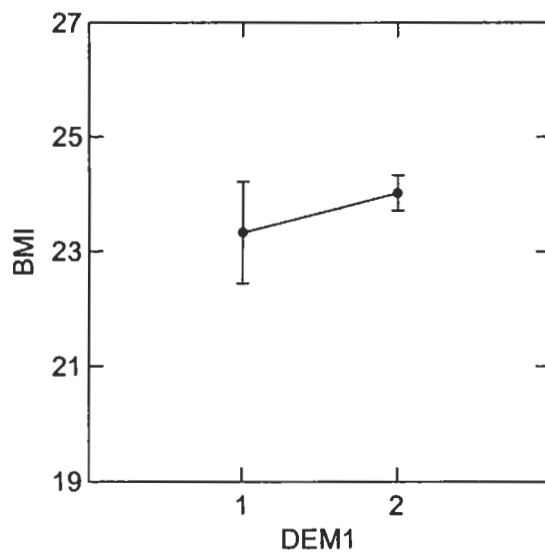
| | | LS Mean | SE | N |
|--------|---|---------|-------|-----|
| BMICAT | 1 | 18.724 | 1.266 | 21 |
| BMICAT | 2 | 22.707 | 0.444 | 126 |
| BMICAT | 3 | 29.593 | 0.423 | 105 |

Least Squares Means



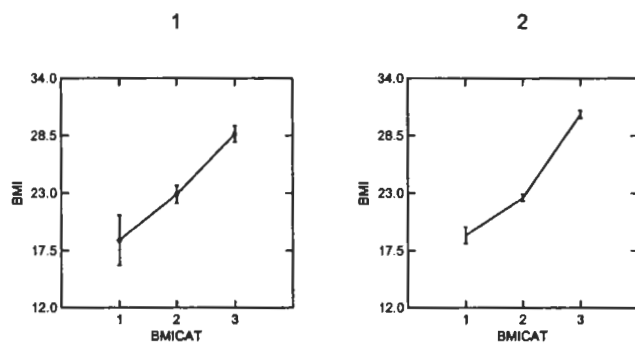
| | | | |
|------|---|--------|-----|
| DEM1 | 1 | 23.329 | 39 |
| DEM1 | 2 | 24.020 | 213 |

Least Squares Means



| | | | | |
|--------|---|--------|-------|-----|
| BMICAT | 1 | | | |
| DEMI | 1 | 18.482 | 2.409 | 2 |
| BMICAT | 1 | | | |
| DEMI | 2 | 18.966 | 0.782 | 19 |
| BMICAT | 2 | | | |
| DEMI | 1 | 22.861 | 0.826 | 17 |
| BMICAT | 2 | | | |
| DEMI | 2 | 22.553 | 0.326 | 109 |
| BMICAT | 3 | | | |
| DEMI | 1 | 28.645 | 0.762 | 20 |
| BMICAT | 3 | | | |
| DEMI | 2 | 30.542 | 0.370 | 85 |

Least Squares Means



*** WARNING ***

Case 89 is an outlier
Case 183 is an outlier

(Studentized Residual = 4.931)
(Studentized Residual = 4.717)

Durbin-Watson D Statistic 1.831
First Order Autocorrelation 0.083

Appendix O
Supplemental Tables

Table O.1 Frequencies For Nutrition Information Sources

| | Yes | No |
|---|-------|-------|
| 1. Books | 62% | 38% |
| 2. Doctor | 55.4% | 44.6% |
| 3. Magazines | 51.9% | 48.1% |
| 4. Newspapers | 45.3% | 55.7% |
| 5. Internet | 44.2% | 55.8% |
| 6. Media | 41.1% | 58.9% |
| 7. Teacher | 38.8% | 61.2% |
| 8. Other | 31.8% | 68.2% |
| 9. Dietitian | 26.7% | 73.3% |
| 10. Nurse | 26.4% | 73.6% |
| 11. Relative working in the health care field | 25.6% | 74.4% |
| 12. Peer-reviewed journals | 20.5% | 79.5% |
| 13. Relative not working in the health care field | 9.7% | 90.3% |

Subjects responded to all that applied (n=258)

Table O.2 Antifat Attitudes Test (AFAT) Mean Scores¹ Adjusted by College Status: Time by Year in School Least Square (LS) Mean Scores (\pm SE)

| Year in School | AFAT Pretest LS Means ² | AFAT Posttest LS Means ³ | AFAT Follow-up LS Means ⁴ |
|------------------|---------------------------------------|--|---|
| First Year | 2.310 (\pm 0.105) ^a | 2.148 (\pm 0.119) ^a | 2.160 (\pm 0.120)^a |
| Sophomore | 2.069 (\pm 0.064) | 1.948 (\pm 0.073) | 1.968 (\pm 0.074) |
| Junior | 1.950 (\pm 0.053) ^b | 1.825 (\pm 0.061) | 1.826 (\pm 0.061) |
| Senior | 1.819 (\pm 0.065) ^c | 1.697 (\pm 0.074) ^b | 1.691 (\pm 0.075) ^b |
| Graduate Student | 1.782 (\pm 0.121) ^d | 1.569 (\pm 0.137) ^c | 1.580 (\pm 0.138) ^c |
| College Graduate | 1.872 (\pm 0.092) ^e | 1.685 (\pm 0.104) ^d | 1.615 (\pm 0.105) ^d |

1 Antifat Attitudes Test (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997), scores ranged from 1=definitely disagree to 5=definitely agree

2 First year students have higher negative attitudes at pretest compared to juniors (p=0.027), seniors (p=0.001), graduate students (p=0.012), and certified teachers (p=0.021).

