

An experimental investigation of physical education teachers' and coaches' reactions to weight-based victimization in youth

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ABSTRACT

Objectives: Overweight youth are frequent targets of weight-based victimization during Physical Education (PE) and sports. In addition, previous research indicates that teachers' perceptions and expectations may influence their likelihood of intervening during victimization, and physical educators may endorse biased perceptions and expectations of overweight youth. Despite this evidence, no research has examined how physical educators respond to weight-based victimization of their students. Thus, the current study examined PE teachers' and coaches' responses to different types of victimization involving average weight and overweight students.

Design: This study utilized an experimental design that assessed participants' reactions to situations of weight-related victimization using hypothetical scenarios accompanied by photographs of youth.

Methods: PE teachers and sport coaches ($N = 162$) were randomly presented with a scenario and follow-up questions about an average weight or an overweight student. Each participant completed two conditions: one with a male target, and one with a female target.

Results: Participants were more likely to take action when overweight female students were victims of bullying, specifically in situations of verbal and relational victimization. Male participants were less likely to respond to victimization than female participants.

Conclusions: Findings suggest the importance of increasing awareness about weight-based victimization and its consequences, especially among male physical educators. Implications for the psychological, social, and physical development of overweight youth are discussed.

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Nearly half of youth are vulnerable to consistent bullying from peers during adolescence (Pepler, Jiang, Craig, & Connolly, 2008). Overweight and obese youth are particularly likely to be involved as a bully or a victim compared to their peers (Griffiths et al., 2006; Janssen, Craig, Boyce, & Pickett, 2004). Recent research has documented body weight as one of the primary reasons that adolescents report being frequently bullied in school (Puhl, Luedicke, & Heuer, 2011; Puhl, Luedicke, & Heuer, in preparation), with obese youth being targeted regardless of their gender, race, social skills, or scholastic achievement (Lumeng et al., 2010). Given that 31% of youth are overweight or obese in the United States (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010), weight-related bullying places millions of youth at risk for victimization and its negative emotional, psychosocial, physical health, and academic consequences (Hayden-Wade et al., 2005; Menzel et al., 2010; Puhl & Latner, 2007; Puhl & Luedicke, 2011; Storch et al., 2007). Victimization is broadly defined as a form of peer abuse involving frequent,

unprovoked aggressive behaviors (e.g., verbal teasing, relational and physical bullying) committed toward a target (Kochenderfer & Ladd, 1996).

Although overweight youth are vulnerable to weight-based stigma from multiple sources (Puhl & Brownell, 2001; Puhl & Latner, 2007), weight-related bullying appears to be heavily concentrated in the school setting, including the classroom, cafeteria, playground, locker room, and hallways (Puhl, Luedicke, et al., in preparation; Taylor, 2011). In addition, despite assumptions that school Physical Education (PE) is an ideal setting for the promotion of Physical Activity (PA) and obesity prevention (Price, 1990; Savage, 1995), research has documented increasing reports of weight-based bullying toward overweight youth specifically during school-based PA and in settings such as the gymnasium and athletic field (Faith, Leone, Ayers, Moonseong, & Pietrobello, 2002; Puhl, Luedicke, et al., 2011; Slater & Tiggemann, 2010, 2011). For example, a recent study found that 84% of high school students reported observing overweight students being teased or treated in a mean way because of their weight during PA (Puhl, Luedicke, et al., 2011). In addition, as many as 34% of adolescents

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report being excluded, ignored, left out, teased during gym class, and excluded from PA because of their weight (Puhl, Luedicke, et al., in preparation).

Negative attitudes and assumptions about body weight may be important contributors to weight-related victimization in PE settings, and research indicates that physical educators (e.g., PE teachers, coaches, and students in training to become PE teachers or coaches) endorse negative beliefs about overweight individuals. Of the limited work that has been published, one study of educators (including PE teachers) found that obese persons were believed to be untidy, less likely to succeed, more emotional, and more likely to have family problems than thinner persons (Neumark-Sztainer, Story, & Harris, 1999). A recent study additionally suggests that physical educators hold biased beliefs about overweight youths' physical condition, ability to play sports, and concepts of themselves and their bodies (Peters & Jones, 2010). In addition, PE teachers have reported holding higher expectations for normal weight students than overweight students across a range of skill areas, as well as strong beliefs that body weight is within personal control (Chambliss, Finley, & Blair, 2004; Greenleaf & Weiller, 2005). Other studies show that, among individuals training to become physical educators, bias toward overweight or obese youth may increase during their training (O'Brien, Hunter, & Banks, 2007), their biases are generally stronger and more consistent than students training in other disciplines (Greenleaf, Martin, & Rhea, 2008), and weight biases are evident across both implicit and explicit measures (O'Brien et al., 2007). Finally, one study found that junior and senior high school coaches provided their athletes with recommendations for weight control based solely on appearance instead of more objective measures of health, and believed that athletes can only reach optimal performance when a very low body weight is achieved (Griffin & Harris, 1996).

