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EMPIRICAL RESEARCH

Strategies to Address Weight-Based Victimization: Youths' Preferred Support Interventions from Classmates, Teachers, and Parents

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Abstract Weight-Based Victimization is a frequent experience for adolescents who are overweight or obese, and is associated with numerous psychosocial and physical consequences for those who are targets of victimization. Assessing targets' preferences for different types of support and intervention has been absent in the context of weight-based victimization, but is needed to help inform potential interventions, motivate action, and identify strategies to help adolescents cope with experiences of weight-related teasing or bullying. Adolescents (14–18 years, N = 361, 40 % female, 71 % Caucasian) enrolled in national weight-loss camps completed an on-line survey. Participants who reported previous experiences of weight-based victimization were surveyed about their preferred interventions from peers, friends, teachers, Physical Education (PE) teachers/coaches, and parents. Participants indicated their preferences for specific strategies pertaining to target support, bullying intervention and prevention (e.g., inclusion in peer activities, confronting the bully, telling an adult, and improving anti-bullying policies). Friends (66 %) and peers (58 %) were the most highly preferred intervention agents followed by teachers (55 %), PE teachers/coaches (44 %), and parents (43 %). Participants who experienced more weight-based victimization expressed increased desire for intervention. The frequency of victimization, social support from friends and family, and perceived likelihood and helpfulness of intervention significantly influenced participant preferences for certain types of intervention, although preferences were generally consistent across participants' characteristics. The current study is the first to document youth's preferences for interventions in response to weight-based victimization. The findings have important implications for encouraging appropriate intervention and informing bystanders, which may help to reduce the prevalence, recurrence, and consequences for youth who are targets of weight-based teasing or bullying.

Keywords Obesity · Overweight · Victimization · Intervention · Support

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Introduction

Weight-Based Victimization in Youth

Being overweight is a prevalent reason that adolescents are teased or bullied in school (Griffiths and Page 2008; Puhl and Latner 2007; Puhl et al. in press). In fact, youth report that weight-related teasing or bullying (i.e., weight-based victimization) occurs more often at school than bullying due to race, religion, or disability, and is comparable to rates of bullying due to perceived sexual orientation (Puhl et al. 2011). Similar to youth reports, weight-based victimization is also a prominent concern among educators (Haines et al. 2007). A recent nationwide survey of more than 5,000 teachers and school staff found that bullying based on a student's weight was perceived as more of a problem in schools than bullying due to gender, perceived sexual orientation, or disability (Bradshaw et al. 2011). Thus, weight-based teasing and bullying at school is prevalent and of concern according to both students and educators.

Overweight youth often report being teased for multiple reasons (e.g., competence and body weight) (Hayden-Wade et al. 2005) and through various forms of victimization (i.e., verbal, physical, relational, and cyber-bullying) (Griffiths

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and Page, 2008; Puhl et al. 2011). This is concerning in light of previous research that indicates experiencing multiple types and forms of victimization is associated with increased psychological distress (Kessel Schneider et al. 2012), and given that weight-related teasing elicits more negative affect compared to teasing motivated by other reasons (e.g., academic competence or ability) (Carlson Jones and Burrus Newman 2005; Hayden-Wade et al. 2005). Additionally, in contrast to rates of general victimization that may peak in middle school and then decrease during subsequent high school years (McKenna and Hawk 2011; Nansel et al. 2001), victimization may commence earlier for overweight youth compared to their non-overweight peers (Hayden-Wade et al. 2005) and weight-based victimization is often a long-term experience (Eisenberg et al. 2006; Puhl et al. in press). For example, a recent longitudinal study found that experiences of weight teasing during adolescence nearly doubled one's risk of experiencing hurtful weight-related comments 10 years later (Eisenberg et al. 2011). Thus, teasing or bullying because of one's weight may represent a qualitatively different form of victimization relative to teasing or bulling for other reasons.