3 First year students have higher negative attitudes at posttest compared to seniors (p=0.017), graduate students (0.018), and certified teachers (p=0.008).

4 First year students have higher negative attitudes at follow-up compared to seniors (p=0.012), graduate students (p=0.019), and certified teachers (p=0.008).

Table O.3 Antifat Attitudes Test¹ Mean Scores Covaried with Counselor Rating Form²: Group Slope Values

| Groups | Pretest | Posttest ³ | Follow-up ⁴ |
|------------------------------------|---------|-----------------------|------------------------|
| Module + source credentials | -.147 | -.265 | -.215 |
| Module + credible "non-fat" source | -.125 | -.126 ^a | -.075 ^a |
| Module + credible "fat" source | -.229 | -.485 ^b | -.400 ^b |

1 Anti-Fat Attitudes Test (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997), scores ranged from 1=definitely disagree to 5=definitely agree with negative attitudes of obesity

2 Counselor Rating Form (Barak & LaCrosse, 1975)

3 $p=0.009$ the credible "fat" source had a more favorable effect on attitudes of obesity at posttest than the credible "non-fat" source

4 $p=0.025$ the credible "fat" source had a more favorable effect on attitudes of obesity at follow-up than the credible "non-fat" source

Note: Group slopes followed by a, b illustrate time by treatment (groups 3 and 4) interactions.

Table O.4 Anti-Fat Attitudes Test¹ Mean Scores Covaried with Counselor Expertise²: Group Slope Values

| Groups | Pretest | Posttest ³ | Follow-up ⁴ |
|------------------------------------|---------|-----------------------|------------------------|
| Module + source credentials | -.186 | -.329 ^a | -.279 ^a |
| Module + credible "non-fat" source | -.051 | -.043 ^b | -.026 ^b |
| Module + credible "fat" source | -.150 | -.399 ^a | -.295 ^a |

1 Anti-Fat Attitudes Test (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997), scores ranged from 1=definitely disagree to 5=definitely agree with negative attitudes of obesity

2 Counselor Rating Form Subscale 1 (Barak & LaCrosse, 1975)

3 $p=0.017$ perceived expertise of the credible source without appearance had a more favorable effect on attitudes of obesity at posttest than the perceived expertise of the credible "non-fat" source, $p=0.003$ perceived expertise of the credible "fat" source had a more favorable effect on attitudes of obesity at posttest than the perceived expertise of the credible "non-fat" source

4 $p=0.045$ perceived expertise of the credible source without appearance had a more favorable effect on attitudes of obesity at follow-up than the perceived expertise of the credible "non-fat" source, $p=0.034$ perceived expertise of the credible "fat" source had a more favorable effect on attitudes of obesity at follow-up than the perceived expertise of the credible "non-fat" source

Note: Group slopes followed by a, b illustrate time by treatment (groups 2, 3, and 3,4) interactions.

Table O.5 Antifat Attitudes Test¹ Mean Scores Covaried with Counselor Trustworthiness²: Group Slope Values

| Groups | Pretest | Posttest ³ | Follow-up ⁴ |
|------------------------------------|---------|-----------------------|------------------------|
| Module + source credentials | -.161 | -.256 ^a | -.217 |
| Module + credible "non-fat" source | -.141 | -.120 ^a | -.103 ^a |
| Module + credible "fat" source | -.220 | -.503 ^b | -.436 ^b |

1 Anti-Fat Attitudes Test (Lewis, Cash, Jacobi, & Bubb-Lewis, 1997), scores ranged from 1=definitely disagree to 5=definitely agree with negative attitudes of obesity

2 Counselor Rating Form Subscale 2 (Barak & LaCrosse, 1975)

3 $p=0.030$ perceived trustworthiness of the credible "fat" source had a more favorable effect on attitudes of obesity at posttest than the perceived trustworthiness of the credible source without appearance $p=0.005$ perceived trustworthiness of the credible "fat" source had a more favorable effect on attitudes of obesity at posttest than the perceived trustworthiness of the credible "non-fat" source

4 $p=0.019$ perceived trustworthiness of the credible "fat" source had a more favorable effect on attitudes of obesity at follow-up than the perceived trustworthiness of the credible "non-fat" source

Note: Group slopes followed by a, b illustrate time by treatment (groups 2, 4, and 3,4) interactions.