Although the above studies have begun to document physical educators' attitudes about obese individuals, the lack of research examining weight bias in the context of PE leaves many important questions unanswered, specifically, how physical educators perceive and respond to victimization and if a child's body weight influences educators' likelihood of intervention. A few studies have examined perceptions of and responses to general bullying or teasing in samples of teachers and students training to become teachers. This research indicates that the empathy teachers reported feeling toward youth involved in victimization may motivate their likelihood of intervening during bullying situations (Bauman & Del Rio, 2006). In addition, when teachers do not intervene in bullying situations, their students are also less likely to intervene (Twemlow, Fonagy, & Sacco, 2006), and increased levels of teacher-related victimization are associated with increased levels of peer victimization (Khoury-Kassabri, 2011). Thus, if teachers display more lenient behavior regarding victimization of overweight youth, or demonstrate unequal levels of empathy or concern for youth of different body weight, students may also display increased levels of weight-based victimization. This could increase the vulnerability for obese students to weight bias during PE and PA and its negative consequences.

Weight bias expressed by physical educators and coaches has concerning implications for overweight students. Instructors' weight-related stereotypes can influence the quality and quantity of feedback and instruction during PA and sport-related education (Martinek, 1997), and PE teachers and coaches may transmit negative attitudes to their students (Smith & Ogle, 2006; Yager & O'Dea, 2005). Weight bias from peers and teachers may discourage overweight youth from participating in PA (Bauer, Yang, & Austin, 2004; Faith et al., 2002; Storch et al., 2007; Zabinski, Saelens, Stein, Hayden-Wade, & Wilfley, 2003),

may reduce youth preferences for PA (Faith et al., 2002; Hayden-Wade et al., 2005), and contribute to overweight students' lack of participation in athletic teams (Shore et al., 2008). Thus, in addition to its potential influence on perceptions of and reactions to weight-related victimization, PE teachers' and coaches' anti-fat attitudes may perpetuate the cycle of overweight, increase obesity stigma, and preclude overweight youth from the social benefits of participation in sports teams (see Strauss & Pollack, 2003).

There may also be important gender differences in experiences of weight-based victimization in PA settings, which may potentially influence physical educators' likelihood of intervention. Girls may be at heightened risk for weight-related victimization: their bodies may be more closely monitored and criticized compared to males (Taylor, 2011), they may generally be teased more often than boys (Krukowski et al., 2008; Tang-Péronard & Heitmann, 2008), teased by both girls and boys (Puhl, Luedicke, et al., in preparation), and teased more frequently during PA settings by peers and teachers (Bauer et al., 2004; Slater & Tiggemann, 2010, 2011; Zabinski et al., 2003). Some work suggests that adolescent girls report that teasing from team-mates is one of the reasons they withdraw from PA (Slater & Tiggemann, 2010). Additionally, coaches more often perceive females as needing to lose weight compared to males (Griffin & Harris, 1996; Harris & Foltz, 1999). Thus, physical educators' perceptions of or reactions to weight-based victimization may differ according to the gender of the youth.

