

RELATION BETWEEN LIFESTYLE FACTORS
AND ANTI-FAT ATTITUDES IN COLLEGE
STUDENTS, AGES 18-24

By

EMILY JOYE FELTS

Bachelor of Science in Nutritional Sciences

Oklahoma State University

Stillwater, Oklahoma

2005

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
December, 2007

RELATION BETWEEN LIFESTYLE FACTORS
AND ANTI-FAT ATTITUDES IN COLLEGE
STUDENTS, AGES 18-24

Thesis Approved:

Dr. Tay Kennedy

Thesis Adviser

Dr. Stephany Parker

Dr. Glade Topham

Dr. A. Gordon Emslie

Dean of the Graduate College

TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION.....	1
Statement of the Problem.....	2
Purpose of the Study.....	2
Hypotheses	3
II. REVIEW OF LITERATURE	
Introduction	5
Prevalence of Obesity and Medical Problems Associated with Obesity.....	5
Social Stigma and Obesity	6
Antifat Bias and Ethnicity.....	10
Body Dissatisfaction.....	10
III. FINDINGS	14
“Relation between Lifestyle Factors and Anti-fat Attitudes in College Students”	
To be submitted to <i>The Journal of the American Dietetic Association</i>	
Introduction	14
Methods	17
Surveys	17
Procedures.....	20
Analyses	21
Results	21
Discussion.....	29
Conclusion	33
Abstract (for journal submission).....	34
References (for journal submission).....	35
IV. CONCLUSION	38
Review of Hypotheses	38

Chapter	Page
Additional Results.....	39
Limitations.....	42
Further Research.....	43
Implications.....	44
REFERENCES.....	47
APPENDIX I.....	52
Institutional Review Board Approval.....	53
APPENDIX II.....	56
Approved IRB instruments and consent forms.....	56
Height/weight form.....	57
Demographic questionnaire.....	58
Antifat Attitudes questionnaire.....	59
Body Image questionnaire.....	61
Consent form – Experimentrix students.....	65
Consent form – Extra credit students.....	67
APPENDIX III.....	69
Item description and mean responses for antifat attitudes and body image questionnaires.....	70
Reliability table for Antifat Attitudes subscales and body image subscales.....	74

LIST OF TABLES

Table	Page
Table 1: Description of Participants	22
Table 2: Antifat Attitudes Subscales & Ethnicity	26
Table 3: Body Image Subscales & Ethnicity	28

CHAPTER I

INTRODUCTION

Obesity and overweight are on the rise in the United States. In the period of 1999-2000, the prevalence of overweight increased from 55.9% to 64.5% (1). The increase in obesity took place in all age groups, men and women, and for non-Hispanic whites, non-Hispanic blacks, and Mexican Americans (1). By the year 2004, there were seven states with obesity prevalence in the range of 15-19%, 33 states in the range of 20-24%, and there were nine states with obesity rates higher than 25% (2). In a study conducted by Stunkard, Foch, and Hrubec (3), the height, weight, and BMI of twins were highly correlated over time, which suggests that obesity is largely due to genetic and metabolic factors (3). Diet and exercise are currently the main mode of treatment for overweight and obesity; however, attention needs to be given to the genetic and metabolic factors as well. The social consequences of overweight are perhaps just as devastating as the physical. Much of the available research shows that overweight has been linked, in the public's perception, with a cluster of less than desirable qualities including being lazy, inactive, lacking in discipline and self-control, and being less competent (4). Overweight individuals are less likely to

attend college and being overweight is related to low socioeconomic status (5,6).

In the current study, we explored relations between antifat attitudes and lifestyle factors including demographic information, body mass index, amount of physical activity, and body dissatisfaction issues.

STATEMENT OF THE PROBLEM

This study will investigate antifat bias and body image dissatisfaction among college students. Antifat bias and its relationship to body weight in college students will be assessed in order to determine correlating factors. We will also examine any correlating variables from the demographic questionnaire, a body image dissatisfaction questionnaire, and how this information relates to antifat score.

PURPOSE OF THE STUDY

Obesity is increasing at an alarming rate in the United States today. Current research shows that approximately 64% of U.S. adults are overweight and 30% of those are obese (7). The treatment of obese and overweight individuals is of great concern due to the health risks associated with the disease. A few of the common health problems linked to obesity include Type II diabetes, hypertension, stroke, coronary artery disease and congestive heart failure (8). However, the social stigma associated with obesity can sometimes

prove more detrimental than the physical risks. Overweight and obese individuals face discrimination in virtually all areas of life (9). However, the majority of the studies dealing with obesity and discrimination have concentrated on children and middle-aged adults. Little attention has been focused on college students in the area of antifat prejudice.

The results of this study may be useful in understanding factors that are related to antifat bias in college students. Presently, there is a wealth of research regarding obesity stigma, but a limited amount on how to reduce the prejudice that accompanies these attitudes. Thus, theories describing the effects of this stigma are limited. There is a possibility that searching for the presence of correlates and the role they play in why people possess certain attitudes and feelings could open doors for new research approaches.

HYPOTHESES

The following hypotheses will be examined:

Hypothesis 1:

Age and gender will not correlate with antifat score.

Hypothesis 2:

Subjects who have a BMI ≥ 25 will have a significantly lower antifat score than subjects with a BMI in the range of 19 – <25 . Subjects who have a BMI in the range of 19 – <25 will have a lower antifat score than subjects with a BMI < 19 .

Hypothesis 3:

Subjects who engage in physical activity 3 or more times a week will have a significantly higher antifat score than subjects who engage in physical activity less than 3 times a week.

Hypothesis 4:

Subjects who have high levels of body dissatisfaction will have a significantly higher antifat score than subjects who have lower levels of body dissatisfaction.

Hypotheses 1 and 4 were analyzed using correlations; hypotheses 2 and 3 were analyzed using group comparisons (analysis of variance) using BMI groups and physical activity groups.

Antifat attitudes (AFA) were measured using Crandall's AFA questionnaire (10), which consists of three subscales with a total of 13 questions: Fear of Fat, Dislike, and Willpower. Body image dissatisfaction was measured using Davison and McCabe's questionnaire (11) from the study "Relationships between Men's and Women's Body Image and their Psychological, Social, and Sexual Functioning"; this questionnaire contains five sections that deal with different aspects of concern over body image. Each study participant then completed a demographic questionnaire that included date of birth, gender, ethnicity, parents' income and education, and frequency of physical activity.

CHAPTER II

REVIEW OF LITERATURE

Introduction

In addition to numerous health risks, the obese population in this country faces discrimination practically daily in employment settings, the dating world, colleges and universities, doctors' offices and hospitals, and even in preschool classes (5-6,9,12-15).

Prevalence of Obesity and Medical Consequences

In the year 2003-2004, 17.1% of children and adolescents were overweight and 32.2% of adults aged 20 or older were obese (7). In the period of 1999-2004, overweight among children and adolescents and obesity among men increased significantly. There is evidence that suggests the body weight of women is no longer increasing as there was no significant change in the time span of 1999-2004 (7). Obesity increases an individual's risk for many diseases including hypertension, coronary heart disease, and Type II diabetes (8). Higher rates of endometrial, cervical, ovarian, gall bladder and breast cancer are present in overweight women when compared to normal weight women (8). There are

many other conditions that can be exacerbated by obesity, including sleep apnea, osteoarthritis, and changes in the reproductive system (16).

Social Stigma and Obesity

An understanding of the stigma associated with obesity is necessary in order to be aware of the effects that obesity has on an individual's general welfare and health. Puhl and Brownell (9) found that weight-based discrimination exists in all areas of life. Crandall and Martinez (17) have shown that antifat attitudes in the U.S. are due, in part, to an idea that an individual is responsible for all situations and consequences in his or her life. In a cross-cultural analysis, there were two factors that were discovered to lead to antifat bias; the first was a cultural preference for thinness and the second was the idea that weight is self-controlled (17). Self-determination and self-control are key ideals in the United States that play a part in the pattern of antifat bias (18). "If one's values and beliefs about the world lead one reliably to attribute internal or controllable causality to others, one will tend to blame fat people for their weight and stigmatize them for it" (Crandall and Martinez, p. 1166). A unique characteristic of antifat attitudes is that there is a lack of ingroup preference, meaning that even obese and overweight individuals possess prejudice feelings toward other overweight people (19). This lack of ingroup preference could prove to be hazardous as it may only promote stigmatization of these individuals. For example, if overweight and obese individuals do not challenge the prejudiced

attitudes that non-obese people hold about their group, perhaps no one will and the non-obese may not think twice about the stigmatization of obese people (19).

Dietetics and nondietetics undergraduate students were compared in a study and the researchers found no difference in antifat attitudes between the two groups; they proposed that society is responsible for the promotion of antifat attitudes, not dietetics education (20). In a study where physicians completed anonymous questionnaires, two-thirds of the physicians reported that their obese patients lacked in self-control, and 39% thought their obese patients were lazy (12). In a similar study of female nurses' attitudes, 24% of the nurses reported that caring for an obese patient repulsed them, and 12% reported that they did not like to touch obese patients (13). In this study, the nurses' dissatisfaction with their own weight was positively correlated with their antifat bias.

In one study where the purpose was to reduce the antifat attitudes of medical students, the students' opinions of obesity were recorded before and after an education intervention was provided (14). Before the course the students possessed accurate beliefs about the causes of obesity yet the negative stereotypes of the obese were still upheld by the students. The students' attitudes were measured five weeks after the intervention and again at one year after which time the intervention was shown to be effective. After completing the educational course (videos, role playing, and written materials), the attitudes of the students in the intervention improved significantly in comparison to the control group; the intervention group was less likely to blame the obese for their condition (14).

Many studies document weight discrimination in the workplace. In a study of over 2,000 Human Resources professionals, almost one-third thought obesity a valid medical reason for not employing a person (21). If given the choice of hiring one of two equally qualified applicants, but one of normal weight and the other obese, 93% reported they would choose the normal weight applicant, simply because of their weight. Larkin and Pines (4) found that college students rated obese individuals as less competent, less successful, less ambitious, and mentally lazy when compared with normal weight or underweight individuals.

Evidence has suggested that overweight and obese students have greater difficulty paying for college. One idea is that it is the willingness or ability of the parents to pay the tuition and other expenses of college, not the admission process. One reason that parents may not pay the costs of college is a lack of resources and the other is that they do not see their own children as being able to thrive in such a competitive setting. To test this belief, Crandall (5) conducted a study at two universities to find out how female students' educations were being financed. The results were that women whose parents were paying for the majority of their college expenses were thinner than students who funded their education in other ways. Recent research has shown that overweight individuals experience difficulty in acquiring an education regardless of their academic performance or test scores (5,6).