Table O.6 Need for Cognition (NC) Mean Scores¹ Adjusted by College Status

| Year in School | NC Mean \pm SE |
|-------------------------|-------------------|
| First Year ² | 3.371 \pm 0.139 |
| Sophomore ³ | 3.307 \pm 0.085 |
| Junior ⁴ | 3.484 \pm 0.071 |
| Senior ⁵ | 3.613 \pm 0.086 |
| Graduate Student | 4.060 \pm 0.160 |
| College Graduate | 3.708 \pm 0.122 |

1 Need for Cognition Short Scale (Cacioppo & Petty, 1982), scores ranged from 1=extremely uncharacteristic to 5=extremely characteristic

2 $p=0.000$ first year versus graduate student, $p=0.020$ first year versus teacher

3 $p=0.000$ sophomore versus graduate student, $p=0.005$ sophomore versus teacher, $p=0.014$ sophomore versus senior

4 $p=0.000$ junior versus graduate student

5 $p=0.011$ senior versus graduate student

Table O.7 Knowledge of Obesity (KOB) Mean Scores¹ Adjusted by College Status: Time by Year in School Least Square (LS) Mean Scores (\pm SE)

| Year in School | KOB Pretest LS Means ² | KOB Posttest LS Means ³ | KOB Follow-up LS Means |
|------------------|-----------------------------------|------------------------------------|------------------------|
| First Year | 0.866 (\pm 0.060) | 0.862 (\pm 0.064) ^a | 0.930 (\pm 0.062) |
| Sophomore | 0.870 (\pm 0.037) | 0.909 (\pm 0.039) ^b | 0.862 (\pm 0.038) |
| Junior | 0.846 (\pm 0.031) ^a | 0.862 (\pm 0.033) ^c | 0.872 (\pm 0.032) |
| Senior | 0.918 (\pm 0.038) | 1.002 (\pm 0.040) | 0.972 (\pm 0.039) |
| Graduate Student | 0.953 (\pm 0.069) | 1.179 (\pm 0.074) ^d | 1.044 (\pm 0.072) |
| College Graduate | 1.024 (\pm 0.053) ^b | 1.027 (\pm 0.056) | 1.038 (\pm 0.055) |

1 Short Obesity Knowledge Scale (Price, O'Connell, & Kukulka, 1985), scores ranged from 2=strongly agree (true statements)/disagree (false statements) to 0=strongly disagree (true statements)/agree (false statements).

2 College graduates have higher KOB scores at pretest compared to juniors ($p=0.041$).

3 Graduate students have higher KOB scores at posttest compared to first year ($p=0.015$), sophomores ($p=0.015$), and juniors ($p=0.001$).

Appendix P
Module Feedback

SUBJECT FEEDBACK REGARDING MODULE

Demographic question:

This module may be used for sensitivity training for elementary education (K-8) teachers in the future. Please provide **any** additional comments/feedback that you think may be helpful (i.e. What did you **like most** about the module?, What did you not like about the module?, **What aspect of the module** did you find most useful as a prospective teacher?).

Comments regarding persuasion:

1. "I think that this module was an excellent way for me to see a different side of the issue. The suggestions for teachers will be very helpful to me when I am in my own classroom. I am doing a field experience right now, and I have seen some of this sort of discrimination/teasing at play. I have a better idea of what to do to remedy the situations now."
2. "I thought that this was very well organized, and very interesting. It made me think about, and challenge my own ideas towards obesity, and obese people."
3. "Very insightful information. I would not have realized many of the things that I read about beforehand."
4. "Easy to understand and told it how it was. Not confusing and one can relate to it. Interesting info and very helpful for understanding obese people. It makes you more sensitive to their feelings and needs."
5. "I found the discrimination faced by obese students to be very informative and heart rendering."
6. "I thought the module was very informative and fact based. It provided interesting information as to teaching skills and preventative measures. I was unable to view the two movies due to technical difficulties and would have liked to see them. The best aspect was how everything was related to perceptions of weight and how most peoples perceptions, including my own, are incorrect."
7. "The module was very interesting and helped to show other points of view on overweight and obesity."
8. "Module very helpful and interesting. it's amazing how many stereotypes it is easy to hold without realizing it. I enjoyed the biological basis of the article, as a biology under-graduate I think there is great potential to understand and help students by understanding who people are biologically, but also that environment plays a role - and that is what teachers are in the business of creating - a nurturing, learning environment."
9. "The module opened up a lot of topics for me that I was not previously aware of."