To date, the few studies in this area have examined perceptions of weight among physical educators with surveys (e.g., Greenleaf & Weiller, 2005) and focus groups (e.g., Bauer et al., 2004), in samples of students training to become physical educators (e.g., Chambliss et al., 2004; Greenleaf et al., 2008; O'Brien et al., 2007) or general teachers (e.g., Neumark-Sztainer et al., 1999). Although some have systematically assessed opinions about obesity or overweight people, most studies of PE teachers have assessed general anti-fat attitudes (i.e., negative opinions about "fat kids", "fat children", "fat people", or "obese persons"; Chambliss et al., 2004; Greenleaf & Weiller, 2005; Greenleaf et al., 2008; Neumark-Sztainer et al., 1999; O'Brien et al., 2007). Measures that assessed general anti-fat attitudes or attitudes about overweight adults included potentially inappropriate or irrelevant items for teachers' opinions of their students (e.g., sexual attractiveness; Anti-fat Attitudes Scale, Morrison & O'Connor, 1999). Measures that assessed attitudes about "kids" or "children" were unable to separate weight-based beliefs by a specific age group or gender (e.g., adolescent girls, elementary-aged boys). Additionally, most studies assigned a weight status to the targets (i.e., using a label such as "fat" or "obese") instead of allowing participants to personally interpret the target's body weight. Using a term such as "fat" may invoke more negative connotations related to obesity as recent research shows that people perceive the label "fat" as stigmatizing and blaming when referring to overweight adults or children (Puhl, Peterson, & Luedicke, in preparation; Puhl, Peterson, & Luedicke, 2011). Also, allowing individuals to personally interpret body weight better approximates daily interactions.

Thus, the present study aimed to improve upon existing research to experimentally assess whether, and how, a student's body weight and gender influence reactions of PE teachers and sport coaches in instances of bullying and victimization. While observing teacher responses in a classroom environment could lend some insight into these issues, this approach prevents experimental control and randomization of participants, and introduces extraneous factors that can create bias, error, and mask cause and effect relationships. Thus, this study employed an experimental design to assess physical educators' reactions to several hypothetical scenarios including

three different types of bullying/teasing situations (e.g., verbal teasing, social exclusion/isolation, and physical aggression) involving overweight and average weight male and female students. Given the numerous and sometimes subtle individual differences that potentially influence teachers' perceptions of students (e.g., physical attractiveness and facial expressions; Parks & Kennedy, 2007; Ritts, Patterson, & Tubbs, 1992; Wang, Treat, & Brownell, 2008), the current study sought to control these factors and remove potential demand characteristics by using hypothetical scenarios accompanied by photographs of youth that were altered to represent both average weight and overweight targets.

The primary aim of the current study was to assess physical educators' responses to victims of weight-related teasing and bullying. A secondary goal was to examine participant characteristics (e.g., demographics such as gender, body weight, education, income, teaching experience, and teaching satisfaction; variables associated with weight bias such as anti-fat attitudes and previous experience of weight-related victimization) that may potentially influence whether, and how, participants respond to students involved in teasing and bullying. This information can be used to inform school-based interventions to reduce weight-related victimization. For example, some work has previously documented differences in expressions and experiences of weight stigmatization by individual factors such as gender (e.g., Puhl, Andreyeva, & Brownell, 2008; Puhl, Heuer, & Sarda, 2010; Roehling, Roehling, & Pichler, 2007). Thus, an exploratory examination is warranted to determine if these differences are present among PE teachers and coaches, and whether these differences affect their reactions. To our knowledge, this study is the first to conduct a systematic assessment of perceptions and reactions to victimization involving students of differing body weights and gender using a national sample of PE teachers and sport coaches.

Method

Sample

Participants in the present study were PE teachers and coaches recruited through Market Data Retrieval (MDR). MDR is a leading provider of marketing information and services for education markets in the United States (Market Data Retrieval, 2010). MDR has comprehensive, accurate education databases through which they emailed a recruitment flier for the current study. MDR advertised the present study as a survey interested in learning about the opinions of PE teachers and coaches about common behaviors and abilities of students. The survey description and link was emailed to approximately 3000 middle, junior, and high school PE teachers, and approximately 3000 high school sport coaches from their database of 97,415 teachers and 20,362 coaches. Although the typical click rate (i.e., opening the email and clicking on the link) for surveys deployed through MDR is 2–2.5%, the click rate for the current study was 5.28%. The final sample consisted of 162 PE teachers and sport coaches. Gift certificates were provided as an incentive for participation. All participants provided informed consent, and the study was approved by Yale University institutional review board.

Stimuli

Previous experimental research examining the effect of student ethnicity on teachers' expectations has indicated that providing photographs of students can promote higher accuracy and validity of responses than written vignettes alone (Tenenbaum & Ruck, 2007). Thus, in the present study, participants viewed photographs depicting either an average weight or

overweight student (male or female) with a neutral facial expression.