One study of preschoolers' attitudes found that children thought an overweight child was "meaner, stupider, louder and sloppier than an average weight or thin child" (15). They selected overweight children as friends 16% of

the time and only 7% of the time as best friends. Normal weight children were chosen as friends 45% of the time and as best friends 38% of the time. The preschoolers studied were four to six years old and had already developed a negative attitude toward overweight peers (15). Another study measured trade-offs that parents were willing to make in order to avoid having an obese child. Ten percent of parents would rather have an anorexic child than an obese child and 8% of parents would rather have a learning-disabled child than an obese child (22).

In research conducted by Schwartz, Vartanian, Nosek, and Brownell (22), 46% of participants were willing to give up one year of life and 15% were willing to relinquish ten or more years of their life as a trade-off for not being obese. Thirty percent of participants would rather be divorced than be obese; 15% stated they would rather be severely depressed and 14% said they would rather be alcoholics than be obese. The study found that the trade-offs reported were more likely to be supported by the thin subjects than by the heavier subjects (22).

Women who are overweight have been found to be 20% less likely to marry and earn incomes that are significantly lower than the incomes of normal weight women. There are no differences in the financial status of a normal weight man and an overweight man; however, overweight men are also less likely to marry (23).

Ethnicity & Antifat Bias

African American women's attitudes toward obesity were more positive than white women, white men, and even African American men which indicates more acceptance of obese persons by African American women (24). The subjects were asked to rank six drawings of adults with obesity, various disabilities, and no disabilities; the figure with no disabilities was ranked the highest, the obese figure was ranked second to last, and the figure with no left hand received the lowest ranking. When non-white ethnic groups were combined (African American, Asian, and Hispanic), a significant difference was found in the preference for the obese person, which suggested a greater antifat bias by white people (24). Wang, Brownell, and Wadden (19) found similar results in a study with individuals enrolled in a weight-loss program; African Americans were found to possess a weaker antifat bias than Caucasians. Crandall and Martinez (17) compared antifat attitudes of university students from the United States and Mexico and found that Americans were more concerned with their own weight than were Mexicans. In general women were more concerned about their weight than men and American women showed great concern about gaining a significant amount of weight (17).

Body Dissatisfaction

The top reasons for wanting to lose weight were reported as appearance, health, and mood in a 2007 study (25). There were interesting associations

between individual self-image and desire for weight loss; the subjects who reported health as their reason to lose weight were generally more satisfied with their appearance than those who reported appearance or mood reasons. Those who wanted to lose weight due to mood had lower self-image and were more preoccupied with their weight than subjects who reported appearance or health reasons for weight loss (25).

Yates, Edman, and Aruguete (26) studied a variety of ethnic groups and compared body dissatisfaction and BMI between groups. Findings included white males having a higher than average BMI accompanied with the lowest levels of body dissatisfaction than any other male group; likewise, African American females had the highest BMI when compared to other ethnic groups but were reasonably satisfied with their bodies. When comparisons between males and females were examined, females showed higher body dissatisfaction than males of their same ethnic group (26). Neighbors and Sobal (27) found that females demonstrated greater body dissatisfaction (weight and shape) than did males, which is consistent with the findings of Yates, Edman, and Aruguete (26) as well as Varnado-Sullivan, Horton, and Savoy (28). Neighbors and Sobal's study also found that all overweight females desired a body weight lower than their current weight; however, overweight females exhibited no more body dissatisfaction than females in the normal BMI range (27). Thompson, Shroff, Herbozo, Cafri, Rodriguez, and Rodriguez (29) discovered a different relation between weight and body dissatisfaction for adolescent girls in that overweight girls reported higher scores than average weight girls in the area of body

dissatisfaction. Findings in a study with Black and Hispanic women revealed that these two groups differed very little in their body image; although higher weight was related with increased body image concerns regardless of ethnicity (30).

When Mirza, Davis, and Yanovski (31) studied body image, self-esteem, and BMI in Hispanic children, they found that children with a higher BMI exhibited more body dissatisfaction and lower self-esteem. Self-esteem and body dissatisfaction showed associations as well, which uncovers a vicious cycle between these three variables; self-esteem decreases as BMI and body dissatisfaction increases. Varnado-Sullivan, Horton, and Savoy found relations between three similar variables: weight, exercise frequency, and concern over body image; results indicated that higher weight and exercise frequency were related to increased body image disturbance (28). Pepper and Ruiz (32) found results similar to those of Crandall and Martinez (17) that European American female students possessed stronger antifat bias than Latina students. The researchers measured antifat attitudes and body dissatisfaction and found that students with higher levels of body dissatisfaction also had higher scores on the antifat attitudes survey (32).

Crandall developed the Antifat Attitudes (AFA) scale in the university setting using undergraduates in a psychology class; it was then tested with students of different political views and values when deciding which items would make up the final scale (10). Another trial included providing education to the students in the sample and then distributing the surveys (10). The AFA scale consists of 13 questions and three subscales: Dislike, Willpower, and Fear of Fat.

The body image questionnaire used in our study consists of five sections; the first two sections are subscales from the Body Image and Body Change Questionnaire that were used in a study with adolescents by Ricciardelli and McCabe in 2001 (33). The Physical Attractiveness Scale and the Body Image Behavior Scale were created for Davison and McCabe's study (11); the Body Image Behavior Scale consists of two parts, body concealment and body improvement. Thompson's Physical Appearance Comparison Scale (34) was shown to be reliable in a university setting but Davison and McCabe excluded this measure to gain an acceptable level of reliability in their community setting.

In summary, weight stigmatization is not something that occurs in a single setting, age group, or culture; overweight and obese individuals experience discrimination based on weight in virtually all areas of life.

CHAPTER III

FINDINGS

“Relation between Lifestyle Factors and Anti-fat Attitudes in College Students”

To be submitted to *The Journal of the American Dietetic Association*

INTRODUCTION

In addition to numerous health risks, the obese population in this country faces discrimination practically daily in employment settings, the dating world, colleges and universities, doctors' offices and hospitals, and even in preschool classes (1-7).

Obesity and overweight are on the rise in the United States. In the period of 1999-2000, the prevalence of overweight increased from 55.9% to 64.5% (8). The increase in obesity took place in all age groups, men and women, and for non-Hispanic whites, non-Hispanic blacks, and Mexican Americans (8). A few of the common health problems linked to obesity include Type II diabetes, hypertension, stroke, coronary artery disease and congestive heart failure (9). However, the social stigma associated with obesity can sometimes prove more detrimental than the physical risks. Overweight and obese individuals face discrimination in virtually all areas of life. Overweight has been linked in the

public's perception with a cluster of less than desirable qualities including being lazy, inactive, lacking in discipline and self-control, and being less competent (10). Overweight individuals are less likely to attend college and being overweight is often consistent with low socioeconomic status (1). Even though research has been carried out dealing with obesity and discrimination, the majority of these studies have concentrated on children and middle-aged adults (4-6). Little attention has been focused on college students and their role in the area of antifat prejudice.

There is evidence that weight-based discrimination exists in all areas of life (3). Crandall and Martinez (11) have shown that antifat attitudes are due, in part, to an idea that an individual is responsible for all situations and consequences in his or her life. In a cross-cultural analysis, there were two factors that lead to antifat bias; the first was a cultural preference for thinness and the second was the idea that weight is self-controlled (11).

A unique characteristic of antifat attitudes is that there is a lack of ingroup preference, meaning that even obese and overweight individuals possess prejudiced feelings toward other overweight people. This lack of ingroup preference could prove to be hazardous, as it may only promote stigmatization of these individuals (12).

Antifat attitudes are pervasive among the public. One study about preschoolers' attitudes found that children thought an overweight child was "meaner, stupider, louder and sloppier than an average weight or thin child" (4). They selected overweight children as friends 16% of the time and only 7% of the

time as best friends. Normal weight children were chosen as friends 45% of the time and as best friends 38% of the time. The preschoolers studied were in the age range of four to six years old and had already developed a negative attitude toward overweight kids (4). Another study measured trade-offs that parents were willing to make in order to avoid having an obese child (13). Ten percent of parents would rather have an anorexic child than an obese child and slightly lower than that at 8% were parents that would rather have a learning-disabled child than an obese child (13).

In research conducted by Schwartz, Vartanian, Nosek, and Brownell (13), 46% of participants were willing to give up one year of life and 15% were willing to relinquish ten or more years of their life as a trade-off for not being obese. Thirty percent of participants would rather be divorced than be obese; 15% stated they would rather be severely depressed and 14% said they would rather be alcoholics than be obese. The study found that the trade-offs reported were more likely to be supported by the thin subjects than by the heavier subjects (13).

The objective of this study was to understand patterns of antifat attitudes (AFA) and body image dissatisfaction in college students. Given the diverse population that a university attracts, we hypothesized that there would be no differences in antifat attitudes due to age or gender but differences would exist in antifat attitudes according to amount of physical activity, BMI, and body image dissatisfaction.

METHODS

The design was descriptive, correlational, and cross-sectional and the type of sampling utilized was convenience sampling. Eligibility criteria included being enrolled as a college student at Oklahoma State University and in the age range of 18-24 years. Recruitment began in September of 2006 and concluded in December of the same year. Subjects were acquired through Experimetrix, the online research subject pool at Oklahoma State University as well as through visiting individual classes with the approval of the instructors and accepting volunteers from classes. Compensation for participants included one (1) hour of research credit, which is required for many introductory psychology courses or ten (10) bonus points if a participant volunteered through a class that did not require research credits. There were 187 eligible subjects who participated in the study. Written consent was obtained from subjects. Protocols and procedures were approved by the Oklahoma State University Institutional Review Board for Human Subjects.

Surveys

Antifat attitudes were measured using Crandall's questionnaire from the original Antifat Attitudes (AFA) study (14). The AFA questionnaire consists of 13 questions, which are answered on a 0-9 Likert scale; a score of 0 means 'Completely Disagree' and a score of 9 on an item means 'Completely Agree'. The survey is comprised of three subscales, Dislike (subjects' prejudice toward fat people), Fear of Fat (concerns regarding your own weight), and Willpower

(beliefs about the controllability of weight). Reliability for each of the three subscales in the original study and this study can be found in the Reliability Table in Appendix III on page 73.

Body image dissatisfaction was measured using the questionnaire from Davison & McCabe's study in 2005 (15). This questionnaire was divided into five sections, including: Section A – Body Image (16), Section B – Body Change (16), Section C – Body Image Behavior Scales, Section D – Physical Attractiveness Scale [both sections C and D were designed for the study “Relationships Between Men’s and Women’s Body Image and Their Psychological, Social, and Sexual Functioning” (15)], and Section E – Physical Appearance Comparison Scale (17). Reliability for each section of the body image questionnaire in the original study and this study can be found in the Reliability Table in Appendix III on page 73.