10. "I was amazed that I did not know much of the information presented and that I had bought into a lot of myths that I now know are incorrect. The manner this information was presented was excellent."
11. "I agree with a lot of the things you are preaching. I learned from my life about how weight affects people. I was fat once. I am not now. But I **still some** time am not comfortable with the way I look. Even though I am not fat. **The media** paints a picture that no **one can** achieve. It makes me angry that we **live in this** culture, but the only way to **change** it is with things like this. Small steps to the goal."
12. "I believe that my experience as a fat youth may have jaded my perspective and made me more sensitive to my future students needs."
13. "The module was very interesting. As the daughter of an obese parent, I could identify with some of the feelings of frustration and inferiority that she has felt most of her life. I agree that obese children should be spared from these feelings as much as possible."
14. "The most interesting part of this module was the part how **kids are teased** about their weight because I feel that it is not only the "fat" kids that are **teased, it is also the** "thin" ones from a personal view. I was teased throughout all **my school years**(except in college) for being so thin, I was called all kind of "thin" names to **put it kindly**, but that was not my fault for being thin. I ate more than others could but I never gained weight, and for my height it made it even worse. So I know how it feels to be teased. The points about the effects of being teased were present everyday throughout my life, even though I had family support on my being thin, my self-esteem has never recovered. Other than that all the information throughout the module was very useful and informative for everyone to use even the teachers."
15. "I believe it is important to raise issues of discrimination and self-esteem. Our children need to be more aware of diversity in all forms. Health issues should be stressed, not size."

Comments pertaining to sensitivity training/application in the classroom:

16. "I found the statistics informative. Also, the material about how to encourage students to be more sensitive to weight issues in the classroom was interesting and I plan to use the suggestions in the future."
17. "I think that the whole module itself was very helpful as a future teacher. I learned some new facts. I particularly the suggestions on how to handle weight discrimination in the school. Children can be very cruel and that is due in part to society and parental influence and we as teachers need to know how to overcome these influences."

18. "In our school we are setting up a no bullying system. We have had a man come to our school for work shops. I think this will fit right in with what we have been working on."
19. "I feel that this module would be very helpful for elementary school teachers. It is another way to promote diversity in the classroom and work to get rid of prejudice earlier in life. I did feel that the module was a bit redundant at times though."
20. "I think this is useful for sensitivity training for teachers. I learned quite a few facts I was unaware of. It was nicely done and easy to understand. I enjoyed the personal stories that were added and the graphs that were also used to visualize a point. I feel the module was easy and would use it again if I needed information on this topic."
21. "I think that talking about students perception and acceptance of each other is very important in creating a community within your classroom as a teacher. It will allow you to have an environment where everyone feels safe to learn and express themselves for who they are and be a part of an accepting group of people. We also need to educate the children we teach about different types of diversity and acceptance, so that they do not leave their educational journey ignorant to the fact that different is not bad. Different is just different."
22. "I already teach a unit about self acceptance and work strongly on self-esteem. This gave me added knowledge and an understanding about obesity that I didn't have before. We often think of diversity in so many areas, and I had never thought about it with body size. That has changed."
23. "The module talked about an issue that isn't always discussed in education classes, especially when they discuss gender bias's and nationality bias's."
24. "As a teacher at the middle school level I believe that we cannot underestimate the importance of sensitivity training. I have seen a big difference in my own school over the years as this type of training has been instituted."
25. "I think this would be a great module to use for sensitivity training. This is a sensitive issue that many teachers tend to ignore, with this module they will have the resources to help the issue."
26. "It was excellent! I would provide handouts of the information and have teachers in training plan lessons about the info. Very key comparisons to other selected groups of "handicapped", "different" or minority types were well done. All of the research was very interesting! The heartfelt true experiences made good points, too."
27. "We have been teaching character education and trying to eliminate Bullying. This certainly helps bring the teasing of fat children to the for front of our teaching."

28. "All of the information was very easy to apply to my teaching career. I have no doubt I will be using the information provided as soon as tomorrow."
29. "I liked the emphasis on making the classroom a "safe" environment for all children - including those that are considered overweight. I also appreciated the "intervention techniques" and "tips for dealing with prejudice in the classroom". I expect that I will utilizing this info very soon!"
30. "The module brought up many interesting points that I had never taken into consideration regarding obesity. It has given me a broader understanding of how to deal with situations of obesity in the classroom and has also made me more sensitive to these issues especially in regards to children."
31. "I think this info is relevant to my everyday teaching. Just last Friday, I had a student tell me that another student made fun about her being "fat". This is still going on even if we don't see it happening. This would make a good assembly for middle school students. A spirit club activity."
32. "I thought that the module was very helpful for me as a prospective teacher. I will definitely take the information that was provided about handling situations around this topic in my classroom. The language of the module was very easy to understand versus medical language. Overall, it was very helpful."
33. "I printed off the "10 Tips For Dealing With Prejudice In The Classroom," and intend to implement them in my own future classroom. The module is full of useful information that is extremely practical and pertinent to elementary children, especially in this day and age of unattainable body-image standards that we seem to be bombarded with. The module hits home because everyone is affected by body-image, not just our children. I found it very interesting and insightful. . .something I will not soon or ever forget. Thank you."