Photographs of a male and female overweight model were selected from a database of positive, non-stigmatizing youth images recently created for use in the media and research (Yale Rudd Center for Food Policy & Obesity, 2010). The models were 12 years and 9 months old at the time of photographing. The Body Mass Index (BMI) of both models were in the overweight range according to the clinical guidelines for the classification of overweight and obesity (Centers for Disease Control, 2008). Photoshop photograph editing software (Adobe Systems Incorporated, 2006) was used to manipulate the body size of the original model in order for the same photograph to depict both an average weight and an overweight body size (see Fig. 1). In one photo (Photo "A"), the model's body size is morphed to depict an average weight body. In the other photo (Photo "B"), the model's body size is kept at its original size to depict an overweight body.

Twenty-four photographs (12 of each gender and body weight) were piloted in a sample of 124 adults (65% female, mean age = 36.4 years) to ensure the normality of the manipulated stimuli and to obtain participants' perceptions of the images. Stimuli were then matched according to perceived body weight, age, typicality, and how flattering the youth was portrayed. Four comparable photographic stimuli were selected for use in the present study. Selected images were rated "neutral" on the flattering scale and "likely" to be a local child by the majority of participants. Photographs depicted an overweight or average weight Caucasian female and an overweight or average weight Caucasian male sitting at a desk with a pencil and paper ostensibly completing class work.

Student targets were described as 13- to 14-year-olds. This age was chosen for several reasons. First, this age-range matched ratings of the students' ages in piloting. Second, recent research has found that 85% of adolescents observe peers being teased because of their weight during physical activities at school (i.e., physical education; Puhl, Luedicke, et al., in preparation). Finally, recent longitudinal research indicates that PA declines most drastically after 14 years of age for both girls and boys (Wall, Carlson, Stein, Lee, & Fulton, 2011). Thus, this may be a critical period to ensure that PE and activity settings are welcoming and free of bias.

Procedure

A web-based experimental survey was created for the present study. Upon entering the survey, participants were randomly assigned to 1 of 2 conditions with a female target (Jessica), and 1 of 2 conditions with a male target (Michael). One condition depicted an average weight target and one condition depicted an overweight target. Participants were restricted to viewing only one target for each gender because if presented with both female or male targets, they would very likely notice that it is an image of the same student, and the validity of the study would be compromised. The following instructions were identical across conditions: "Jessica/Michael is a new student being transferred to your class from another school. On the following page is a photo and a brief description of her/him. You've been asked to make an initial evaluation of Jessica/Michael based on this information by answering the questions that follow. You may be unsure about how to respond to some of the questions, but please consider all of the information provided and use your best professional judgment as a teacher/coach." Then, participants were presented with a color photograph of the student and the following information, "Jessica/Michael is an average 13- to 14-year-old student." The picture was presented at the top of each webpage accompanying all questions of the survey.

Photo A



Photo B



Fig. 1. Photographic stimuli used in experimental conditions. Photo A represents the “average weight” student target, and Photo B represents the “overweight” student target.

Measures

Demographic and individual characteristics

Participants first answered demographic questions (e.g., sex, age, weight and height to calculate BMI, what area they live in, highest level of education completed, and current household income). Participants were asked questions about their profession (e.g., age group and subject area taught, type of school they teach at, length and satisfaction with teaching experience) and sports coaching experience (e.g., type of sports teams and age groups coached). Participants were also asked four dichotomous questions to assess whether they had ever been teased or treated unfairly because of their weight (i.e., discrimination experience).

Participant reactions to hypothetical scenarios involving experimental stimuli

After participants viewed the experimental stimuli, they were provided with questions about the target’s behavior in hypothetical scenarios that were developed for the purposes of this study. Specifically, three questions assessed participants’ reactions to verbal, relational, and physical bullying involving the target student as the victim. Participants were asked how they would respond if they observed another student “*verbally teasing*

or taunting”, “*pushing or shoving*”, or “*purposefully excluding or isolating*” Jessica/Michael. For each question, participants indicated the likelihood that they would respond in each of the following ways: “*I would tell the student who is bullying or teasing ____ to stop*”; “*I would assign the bully to detention*”; “*I would send the bully to the principal’s office*”; “*I would contact ____’s parents to discuss the behavior*”; and “*I would refer ____ to a school counselor to discuss the bullying/teasing*”; “*I would talk to ____ to offer support and help him/her cope with the bullying experiences*”; “*I would continue to monitor the situation, but not intervene right away*”; “*I would take no immediate action*”. Responses were scored on a 5-point Likert scale ranging from 1 = “*very unlikely*”, 2 = “*unlikely*”, 3 = neutral, 4 = “*likely*”, and 5 = “*very likely*”. Questions and response options were presented in random order.

