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Implicit and Explicit Biases toward Obesity: Perspectives of School of Education Students

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Abstract

The current study investigated implicit and explicit biases toward obesity among a group of pre-service educators. Educators play a key role in helping children learn habits that contribute to a healthy lifestyle and lowered rate of obesity. Explicit biases, such as overt discrimination against obese children may be rare among educators, but implicit biases, such as not calling on obese children in class, may be more prevalent. More importantly, implicit biases may not be recognized or understood among educators. A total of 102 undergraduate and graduate students enrolled in a university level school of education were administered the Implicit Attitudes Test, the Antifat Attitudes Questionnaire and the Attitudes towards Obese Persons Scale. The participants did not demonstrate an explicit bias against obesity but did appear to have an implicit bias toward individuals with obesity.

Keywords: Questionnaire; Obese persons scale

Implicit and Explicit Biases toward Obesity: Perspectives of Pre-service Educators

The United States has recently experienced a steep incline in the prevalence of obesity, with rates in children nearly tripling since 1980 [1]. The Center for Disease Control and Prevention (2011) reports that 17% of children and adolescents are now overweight or obese which are defined as having a body mass index (BMI) at the 85th percentile or higher. BMI refers to the ratio of a person's height to weight and can be interpreted as a measure of body fatness (CDC, 2011). Four categories have been assigned to different percentiles of BMI for children and teens and these are as follows: less than 5th percentile is underweight, 5th to 85th percentile is healthy weight, greater than 85th and less than 95th percentile is considered overweight, and over the 95th percentile is considered obese (CDC, 2011). As children gain weight, they not only suffer from deteriorating health [2] but also from discrimination and biases [3,4].

Children judge each other, as shown by [5], a study indicating teens have implicit negative stereotypes about their overweight peers, particularly in regards to their physical/romantic unattractiveness. However, teens are not the only groups that hold these negative beliefs. Adults also have been shown to have an anti-fat bias [6]. This is a topic that has recently gained public attention through various popular media outlets; this year Glamour magazine released an article detailing weight biases in America and the negative stereotypes applied to overweight individuals, citing that they are seen as more "sloppy", "undisciplined", "lazy", and "slow" [7].

These negative stereotypes affect all areas of a child's life, including the education system. It is the belief of education professionals that overweight individuals are "weak-willed, ugly, awkward...gluttonous, lazy...stupid, worthless, and lacking in self control" [3]. This bias could be the result of a deficit in training. Neumark-Sztainer et al. found that school professionals receive little training in nutrition and preventative techniques related to obesity [8]. They also found that the training that education professionals receive is variable and dependent upon the subject in which they were trained, the university they attended, and their personal interest in the topic. It has been suggested that this lack of training results in a negative, "victim blaming" attitude directed towards obese students [8,9].

In particular, several studies have revealed anti-fat attitudes amongst physical educators (P.E.) teachers [9,10]. P.E. teachers

have indicated that they expected normal weight students to perform at a higher standard than obese students physically, socially, and cognitively [10]. O'Dea [3] showed that this problem is exacerbated by the dangerous methods of weight loss that P.E. teachers practice themselves. Both male and female participants practiced unhealthy weight loss methods—such as skipping meals and excessive exercise. Female participants reported more severe problems, with 19% abusing laxatives and 10% purging. Since P.E. teachers are often charged with imparting health advice to students, these knowledge deficits and unhealthy practices are particularly concerning. If P.E. teachers are misinformed about healthy weight practices, then dangerous or incorrect advice may have the chance of being conveyed to students.

While P.E. teachers' biases towards obese students and a need for nutrition education has been well established, there is currently a lack of research regarding other school professional's attitudes and beliefs [10-12]. One study examined the attitudes of science, health, economics, and P.E. teachers at the junior and senior high-school level, and found that the participants held several negative views about obese individuals [8]. Of these teachers, 20-25% thought that obese people were more emotional, less tidy, less likely to succeed at work, and had more difficult personalities and more family problems.

Research regarding the training and an attitude of general education teachers is important, because studies have shown these beliefs can affect how teachers treat their students and in turn, how successful a student is academically. Rosenthal and Jacobson [13] showed this in their seminal work *Pygmalion in the Classroom*. In this study, students were randomly assigned to a control group, or a group whose intelligence was said to be "blooming" or growing [13]. These groups were assigned regardless of the children's' true level of intelligence (IQ). By the end of a year, the blooming group had an advantage in total IQ, verbal IQ, and reasoning IQ. Researchers speculated that

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positive attitudes of the teachers towards the bloomers were conveyed through subtleties like facial expressions, postures, and verbal praise and the students' awareness of the expectations allowed them to rise to those expectations.