Comments regarding need for training/nutrition education:

34. "I wish some of my teachers had been required to take this during elementary school, and to middle school to some extent."
35. "I thought the classroom activities were the most beneficial. I know that there is a stereotype for obese children but I couldn't think of ways to combat it so being able to see the ideas in the module was very helpful."
36. "I think this was good insight to how overweight kids are treated and this should be brought to all teachers attention."
37. "I liked the emphasis placed on not ignoring the rude comments...this problem will cause some commotion in the classroom but it must be addressed. I also liked the

specific examples of how children and adults can seriously affect the lives of overweight students.”

38. “I think is a very useful module because all teachers must confront this problem of discrimination and taunting, and we have to create programs to help our students first learn to love themselves, and second to live healthier lives.”
39. “The examples of what to say to students in a discriminatory situation were helpful to me. Otherwise, I wouldn't know where to begin!”
40. “I really enjoyed participating in this activity. I feel that obesity is a huge problem in today's society and more frequently younger children are becoming obsessive about their weight. It is important for teachers to learn about good nutrition to help educate the students in their class to lead them on a better lifestyle. I thought this was helpful because it gave me a new perspective on how to deal with nutrition in the classroom! :)”
41. “Coming to this project, having very little background in nutrition and obesity, I thought it was beneficial to have all the background knowledge first. I liked the organization of the topics and thought they were very logical. I have printed out a copy and plan to keep it to remind me of things I can do to be in better shape and help my future students and peers feel better about themselves. I agree there is a problem in our schools, as well as our societies in the way we treat obese people. Hopefully more people will come across this information and change societies perception.”
42. “I have never struggled with weight control and this module supplied me with important information about obesity. Especially obesity and its effects on young children.”
43. “The teaching Module you provided will definitely be helpful for future references.”
44. “I liked the sections on dealing with weightism in schools. The information on obesity was also extremely helpful and interesting - causation factors, research-based information. Well-done and useful. I will incorporate much of this in my health course for high school freshman.”
45. “The list of things that teachers can do is very helpful - a teacher could print that off and save it. I would put it somewhere near me at school so that if I saw a problem I could quickly refer to it for some possible solutions and things that I could do to help.”
46. “I found the module to be very informative and I feel as though it offered several good ideas on ways to apply the knowledge presented into the classroom.”

47. "I would recommend this module for any future/current teacher. I believe that it will help in addressing the an issue that will most likely arise in the classroom. The module gives suggestions to help one cope/deal with those issues relating to obesity."
48. "I thought that this module was well, prepared and informative. I found it personally interesting because I find that child obesity is growing in the U.S. and definitely needs to be addressed."
49. "I think this whole process went very well. It was set up very well, it went smoothly. I learned a lot of information about obesity. I am glad I got involved in this research, it is something I will remember when I start teaching. I really liked the advice to give to teachers when they hear someone discriminating against the obese and what they should say or do. Thanks for the information!"
50. "The information about what happens in schools today concerning fat people was interesting and helpful as I prepare for teaching myself. Module was interesting and easy to understand and not too long."
51. "I found it interesting to read statistics about obesity, the causes of it, and strategies of how to reduce discrimination in the classroom. That will probably prove to be useful in the future."
52. "Everything to do with people's images of themselves and societal norms. the whole thing was very informative and I learned a lot about nutrition."
53. "All information was useful, when learning about obese children and how they are teased too much. I didn't realize children were harassed that badly."
54. "I found this module to be very informative. I feel that something like this should be incorporated into the college curriculum to become a teacher."
55. "The proof that teachers do avoid or teach down to overweight kids was of interest to me and made me mad."
56. "I thought the module would be a wonderful training manual for teachers, as well as anyone, should look to. I wish this had been around when I was in school."
57. "The module was well understood and had the info needed. The module was understandable and had a lot of good insights. I think all the aspects are useful as a prospective teacher."
58. "I did not like that I was unable to jump back into the teaching module where I left off, but always had to page through. I think a teacher could make use of the videos."

I assume they are available, I would like more information about teacher intervention. To the extent intervention requires drawing attention to the victim of the harassment (of whatever type), is it still okay to assume it's better to address the issue with the whole class? I realize sometimes the events are only known by the people involved, and in that case it's not necessary, but should you automatically discuss comments heard by the whole group in front of the whole group?"

59. "I appreciated all of the information on how to deal with children's emotions over obesity."
60. "I thought I knew more than I did about some aspects of obesity. I have done nutrition education and never focused on what one looks like, but instead, the benefits of healthy eating and eating all things in moderation. I am glad to have the opportunity to participate. Thanks..."
61. **"This module was very helpful for school use and personal knowledge with my own family. It will help in relationships with others that I am in contact."**

Comments regarding use of technology:

62. **"I am in the process of taking Adolescent Psychology and I was very happy to see all of the sources that you used. We are talking about eating disorders on Friday and found some of this information very helpful and plan to bring it up during discussion. When I saw that you were consistently using quotations I was disappointed when I kept seeing them and no Mary Pipher. (Reviving Ophelia is a requirement for Ad Psch) Then in one of the final pages there was a quotation from her and I was pleasantly surprised that you did not leave out this expert in the field of female adolescence. I especially liked the sections about how teachers should handle teasing. This was the first of these that I have ever done and was somewhat nervous. However, I really enjoyed module and found it very informational."**
63. "I enjoyed reading the different statistics related to this issue. I was glad that you could take your time with the teaching module. I stopped and went back to it, took notes, etc."
64. "I especially liked the piece where you asked the reader to question their own thoughts on how they perceive certain students-I think it makes it real for them. I didn't like reading it from computer, didn't think about printing it. Also, I unfortunately, could not access the movie clips that you provided-no doubt my computer needs to be updated. I liked your responses about being a good role model as a teacher-it is very true that a lot of harm can be done to a child from something not done as well as what is done. In other words, we need to respond immediately when taunting is going on."
65. "Well done for teachers to inform children about obesity. For me, technologically was not the easiest.."

66. "I enjoyed this method of learning and would be interested in updating my knowledge in this way in the future. I appreciated that I could work on the module at my own pace and on my own schedule. I was unable to get the movies to run on my computer. As a teacher I found the updated information and perspective most helpful in preparing lessons and dealing with related issues with my students. Thank you. Ronda PS. Please notify my of the 6 week follow up survey at my home e-mail address of ralecompte@aol.com."
67. "I thought it was nice to have the module broken down into components. I did not take any breaks while reading the module, but this format would have enabled me to do so. It also made it easier for me to process. I could complete one section, and then process the information without becoming overwhelmed."
68. "I liked the module because it was easy to access and it was on the internet, I didn't have to leave my house. I didn't like it because the last post test was really long and had a lot of questions, but they didn't take to long. Sometimes it got a bit confusing. But overall, it was good."
69. "This was the first time I have done a survey of this sort on the internet. I found it very interesting and felt very secure being at home and doing the survey without being put on the spot in a classroom."
70. "I liked being able to complete the module at my own pace and on my own schedule."
71. "I do not like working on the computer. Having a hard copy is more my style."
72. "I think the module was very easy to use and the instructions were very step by step."
73. "I liked the fact that a large amount of easy to understand information was packed into one module. That makes it helpful, knowledgeable, and a time saver."

Comments regarding questionnaires:

74. "The questions were harsh yet eye opening!"
75. "The information was helpful, but the post-test was difficult to use... this effected my answers."
76. "I didn't like that there were so many questions however some of the questions made me think about what type of person I am."
77. "Some of the questions were offensive and if an obese person were taking this test they might be extremely depressed due to the way the questions were stated."

78. "I thought that the module was very informative. I wish that the font was larger in places, so much small print is hard to read for an extended period of time on the computer. The information was very helpful. I don't think that people realize the genetic connection. I think that the more knowledge people have, the more understanding and tolerant we all will be. I do think that it was a lot of information to absorb. I know that I didn't remember some of the answers to questions asked, but I did remember it being discussed. I enjoyed participating."
79. "I liked that the questions were not too broad and hard to interpret. I thought some of the questions were a little strong towards people who are fat. But I also thought that the questions were relevant to the topic and they did make me think about my answers as well."
80. "I enjoyed the information and the way in which this model worked. The survey questions about the instructor were very difficult to answer. Enthusiastic or not? How is one to tell from a computer?"
81. "I have always been interested in nutritional facts. I was one of the teenagers who always thought I was fat and had to lose weight by means of dietary supplements, ie. slimfast, dexatrim, etc.(keep in mind I usually got bored or tired of using it) I realize now who I am is who I am, but I try to adopt a healthy eating style and exercise regularly. As a pre-service teacher I am always looking for information to help me in my new career. I think this module was excellent in sharing and clarifying information that can easily be passed on to myself and my students to understand and I always love having tips to keep at the back of my mind for future reference. One last thing, some of the questions, I felt uncomfortable answering. For example, one question asked if overweight people should wear revealing clothing in public? I disagreed, but on the other side I also disagree for people who are average weight also. There are certain places to wear certain clothing. And some questions I felt were either right or wrong for all people. I know it is hard to create a full proof questionnaire, just an example. Karen"
82. "I felt that the module was less than complete in it's information; some of the information was opinion-based and subjective interpretation. Many of the questions were vague and general or leading and poorly worded. Most of the questions dealt with generalizations (like, fat people are fat because they eat too much - this is the case with some fat people, but not all, and an "agree, disagree" answer choice is not at all representative of my feelings or knowledge about this area)."
83. "I didn't really get what #1-37 was all about. It was difficult to answer putting all 'overweight' people into a single category. I know 'skinny' people that could fit as well. I think that skewed some of my answers. Maybe 'sometimes' could have been an option."