Attitudes toward target students

Participants completed a modified version of the Fat Phobia Scale (Bacon, Scheltema, & Robinson, 2001) separately for the male and female target. The original scale contains 14 pairs of adjectives (e.g., “*lazy*” versus “*industrious*”, “*no will power*” versus “*has will power*”), and respondents indicate on a scale from 1 to 5 which adjective best describes their feelings and beliefs about obese people. For the present study, this scale was modified by assessing attitudes specifically about the target student, adding education-related

adjectives (e.g., “bad attitude” versus “good attitude”, “uncooperative” versus “cooperative”, “doesn’t follow directions” versus “follows directions”, “unmotivated” versus “motivated”, “unintelligent” versus “intelligent”, “irresponsible” versus “responsible”, “not likeable” versus “likeable”, and “incompetent” versus “competent”; Puhl & Heuer), and excluding less relevant adjectives (e.g., “shapeless” versus “shapely”, and “unattractive” versus “attractive”). Scores above 2.5 indicate more negative attitudes. Cronbach’s alpha was 0.91 for female targets, and 0.92 for male targets.

Statistical analysis

In addition to the use of descriptive statistics, Analysis of Variance (ANOVA) and linear regression models (OLS) were estimated using Stata 11.1.

Results

Sample characteristics

The final sample consisted of 162 PE teachers and sport coaches (see Table 1). Males comprised 58.6%, and the mean age was 43.7 years ($SD = 10.2$). Eighty-nine percent of participants taught at public schools and 8% taught at private schools. The majority of participants taught at high schools (71%) or middle schools (28.4%). PE was taught by 72.8% of participants and 27.2% were sport coaches that taught classes in other subjects. The most frequently coached teams were also at the high school (73.5%) and middle school (19.1%) levels. The most frequently coached sports were basketball (38.9%), baseball/softball (25.9%), soccer (21%), and football (21%). College degrees were held by 40.1% of participants, and 59.9% completed post-graduate education. The mean length of teaching experience was 16.6 years ($SD = 9.5$) and coaching experience was 15.3 years ($SD = 8.4$).

Body mass index (BMI) was stratified using the clinical guidelines for the classification of overweight and obesity in adults by the Centers for Disease Control and Prevention (Centers for Disease Control, 2008). Using these classifications, 32.9% of participants were normal weight and 67.1% were overweight or obese, which is

comparable to the national population (Flegal, Carroll, Ogden, & Curtin, 2010). Other sample characteristics reported above generally approximated the national population of health and PE teachers in public schools (National Center for Educational Statistics, 2009), with the exception that our sample held more post-graduate degrees. Sample characteristics did not significantly differ across experimental conditions.

Disciplinary reactions to student teasing/bullying

To examine the influence of the target student’s body weight and participant characteristics (e.g., gender, BMI, area of living, previous experience of weight stigma, anti-fat attitudes) on participants’ self-reported likelihood of disciplinary action or intervening when observing different types of victimization, composite mean scales were created to account for all response options within each bullying type. Responses that reflected delayed or no reaction were reverse coded. A scale was created for each type of bullying (e.g., verbal, physical, and relational bullying). Thus, 3 mean scales were created separately for male and female targets for a total of 6 scales. A series of ANOVAs were conducted to examine the effect of student weight (normal weight, overweight) on participants’ reactions to three different types of victimization scenarios (see Table 2; corresponding means in Fig. 2).

Results showed that participants who viewed the female target were more likely to intervene when a female victim was overweight than average weight (see Table 2, rows 1–3). These findings were marginally significant in situations of verbal victimization, $F(1, 159) = 3.241, p = 0.074, \eta^2 = 0.02$, and significant in scenarios of relational victimization, $F(1, 159) = 5.623, p = 0.019, \eta^2 = 0.034$. There were no significant differences in the likelihood of intervention for physical aggression. In contrast, there were no significant differences in the likelihood of intervening on behalf of overweight or average weight male victims for all three types of victimization (see Table 2, rows 4–6).

OLS regression analyses were conducted to examine the influence of the target’s body weight and participants’ characteristics (e.g., gender, BMI, area of living, previous experience of discrimination, anti-fat attitudes) on participants’ self-reported likelihood of intervening during victimization situations (see Table 3). Total mean scales were created by combining data from all three types of bullying (verbal, relational, physical) to create two scales that measured participants’ likelihood of intervening regardless of the type of bullying. Scales were created separately for male and female students as the target of victimization. Alpha reliabilities for the two overall scales were acceptable and are presented in Table 3.