This phenomenon is of concern when the attitudes of teachers towards obese students are examined. Datar et al. observed that overweight children had lower math and reading test scores when compared to their peers [14]. After accounting for socioeconomic status and behavioral variables, the researchers emphasized that weight is the most easily observed characteristics, thus, perhaps one of the easiest ways to begin forming assumptions about a student.

While the relationship between teacher expectations and student performance has been well established, educator bias about obesity has not been thoroughly investigated. Although there has been published literature on this topic, the majority of the data has been collected from PE teachers or health professionals. The purpose of this study is to examine a wider range of educational professionals to gain insight into their perceptions about obesity. This data could help universities and grade schools to target individuals who might benefit from additional training in this area.

This study measured pre-service teachers' nutritional knowledge and biases toward obesity. The following three questions were examined: a) do education professionals display a negative bias towards obese students, b) do pre-service teacher exhibit a general knowledge about nutrition and obesity, and c) do perspectives differ across disciplines?

Method

Participants

A total of 102 undergraduate and graduate level students enrolled in school of education classes at a mid-sized, religiously affiliated university participated in the current study. Instructors were contacted requesting participation of their classes, and the participants were recruited from the classes of the consenting instructors. School of education majors ($n=86$) were enrolled in degrees such as special education, elementary education, curriculum and instruction, school psychology, human health performance and recreation, educational psychology, deaf education, and music education. Non-school of education majors ($n=16$) were enrolled in psychology, chemistry, business, and social work majors. Refer to table 1 for participant characteristics related to the questionnaire.

Procedures and instruments

Procedures: After the study was approved by the university's Institutional Review Board, the principal investigator asked individual instructors in the school of education for access to classes to solicit participation. The principal investigator visited the agreed upon classrooms and presented an overview of the project. At this time, student who chose to participate completed an informed consent and those who did not choose to participate were allowed to leave or work on coursework. The nature of this process may have created a self-selection bias, but this is not likely as all students agreed to participate. The study was conducted in the classroom. Each instrument was administered by the principal investigator according to the standardized instructions to promote fidelity of treatment.

Questionnaire: The questionnaire, created for the purposes of this study, included questions about age, major, and gender. The questionnaire also contained items to assess weight satisfaction, satisfaction with appearance, and personal dieting practices. Additional

questions were asked regarding prior knowledge about causes of obesity. A copy of the questionnaire is included in the Appendix.

Implicit attitudes test (IAT): The IAT is a commonly used measured designed to assess implicit attitudes. Research has shown that IAT scores may predict negative attitudes or perceptions of specific groups [9]. Previous studies implementing the IAT have demonstrated that words can be categorized more quickly when positive attributes are associated with the thin/smart people (e.g., slim and bright) as opposed to obese/stupid people (e.g., dense and large) [6,9,15-17]. Studies have used the IAT to assess implicit anti-fat attitudes and perceptions among health professionals and educators [9,15]. The IAT has demonstrated adequate reliability and validity [18]. Furthermore, implicit attitudes are proven to be "precursors and shapers of subsequent information processing, including explicit attitudes" [19]. A review of all studies implementing the IAT has revealed that there was a moderate correlation of implicit measures and anti-fat attitudes and stereotypes ($r=0.33$ to $r=0.52$) by a consistent faster answering of typical trials (fat/bad and thin/good) over the atypical trials (fat/good and thin/bad) [18].

The IAT is a word-classification task with a time limit. Participants are presented with a list of words, all of which fit less than one of four classifications. The four classifications used are fat people, thin people, smart, and stupid. The corresponding words for each category are: fat, obese, large, slim, thin, skinny, intelligent, smart, bright, dumb, stupid, and dense. Words are paired together on one sheet, and then associated with the word's opposite on the second sheet. On the first sheet, the fat and smart categories were paired together, as well as thin and stupid. In reverse, on the second sheet, fat and stupid were paired together as well as thin and smart. In order to classify a word, the participant makes a check on either side of the word, which categorizes it into the proper column.

Antifat attitudes questionnaire (AFA): The AFA is an instrument used to measure explicit anti-fat attitudes. This 13-item questionnaire is divided into three individual subscales: Dislike, Fear of Fat, and Willpower. The Dislike subscale measures an individuals' dislike, or negative attitudes towards fat people (e.g. "I tend to think that people who are overweight are a little untrustworthy"). The Fear of Fat subscale measures an individuals' personal worry of obesity (e.g. "I worry about becoming fat"). The Willpower subscale assesses an individual's ideas of willpower regarding obesity (e.g. "Some people are fat because they have no willpower"). Items are scored on a 10-point Likert scale (0 = very strongly disagree, 9 = very strongly agree) [17,20]. The AFA has demonstrated adequate validity and reliability of .81 (Dislike) and .66 (Willpower) with no coefficient was provided for Fear of Fat [20,21].