Section A from the body image dissatisfaction questionnaire (16) is scored on a 1-5 Likert scale where 1 means ‘Extremely Dissatisfied’ and 5 means ‘Extremely Satisfied’. Scores range from 10 to 50; a high score is representative of a high level of satisfaction with the body. Section B (16) from this questionnaire is scored on a 1-5 Likert scale where 1 means ‘Extremely Unimportant’ and 5 means ‘Extremely Important’. If a subject marks a 5 on ‘the appearance of your legs’, this equates the subject’s feelings about the appearance of his/her legs as extremely important. Scores range from 10 to 50; a high score is representative of a rating of appearance as highly important.

Section C on the body image questionnaire is scored on a 1-6 Likert scale where 1 means 'Never' and 6 means 'Always'. If a subject marks a 1 on 'I try hard to improve my body shape', the subject is saying that he or she never tries hard to improve his or her body shape.

Body Image Section D is scored on a 1-5 Likert scale where 1 means 'Extremely Unattractive' and 5 means 'Extremely Attractive' for the first five items. For the last item, 1 means 'Extremely Sexually Unattractive' and 5 means 'Extremely Sexually Attractive'. A subject's high score on this section is equated with a positive perception of his/her looks. Scores range from 6 to 30; a high score indicates a high self-rating of attractiveness.

Section E is the last segment of the body image dissatisfaction questionnaire and is scored on a 1-5 Likert scale where 1 means 'Never True' and 5 means 'Always True'. Questions in this section deal with how often subjects compare their figure to that of others in social situations. Scores range from 5 to 25; a high score represents a higher tendency to compare one's own appearance with that of others.

The demographic information consisted of parents' income and education level, subjects' ethnicity, birth date, gender, and weekly activity level. Date of birth was used rather than class designation (freshman, sophomore, junior, senior,) because there are no age requirements for each class so a freshman or senior could be any age. Ethnicity was self-reported by subjects on the survey but the race categories were defined by the researcher as "White, Non-Hispanic", "Black, Non-Hispanic", "Hispanic", "American Indian or Native Alaskan", "Asian

American or Pacific Islander” and “Other”. The “Other” category provided subjects the opportunity to write in their ethnicity if they felt one of the above named categories was not appropriate. Ethnic group was recoded due to the small percentage of ‘Hispanic’ & ‘Asian American or Pacific Islander’ study participants. These two ethnic groups were added to the ‘Other’ group in order to have an adequate amount of subjects in each ethnic group for analyses. The researcher recorded each subject’s self-reported college major after measuring their height and weight. Because of the variety of majors reported by participants, college majors were recoded into categories. Refer to Table 1 for details regarding which majors comprise each category.

Procedures

Each subject’s height and weight was measured and recorded by the researcher. Height was measured using a wall-mounted stadiometer (Veeder-Root, Elizabethtown, N.C., accurate to ± 0.01 centimeters) and weight was measured in kilograms using an electronic scale (Vogel & Halke, Germany, accurate to ± 0.02 kg). Questionnaires regarding body image dissatisfaction, antifat attitudes, and demographic information were then administered by the researcher and completed by each subject. The primary investigator administered all questionnaires.

Analyses

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) 14.0 for Windows. Body mass index (BMI) was calculated using the following equation: $BMI = [\text{weight (kg)}/\text{height (m}^2\text{)}]$.

Descriptive statistics and t-tests were executed, and after discovering the differences between gender in antifat attitudes (t-test for equality of means) and BMI (t-test for equality of means) for our study sample, analysis of variance tests and correlates controlled for gender. A *P* value ≤ 0.05 was considered statistically significant.

RESULTS

Characteristics of the population who participated in this study are summarized in Table 1. Because of the differences discovered between genders during initial data analysis, further analyses controlled for this factor. Gender differences were present in all three subscales of the AFA questionnaire, amount of physical activity, and participant BMI. There were however, no significant differences in participants' age, parents' college attendance, or annual income of family between genders.

Table 1 – Description of Participants

<u>Population (n = 187)</u>	<u>Mean</u>		<u>SD</u>
<u>Age</u>	20.71		1.54
	<u>%</u>	<u>#</u>	
<u>Gender</u>			
<i>Male</i>	21.9	41	
<i>Female</i>	78.1	146	
<u>Ethnic Group</u>			
<i>White, Non-Hispanic</i>	86.4	159	
<i>Black, Non-Hispanic</i>	3.8	7	
<i>American Indian or Native Alaskan</i>	3.8	7	
<i>Other, Hispanic, Asian American or Pacific Islander</i>	6.0	11	
<u>Parents' College Attendance</u>			
<i>Yes</i>	85.0	159	
<i>No</i>	15.0	28	
<u>Annual Income of Family</u>			
<i>\$20,000 or Below</i>	7.5	14	
<i>Above \$20,000</i>	92.5	173	
<u>College Major of Participant</u>			
<i>Arts & Sciences*</i>	11.8	22	
<i>Business**</i>	16.0	30	
<i>Education***</i>	3.7	7	
<i>Engineering****</i>	2.1	4	
<i>HDFS*****</i>	5.3	10	
<i>Health Careers*****</i>	38.0	71	
<i>Psychology*****</i>	23.0	43	
	<u>Mean</u>		
<u>Number of Times Per Week You Exercise 30 min or more</u>			
<i>None</i>	9.6		
<i>1-2 times</i>	38.5		
<i>3-4 times</i>	34.8		
<i>5 or more times</i>	16.6		
<u>Average Participant BMI</u>			
<i>Total</i>	22.91		3.50
<i>Males</i>	24.46*		3.05
<i>Females</i>	22.48*		3.51

*Significant difference between genders for BMI (P=0.001)

*The “Arts & Sciences” category included the following: Biochemistry, Biology, Computer Science, English, Liberal Studies, Physiology, Political Science, Sociology, Spanish, Studio Art, University Studies, and Undeclared majors.

**The “Business” category included Agricultural Communications, Accounting, Agricultural Economics, Apparel Merchandising, Aviation/Aviation Management, Business, Hotel & Restaurant Administration, International Business, Journalism & Broadcasting, Marketing, and Public Relations.

***The “Education” category included Early Childhood Education, Education, and Elementary Education.

****The “Engineering” category included Architecture, Civil Engineering, and Industrial Engineering majors.

*****The “Human Development & Family Science (HDFS)” category included HDFS majors.

*****The “Health Careers” category included Athletic Training, Dental Hygiene, Health Promotion, Leisure Studies, Medical Technology, Nutrition, Physical Therapy, Pre-Med, Speech Pathology, and Therapeutic Recreation majors.

*****The “Psychology” category included Criminal Psychology and Psychology majors.

T-tests revealed a significant difference between genders in all three subscales of the Antifat Attitudes questionnaire: Fear of Fat ($P=0.000$), Dislike ($P=0.004$), and Willpower ($P=0.010$). Fear of Fat was substantially higher for females than for males, males have a higher level of dislike for overweight than

females, and males attribute overweight to a lack of willpower more readily than do females. A negative correlation was uncovered between age and Dislike ($r = -0.176$; $P=0.017$) and between age and Willpower ($r = -0.158$; $P=0.032$), which indicates that as age increases, Dislike and Willpower both decrease.

Analysis of variance revealed no significant differences between physical activity groups (2 groups: physical activity 0-2 times per week or physical activity 3 or more times per week) and total AFA or AFA subscales. However, there was a significant difference between males and females and engagement in physical activity. For males, mean = 2.93 and SD = 0.88 and females, mean = 2.47 and SD = 0.88 ($P = 0.004$).

The difference in BMI between genders was significant ($P = 0.001$) with males having a mean = 24.46 and SD = 3.05 and females having a mean = 22.48 and SD = 3.51. No significant difference was found between BMI groups for total AFA score or for any of the three subscales using ANOVA. Partial correlation (controlling for gender) revealed a positive correlation between Individual BMI and the Fear of Fat subscale ($r=0.252$; $P=0.001$) as well as between BMI groups and the Fear of Fat subscale ($r=0.204$; $P=0.005$). As an individual's BMI increases, his or her Fear of Fat score increases as well.

A partial correlation between total AFA scores and body image subscales revealed a positive relation between AFA and subscales "B" ($r=0.422$; $P=0.035$), "C" ($r=0.368$; $P=0.000$), and "E" ($r=0.415$; $P=0.000$) but a negative relation for AFA and subscale "A" ($r = -0.157$; $P=0.000$). As AFA scores increase, subscale B scores increase as well which shows that the more importance one places on his

or her body appearance, the higher degree of antifat bias he or she possesses. The positive relation between AFA and subscale C reveals that as the tendency to “hide” one’s body shape and effort to improve one’s body increases, AFA also increase. As scores on subscale E increase, AFA scores also increase which shows that the higher one’s tendency to compare his or her appearance or figure to that of others, the higher his or her degree of antifat bias. A negative relation between AFA scores and subscale A shows that as scores on subscale A decrease, (the lower one’s score on subscale A, the more dissatisfaction he or she feels with weight and body shape) AFA scores increase.

Ethnicity Results

When examining ethnicity, there is a significant main effect for the Dislike ($P= 0.033$) and Willpower ($P= 0.019$) subscales although the main effect for the Fear of Fat subscale ($P= 0.086$) was not significant. Table 2 shows between group results for ethnicity and antifat attitudes.

Table 2 – Antifat Attitudes Subscales & Ethnicity

<u>Ethnicity</u>	<u>%*</u>	<u>#*</u>	<u>Fear of Fat</u> Mean (SD)	<u>Dislike</u> Mean (SD)	<u>Willpower</u> Mean (SD)
White, Non-Hispanic	85.0	159	16.51(7.99)	13.24(10.23) ^a	17.65(5.85) ^a
Black, Non-Hispanic	3.7	7	8.71(7.20)	6.86(4.18) ^b	12.00(8.16) ^a
American Indian or Native Alaskan	3.7	7	16.00(6.43)	4.86(3.44) ^{a,c}	14.14(7.40)
Other, Hispanic, Asian American or Pacific Islander	6.0	11	16.64(6.00)	17.09(13.31) ^{b,c}	14.64(4.32)

Note – Same letters represent significant differences between groups ($P \leq 0.05$).

**Represents percentage of participants and number of participants in each ethnic group.*

For the Fear of Fat subscale, the difference between American Indian/Native Alaskan and Black, Non-Hispanic approaches significance ($P=0.083$).

There is a significant main effect between ethnic groups for the Body Image Sections A, C, and E of the body image questionnaire ($P= 0.041, 0.010,$ and $0.018,$ respectively). The main effect for Body Image Section D is not significant ($P= 0.088$). Table 3 presents between group results for ethnicity and body image dissatisfaction subscales.