The early onset and extended duration of weight-based teasing and bullying is especially concerning in light of the deleterious consequences associated with these experiences. Being a target of weight-based victimization may increase the risk for negative psychological outcomes (e.g., low self-esteem, body dissatisfaction, depressive symptoms, suicidal thoughts and behaviors) (Eisenberg et al. 2003; Menzel et al. 2010) and academic consequences (e.g., skipping school or poorer academic performance) (Puhl and Luedicke 2012). Youth who are teased or bullied about their weight are also vulnerable to negative consequences that contribute to poor health and eating disorder symptoms (e.g., increased caloric consumption, binge eating, bulimic and unhealthy weight control behaviors, increased preference for sedentary activities, and avoiding physical activity) (Menzel et al. 2010; Puhl and Luedicke 2012). Indeed, weight-based victimization contributes to behaviors that may lead to weight gain, and according to longitudinal research, weight-based teasing predicts future overweight status. As an example, prospective research that followed more than 2,500 adolescents over 5 years found that weight-related teasing at baseline predicted overweight status 5 years later, controlling for participant characteristics including initial weight status, race/ethnicity, SES, and age (Haines et al. 2007). Thus, weight-based victimization may increase one's risk of numerous negative consequences, some of which may even contribute to or exacerbate overweight.

Finally, and perhaps unexpectedly, overweight youth are often teased, criticized, or bullied about their weight from other sources in addition to their peers, including parents, siblings, teachers, and sport coaches (Arneson McCormack et al. 2011; Puhl et al. in press) This may in part result from the broader social acceptability of weight bias in North American culture, and from causal attributions of obesity that unfairly blame individuals for lacking personal control or willpower to maintain a healthy body weight (for a review of psychosocial origins of weight stigmatization, see Puhl and Brownell 2003). Teasing from multiple sources may not only exacerbate negative health and emotional consequences of these teasing experiences (Libbey et al. 2008), but also leave adolescents without protection and support to cope with these experiences. Thus, victimization specifically motivated by body weight may represent a uniquely prevalent, pervasive, and pernicious form of victimization that warrants research attention as well as intervention.

Correlates of Weight-Based Victimization

Several risk factors have been linked with weight-based victimization, which may influence desire or preferences for support and intervention among youth who are victimized. Notable is the consistent, positive association that has been documented between weight-based victimization and body weight. Heavier youth are more susceptible to weight-based victimization than their non-overweight peers, although non-overweight youth also report weight-based victimization (Neumark-Sztainer et al. 2002; Puhl et al. in press). Further, obese children are more likely to be bullied regardless of other personal and demographic factors (e.g., race, SES, academic achievement, or social skills) (Lumeng et al. 2010). Obese youth and those seeking weight-loss treatments also may exhibit more pronounced consequences of weight-based victimization (Gunnarsdottir et al. 2011; Hayden-Wade et al. 2005; Storch et al. 2007). Given recent estimates that 1 out of every 3 Americans between 2 and 19 years of age are clinically overweight or obese (Ogden et al. 2012), millions of youth may be vulnerable to becoming targets of weight-based teasing or bullying.

Personal and demographic characteristics also are associated with weight-based victimization. For example, females may be at higher risk of weight-based victimization than males (Neumark-Sztainer et al. 2002), and students with lower academic performance report more weight-based victimization than students with higher school grades (Puhl et al. in press). Although rates of weight-related teasing may be comparable across race/ethnicity (van den Berg et al. 2008), differences may emerge when considering different perpetrators. For example, Asian American boys and girls and black boys report lower rates of weight-related teasing from peers than

white youth, but Hispanic, Asian American, and mixed race girls report more weight-related teasing compared to white girls from their families (van den Berg et al. 2008). Less research has examined family variables in relationship to youth risk or frequency of weight-based victimization, such as parental weight status. However, preliminary evidence from a sample of weight-loss treatment-seeking youth suggests that maternal BMI may be related negatively to children's self-esteem (Zeller et al. 2004), a quality also associated with weight-based teasing in youth (Eisenberg et al. 2003). Thus, personal and familial characteristics are also important to examine in the context of weight-based victimization.

Social support is also a variable of interest to examine in relationship to weight-based victimization. First, obese youth who have been victimized report seeking help from supportive friends and family members (Griffiths and Page 2008). Secondly, weight-based victimization has been proposed as a contributor to the previously documented social isolation and low peer acceptance of overweight youth (Zeller et al. 2008). Finally, more social support from friends and family is associated negatively with distress and psychopathology, and social support from friends is positively associated with social competence (Procidano and Heller 1983). Thus, social support from friends or from family may function as a protective factor for youth who experience weight-based victimization.