Attitudes towards obese persons scale (ATOP): The ATOP is an instrument designed to measure explicit attitudes and perceptions toward obese people (e.g. "Obese people are as happy as non-obese people", "One of the worst things that could happen to a person would be for him to become obese"). This instrument is a 20-item scale which participants rate on a 6-point Likert-type scale (-3 = I strongly disagree, +3 = I strongly agree). The test has demonstrated adequate validity with alpha reliability ranging from .80 to .84 [22,23].

Participant Questionnaire

Name: _____

What is your ethnicity?

- Caucasian
- Hispanic

- c. African American
 - d. Asian
 - e. Other: _____
- What is your major? _____

What year are you in school?

- a. Freshman
- b. Sophomore
- c. Junior
- d. Senior
- e. Graduate

What is your gender?

- a. Female
- b. Male

Are you at your desired weight?

- a. Yes
- b. No

If No, what percentage of your body weight would you like to lose or gain? Please circle one of the percentages below.

	Lose								Gain
	-30%	-20%	-10%	-5%	0%	5%	10%	20%	30%
How satisfied are you with your appearance? (Please circle one)	Very Unsatisfied	Unsatisfied	Neutral	Satisfied	Very Satisfied				
How often do you diet to lose weight? (Please circle one.)	Never	Sometimes	Often	Almost Always	Always				
How often do you diet to gain weight? (Please circle one.)	Never	Sometimes	Often	Almost Always	Always				
How likely are genes to be a risk factor for obesity? (Please circle one.)	Very Unlikely	Unlikely	Sometimes	Likely	Likely	Very Likely			
How likely are hormone problems to cause a person to be overweight or obese? (Please circle one.)	Very Unlikely	Unlikely	Sometimes	Likely	Likely	Very Likely			
How likely is medicine to cause you to gain weight? (Please circle one.)	Very Unlikely	Unlikely	Sometimes	Likely	Likely	Very Likely			

Analyses

All analyses were performed in SPSS (v. 19.0). The implicit and

explicit measures were used to examine bias against obesity in the sample. To calculate an implicit bias, a difference score was calculated by subtracting the score on the pro-fat implicit attitudes test from the score on the pro-thin implicit attitudes test. The score was calculated from the number of items answered correctly divided by the number of items attempted. If the percentage correct on either iteration was below 35%, the participant was dropped from further IAT analyses [24]. In addition, a latency score was calculated, which used the time per response on each iteration as a measure of bias. This score was calculated by first calculating the average latency response per item and then using this value in the following equation: $1000 * ((1/B) - (1/A))$ [24]. The test iteration for pro-fat was used for variable A and the pro-thin iteration was used for variable B. To test for implicit bias, a one-sample *t* test against a mean of 0 was performed on the latency scores and the difference scores. A Bonferroni correction was applied to control Type 1 error rate.

To test for general knowledge of nutrition and obesity among the sample, frequencies were calculated for three items from the demographic portion of the survey. These items were measured on a 5-point Likert-type scale ranging from “Very Unlikely” to “Very likely.” A response of “Likely” or “Very Likely” to the items was considered a correct response. The three items included: “How likely are genes to be a risk factor for obesity?”; “How likely are hormone problems to cause a person to be overweight or obese?” and “How likely is medicine to cause you to gain weight?” Information pertaining to participants’ weight management goals and satisfaction with appearance may be found in (Table 1).

Chi-square analyses were used to determine if the answers to the nutrition and obesity questions differed by disciplines. Disciplines were separated into four categories according to the response for “What is your major?” The four categories included: non-education majors, elementary education majors, special education majors, and education majors not in special or elementary education. The last category includes all level music education majors and physical education majors.