Table 3 – Body Image Subscales & Ethnicity

<i>Ethnicity</i>	<i>Body Image A</i> Mean (SD)	<i>Body Image B</i> Mean (SD)	<i>Body Image C</i> Mean (SD)	<i>Body Image D</i> Mean (SD)	<i>Body Image E</i> Mean (SD)
White, Non-Hispanic	33.72(7.97) ^a	33.72(6.72)	38.58(9.76) ^a	19.82(3.65)	16.09(3.12) ^a
Black, Non-Hispanic	40.43(4.43) ^{a,b}	32.71(7.61)	26.86(5.05) ^{a,b}	22.14(2.48)	12.29(3.25) ^{a,b,c}
American Indian or Native Alaskan	38.00(7.12)	31.14(5.84)	37.50(13.00) ^b	19.57(2.88)	15.86(3.53) ^b
Other, Hispanic, Asian American or Pacific Islander	30.91(7.88) ^b	33.73(4.03)	34.09(7.29)	17.73(3.69)	15.55(2.34) ^c

Note – Same letters represent significant differences between groups ($P \leq 0.05$).

See Table 2 for the percentage and number of participants in each ethnic group.

There were significant differences between White, Non-Hispanics and Black, Non-Hispanics in three of the five sections of the body image questionnaire, including A, C, and E ($P=0.028$, 0.002 , and 0.002 , respectively). The difference between American Indian/Native Alaskan and the “Other” group for Body Image Section A approached significance ($P=0.063$).

DISCUSSION

This study examined the prevalence of antifat attitudes in a college population. Body dissatisfaction issues, body mass index, and demographics in relation to antifat attitudes were examined to discover important relations between variables.

In summary, our research found that while the antifat bias did not vary significantly with age, there was a gender difference. In general, males were more extreme in their attitudes toward overweight individuals than were females in this group; mean scores and results for Crandall’s study were similar and included men scoring higher on the Dislike and Willpower subscales of the AFA and women scoring higher on the Fear of Fat subscale (14). High scores on the Dislike and Willpower subscales can be equated to greater dislike for overweight individuals and attributing overweight to a lack of willpower.

We proposed that amount of physical activity would be a factor in determining antifat attitudes scores which was not supported by our results; there were no previous studies that examined the relation between physical activity

and antifat attitudes. We hypothesized that participants with a higher BMI would have a lower antifat score and, in general, results did not support this hypothesis, although there was a positive correlation between the Fear of Fat subscale and participant BMI. Perhaps the hypothesis was not supported due to the lack of ingroup preference that overweight individuals show, meaning that overweight individuals do not identify with one another or possess positive feelings for one another simply on the basis of their weight (12).

Our findings supported the final hypothesis that participants with a higher degree of body dissatisfaction will have a higher antifat score than those with lower levels of body dissatisfaction, which was consistent with the findings of Pepper and Ruiz (18). The higher an individual's antifat attitudes score, the more prejudiced they are toward the overweight population. The correlations discovered between body image subscales and AFA support the idea that as one's opinion about his or her own appearance and/or weight becomes more negative, his or her attitude toward overweight and obese people becomes more negative. Mean scores for the original study and this study were similar; however, both females' and males' scores on section E in this study were higher than the scores in the original study. This suggests that males and females in this study have a higher tendency to compare their appearance to that of others than those in Davison and McCabe's study.

Differences between Black, Non-Hispanics and White, Non-Hispanics were significant for all three of the AFA subscales. These scores suggest that whites are less satisfied with their bodies than are blacks. Blacks are less

consumed with trying to improve their bodies than are whites and whites compare their bodies to others more often than do blacks which is consistent with Yates, Edman, and Aruguete's findings that blacks are more likely to be satisfied with their bodies (19).

In summary, Black, Non-Hispanics and American Indian/Native Alaskans reported the lowest degree of dislike for overweight individuals out of the groups represented here while whites regarded overweight as a lack of willpower more readily than did any of the other groups represented.

The questions on body image section "A" rate your satisfaction with your own body weight and various parts of your body; the "Other" group scored the lowest on this section which suggests that this group possesses lower body satisfaction than the other groups represented here. The scores on section "C" suggest that American Indian/Native Alaskans are more concerned with trying to improve their bodies than are blacks. While no studies with American Indian/Native Alaskans were available, these findings are consistent with Yates, Edman, and Aruguete's previously mentioned study with African Americans (19).

In summary, results suggest that blacks are more confident in the appearance of their own bodies and do not put as much emphasis as other groups on improving their bodies, whites' and American Indian/Native Alaskans' scores indicate much effort to improve their bodies, and the "Other" group possesses the lowest scores in the area of body satisfaction.

Although evidence suggests that individuals involved in various areas of healthcare (physicians, nurses, medical students) possess more extreme antifat

attitudes than people in other professions (5-7), when comparing health career majors with other college majors, our findings did not support the idea that antifat bias is greater with the health career students. One significant difference between college major groups was revealed and it was between the Health Careers group and the Arts & Sciences group; the Health Careers group possessed a higher Fear of Fat than did the Arts & Sciences group but there were no differences between the Dislike and Willpower subscales. College is often thought of as a key time for the formation of beliefs and attitudes as well as a time of change and personal development for individuals. Perhaps the prejudiced attitudes toward the overweight population surface after students are involved in their professional lives. Experiences with non-compliant patients can lead to frustration and because antifat attitudes are socially acceptable, it is easier to blame the patient than for the healthcare provider to examine his or her own limitations as a professional.

Limitations

Subjects were asked to self-report their antifat attitudes and their body image dissatisfaction, which is a limitation. Randomization of subjects is the best way to ensure a good representation of the sample population; however, this was a convenience sample as subjects volunteered for this study through an online human subjects research pool. The majority of subjects in this study were white females so results may not be applicable to other populations, which indicates findings may not generalize to other samples.

CONCLUSION

Results of this study indicate the presence of weight stigmatization that has been discovered in many other settings. Males and females both possess antifat attitudes, males hold greater dislike for overweight and attribute weight to a lack of willpower more than females, and females report a greater fear of fat than males. The correlations between antifat attitudes and body dissatisfaction suggest that as one feels more satisfied with his or her own body, he or she holds antifat attitudes to a lesser degree. Blacks report less body dissatisfaction and antifat attitudes than whites. Further research is needed to examine other cultures and the way they view weight issues as our country is becoming more diverse. Although it is not enough, knowing that antifat attitudes exist in the college population is the first step.

Abstract

Overweight individuals are affected by prejudice. This study examined antifat bias and body image dissatisfaction and their relation to body mass index (BMI) among college students. Height and weight were measured in 187 (78% female) college students between the ages 18-24. Antifat bias was assessed using Crandall's antifat attitudes (AFA) questionnaire and body dissatisfaction was assessed using Davison and McCabe's questionnaire. Differences between genders were found for all three subscales of the AFA questionnaire: females were found to have a higher *Fear of Fat* than males ($P=0.000$), males possess a higher level of *Dislike* for overweight individuals ($P=0.004$), and males attribute overweight to a lack of *Willpower* more readily than do females ($P=0.010$). BMI and the *Fear of Fat* were still positively correlated when controlling for gender ($r=0.252$, $P=0.001$) and ANOVA also found a between BMI groups (BMI<19, BMI 19 to <25, BMI≥25) difference in *Fear of Fat* scores ($P=0.005$). Correlations between total AFA scores and Body Image subscales suggest that as one's opinion about his or her own appearance and/or weight becomes more negative, his or her attitude toward overweight and obese people become more negative. Males appear to be more extreme in their attitudes toward overweight individuals.

References

- (1) Crandall CS. Do heavy-weight students have more difficulty paying for college? *Pers Soc Psychol Bull.* 1991;17:606-611.
- (2) Crandall, CS. Do parents discriminate against their heavyweight daughters? *Pers Soc Psychol Bull.* 1991;17:606-611.
- (3) Puhl RM, Brownell KD. Bias, Discrimination, and Obesity. *Obes Res.* 2001;9:788-805.
- (4) Musher-Eizenman DR, Holub SC, Miller AB, Goldstein SE, Edwards-Leeper L. Body size stigmatization in preschool children: the role of control attributions. *J Pediatr Psychol.* 2004;29:613-620.
- (5) Price JH, Desmond SM, Krol RA, Snyder FF, O'Connell JK. Family practice physicians' beliefs, attitudes, and practices regarding obesity. *Am J Prev Med.* 1987;3:339-345.
- (6) Bagley CR, Conklin DN, Isherwood RT, Pechiulis DR, Watson LA. Attitudes of nurses toward obesity and obese patients. *Percept Mot Skills.* 1989;68:954.
- (7) Wiese HJ, Wilson JF, Jones RA, Neises M. Obesity stigma reduction in medical students. *International Journal of Obesity and Related Metabolic Disorders.* 1992;16:859-868.
- (8) Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among U.S. adults, 1999-2000. *JAMA.* 2002;288:1723-1727.
- (9) Stunkard AJ. Current views on obesity. *Am J Med.* 1996;100:230-236.
- (10) Larkin JC, Pines HA. No fat persons need apply: experimental

- studies of the overweight stereotype and hiring preference. *Sociology of Work and Occupations*. 1979;6:312-327.
- (11) Crandall CS, Martinez R. Culture, ideology, and antifat attitudes. *Pers Soc Psychol Bull*. 1996;22:1165-1176.
- (12) Wang SS, Brownell KD, Wadden TA. The influence of stigma of obesity on overweight individuals. *Int J Obes*. 2004;28:1333-1337.
- (13) Schwartz MB, Vartanian LR, Nosek BA, Brownell KD. The influence of one's own body weight on implicit and explicit anti-fat bias. *Obesity*. 2006;14:440-447.
- (14) Crandall CS. Prejudice against fat people: ideology and self-interest. *J Pers Social Psychol*. 1994;66:882-894.
- (15) Davison TE, McCabe MP. Relationships between men's and women's body image and their psychological, social, and sexual functioning. *Sex Roles*. 2005;52:463-475.
- (16) Ricciardelli LA, McCabe MP. Self-esteem and negative affect as moderators of sociocultural influences on body dissatisfaction, strategies to decrease weight, and strategies to increase muscles among adolescent boys and girls. *Sex Roles*. 2001;44:189-207.
- (17) Thompson JK, Heinberg L, Tantleff S. The physical appearance comparison scale (PACS). *Behav Ther*. 1991;14:174.
- (18) Pepper AC, Ruiz SY. Acculturation's influence on antifat attitudes, body image and eating behaviors. *Eat Disord*. 2007;15:427-447.
- (19) Yates A, Edman J, Aruguete M. Ethnic differences in BMI and body/self-

dissatisfaction among whites, Asian subgroups, Pacific Islanders, and African-Americans. *J Adolesc Health*. 2004;34:300-307.

CHAPTER IV

CONCLUSION

This chapter will review the hypotheses of this study, discuss conclusions, and review the study's limitations. The final section will discuss implications and further research directions.

In summary, our research found that there was a gender difference in antifat bias but it did not change with age. Males were more extreme in their attitudes toward overweight individuals than were females in this group; Crandall's results were similar which included men scoring higher on the Dislike and Willpower subscales of the AFA and women scoring higher on the Fear of Fat subscale (10). High scores on the Dislike and Willpower subscales can be equated to greater dislike for overweight individuals and attributing overweight to a lack of willpower.