Interventions

To date, most bullying intervention research has examined responses to situations of general bullying or victimization, and is limited in its ability to inform our understanding of weight-based victimization for several reasons. In particular, previous studies of bullying interventions have examined broad situations of bullying (not specifically due to weight), using hypothetical scenarios or retroactive assessments, in samples of mostly middle school students or youth who had not reported previous experiences of victimization (e.g., Black et al. 2010; Craig et al. 2007; Crothers et al. 2006; Frisen et al. 2012). Furthermore, these studies examined what strategies students previously has used in response to victimization, rather than students' preferences for the kinds of support strategies that they would prefer to be implemented.

Only a few studies have examined responses or interventions related to bullying specifically about weight. These studies primarily have examined coping responses as personal strategies for dealing with weight stigma or weight-based victimization. Although active, problem-focused coping strategies (e.g., efforts to plan, think about, or execute ways to solve the problem) may be more adaptive and buffer youth from the negative effects of weight-based victimization (Faith et al. 2002), avoidant coping strategies (e.g., skipping gym class, increased food consumption, and binge eating) remain common responses to weight-based victimization (Puhl and Luedicke 2012). Alternatively, a few studies have examined others' reactions to weight-based teasing and bullying. This research indicates that although weight-based victimization is prevalent, commonly observed, and an issue of concern at school, many students remain passive bystanders (Puhl et al. 2011), and teachers also may be less likely to intervene in response to weight-based victimization (especially in situations involving male students) (Peterson et al. 2012).

The Current Study

To date, research has not yet assessed preferences among overweight and obese youth for who should intervene in response to weight-based victimization, and what specific interventions they would prefer to help them cope with these experiences. To obtain an accurate understanding of these questions, the current study conducted a comprehensive assessment of intervention preferences including multiple sources and strategies for target support, bullying intervention and prevention. Interventions that are relevant to multiple forms of bullying (i.e., verbal, physical, relational, and cyber-bullying) also were assessed in the context of weight-based victimization. Beyond the practical importance of documenting desire and preference for intervention, the current study additionally included correlates of weight-based victimization (e.g., previous experience of weight-based victimization, socio-demographic variables and parental weight status, and perceived social support from family and friends) for a more exploratory examination of how these variables influence targets' desire or preference for intervention in response to weight-based victimization, and to establish profiles of youth intervention preferences.

Methods

Participants

Adolescents (14–18 years old) enrolled in Wellspring Camps and Academies (http://www.wellspringacademies.com/) and Camp Shane (http://www.campshane.com/) were recruited for the study by program directors via email during spring of 2011. These youth weight-loss programs were selected for their large enrollments, numerous facilities, and participation across the United States (U.S.). Participants provided written consent and passive parental consent if under 18 years of age.

The study was reviewed and approved by the directors of each program and by the authors' university Institutional Review Board.

Data was collected on-line via self-report surveys. For Camp Shane, 1,025 emails with the survey link were received by potential participants, and 400 campers from Wellspring received emails about the survey. Although 550 participants (38.6 %) began the survey, a portion of participants did not provide consent (n = 38) or did not finish (n = 123), which yielded a completion rate of 70.7 %. The survey response rate, 27.3 %, is similar to previously published on-line studies of victimization in youth (e.g., Ybarra et al. 2007). Exclusions were made for participants who were younger than 14 years old (n = 2) or older than 18 years old (n = 5), underweight (n = 15), or non-native English speakers (n = 6). Participants from Camp Shane (76 %) and Wellspring (23 %) were represented in the final sample (N = 361).

Measures

Weight-Based Victimization

Adolescents were asked if they had been teased or bullied because of their weight at school. If they reported weight-based victimization, participants were then asked if they had experienced 19 specific instances of verbal, relational, physical, and cyber-bullying because of their weight (see Puhl et al. in press). Responses were measured on 5-point Likert scales ("never"—"very often"). Individual experiences of weight-based victimization were averaged to indicate total frequency (M = 2.34, SD = .82, Cronbach's $\alpha = .94$). Participants also were asked how likely it was that each type of person would intervene in situations of WBV (5-point Likert scale, "very unlikely"—"very likely") and how helpful each intervener would be ("not helpful", "somewhat helpful", or "very helpful").