Results confirm the ANOVAs above and showed that for female targets, participants reported a greater likelihood of intervening if the victim was overweight. In contrast, for male targets, there was no difference between weight categories if the male student was

Table 1
Sample characteristics.

	<i>n</i>	%/M	<i>SD</i>
Gender			
Male	95	58.64	
Female	66	40.74	
Area of living			
Urban	31	19.14	
Rural	62	38.27	
Suburban	69	42.59	
Highest educational degree			
College	65	40.12	
Higher than college	97	59.88	
Annual household income			
\$0k–\$50k	26	16.05	
\$50k–\$75k	39	24.07	
\$75k–\$100k	37	22.84	
>\$100k	59	36.42	
Weight status of teacher/coach			
Normal weight (BMI < 25)	53	32.92	
Overweight or obese (BMI ≥ 25)	108	67.08	
Age (in years)	162	43.72	10.19
Teaches PE			
No	44	27.16	
Yes	118	72.84	
Teaching experience (in years)	161	16.58	9.52
Coaching experience (in years)	65	15.32	8.42

Table 2
Mean differences in the perceived likelihood of participant intervention by student body weight and type of victimization – ANOVA.

#	<i>F</i>	<i>df</i> _{within}	<i>df</i> _{between}	<i>p</i>	η^2
1	3.241	1	159	0.074	0.020
2	1.357	1	159	0.246	0.008
3	5.623	1	159	0.019	0.034
4	0.059	1	159	0.809	0.000
5	0.000	1	159	0.997	0.000
6	0.108	1	159	0.743	0.001

Note. Numbers 1–6 refer to Fig. 2 and denote the difference that is tested in a given ANOVA.

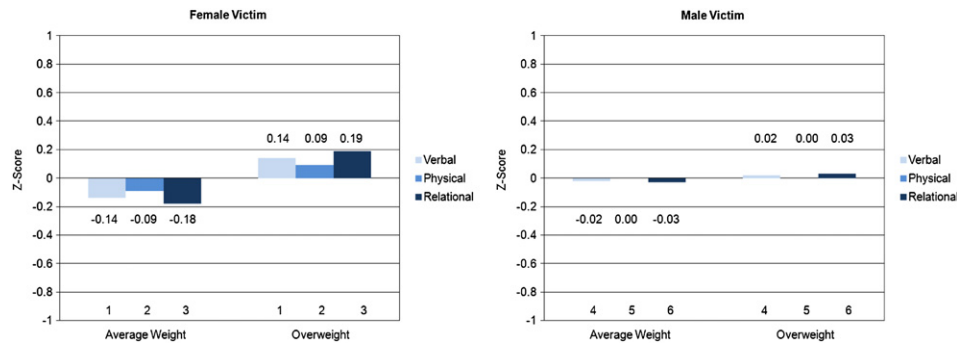


Fig. 2. Mean differences of endorsed disciplinary reactions to victimization by student gender, body weight, and type of victimization. *Note.* Variables are standardized with a mean of zero and a standard deviation of 1. Index numbers indicate the difference that is tested using ANOVA (see Table 2). For example, if the depicted student was a female that was described as being a victim (left graph), the perceived likelihood of teachers taking disciplinary measures was higher when the student was overweight. In case of relational bullying (index number 3), the difference amounted to 0.37 [0.19 – (–0.18)] which reflects a difference of roughly a third of a standard deviation. It can be seen in Table 2 (first row, index number 3) that this difference was statistically significant, at least at the 95% level, with an effect size of $\eta^2 = 0.034$ (thus, a small-to-medium effect).

a victim of bullying. Participants were marginally more likely to intervene in situations involving female victims than male victims. Of note, female participants reported a higher likelihood of intervening across all victimization situations compared to male

participants (see Table 3). There was also a trend that teachers from rural areas were generally less likely to intervene during victimization involving male students compared to teachers from urban areas.

Table 3
Perceived likelihood of participants' reactions to victimization – OLS Regressions.