We hypothesized that participants with a higher BMI would have a lower antifat score and, in general, results did not support this hypothesis, although there was a positive correlation between the Fear of Fat subscale and individual BMI. Perhaps the hypothesis was not supported due to the lack of ingroup preference that overweight individuals show, meaning that overweight individuals

do not identify with one another or possess positive feelings for one another simply on the basis of their weight (19).

We proposed that amount of physical activity would be a factor in determining antifat attitudes scores which was not supported by our results, although there was a significant difference between males and females and engagement in physical activity. There were no significant differences between activity groups for AFA subscales or total AFA scores.

Our findings supported the final hypothesis that participants with a high level of body dissatisfaction will have a higher antifat score than those with low levels of body dissatisfaction, which were consistent with the findings of Pepper and Ruiz (32). This correlation supports the idea that as one's opinion about his or her own appearance and/or weight becomes more negative, his or her attitude toward overweight and obese people becomes more negative.

The remainder of this section will focus on results that were not included in the original research questions.

Additional Results

Findings regarding ethnicity, antifat attitudes, body image dissatisfaction, and college major are detailed below.

Antifat Attitudes Results

Differences in Fear of Fat exist between the White, Non-Hispanic group and Black, Non-Hispanic group with scores indicating that the Black, Non-

Hispanic group possesses a much lower Fear of Fat score than the White, Non-Hispanic group.

Differences for the Dislike subscale exist between the White, Non-Hispanic ethnic group and the American Indian/Native Alaskan group; American Indians/Native Alaskans possess a lesser degree of dislike for overweight than do whites. In summary, Black, Non-Hispanics and American Indian/Native Alaskans reported the lowest amount of Dislike for overweight individuals out of the groups represented here.

There was a significant difference between White, Non-Hispanics and Black, Non-Hispanics in the Willpower subscale; whites regarded overweight as a lack of willpower more readily than did any of the other groups represented.

Body Image Results

There were significant differences between ethnic groups for sections A, C, and E of the body image questionnaire.

There were significant differences between White, Non-Hispanics and Black, Non-Hispanics in three of the five sections of the body image questionnaire, including sections A, C, and E. These scores suggest that whites are less satisfied with their bodies than are blacks, blacks are less consumed with trying to improve their bodies than are whites, and whites compare their bodies to others more often than do blacks.

The questions on section "A" rate your satisfaction with your own body weight and various parts of your body; the "Other" group scored the lowest on

this section out of all the groups represented which suggests this group possesses very low body satisfaction.

For Body Image Section “C”, there were significant differences between Black, Non-Hispanics and the American Indian/Native Alaskan group. The scores on this section suggest that American Indian/Native Alaskans are more concerned with trying to improve their bodies than are blacks.

In summary, results suggest that blacks are more confident in the appearance of their own bodies and do not try as hard as other groups to improve upon their bodies, whites and American Indian/Native Alaskans scores indicated much effort to improve their bodies, and the “Other” group possesses the lowest scores on the section dealing with body satisfaction.

College Majors

Although evidence suggests that individuals involved in various areas of healthcare (physicians, nurses, medical students) possess more extreme antifat attitudes than people in other professions (12-14), when comparing health career majors with other college majors, our findings did not completely support the idea that antifat bias is greater with the health career students. One significant difference between college major groups was revealed and it was between the Health Careers group and the Arts & Sciences group; the Health Careers group possesses a higher Fear of Fat than does the Arts & Sciences group but there were no differences between the Dislike and Willpower subscales. College is often thought of as a key time for the formation of beliefs and attitudes and a time

of much change and personal development for individuals. Perhaps the prejudice attitudes of health careers majors toward the overweight population do not surface until students are involved in their professional lives. Experiences with non-compliant patients can lead to frustration and because antifat attitudes are socially acceptable, it is easier to blame the patient than for the healthcare provider to examine his or her own limitations as a professional.

LIMITATIONS

While careful consideration was given to the design of the study, limitations still exist. The first limitation is the generalizability of the findings. This study focused on college students, ages 18-24, at one university. The sample was discovered to consist largely of Caucasian females; seventy-eight percent of subjects were female. Thus, one must be cautious when generalizing results to other populations. It is uncertain how men, different age groups, and other ethnic or cultural groups may perceive overweight individuals and whether these groups would express antifat attitudes in a similar manner and to the same degree as the sample surveyed in this study. If equal numbers of males and females had participated in this study, perhaps a more representative sample would have been achieved. Because this study was carried out at only one university, it would be inappropriate to generalize findings to college students across the country as opinions and values vary from region to region and school to school. However, it does provide insight into the college student's perception of

overweight and obesity, which can serve as a base to build upon with more research about this population in the area of antifat attitudes.

The internal reliability of Body Image Section E (men – $\alpha > 0.33$, women – $\alpha > 0.64$) was not as high as in the original study (men – $\alpha > 0.70$, women – $\alpha > 0.80$), which leaves room to question the validity of this section of the body image questionnaire. Another limitation is using a convenience sample as subjects volunteered for this study so there was no random sampling; antifat attitudes and body image dissatisfaction were based on self-report of each participant which may not be completely reliable.

FURTHER RESEARCH

The area of stigmatization on the basis of weight is a research area that impacts many people's lives, as approximately 65% of individuals in the U.S. are overweight or obese (1). A first step in expanding this research would be to replicate this study in other college environments and compare findings; another important step is to include equal percentages of males and females and to provide a better representation of other ethnicities and cultures. The importance of creating culturally sensitive programs with the purpose to decrease antifat bias is supported by the discovery of the ethnic differences in antifat attitudes in this study. Studies involving other cultures will provide a clearer picture of the differences in antifat bias between cultures. The necessity for programs to be created for the purpose of decreasing weight stigmatization is great due to the

way this prejudice impacts people's lives; after implementation, programs need to be tested for adequacy and appropriateness based on the presence or degree of antifat bias.

IMPLICATIONS

There are ways that antifat attitudes are similar to other prejudices, such as racism and sexism; these ideas are widespread and result in some kind of discrimination. However, unlike racism and sexism, there is no real social pressure to hide or downplay the feelings that individuals possess toward obesity (10). While studies are being conducted regarding the theories of obesity stigma, there is little research aimed at reducing this stigma. There is a great need for attention to be focused on testing theories of obesity stigma and finding a way to decrease this bias and discrimination.

Health at Every Size (HAES) is a movement with the intention of acknowledging the natural differences in body shapes and sizes, warning about the dangers of dieting to lose weight, encouraging attentiveness to internal cues when eating, and being aware of different factors (social, emotional, spiritual, and physical) and their important contribution to overall health and happiness (35). HAES suggests that a healthy weight is the result of people eating in response to internal cues and enjoying reasonable amounts of physical activity and should not be defined by numbers on a scale or ideal body weight charts. HAES promotes mindful eating and discourages the idea of "good" foods versus "bad"

foods with the intention of reducing the anxiety about eating that is often experienced when individuals count calories and fat grams. HAES promotes physical activity by putting emphasis on enjoyment, improved quality of life, and fun; the focus is on finding movement that one enjoys instead of exercising to burn calories and lose weight. HAES encourages people to focus on well-being, energy level, lipids, and glucose rather than on weight. HAES encourages health professionals to aid individuals in living healthier lives by taking care of the bodies they have and not participating in harmful dieting or exercise practices to achieve the unrealistic standards of body shape and size that society has set forth. Health comes in all shapes and sizes and the Health at Every Size movement is focusing on improving quality of life (35).

Results of this study indicate the presence of weight stigmatization that has been discovered in many other settings. Discovering negative attitudes toward overweight in this population indicate the need for curricula aimed at educating college students about the many causes of obesity and the prejudice associated with it to dispel or decrease these attitudes at the very least. This education should also include information that is specific to different cultures as results of this study show that each culture views weight issues differently. Providing interventions while in the university setting is important due to the protected environment that is provided and the impressionable state of students as they are forming opinions and beliefs about the world; to intervene before antifat bias is completely formed could prove to be beneficial. Although it is not enough, knowing that antifat attitudes exist in the college population is the first

step. The next step includes creating and implementing prevention programs designed for decreasing weight stigmatization.

REFERENCES

- (1) Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among U.S. adults, 1999-2000. *JAMA*. 2002;288:1723-1727.
- (2) U.S. Department of Health and Human Services: *U.S. obesity trends*. (2004). Retrieved February 21, 2006, from <http://www.cdc.gov/nccdphp/dnpa/obesity/trend/maps/>.
- (3) Stunkard AJ, Foch TT, Hrubec Z. A twin study of human obesity. *JAMA*. 1986;256:51-54.
- (4) Larkin JC, Pines HA. No fat persons need apply: experimental studies of the overweight stereotype and hiring preference. *Sociology of Work and Occupations*. 1979;6:312-327.
- (5) Crandall CS. Do heavy-weight students have more difficulty paying for college? *Pers Soc Psychol Bull*. 1991;17:606-611.
- (6) Crandall CS. Do parents discriminate against their heavyweight daughters? *Pers Soc Psychol Bull*. 1995;17:724-735.
- (7) Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of overweight and obesity in the United States, 1999-2004. *JAMA*. 2006;295:1549-1555.
- (8) Stunkard AJ. Current views on obesity. *Am J Med*. 1996;100:230-236.

- (9) Puhl RM, Brownell KD. Bias, Discrimination, and Obesity. *Obes Res.* 2001;9:788-805.
- (10) Crandall CS. Prejudice against fat people: ideology and self-interest. *J Pers Soc Psychol.* 1994;66:882-894.
- (11) Davison TE, McCabe MP. Self-esteem and negative effect as moderators of sociocultural influences on body dissatisfaction, strategies to decrease weight, and strategies to increase muscles among adolescent boys and girls. *Sex Roles.* 2001;44:189-207.
- (12) Price JH, Desmond SM, Krol RA, Snyder FF, O'Connell JK. Family practice physicians' beliefs, attitudes, and practices regarding obesity. *Am J Prev Med.* 1987;3:339-345.
- (13) Bagley CR, Conklin DN, Isherwood RT, Pechiulis DR, Watson LA. Attitudes of nurses toward obesity and obese patients. *Percept Mot Skills.* 1989;68:954.
- (14) Wiese HJ, Wilson JF, Jones RA, Neises M. Obesity stigma reduction in medical students. *International Journal of Obesity and Related Metabolic Disorders.* 1992;16:859-868.
- (15) Musher-Eizenman DR, Holub SC, Miller AB, Goldstein SE, Edwards-Leeper L. Body size stigmatization in preschool children: the role of control attributions. *J Pediatr Psychol.* 2004;29:613-620.
- (16) Bray GA. Medical consequences of obesity. *J Clin Endocrinol Metab.* 2004;89:2583-2589.
- (17) Crandall CS, Martinez R. Culture, ideology, and antifat attitudes. *Pers Soc*

- Psychol Bull.* 1996;22:1165-1176.
- (18) Betancourt H, Hardin C, Manzi J. Beliefs, value orientation, and culture in attribution processes in helping behavior. *J Pers Soc Psychol.* 1992;51:1173-1182.
- (19) Wang SS, Brownell KD, Wadden TA. The influence of stigma of obesity on overweight individuals. *Int J Obes.* 2004;28:1333-1337.
- (20) Berryman DE, Dubale GM, Manchester DS, Mittelstaedt R. Dietetics students possess negative attitudes toward obesity similar to nondietetics students. *JADA.* 2006;106:1678-1682.
- (21) Thomas D. Fattism is last bastion of employee discrimination. *Personnel Today.* (2005, October 25) p. 4.
- (22) Schwartz MB, Vartanian LR, Nosek BA, Brownell KD. The influence of one's own body weight on implicit and explicit anti-fat bias. *Obesity.* 2006;14:440-447.
- (23) Kolata G. Women pay price for being obese. *New York Times.* (1993, September 30) p. A18.
- (24) Latner JD, Stunkard AJ, Wilson GT. Stigmatized students: age, sex, and ethnicity effects in the stigmatization of obesity. *Obes Research.* 2005;13:1226-1231.
- (25) O'Brien K, Venn BJ, Perry T, Green TJ, Aitken W, Bradshaw A, Thompson R. Reasons for wanting to lose weight: different strokes for different folks. *Eat Behav.* 2007;8:132-135.