Intervention Preferences

Targets' preferences for whom and how others should respond to weight-based victimization were assessed with 5 questions: "Would you want a <peer/friend/teacher/PE teacher/sport coach/parent> to intervene if he/she saw or knew you were being teased or bullied because of your weight at school?" If intervention was desired, participants were provided with a list of strategies to indicate their intervention preferences from that person. Response items were primarily developed from previous research on weight-based teasing and bullying, (Puhl and Luedicke, 2012; Puhl et al. 2011) but also informed by literature on general victimization (e.g., Black et al. 2010; Craig et al. 2007; Crothers et al. 2006) and cyber-bullying (Agatston et al. 2007). Items ranged from social and emotional inclusion for the victim (e.g., "spend time with you" or "say something encouraging"), punishment for the bully (e.g., "tell the bully's parents"), practical help (e.g., "help you tell an adult"), and school-related responses (e.g., change your class). Overweight youth also may expect that bullying/teasing will stop if they lose weight (Pierce and Wardle 1997). Thus, items specific to weight-loss (e.g., "help you plan/adhere to a new workout routine") were also included. Responses were measured on 5-point Likert scales ("definitely not"—"definitely yes").

As some support strategies were more or less relevant for different intervention agents, the lists of strategies varied across interveners. Specifically, 26 strategies were provided for peers and friends, 16 strategies were provided for teachers and parents, and 21 strategies were provided for PE teachers/coaches. Additional strategies that were assessed for PE teachers/coaches included items specific to the PE environment (e.g., "Assign students with partners or in teams so that no one is left out").

Scales were developed through exploratory factor analyses. Only items with adequate scale reliability were included in analyses: 18 strategies were retained for peers and friends, 15 strategies for teachers, 19 strategies for PE teachers/coaches, and 15 strategies for parents. Scales within the bullying intervention preferences measure demonstrated acceptable reliability (α's: .69−.92). For a complete list, see Table 1.

Correlates of Preferred Interventions

Demographic Information

Given the aforementioned associations between personal and demographic characteristics and risk of weight-based victimization, participants reported their age, gender, race/ethnicity, and current grades in school. Self-reported height and weight were also collected to calculate Body Mass Index (BMI).

Interveners

In light of research documenting the pervasiveness of weight-based victimization across multiple sources, participants also were asked if they had experienced weight-based teasing or bullying by a peer, friend, teacher, PE teacher/sport coach, or parent within the last year. Responses were measured on a 5-point Likert scale ("never"—"very often").

Given that parental weight may influence a child's risk of weight-based victimization, participants also were asked to describe their biological mother's and father's weight using two items derived from Neumark-Sztainer and

Table 1 Intervention and support scales listed by intervention agent, determined through factor analyses

Intervention from peers

Inclusion (social/emotional) (M = 3.55, SD = .87, α = .896, N = 214)

1. Include you in social activities/invite you to peer events
2. Include you or be your partner in physical activities/sports
3. Hang out with you during school groups/invite you to extracurricular activities
4. Listen to you/talk with you
5. Spend time with you or hang out with you
6. Lighten the mood of the situation
7. Physically separate the bully from you
8. Say something encouraging
9. Just be there with you

Weight-loss support (M = 2.70, SD = 1.08, α = .843, N = 217)

1. Help you plan/adhere to a strict, LC diet
2. Help you plan/adhere to a VLC diet
3. Help you plan/adhere to a new workout routine
4. Help you plan/adhere to increases in a previously established workout routine

Aggressive response (M = 2.56, SD = 1.16, α = .714, N = 217)

1. Fight with the bully
2. Verbally threaten the bully

Practical help (M = 3.05, SD = 1.01, α = .685, N = 219)

1. Tell the bully to stop
2. Help you tell an adult
3. Help you make a safety plan

Intervention from parents

Victim support (M = 3.67, SD = .83, α = .845, N = 164)