Results

Implicit bias

After calculating the difference scores for the Implicit Attitudes

	Female (n=92)	Male (n=10)
At desired weight	39% (n=36)	40% (n=4)
Not at desired weight	61% (n=56)	60% (n=6)
Want to lose 30%	5% (n=3)	0% (n=0)
Want to lose 20%	16% (n=9)	0% (n=0)
Want to lose 10%	39% (n=22)	10% (n=1)
Want to lose 5%	29% (n=16)	30% (n=3)
Want to gain 5%	4% (n=2)	10% (n=1)
Want to gain 10%	16% (n=9)	0% (n=0)
Want to gain 20%	0% (n=0)	10% (n=1)
Want to gain 30%	0% (n=0)	0% (n=0)
Satisfaction with current appearance		
Very unsatisfied	0% (n=0)	0% (n=0)
Unsatisfied	23% (n=13)	17% (n=1)
Neutral	21% (n=12)	33% (n=2)
Satisfied	55% (n=31)	50% (n=3)
Very satisfied	0% (n=0)	0% (n=0)

Note: Satisfaction with current appearance category only applies to individuals who chose “not at desired weight.” As such, percentages are calculated from 56 females and 6 males

Table 1: Weight management goals and satisfaction by sex.

Test, 41 participants had results with less than 35% correct on either the first or second iteration of the IAT. These participants were excluded from the analyses for implicit bias. The results of the implicit bias tests indicate an implicit bias against obesity for the difference score, $t(60)=4.81, p<0.001$, and the latency score, $t(59)=5.66, p<0.001$ after applying the Bonferroni correction. This indicates participants took longer to answer pro-fat items and scored lower overall on the pro-fat iteration of the IAT.

Explicit bias

Explicit bias was calculated by the frequencies of responses on the Anti-fat Attitudes Questionnaire (AFA) and the Attitudes toward Obese Persons Scale (ATOP). The AFA was measured on a scale of 0 to 9 with a median response of 4.5. Responses from 7 to 9 were considered biased as these responses were in the last quartile and represented extreme responses to the items. For the ATOP, bias was calculated by a response of an “I moderately agree” or I strongly agree” to negative items about obese persons or a response of “I moderately disagree” or I strongly disagree” to positive items about obese persons. Once again, the scale used a 6-point Likert-type measurement and a median of 3.5 represented neutrality. Scores on the extreme ends of the scale were considered biased. Table 2 displays the number and percentage of

participants indicating explicit bias on each item of the AFA and the ATOP.

General knowledge about obesity

The frequencies of responses to the nutrition and obesity items indicate approximately half of the participants displayed adequate knowledge. The chi-square analysis for differences by discipline indicated no differences between a correct or incorrect response and the discipline studied. Since the significance level for all tests exceeded .05, no correction for Type 1 error was applied (Table 4).

Discussion

Participants exhibited several anti-fat biases identified by this study. There was evidence of an implicit bias according to responses on the IAT. These results indicated that participants took 105.52 milliseconds longer to answer pro-fat items and scored lower overall on pro-fat items. The data thus suggests that tasks with an anti-fat bias-those items conforming to weight stereotypes-were answered more innately, as participants were able to more quickly and accurately identify the answers for these tasks.

While most of the items from the ATOP and AFA do not indicate

Item	N	Percentage
Antifat Attitudes Scale		
I don't really like fat people much.	4	4%
I don't have any friends that are fat.	18	18%
I tend to think that people who are overweight are a little untrustworthy.	4	4%
Although some fat people are surely smart, in general, I think they tend not to be quite as bright as normal weight people.	6	6%
I have a hard time taking fat people too seriously.	4	4%
Fat people make me somewhat uncomfortable.	10	10%
If I were an employer looking to hire, I might avoid hiring a fat person.	21	20%
I feel disgusted with myself when I gain weight.	51	50%
One of the worst things that could happen to me would be if I gained 25 pounds.	54	53%
I worry about becoming fat.	52	51%
People who weight too much could lose at least some part of their weight through a little exercise.	70	69%
Some people are fat only because they have no willpower.	36	35%
Fat people tend to be fat pretty much through their own fault.	17	17%
ATOP Scale		
Obese people are as happy as non-obese people.	23	23%
Most obese people feel they are not as good as other people.	31	31%
Most obese people are more self-conscious than other people.	56	55%
Obese workers cannot be as successful as other workers.	36	39%
Most non-obese people would not want to marry anyone who is obese.	36	39%
Severely obese people are usually untidy.	23	23%
Obese people are usually sociable.	25	25%
Most obese people are not dissatisfied with themselves.	5	5%
Obese people are just as self-confident as other people.	10	10%
Most people feel uncomfortable when they associate with obese people.	5	5%
Obese people are often less aggressive than non-obese people.	10	10%
Most obese people have different personalities than non-obese people.	5	5%
Very few obese people are ashamed of their weight.	11	11%
Most obese people resent normal weight people.	18	18%
Obese people are more emotional than non-obese people.	10	10%
Obese people should not expect to live normal lives.	11	11%
Obese people are just as healthy as non-obese people.	6	6%
Obese people are just as sexually attractive as non-obese people.	8	8%
Obese people tend to have family problems.	2	2%
One of the worst things that could happen to a person would be for him to become obese.	22	22%

Note: All percentages are based on the $n = 102$ sample. Explicit bias is indicated by the percent of the sample selecting extreme responses

Table 2: Explicit Bias on the AFA and ATOP.