- (26) Yates A, Edman J, Aruguete M. Ethnic differences in BMI and body/self-dissatisfaction among whites, Asian subgroups, Pacific Islanders, and African-Americans. *J Adolesc Health*. 2004;34:300-307.
- (27) Neighbors LA, Sobal J. Prevalence and magnitude of body weight and shape dissatisfaction among university students. *Eat Behav*. 2007;8:429-439.
- (28) Varnado-Sullivan PJ, Horton R, Savoy S. Differences for gender, weight and exercise in body image disturbances and eating disorder symptoms. *Eat Weight Disord*. 2006;11:118-125.
- (29) Thompson JK, Shroff H, Herbozo S, Cafri G, Rodriguez J, Rodriguez M. Relations among multiple peer influences, body dissatisfaction, eating disturbance, and self-esteem: a comparison of average weight, at risk of overweight, and overweight adolescent girls. *J Pediatr Psychol*. 2007;32:24-29.
- (30) Hrabosky JI, Grilo CM. Body image and eating disordered behavior in a community sample of Black and Hispanic women. *Eat Behav*. 2007;8:106-114.
- (31) Mirza NM, Davis D, Yanovski JA. Body dissatisfaction, self-esteem, and overweight among inner-city Hispanic children and adolescents. *J Adolesc Health*. 2005;36:267.e16-267.e20.
- (32) Pepper AC, Ruiz SY. Acculturation's influence on antifat attitudes, body image and eating behaviors. *Eat Disord*. 2007;15:427-447.

- (33) Ricciardelli LA, McCabe MP. Self-esteem and negative affect as moderators of sociocultural influences on body dissatisfaction, strategies to decrease weight, and strategies to increase muscles among adolescent boys and girls. *Sex Roles*. 2001;44:189-207.
- (34) Thompson JK, Heinberg L, Tantleff S. The physical appearance comparison scale (PACS). *Behav Ther*. 1991;14:174.
- (35) Robison J, Putnam K, McKibbin L. Health at every size: A compassionate, effective approach for helping individuals with weight-related concerns – part II. *Occup Health Nurs*. 2007;55:185-192.

APPENDIX I

INSTITUTIONAL REVIEW BOARD

APPROVAL

Oklahoma State University Institutional Review Board

Date: Monday, May 08, 2006
IRB Application No HE0658
Proposal Title: Predictors of Relation Between Lifestyle and Anti-fat Attitudes in College Students, Ages 18-24 Years

Reviewed and Processed as: Expedited

Status Recommended by Reviewer(s): Approved Protocol Expires: 5/7/2007

Principal Investigator(s)

Emily Felts 312 HES Stillwater, OK 74078	Tay Seacord Kennedy 312 HES Stillwater, OK 74078
--	--

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 415 Whitehurst (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,



Sue C. Jacobs, Chair
Institutional Review Board

Oklahoma State University Institutional Review Board

Date Thursday, October 26, 2006 Protocol Expires: 5/7/2007
IRB Application HE0658
Proposal Title: Predictors of Relation Between Lifestyle and Anti-fat Attitudes in College Students, Ages 18-24 Years
Reviewed and Processed as: Expedited
Modification

Status Recommended by Reviewer(s) **Approved**


Principal Investigator(s) :

Emily Felts Tay Seacord Kennedy
312 HES 312 HES
Stillwater, OK 74078 Stillwater, OK 74078

The requested modification to this IRB protocol has been approved. Please note that the original expiration date of the protocol has not changed. The IRB office MUST be notified in writing when a project is complete. All approved projects are subject to monitoring by the IRB

- The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

Signature :


Sue C. Jacobs, Chair, OSU Institutional Review Board

Thursday, October 26, 2006
Date

Oklahoma State University Institutional Review Board

Date: Tuesday, April 17, 2007 Protocol Expires: 4/16/2008
IRB Application No: HE0658
Proposal Title: Predictors of Relation Between Lifestyle and Anti-fat Attitudes in College Students, Ages 18-24 Years

Reviewed and Processed as: Expedited
Continuation

Status Recommended by Reviewer(s) **Approved**

Principal Investigator(s)

Emily Felts
312 HES
Stillwater, OK 74078

Tay Seacord Kennedy
312 HES
Stillwater, OK 74078


Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modifications to the research project approved by the IRB must be submitted for approval with the advisor's signature. The IRB office MUST be notified in writing when a project is complete. Approved projects are subject to monitoring by the IRB. Expedited and exempt projects may be reviewed by the full Institutional Review Board.

- The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

The reviewer(s) had these comments:

Continuation approved for data analysis only. Any additional data collection will need to be submitted as a modification to the protocol.

Signature :


Sue C. Jacobs, Chair, Institutional Review Board

Tuesday, April 17, 2007
Date

APPENDIX II
APPROVED IRB INSTRUMENTS AND CONSENT FORMS

Researcher's Questionnaire
(Questionnaire #1)

ID# _____

Date: _____

1. Height _____

2. Weight _____

3. Major _____

Demographic Questionnaire
(Questionnaire #2)

ID# _____

Date _____

Thank you for participating in this study. Your time and honesty is greatly appreciated. The effort you have shown by being here has contributed to this research.

For the following demographic questions, please place a checkmark or an X in the box that best answers the questions.

1. Date of Birth _____

2. Gender

Male Female

3. Ethnic Group

- White, Non-Hispanic
- Black, Non-Hispanic
- Hispanic
- Asian American or Pacific Islander
- American Indian or Native Alaskan
- Other

4. Did either of your parents or legal guardian attend a community college, four-year college or university?

Yes No

5. What is your family's total annual income for the last calendar year? This is the combined gross income for both of your parents.

\$20,000 or below above \$20,000

6. Approximately how many times in the past week have you engaged in physical activity for thirty minutes or longer?

none 1-2 times 3-4 times 5 or more times

AFA Questionnaire
(Questionnaire #3)

ID# _____

Date _____

Thank you for participating in this study. Your time and honesty is greatly appreciated.

For the following questions, 0=Completely Disagree 9=Completely Agree
Please place an X on the line over the number that best describes how you feel about each statement.

1. I really don't like fat people much.

0 1 2 3 4 5 6 7 8 9

2. I don't have many friends that are fat.

0 1 2 3 4 5 6 7 8 9

3. I tend to think that people who are overweight are a little untrustworthy.

0 1 2 3 4 5 6 7 8 9

4. Although some fat people are smart, in general, I think they tend not to be quite as bright as normal weight people.

0 1 2 3 4 5 6 7 8 9

5. I have a hard time taking fat people too seriously.

0 1 2 3 4 5 6 7 8 9

6. Fat people make me feel somewhat uncomfortable.

0 1 2 3 4 5 6 7 8 9

Thank you for participating in this study. Your time and honesty is greatly appreciated.

For the following questions, 0=Completely Disagree 9=Completely Agree

Please place an X on the line over the number that best describes how you feel about each statement.

7. If I were an employer looking to hire, I might avoid hiring a fat person.

0 1 2 3 4 5 6 7 8 9

8. I feel disgusted with myself when I gain weight.

0 1 2 3 4 5 6 7 8 9

9. One of the worst things that could happen to me would be if I gained 25 pounds.

0 1 2 3 4 5 6 7 8 9

10. I worry about becoming fat.

0 1 2 3 4 5 6 7 8 9

11. People who weigh too much could lose at least some part of their weight through a little exercise.

0 1 2 3 4 5 6 7 8 9

12. Some people are fat because they have no willpower.

0 1 2 3 4 5 6 7 8 9

13. Fat people tend to be fat pretty much through their own fault.

0 1 2 3 4 5 6 7 8 9

ID# _____

Date _____

**Body Image Questionnaire
(Questionnaire #4)**

This questionnaire is designed to find out how you feel about your body. There are no right or wrong answers. We just want to know how you feel. It is important not to take too long to answer each question. Simply tick the box that best applies to you.

A. Are you satisfied with your body?

	extremely dissatisfied	fairly dissatisfied	neutral	fairly satisfied	extremely satisfied
How satisfied are you with your WEIGHT ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How satisfied are you with your BODY SHAPE ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How satisfied are you with your MUSCLE SIZE ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The remainder of the questions in this section ask about how **SATISFIED** you are with **particular body parts**.

	extremely dissatisfied	fairly dissatisfied	neutral	fairly satisfied	extremely satisfied
Your HIPS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your THIGHS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your CHEST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your ABDOMINAL REGION/STOMACH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The size/width of your SHOULDERS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your LEGS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your ARMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B. Is the way your body looks important?

	extremely unimportant	fairly unimportant	neutral	fairly important	extremely important
How important to you is WHAT YOU WEIGH compared to other things in your life?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How important to you is the SHAPE OF YOUR BODY compared to other things in your life?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How important to you is the SIZE OF YOUR MUSCLES compared to other things in your life?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The remainder of the questions in this section ask about the **IMPORTANCE** of the appearance of different **parts of your body**.

	extremely unimportant	fairly unimportant	neutral	fairly important	extremely important
Your HIPS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your THIGHS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your CHEST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your ABDOMINAL REGION/STOMACH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The size/width of your SHOULDERS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your LEGS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your ARMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C. Body Image Behaviour Scale

Please tick the box which best describes how often you currently do these behaviours.