1. Counsel (listen, talk with you)
2. Do a fun activity with you
3. Help you deal with your feelings about the bully or what he/she bullied you about
4. Tell you it's not your fault
5. Just be there/spend time with you
6. If you are bullied in a particular location, help you to avoid that location
7. Encourage you

Bully-focused (M = 3.17, SD = 1.07, α = .840, N = 173)

1. Tell the bully to stop
2. Have a serious talk with the bully
3. Tell the bully's parents
4. Talk with your teacher to better enforce rules to prevent bullying from happening

School (M = 3.19, SD = .99, α = .799, N = 174)

1. Physically separate the bully from you by changing your class
2. Physically separate the bully from you by changing your school
3. If you are bullied in a particular location, help you to avoid that location
4. Enroll you in a new group or program so that you can make new or different friends

Intervention from teachers

Victim support (M = 3.19, SD = .95, α = .885, N = 191)

1. Counsel (listen, talk with you)
2. Help you create a safety plan
3. If technology-related, regulate access to computers/cell phones
4. Help you deal with your feelings about the bully/what he or she bullied you about
5. Tell you it's not your fault
6. Just be there/spend time with you
7. Encourage you
8. Bullying hotline or bullying information website

Bully-focused (M = 3.55, SD = .94, α = .889, N = 194)

1. Verbal (tell the bully to stop)
2. Punishment
3. Have a serious talk with the bully
4. Tell the bully's parents with a call or a parent-teacher conference
5. Enforce more rules in the classroom to prevent bullying from happening
6. Physically separate the bully from you
7. Assign students with partners/groups so that no one is left out

Intervention from friends

Inclusion (social and emotional) (M = 3.70, SD = .87, α = .888, N = 212)

1. Include you in social activities/invite you to peer events
2. Include you or be your partner in physical activities/sports
3. Hang out with you during school groups/invite you to extracurricular activities
4. Listen to you/talk with you
5. Spend time with you or hang out with you
6. Lighten the mood of the situation
7. Physically separate the bully from you
8. Say something encouraging
9. Just be there with you

Weight-loss support (M = 2.84, SD = 1.11, α = .844, N = 215)

1. Help you plan/adhere to a strict, LC diet
2. Help you plan/adhere to a VLC diet
3. Help you plan/adhere to a new workout routine
4. Help you plan/adhere to increases in a previously established workout routine

Aggressive response (M = 2.56, SD = 1.19, α = .730, N = 217)

1. Fight with the bully
2. Verbally threaten the bully

Practical help (M = 3.19, SD = 1.06, α = .739, N = 216)

1. Tell the bully to stop
2. Help you tell an adult
3. Help you make a safety plan

Intervention from PE teachers/sport coaches

Victim Support (M = 3.03, SD = .94, α = .917, N = 173)

1. Counsel (listen, talk with you)
2. Help you create a safety plan
3. If technology-related, regulate access to computers/cell phones more thoroughly
4. Help you deal with your feelings
5. Tell you it's not your fault
6. Just be there/spend time with you
7. Help you to plan/adhere to a strict, LC diet
8. Help you to plan/adhere to a strict, VLC diet
9. Help you to plan/adhere to a new workout routine
10. Help you plan/adhere to increases in a previously established workout routine
11. Bullying hotline or bullying information website

Bully-Focused (M = 3.59, SD = .89, α = .907, N = 172)

1. Verbal (tell the bully to stop)
2. Punishment have a serious talk with the bully
3. Tell the bully's parents with a call or a parent-teacher conference
4. Enforce more rules in the classroom to prevent bullying
5. Physically separate the bully from you
6. Assign students with partners or teams so that no one is left out
7. Redesign curriculum so all students can participate

Strategies were specified: low-calorie diet (LC): "< 1200 calories/day"; very low-calorie diet (VLC): "< 800 calories/day"; "Safety plan": plan "to avoid future bullying situations"

colleagues' longitudinal study on weight-related concerns and behaviors in youth (Neumark-Sztainer et al. 2002). Due to sparse cell coverage, "overweight"/"very overweight" and "very underweight"/"underweight"/"just about right" were collapsed, resulting in binary variables for each parent.