Degree Focus	Number of Participants
Applied Behavior Analysis	1
Athletic Training	7
Business	1
Chemistry	1
Curriculum and Instruction	5
Deaf Education	2
Education	2
Educational Psychology	2
Elementary Education	41
Elementary Education with Special Education Certification	4
Gifted and Talented Education	7
Masters in Education	1
Music Education	6
Music	1
Psychology	4
Social Work	1
Special Education	14
Speech Pathology	1
*Unidentified	1

Note: All participants were enrolled in courses in a school of education

Table 3: Degree Programs of Participants.

Item	Percentage of Correct Responses	χ^2
How likely are genes to be a risk factor for obesity?	54% (n = 55)	$\chi^2 (12) = 12.43, p = .412$
How likely are hormone problems to cause a person to be overweight or obese?	57% (n = 58)	$\chi^2 (9) = 11.61, p = .236$
How likely is medicine to cause you to gain weight?	40% (n = 41)	$\chi^2 (12) = 15.00, p = .236$

Note: Correct responses were calculated using the response categories "Likely" and "Very Likely."

Table 4: Responses to Health and Obesity Questions by Discipline.

a systematic explicit bias, negative perceptions were seen in items that were self-reflective or dealt with personal weight control. Fifty percent or more of the participants answered positively to such questions as, "I feel disgusted with myself when I gain weight"; "One of the worst things that could happen to me would be if I gained 25 pounds"; and "I worry about becoming fat". This would suggest that although educators are not overly critical of others who gain weight, they can be harsh on themselves and would consider weight gain an event which would be impactful on their lives in a negative way.

Perhaps contributing to this anti-fat attitude is the confusion that several of the participants displayed about weight gain and control. Approximately half of the sample did not think genes, hormone problems, or medications were likely risk factors for obesity. It is concerning that this percentage of educational professionals would not demonstrate an adequate knowledge on related topics; however this finding is not unprecedented [3,10,12].

While this study also examined the knowledge of educational professionals of various disciplines, the data did not indicate any significant differences in their understanding of obesity. It should be noted that this participant group consisted of 102 individuals; resulting in a limited number of representatives for each discipline (Table 3), with some disciplines represented by only one or two participants. It is possible that a study with a larger sample size might identify significant differences among the various groups.

This study's main purpose was to examine the anti-fat biases of a wide array of educational professionals. We were interested in investigating the bias not only of physical education teachers--the group most studied in the past, but also other education professionals--such as teachers (all specialties), administrators, counselors, therapists, and

any other personnel working in the schools with children. This research did suggest some negative attitudes and beliefs about obesity, primarily the negative implicit bias and the lack of knowledge about weight gain, as discussed above.

Clinically, the implications of this study are that educators across these various fields would benefit from additional training on the topic of weight gain. University programs and administrators in public school systems could implement preventative measures towards this goal. One example of prevention in practice is the eight model program created by the Rudd Center for Food Policy and Obesity. This program is designed for health professionals; however, a similar intervention might be effective with educators [25].

While this study has begun the process of looking at educators' biases towards obese students, there are several methods that future studies could employ to investigate the topic further. More explicit data could be gathered. There was a negative bias present in implicit data; however, few instances of statistically significant explicit biases were found. It seems unlikely that an individual would have implicit biases without also having an accompanying explicit bias. The theory of reasoned action proposes that social norms and attitudes lead to intentions, which then translate into behavior [26]. Implicit bias paired with social norms against obesity could translate into behaviors, or explicit bias, against individuals who are overweight; however, in this case, the social norm against expressing dislike for children with obesity may have prevented the expression of an explicit bias. In other words, the participants had a negative implicit bias, or attitude, against obesity, but did not admit to this belief overtly in the explicit tests.

Additionally, a larger sample size may improve the data by allowing for more comparisons between the various disciplines. This study was

one of the first to attempt such a comparison, but the small participant group may have prevented statistically significance differences from becoming apparent. These improvements would allow for increased insight into the topic of educational professionals and their anti-fat biases, as well as providing a greater understanding about how we can best help overweight students within the school system.

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