84. "These were interesting question and I am eager to see the statistics. I don't understand why some questions were asked over others, so this will be an interesting set of results to read."
85. "I thought that the first portion of this posttest was very confusing (the part that was rating the instructor). **Some** of the questions seemed **too ambiguous** to answer. This might be made **more clear in** the future. Other than **that, the module** was very straight forward and **accessible.**"
86. "The part that I did **not enjoy** about the module is that there are many types of fat people. One cannot **just say** agree, disagree, or uncertain to some of those questions. In maybe true in **some cases** but is definitely not in others."
87. "The Teaching Module was full of great information and facts, however I was unable to find the questions pertaining to this section, and therefore unable to answer them."
88. "This was very informative, and I enjoyed answering the questions....I didn't really understand why you asked the same questions in the tests over and over again."

General comments regarding module:

89. "The graphs and charts were hard to read because they were too small. The information is clearly presented and relevant."
90. "The length was a little drawn out and shouldn't be enforced to be completed all at once. It should be a 'learn at own pace'."
91. "I liked the informative reading and videos. I disliked the fact that I had to keep on clicking on "Save Answer," There are ways to do that so people only have to click on one button. I found the "things to say" section very useful."
92. "I liked the list of tools that teachers can use to help stop the bullying and taunting that occurs within the classroom."
93. "I liked the graphs and the content was interesting and relevant to the study and to teaching as well."
94. "This module was easy and useful and provided interesting information."
95. "The module was informative, this was the best part. The worst part was navigating the web site. There are problems with it and it causes confusion. Teaching acceptance of varying body sizes is honorable. However, if this results in neglecting or not addressing the health risks associated with being overweight it is intolerable."
96. " I liked everything"

97. "Helping children build self esteem. Improving awareness of children who bully children that are different. Identifying that the children who are doing the bullying are also suffering from self esteem issues too."
98. "I enjoyed the module."
99. "Having take home handouts for use would be helpful, **especially with the strategies.** The directions and process could be a little less complicated to go through. Other than that it was excellent. Perhaps using overweight instead of fat."
100. "I found the module to be long, but very thorough. Maybe a shortened version would get the same information across."
101. "I felt that the information presented was very relevant. I enjoyed the written information. Thank you very much."
102. "The part that I liked the best, and I think is the most useful is when there were examples of what teachers should say to their students when the children are making fun of people."
103. "I think this module was very informative for teachers and gave them some signs to watch out for in the classroom."
104. "Important for teachers to start by modeling acceptance of other obese adult, particularly obese teachers in the presence of their students."
105. "The teaching modules were straight forward and easy to understand. They were logical and credible. The size of the graphs and text boxes should be enlarged to make them easier to read. The first set of questions regarding the presenter were confusing. It would be helpful to provide a little more explanation of what you are evaluating. Thank you for letting me be part of this work. I think it will help me as I enter the classroom."
106. "I could not answer questions that required me to go to a site...got replies that stated 'did not answer...' Impossible to answer when question was not asked. Will use this information in the future. Thank you!"
107. "As a prospective teacher, I thought that the most valuable part of all of this was the teacher module."
108. "All of this module was helpful in many ways. But, the most helpful was the part about the atmosphere for the students. This module has a good start at how to set up a good healthy environment for all children in the classroom."

109. "I liked the personal stories and the quotes from the different sources - those were really interesting to see how people feel about being teased because of their weight. There could have been a bit more regarding how overweight children and adults could lose weight but I guess this was more about accepting people of all shapes and sizes. The information kind of made it seem like if you are overweight, then you will be for life. I think that while it may be harder for overweight people to lose weight, they can do it with the right approach."
110. "This survey was very interesting. I enjoyed taking it. Thank you."
111. "I found the "intervention techniques" helpful."
112. "I loved the module, but there was one part that I did not agree with. When the teacher told the whole class that yes Susie is fat. I think that would hurt Susie's self esteem even more."
113. "The part about sensitivity training should come in useful if I decide to teach someday. Sometimes the module was a bit confusing, but for the most part it was pretty good."
114. "no changes"
115. "I like **the fact that all** the information was clearly presented and there was an effort made to **spare feelings** but not take "politically correctness" to the extreme. I believed **this module** gave the specifics needed in informing teachers of the **situations on this topic.**"
116. "I thought **the module** was skillfully developed, thorough, and realistic. My only concern was that at times I felt it focused more on psychological issues than health issues(I realize that the two are interrelated). I do believe that we must accept ourselves for who we are, but we also need to grow and be aware of the risks if we do not grow emotionally, mentally, spiritually, and physically. Children who are overweight should certainly be encouraged to love themselves, of course. But they should also be educated and encouraged for a life of health. It's not really "okay" for them to be obese in the aspect of the severe health risks they may face down the road. Regardless of physical appearance, we should all be treated as equals, but it is my hope that we all try to become educated (even if it's just the basics), and apply healthy lifestyle living (this is the only life you will have in this body)."
117. "The questions got repetitive after a bit. I wanted to see more info. on how weight gain affects children."
118. "I really enjoyed all the graphs and comics that were associated with the material. It made the text easier to understand."