Perceived Social Support

Finally, social support may function as a protective factor that buffers youth from the negative consequences of weight-based victimization. Thus, participants' perceived social support (i.e., beliefs that his/her needs for support, information, and feedback are fulfilled) from friends and family was assessed using two scales developed by Procidano and Heller (Procidano and Heller 1983). Each scale contained 20 items (e.g., "my friends/family members give me the moral support I need"), which were scored dichotomously, ("yes" = 1, "no"/"I don't know" = 0). Higher numbers indicated more perceived social support (Kuder-Richardson coefficients of reliability, friends: .79; family: .79).

Results

Participant Characteristics

Of 361 participants, 40 % were female and 44 % were male (n = 57 not reported). The average age was 15.79 years (SD = 1.28). Participants' self-reported race/ethnicity included Caucasian (71 %), Black/African American (18 %), Latino/a/Hispanic (6 %), Asian/Pacific Islander (2 %), and Other (3 %). Students reported receiving grades of mostly A's (38 %) mostly B's (40 %), mostly C's (19 %), or mostly D's (3 %). No students reported mostly F's.

BMI-percentiles were calculated with respect to age and gender, and classified according to weight categories (for details, see Puhl et al. in press). One-third (34 %) had a "healthy weight", 24 % were "overweight", and 40 % were "obese". Compared to the U.S. population, the current study sample had a substantially higher proportion of overweight youth and more than double the rate of obesity (Ogden et al. 2012), which is to be expected for a treatment-seeking sample. It was unexpected that one-third of our sample reported BMI within the "healthy weight" range. However, programs confirmed that a portion of enrollees had experienced significant weight-loss and returned to camp for support with weight-loss maintenance.

Statistical Analysis

The data were analyzed using descriptive techniques, principal-component factor analyses, linear (OLS) and logistic regression models, and latent class models for categorical data. To avoid selection bias and loss of statistical power in models where gender was included, missing gender data (16 %) was imputed using multiple imputation (M = 20) (Rubin 1987; Enders 2010). A logistic regression model was used as the imputation model with weight-based victimization, BMI, grades, race/ethnicity, and age as predictors (Nagelkerke $R^2 = 0.23$). In this imputation phase, a logistic model is first fit to the complete data by maximum likelihood to obtain parameters for each covariate and their asymptotic sampling variances. In a next step, model parameters are simulated from the posterior distributions assuming asymptotic normality. Finally, one set of missing values is filled in with predictions from a logit model using the simulated parameters. (This is repeated 20 times for M = 20 imputations). In the final pooling phase, models shown in Tables 2, 3 and 4 were fitted 20 times and point estimates were averaged across fits. Variance estimates were obtained using Rubin's combination rules and within- as well as between-imputation variance is taken into account (Rubin 1987). Analyses were conducted with Stata version 11.2 (StataCorp, College Station, TX), except the latent class analysis (Mplus version 6; Los Angeles, CA).

Weight-Based Victimization

Most participants reported previous experiences of weight-based victimization (n = 231, 64 %). Reported experiences of weight-based victimization were not significantly different according to program attended. Thus, samples were pooled. Several participants' demographic characteristics differed across programs. Therefore, BMI, gender, age, race, and a binary variable specifying camp program were included as predictor variables in regression analyses.

Desire for Intervention

Descriptive analyses indicated desire for intervention to help cope with weight-based victimization was highest for friends (66 %) followed by peers (58 %) and teachers (55 %). Less than half of participants desired intervention from PE teachers/coaches (44 %) or parents (43 %). Parents were the least desired intervention agents (38 % did not want their parents to intervene), and the most uncertainty was reported for peers (22 % were unsure if they wanted their peers to intervene).

Desire for intervention was examined separately for each intervention agent using logistic regression and controlling for participants' demographics and characteristics (see Table 2). Participants with lower grades were less likely to desire peer intervention. Participants who reported more social support from their family were more likely to

Table 2 Ordered logistic regression models: Intervention preferences reported by adolescents who were teased or bullied because of their weight during the past year