	Bullying (victim) ^a	
	Female student	Male student
Weight status of student (ref.: Normal weight)	+	
Overweight	0.425*	-0.040
Weight status teacher/coach (ref.: Normal weight, BMI < 25)		
Overweight or obese (BMI ≥ 25)	-0.067	-0.020
Gender teacher/coach (ref.: Male)		
Female	0.404*	0.436*
Area of living (ref.: Urban)		
Rural	-0.406+	-0.531*
Suburban	-0.203	-0.341
Highest educational degree (ref. College)		
Higher than college	0.051	0.084
Annual household income (ref.: \$0k–\$50k)		
\$50k–\$75k	0.349	0.397
\$75k–\$100k	0.491+	0.413
>\$100k	0.091	0.045
Age (in years)	-0.010	-0.006
Teaches PE		
Yes	-0.042	-0.046
Teaching experience (in years)	0.011	0.001
Teaching satisfaction	0.009	-0.048
Discrimination experience (ref.: no)		
Yes	0.051	0.046
Attitudes toward target students	0.044	-0.025
Correctly recognized weight status of depicted child?		
Yes	0.418+	-0.058
Constant	-0.473	0.564
N	156	156

Note. Horizontal braces denote Wald tests for comparison of coefficients across models. This test was carried out only for weight status to compare the weight status effect across depicted gender. Dependent variables are standardized with a mean of zero and a standard deviation of 1, thus the coefficients shown reflect changes in the dependent variable in standard deviation units. Significance level: + $p < 0.1$. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

^a Cronbach's α : 0.88 (female student), 0.85 (male student).

Discussion

The present study is the first to systematically assess perceptions of and reactions to students of differing body weights and gender using a national sample of currently practicing PE teachers and sport coaches. As expected, participants' reactions to victimization in youth varied by body weight. Specifically, teachers and coaches were more likely to intervene when overweight females were victims, however, there was no significant difference in participants' responses for overweight or average weight male victims. These findings generally remained constant even after accounting for participant BMI, education, age, teaching experience, teaching satisfaction, previous experience of weight discrimination, and anti-fat attitudes. However, there was a trend indicating that teachers and coaches living in rural areas were generally less likely to intervene for victimization situations compared to those in urban settings.

Findings additionally indicated notable gender differences toward student targets and among participants themselves. Regarding target gender, participants were consistently more likely to intervene in situations involving overweight females compared to average weight females. However, this was not the case with male targets. Specifically, participants did not differ in their likelihood of intervening on behalf of overweight male victims compared to average weight male victims. Regarding participant gender, female teachers and coaches were more likely to intervene in response to situations of victimization (regardless of the target's gender or body weight) compared to males.

It is interesting that female teachers and coaches were more likely to respond than males to situations of weight-related victimization. Girls and women may be more susceptible to weight bias than males (Puhl et al., 2008, 2010; Roehling et al., 2007), thus, it may be women's heightened sensitivity to weight criticism and stigmatization that leads female teachers and coaches to feel more empathetic or reactive when witnessing victimization of overweight females. A study of pre-service teachers documented an increased likelihood of intervention during bullying when participants felt empathy for the target (Bauman & Del Rio, 2006). It would be informative for future research to examine the possible effect of teacher empathy on decisions to intervene during student victimization, and its association with instructor or student gender and weight.

It is potentially concerning that male instructors and educators were generally less likely to intervene in response to situations of weight-related victimization, especially given that the majority (62.3%) of public school PE teachers are male (National Center for Educational Statistics, 2009). Although the reasons for this finding are unclear, previous research indicates that instructors believe bullying situations are more normative when involving males than females, and they are less likely to intervene in situations that they perceive as normative (Bradshaw, Sawyer, & O'Brennan, 2007; Kochenderfer-Ladd & Pelletier, 2008; Smith et al., 2010). Future work in this area is needed to clarify gender differences in reactions to overweight girls and boys.

Findings from the current study have several important implications for physical, psychological, and social development of overweight and obese youth. Given the different reactions observed by PE teachers and coaches in response to weight-based victimization of overweight boys and girls, efforts to increase awareness of weight-based victimization appear warranted. Specifically, it may be useful to educate PE teachers and coaches about the consequences of weight-based victimization for overweight youth (and the potential for such experiences to lead to avoidance of PA) so that they can minimize these situations for overweight youth in PA settings, and promote positive social and emotional development for overweight and obese students in the context of PE and sports.