	Never	Rarely	Sometimes	Often	Usually	Always
I buy products that I hope will give me a better body.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wear clothes that hide the parts of my body I don't like.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try hard to improve my body shape.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I avoid physical contact with others.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wear clothes that will divert attention from my body shape or weight.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I avoid wearing 'revealing' clothes, like shorts or bathing suits.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I exercise in order to get a better body.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I avoid situations where people are likely to 'check out' my appearance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try to eat only foods that will help me to improve my body shape or weight.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I avoid discussions about weight and body shape with other people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Never	Rarely	Sometimes	Often	Usually	Always
I try to make sure people can't see what my body really looks like.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try not to go out socially with people whose bodies are much better than mine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I avoid shopping for clothes because I do not want to focus on my body.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I spend time making my body look better.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D. How physically attractive do you look?

	extremely unattractive		of average attractiveness		extremely attractive
Compared to those of the same sex, I am...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The opposite sex usually thinks I am ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When it comes to my looks, I am ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel that my face is ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If people had to rate my appearance, they would probably say I am ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	extremely sexually unattractive		of average sexual attractiveness		extremely sexually attractive
Considering sexual attractiveness, compared to others of the same sex, I am ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

E. Do you compare your appearance to that of other people?

	never true	seldom true	sometimes true	often true	always true
At parties or other social events, I compare my physical appearance to the physical appearance of others.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The best way for people to know if they are overweight or underweight is to compare their figure to the figure of others.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	never true	seldom true	sometimes true	often true	always true
At parties or other social events, I compare how I am dressed to how other people are dressed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comparing your 'looks' to the 'looks' of others is a bad way to determine if you are attractive or unattractive.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In social situations, I compare my figure to the figures of other people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**CONSENT TO PARTICIPATE IN A RESEARCH STUDY
OKLAHOMA STATE UNIVERSITY**

PROJECT TITLE: Predictors of relation between lifestyle and anti-fat attitudes in college students, ages 18-24 years

INVESTIGATORS: Tay Kennedy, Ph.D; Emily Felts, B. S.

PURPOSE:

This study, which is research conducted for a master's thesis, is being conducted through Oklahoma State University. The purpose is to examine the relation between behavior and/or lifestyle and anti-fat attitudes in college students.

PROCEDURES:

The project will involve completion of three questionnaires and the recording of your weight and height. The first questionnaire will ask for demographic information such as your age, gender, race or ethnicity, and your parents' education and income. The second questionnaire will ask about your thoughts and feelings toward overweight individuals. The third questionnaire will ask information about your opinions and thoughts of your own personal body image. The researcher will personally measure and record each height and weight.

The study is designed to last approximately 30-45 minutes.

RISKS OF PARTICIPATION:

There are no risks associated with this project, including stress, psychological, social, physical, or legal risk which are greater, considering probability and magnitude, than those ordinarily encountered in daily life. If, however, you begin to experience discomfort or stress in this project, you may end your participation at any time.

BENEFITS OF PARTICIPATION:

You may gain an appreciation and understanding of how research is conducted.

CONFIDENTIALITY:

All information about you will be kept confidential and will not be released. Questionnaires and record forms will have identification numbers, rather than names, on them. All information will be kept in a file cabinet that is accessible only to the researchers and their assistants. This information will be saved as long as it is scientifically useful; typically, such information is kept for five years after publication of the results. Results from this study may be presented at professional meetings or in publications. You will not be identified individually; we will be looking at the group as a whole.

Confidentiality will be maintained except under specified conditions required by law. For example, current Oklahoma law requires that any ongoing child abuse (including sexual abuse, physical abuse, and neglect) of a minor must be reported to state officials. In addition, if an individual reports that he/she intends to harm him/herself or others, legal and professional

standards require that the individual must be kept from harm, even if confidentiality must be broken. Finally, confidentiality could be broken if materials from this study were subpoenaed by a court of law.

COMPENSATION:

You will receive one unit of course credit for your participation. Other alternatives for course credit are available -please check with your instructor for details.

CONTACTS:

I understand that I may contact any of the researchers at the following addresses and phone numbers, should I desire to discuss my participation in the study and/or request information about the results of the study: Tay Kennedy, Ph.D., 312 HES, Dept. of Nutritional Sciences Oklahoma State University, Stillwater, OK 74078, (405) 744 - 5965. I may also contact Sue Jacobs, Ph.D., Institutional Review Board, 219 Cordell North, Oklahoma State University, Stillwater, OK 74078, (405) 744-1676 with any questions concerning participant's rights.

PARTICIPANT RIGHTS:

I understand that my participation is voluntary, that there is no penalty for refusal to participate, and that I am free to withdraw my consent and participation in this project at any time, without penalty.

CONSENT DOCUMENTATION:

I have been fully informed about the procedures listed here. I am aware of what I will be asked to do and the benefits of my participation. I also understand the following statements:

I affirm that I am 18 years of age or older.

I have read and fully understand this consent form. I sign it freely and voluntarily. A copy of this form will be given to me. I hereby give permission for my participation in the study.

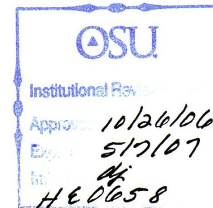
Signature of Participant

Date

I certify that I have personally explained this document before requesting that the participant sign it.

Signature of Researcher

Date



**CONSENT TO PARTICIPATE IN A RESEARCH STUDY
OKLAHOMA STATE UNIVERSITY**



PROJECT TITLE: Predictors of relation between lifestyle and anti-fat attitudes in college students, ages 18-24 years

INVESTIGATORS: Tay Kennedy, Ph.D; Emily Felts, B. S.

PURPOSE:

This study, which is research conducted for a master's thesis, is being conducted through Oklahoma State University. The purpose is to examine the relation between behavior and/or lifestyle and anti-fat attitudes in college students.

PROCEDURES:

The project will involve completion of three questionnaires and the recording of your weight and height. The first questionnaire will ask for demographic information such as your age, gender, race or ethnicity, and your parents' education and income. The second questionnaire will ask about your thoughts and feelings toward overweight individuals. The third questionnaire will ask information about your opinions and thoughts of your own personal body image. The researcher will personally measure and record each height and weight.

The study is designed to last approximately 30-45 minutes.

RISKS OF PARTICIPATION:

There are no risks associated with this project, including stress, psychological, social, physical, or legal risk which are greater, considering probability and magnitude, than those ordinarily encountered in daily life. If, however, you begin to experience discomfort or stress in this project, you may end your participation at any time.

BENEFITS OF PARTICIPATION:

You may gain an appreciation and understanding of how research is conducted.

CONFIDENTIALITY:

All information about you will be kept confidential and will not be released. Questionnaires and record forms will have identification numbers, rather than names, on them. All information will be kept in a file cabinet that is accessible only to the researchers and their assistants. This information will be saved as long as it is scientifically useful; typically, such information is kept for five years after publication of the results. Results from this study may be presented at professional meetings or in publications. You will not be identified individually; we will be looking at the group as a whole.

Confidentiality will be maintained except under specified conditions required by law. For example, current Oklahoma law requires that any ongoing child abuse (including sexual abuse, physical abuse, and neglect) of a minor must be reported to state officials. In addition, if an individual reports that he/she intends to harm him/herself or others, legal and professional

standards require that the individual must be kept from harm, even if confidentiality must be broken. Finally, confidentiality could be broken if materials from this study were subpoenaed by a court of law.

COMPENSATION:

You will receive 10 points of extra credit for your participation. Other alternatives for course credit are available -please check with your instructor for details.

CONTACTS:

I understand that I may contact any of the researchers at the following addresses and phone numbers, should I desire to discuss my participation in the study and/or request information about the results of the study: Tay Kennedy, Ph.D., 312 HES, Dept. of Nutritional Sciences Oklahoma State University, Stillwater, OK 74078, (405) 744 - 5965. I may also contact Sue Jacobs, Ph.D., Institutional Review Board, 219 Cordell North, Oklahoma State University, Stillwater, OK 74078, (405) 744-1676 with any questions concerning participant's rights.

PARTICIPANT RIGHTS:

I understand that my participation is voluntary, that there is no penalty for refusal to participate, and that I am free to withdraw my consent and participation in this project at any time, without penalty.

CONSENT DOCUMENTATION:

I have been fully informed about the procedures listed here. I am aware of what I will be asked to do and the benefits of my participation. I also understand the following statements:

I affirm that I am 18 years of age or older.

I have read and fully understand this consent form. I sign it freely and voluntarily. A copy of this form will be given to me. I hereby give permission for my participation in the study.

Signature of Participant

Date

I certify that I have personally explained this document before requesting that the participant sign it.

Signature of Researcher

Date



APPENDIX III

MEAN RESPONSE

Item description and mean responses for antifat
attitudes and body image questionnaires

Subscale reliability table

Antifat Attitude Questionnaire Results

Question:	Total		Male		Female		Significance
	Mean	SD	Mean	SD	Mean	SD	P-value
Dislike subscale*							
<i>Subtotal for Dislike subscale</i>	12.82	10.24	16.88	12.78	11.70	9.16	.00
I really don't like fat people much.	1.59	2.18	2.78	2.83	1.25	1.84	.00
I don't have many friends that are fat.	4.47	2.70	4.41	2.69	4.49	2.70	.88
I tend to think that people who are overweight are a little untrustworthy.	.73	1.51	1.24	1.93	.58	1.34	.01
Although some fat people are surely smart, in general, I think they tend not to be quite as bright as normal weight people.	.81	1.42	1.12	1.79	.72	1.29	.12
I have a hard time taking fat people too seriously.	1.03	1.82	1.83	2.14	.80	1.66	.00
Fat people make me feel somewhat uncomfortable.	1.80	2.30	2.24	2.51	1.67	2.23	.16
If I were an employer looking to hire, I might avoid hiring a fat person.	2.49	2.48	3.23	2.64	2.29	2.40	.03
Fear of Fat subscale *							
<i>Subtotal for Fear of Fat subscale</i>	16.10	7.91	11.45	8.38	17.38	7.30	.00
I feel disgusted with myself when I gain weight.	5.31	2.87	3.58	2.94	5.78	2.67	.00
One of the worst things that could happen to me would be if I gained 25 pounds.	5.52	3.01	3.88	3.07	5.97	2.84	.00
I worry about becoming fat.	5.28	3.02	4.00	3.14	5.63	2.90	.00
Willpower subscale *							
<i>Subtotal for Willpower subscale</i>	17.19	6.02	19.35	4.51	16.60	6.26	.01
People who weigh too much could lose at least some part of their weight through a little exercise.	7.38	2.00	7.70	1.95	7.29	2.01	.26
Some people are fat because they have no willpower.	5.58	2.81	6.43	2.22	5.34	2.92	.03
Fat people tend to be fat pretty much through their own fault.	4.23	2.38	5.23	1.85	3.96	2.44	.00

* This survey consists of 13 questions which are answered on a 0-9 Likert scale; a score of 0 means 'Completely Disagree' and a score of 9 on an item means 'Completely Agree'. The survey is comprised of three subscales, Dislike (subjects' prejudice toward fat people), Fear of Fat (concerns regarding your own weight), & Willpower (beliefs about the controllability of weight).