119. "The directions were hard to load. I think that this will help, I really enjoyed the facts. Maybe having a fact sheet might make it interesting."
120. "The teaching module was quite a bit of reading all at once, the diagrams were helpful to understand some of the reading. Overall I enjoyed the module and found it interesting."
121. "Learning the right things to say to children who are being bullied and also to the bully. The positive comments that can be said to children with poor self-image."
122. "I found the fact that it gave real situations that people could relate to was very appealing."
123. "I thought it was easy to read and understand."
124. "It could show bias of future teachers."
125. "I liked the examples of problems in the schools and young children being taught about the importance of acceptance of others even when they are different from themselves."
126. "very informative"
127. "I realized how many of my friends should review this module. It should not just be geared towards teachers. I think teachers are more understanding of diversity then, for instance, athletes, when it comes to weight. To make more of an impact, target other groups as well."
128. "I like how the module was organized. The fact that it was thorough and informational also impressed me."
129. "I like the idea but I don't like the time that this module requires."
130. "I enjoyed the way that the material was presented. The presentation of the material was very informative and applicable."
131. "The graphs, charts and tables all helped me to visualize what was being said. The stories of obese children kept my attention by bringing a personal touch to the module."
132. "I thought that the module was designed to get the point of obese children in school. For someone going into teaching this gave excellent examples of how to handle situations of teasing."

133. "Make sure you understand that many teachers are not males. And that this subject can be very hard for many men to talk about."
134. "I found the module very helpful, especially in the sense that it gives teachers information on how to deal with students that are obese. The graphs and pictures were very helpful and focused my attention more."
135. "I thought it was very informative."
136. "I would have liked to print off some of the information to review and share would this be possible? I also liked the aspect of addressing the language of prejudice in the classroom."
137. "Most useful.....the genetic information"
138. "I didn't like this"
139. "I liked the use of statistics, varied research data, and the list of responses teachers can give to students who use words that stereotype and discriminate against other students in the classroom. I disliked the length of the module although I think all the information presented was important."
140. "I feel that it would be helpful to have a few actual lesson plan examples to look at and possibly use with children."
141. "I think this was a very informative module. I found it very enjoyable and educational."
142. "I enjoyed the reading and having the graphics and charts there to see while I was reading the information."
143. "I thought that the module was very informative and colorful..creativity was a big plus also."
144. "I feel that it made me more aware of the crisis we have in terms of people who are over fat. We seem to keep coming up with excuses why it is alright to be fat instead of attacking the issue and developing a solution."
145. "This is interesting, but could be better with more illustrations and examples."
146. "I enjoyed it very much~"
147. "Overall I found that this contained information every person should know"

148. "The reason why I found myself becoming distracted during the module was because it was rather lengthy and I'm not exactly a speed reader."
149. "It's very time consuming, but will be worth the resulting data."
150. "I've noticed that the video's included in the module **did not work**. I found the comeback comments for teachers to say to students **very helpful** and interesting."

BIOGRAPHY OF THE AUTHOR

Anne L. Hague was born in Long Branch, New Jersey on September 23, 1960, the daughter of Russell and Ellen Heston. She graduated from Hillsboro-Deering High School, Hillsboro, New Hampshire in 1978. She earned an Associate in Science Degree in Dental Hygiene with honors from New Hampshire Technical Institute (1982) and was awarded Who's Who Among Junior Colleges. She received a Bachelor of Science Degree in Human Nutrition with a minor in Education cum laude (1986) and a Master of Science Degree in Human Nutrition magna cum laude (1989) from the University of New Hampshire. Her thesis work was a comparative analysis of cholesterol testing methodologies.

After receiving her license, she practiced dental hygiene full-time in private practice from 1982-1984. In January 1985 she enrolled at the University of New Hampshire to pursue her undergraduate and graduate degrees. She completed her clinical dietetic internship at York Hospital in York, Maine and successfully completed the National Dietetic exam in 1990. From 1990-1997 she was an Assistant Professor of Dental Hygiene at the University of New England where she was nominated for the Westbrook College Campus Award for Teaching Excellence and Campus Leadership from 1991-1995. During her residency, she conducted a qualitative study to design, develop, and publish an interdisciplinary Web-based educational module for health care professionals. She was awarded the PhD Program Research Assistant position from the College of Natural Sciences, Forestry and Agriculture (1998), the 2001-2002 Kappa Omicron Nu Research Fellowship, and the 2003 Outstanding Student Research Award from the Society for Nutrition Education. She worked part-time as a nutrition instructor

at the University of New England in 2001 and continues to practice dental hygiene part-time.

Anne's professional memberships include the American Dietetic Association, Sports, Cardiovascular, and Wellness Nutritionists Dietetic Practice Group, Society for Nutrition Education, division of Weight Realities, Phi Kappa Phi National Honor Society, Kappa Omicron Nu Food Science and Human Nutrition Honor Society, and Sigma Phi Alpha Dental Hygiene Honor Society. She is a candidate for the Doctor of Philosophy degree in Food and Nutrition Sciences from The University of Maine in August, 2003.