If PE teachers and coaches do not intervene in situations of weight-based victimization, there is increased risk that overweight youth will experience a range of consequences that compromise their physical and psychosocial health, such as avoidance of PE or PA (Bauer et al., 2004; Faith et al., 2002; Hayden-Wade et al., 2005; Puhl & Luedicke, 2011; Storch et al., 2007; Zabinski et al., 2003), lower levels of social involvement (Faith et al., 2002; Quinlan, Hoy, & Costanzo, 2009), increased weight concerns, reduced preference for or enjoyment of active or social activities, maladaptive eating behaviors, and unhealthy lifestyles (Faith et al., 2002; Hayden-Wade et al., 2005). If overweight youth avoid PA because of weight-based victimization, this may further reinforce peer perceptions that they are non-athletic, which may contribute to a lack of peer acceptance of overweight youth (Zeller, Reiter-Purtill, & Ramey, 2008), and could contribute to social marginalization (Strauss & Pollack, 2003). Given that adolescents who experience weight-based victimization may have a 27% increased likelihood of subsequent victimization per year in age (Puhl, Luedicke, et al., in preparation), and longitudinal and retrospective studies of adults indicate that weight-related victimization has a lasting effect (Grilo, Wilfley, Brownell, & Rodin, 1994; Puhl & Brownell, 2006), earlier interventions may be best to help PE teachers and coaches identify situations of weight-based victimization and intervene appropriately. This may be especially needed among male PE teachers and coaches who may be less likely to intervene during weight-based victimization.

Several limitations of the present study should be noted. All data were obtained via self-report, including individuals' height and weight. Despite a general tendency for people to underestimate self-reported weight and to overestimate height, these inaccuracies are often modest, and reported data are generally highly correlated (Gorber, Tremblay, Moher, & Gorber, 2007). Although the self-report nature of our study allowed for controlled experimental manipulation, it also limits our data to what participants are willing to reveal, and may not correspond to their actual perceptions and behaviors. Future research should examine teachers' and coaches' interactions with students and athletes of varying body weight during PE classes or sports practices. In addition, the current study only examined participant reactions to Caucasian students. It is important for future research to examine PE teachers' and coaches'

reactions to overweight and non-overweight students of diverse racial or ethnic groups. Given that overweight youth are also more likely to be bullies compared to their normal weight peers (Griffiths et al., 2006; Janssen et al., 2004), future research should examine how weight and gender influence educators' perceptions, reactions, or discipline of bullies. Finally, given the exploratory nature of the current study, all victimization situations involved an ambiguous "other student." It may be fruitful for future research to examine reactions to cross-gender bullying in the context of weight-based victimization given documented differences in gender makeup of perpetrators for males versus females (Puhl, Luedicke, et al., in preparation).

Teachers' and coaches' perceptions of weight-based victimization among students (e.g., prevalence, manifestations, relation with gender) are currently unknown. The present study begins to shed light on reactions of PE teachers and coaches to weight-based victimization in the school setting, and suggests that overweight boys and girls may be supported or potentially ignored by physical educators in these situations. It will be useful for future work to examine these perceptions of physical educators and to identify factors that could increase instructors' motivation to intervene during weight-based victimization. Plausible solutions could include providing teachers and coaches with information about the vulnerability of overweight youth to victimization and bullying, the multiple forms of victimization so that they can better identify situations as they occur, the consequences of weight-based victimization to better understand its potential effect on students, or strategies for effectively responding to situations of victimization. These may be effective informational tools given that school staff are more likely to intervene during victimization if they consider the situation to be bullying and have self-efficacy for intervening during victimization (Bradshaw et al., 2007; Mishna, Pepler, & Wiener, 2006).

Conclusions

Overall, the present study provides insight into physical educators' and sport coaches' perceptions of youth body weight, and how those perceptions influence their reactions to overweight youth who are involved in victimization situations in the school setting. These findings have important implications for child health and development, as well as social development of overweight youth in PE and sports environments. Considering the prevalence and consequences of weight-based victimization toward students who are overweight and obese (Hayden-Wade et al., 2005; Menzel et al., 2010; Puhl & Latner, 2007; Puhl & Luedicke, 2011; Storch et al., 2007), and the commonality of weight-based victimization during PA in particular, the present study suggests the importance of highlighting the role of PE teachers and sport coaches to help prevent and effectively respond to weight-based victimization. Intervening in response to students' experiences of weight-related victimization during PA should be encouraged by physical educators, perhaps especially among male instructors in situations involving overweight male victims, who may be more vulnerable to being neglected or ignored by their male teachers in situations of victimization.

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