Body Image Questionnaire Results

Question:	Total		Male		Female		Significance
Section A – Are you satisfied with your body? *	Mean	SD	Mean	SD	Mean	SD	P-values
<i>Subtotal for Section A</i>	34.06	7.98	34.39	7.09	33.97	8.24	.77
How satisfied are you with your weight?	3.36	1.19	3.51	1.03	3.32	1.24	.35
How satisfied are you with your body shape?	3.44	1.12	3.49	1.08	3.42	1.13	.75
How satisfied are you with your muscle size?	3.27	1.02	3.32	1.04	3.26	1.02	.76
<i>How satisfied are you with...</i>							
Your hips	3.37	1.08	3.56	.67	3.32	1.16	.20
Your thighs	2.99	1.19	3.44	.90	2.87	1.23	.01
Your chest	3.59	1.14	3.27	1.10	3.68	1.14	.04
Your abdominal region/stomach	2.90	1.24	2.95	.92	2.89	1.32	.78
The size/width of your shoulders	3.97	.98	3.73	.95	4.03	.99	.08
Your legs	3.56	1.16	3.68	.99	3.52	1.20	.43
Your arms	3.61	1.09	3.44	.98	3.66	1.12	.24

* This section is scored on a 1-5 Likert scale where 1 means 'Extremely Dissatisfied' and 5 means 'Extremely Satisfied'. If a subject marks a low number on one of the items above, the more dissatisfied the subject is with that specific body part or body shape, etc.

Question:	Total		Male		Female		Significance
Section B – Is the way your body looks important?Δ	Mean	SD	Mean	SD	Mean	SD	P-values
<i>Subtotal for Section B</i>	33.61	6.55	32.44	7.09	33.94	6.37	.19
How important to you is what you weigh compared to other things in your life?	3.30	1.00	3.10	.94	3.36	1.01	.13
How important to you is the shape of your body compared to other things in your life?	3.51	.96	3.39	1.07	3.55	.93	.36
How important to you is the size of your muscles compared to other things in your life?	2.86	1.00	3.24	1.07	2.75	.96	.01
<i>How important is the appearance of ...</i>							
Your hips	3.25	.99	2.49	.84	3.46	.93	.00
Your thighs	3.47	.98	2.66	.76	3.69	.91	.00
Your chest	3.44	.95	3.61	.89	3.39	.97	.19
Your abdominal region/stomach	4.01	.83	3.76	.83	4.08	.82	.03
The size/width of your shoulders	2.73	1.01	3.34	1.02	2.55	.95	.00
Your legs	3.63	.96	3.07	.82	3.78	.94	.00
Your arms	3.44	.95	3.78	.82	3.35	.97	.01

Δ This section is scored on a 1-5 Likert scale where 1 means 'Extremely Unimportant' and 5 means 'Extremely Important'. If a subject marks a 5 on 'the appearance of your legs', this equates the subject's feelings about the appearance of his/her legs with extremely important.

Body Image Questionnaire Results, Con't.

Question:	Total		Male		Female		Significance
Section C – Body Image Behavior scale ♦	Mean	SD	Mean	SD	Mean	SD	P-values
<i>Subtotal for Section C</i>	37.67	9.89	33.83	6.61	38.75	10.39	.01
I buy products that I hope will give me a better body.	2.48	1.24	2.80	1.19	2.38	1.24	.05
I wear clothes that hide the parts of my body I don't like.	3.02	1.36	1.93	.99	3.33	1.29	.00
I try hard to improve my body shape.	3.96	1.34	4.07	1.37	3.92	1.33	.53
I avoid physical contact with others.	1.82	.95	1.78	.79	1.83	1.00	.78
I wear clothes that will divert attention from my body shape or weight.	2.39	1.27	1.56	.63	2.62	1.31	.00
I avoid wearing 'revealing' clothes, like shorts or bathing suits.	2.35	1.38	1.61	.86	2.55	1.42	.00
I exercise in order to get a better body.	4.29	1.37	4.44	1.40	4.25	1.36	.44
I avoid situations where people are likely to 'check out' my appearance.	2.19	1.16	1.76	.80	2.32	1.22	.01
I try to eat only foods that will help me to improve my body shape or weight.	3.56	1.35	3.41	1.52	3.60	1.30	.43
I avoid discussions about weight and body shape with other people.	2.45	1.41	2.00	.98	2.58	1.49	.02
I try to make sure people can't see what my body really looks like.	2.29	1.23	1.80	.81	2.42	1.30	.00
I try not to go out socially with people whose bodies are much better than mine.	1.41	.68	1.39	.59	1.41	.71	.87
I avoid shopping for clothes because I do not want to focus on my body.	1.72	1.15	1.39	.95	1.81	1.19	.04
I spend time making my body look better.	3.75	1.25	3.88	1.38	3.72	1.21	.47

♦ This section is scored on a 1-6 Likert scale where 1 means 'Never' and 6 means 'Always'. If a subject marks a 1 on 'I try hard to improve my body shape', the subject is saying that he/she never tries hard to improve his/her body shape.

Body Image Questionnaire Results, Con't.

Question:	Total		Male		Female		Significance
Section D – How physically attractive do you look? ▣	Mean	SD	Mean	SD	Mean	SD	P-values
<i>Subtotal for Section D</i>	19.78	3.68	20.41	4.27	19.60	3.49	.21
Compared to those of the same sex, I am...	3.24	.68	3.49	.68	3.17	.67	.01
The opposite sex usually thinks I am ...	3.43	.80	3.46	.78	3.42	.80	.78
When it comes to my looks, I am ...	3.24	.73	3.32	.82	3.21	.70	.42
I feel that my face is ...	3.28	.76	3.39	.83	3.25	.74	.29
If people had to rate my appearance, they would probably say I am ...	3.39	.71	3.39	.86	3.38	.67	.96
Considering sexual attractiveness, compared to others of the same sex, I am ...	3.20	.70	3.37	.80	3.16	.67	.09

▣ This section is scored on a 1-5 Likert scale where 1 means 'Extremely Unattractive' and 5 means 'Extremely Attractive' for the first five items. For the last item, 1 means 'Extremely Sexually Unattractive' and 5 means 'Extremely Sexually Attractive'. A subject's high score on this section is equated with a positive perception of his/her looks.

Question:	Total		Male		Female		Significance
Section E – Do you compare your appearance to that of other people? ◇	Mean	SD	Mean	SD	Mean	SD	P-values
<i>Subtotal for Section E</i>	15.88	3.14	14.90	2.47	16.16	3.26	.02
At parties or other social events, I compare my physical appearance to the physical appearance of others.	3.33	.98	2.93	.96	3.45	.95	.00
The best way for people to know if they are overweight or underweight is to compare their figure to the figure of others.	2.21	1.09	2.71	.96	2.08	1.08	.00
At parties or other social events, I compare how I am dressed to how other people are dressed.	3.48	.96	3.00	.95	3.61	.92	.00
Comparing your 'looks' to the 'looks' of others is a bad way to determine if you are attractive or unattractive.	3.72	1.01	3.59	1.00	3.75	1.01	.35
In social situations, I compare my figure to the figures of other people.	3.14	1.08	2.68	.88	3.27	1.10	.00

◇ This section is scored on a 1-5 Likert scale where 1 means 'Never True' and 5 means 'Always True'.

Subscale Reliability Table

Survey Subscales	Reliability for <i>Original Study</i>	Reliability for <i>This Study</i>
<u>Antifat Attitudes</u>		
<i>Dislike</i>	$\alpha = 0.84$	$\alpha = 0.82$
<i>Willpower</i>	$\alpha = 0.66$	$\alpha = 0.77$
<i>Fear of Fat</i>	$\alpha = 0.79$	$\alpha = 0.87$
<u>Body Image Dissatisfaction</u>		
<i>Section A</i>	$\alpha > 0.90$	$\alpha = 0.89$
<i>Section B</i>	$\alpha > 0.90$	$\alpha = 0.87$
<i>Section C</i>	$\alpha > 0.80$	$\alpha = 0.84$
<i>Section D</i>	$\alpha > 0.90$	$\alpha = 0.92$
<i>Section E (men)</i>	$\alpha > 0.70$	$\alpha = 0.33$
<i>Section E (women)</i>	$\alpha > 0.80$	$\alpha = 0.64$

VITA

Emily Joye Felts

Candidate for the Degree of

Master of Science

Thesis: RELATION BETWEEN LIFESTYLE FACTORS AND ANTI-FAT
ATTITUDES IN COLLEGE STUDENTS, AGES 18-24

Major Field: Nutritional Sciences

Personal Data: Emily Joye Felts
emily.perkins@okstate.edu

Education: 2007 **M.S.**, Nutritional Sciences
College of Human Environmental Sciences,
Oklahoma State University, Stillwater, OK

2007 **Dietetic Internship**
College of Human Environmental Sciences,
Oklahoma State University, Stillwater, OK

2005 **B.S.**, Nutritional Sciences
College of Human Environmental Sciences,
Oklahoma State University, Stillwater, OK

*Completed the requirements for the Master of Science
degree at Oklahoma State University in December of 2007.*

Experience: 2007 *Graduate Teaching Assistant,
Oklahoma State University, Stillwater, OK
Medical Nutrition Therapy I and Advanced Medical
Nutrition Therapy.*

2005-2007 *Graduate Assistant, Oklahoma State University,
Stillwater, OK
Families & Schools for Health (FiSH) project.*

Name: Emily Joye Felts

Date of Degree: December, 2007

Institution: Oklahoma State University

Location: Stillwater, Oklahoma

Title of Study: RELATION BETWEEN LIFESTYLE FACTORS AND ANTI-FAT
ATTITUDES IN COLLEGE STUDENTS, AGES 18-24

Pages in Study: 74

Candidate for the Degree of Master of Science

Major Field: Nutritional Sciences

Scope and Method of Study:

This study examined antifat attitudes and body image dissatisfaction and their relation to body mass index among college students. Participants completed an antifat attitudes questionnaire, body image dissatisfaction questionnaire, and demographic questions.

Findings and Conclusions:

Significant differences between genders were found for all three subscales of the antifat attitudes questionnaire: females were found to have a higher *Fear of Fat* than males, males possess a higher level of *Dislike* for overweight individuals, and males attribute overweight to a *Lack of Willpower* more readily than do females. BMI and *Fear of Fat* were still positively correlated after controlling for gender. Relation between total AFA scores and body image dissatisfaction suggests that as one's opinion about his or her own appearance and/or weight becomes more negative, his or her attitude toward overweight and obese people becomes more negative. Males appear to be more extreme in their attitudes toward overweight individuals than do females.

ADVISER'S APPROVAL: Dr. Tay Kennedy