	Intervention agent				
	Peers	Friends	Teachers	PE teachers	Parents
Female	–	–	–	–	–
Male	1.410	0.601	1.768	1.193	1.551
Age (in months)	0.993	0.986	1.003	1.002	0.997
White	–	–	–	–	–
Black	1.027	1.165	1.524	1.275	1.970
Other	0.839	0.907	1.482	1.373	1.373
Grades: mostly A's	–	–	–	–	–
Grades: mostly B's	0.709	0.922	1.188	1.210	1.128
Grades: mostly C's/D's	0.381*	0.674	1.319	1.425	0.788
BMI: normal weight	–	–	–	–	–
BMI: overweight	1.116	1.178	1.305	1.503	0.697
BMI: obese	1.021	1.582	1.044	0.725	0.461*
Social support: family	1.012	1.032***	1.015*	1.012	1.020**
Social support: friends	0.999	0.999	0.990	0.990	0.982*
Frequency of getting bullied	1.758***	1.422*	1.429*	1.556**	1.631***
Frequency of being bullied by […]	1.122	0.901	0.838	0.834	0.700**
Camp shane	–	–	–	–	–
Wellspring	1.327	1.159	0.896	0.466*	0.564
No parent overweight					–
One parent overweight					0.444*
Both parents overweight					0.780
Thresholds					
1	0.029*	0.011*	0.504	0.329	0.043
2	0.133	0.047	1.505	0.777	0.097
3	0.416	0.109	3.225	1.955	0.259
4	3.987	0.943	24.744	19.220	1.624
N	219	219	218	217	209

Numbers shown represent odds ratios; some cases were excluded list-wise due to missing data

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

desire intervention from both parents and friends. Participants were less likely to desire parental intervention if they were obese, reported more social support from friends, had experienced weight-based victimization by a parent, or had a parent who was overweight. Participants from Camp Shane were less likely to desire intervention from PE teachers/coaches compared to participants from Wellspring. Finally, participants who reported more weight-based victimization were more likely to desire intervention from all interveners.

Intervention Preferences

Strategies for peer and friend intervention were categorized into four types through principal-component factor analyses: inclusion (e.g., "spend time with you"), weight-loss support (e.g., "help you plan/adhere to a new workout routine"), aggressive responses (e.g., "fight with the bully"), and practical help (e.g., "help you tell an adult").

Peers

Adolescents with lower grades had lower endorsements of inclusion interventions from peers, but participants who were obese and who reported more social support from friends were more likely to want inclusion interventions (see Table 3). Participants who perceived more likelihood of individuals intervening expressed stronger endorsement for weight-loss interventions. Participants who reported higher levels of social support from friends and perceived an increasing likelihood of intervention from peers expressed a stronger preference for aggressive intervention

Table 3 Adolescents' preferred types of intervention from classmates, linear regression models

	Classmate intervention strategies							
	Peers				Friends			
	Inclusion	Weight-loss	Aggressive response	Practical help	Inclusion	Weight-loss	Aggressive response	Practical help
Female	–	–	–	–	–	–	–	–
Male	−0.114	0.122	0.063	0.106	−0.011	0.168	0.093	0.169
Age (in months)	0.004	0	−0.003	0.002	0.005	−0.005	−0.006	−0.002
White	–	–	–	–	–	–	–	–
Black	−0.297	0.279	−0.056	−0.049	−0.152	0.483*	0.141	0.026
Other	−0.124	0.207	−0.068	0.177	−0.013	0.127	−0.008	0.336
Grades: mostly A's	–	–	–	–	–	–	–	–
Grades: mostly B's	−0.221	0.036	0.02	−0.001	−0.315	−0.143	−0.103	−0.204
Grades: mostly C's/D's	−0.412*	0.035	−0.07	−0.163	−0.460*	−0.239	−0.042	−0.212
BMI: normal weight	–	–	–	–	–	–	–	–
BMI: overweight	0.263	0.134	0.017	0.026	0.247	0.048	0.002	−0.027
BMI: obese	0.539**	−0.227	0.075	0.351	0.550**	−0.111	−0.056	0.212
Social support: family	0.001	0	−0.003	0.003	0.005	0.004	0.003	0.006
Social support: friends	0.007*	0.004	0.005	0.003	0.003	0.006	0.004	−0.001
Perceived likelihood of other's intervening	0.011	0.155**	0.171**	0.161**	0.189*	0.003	−0.024	0.159*
Intervention from […] would be helpful? (ref.: No)	–	–	–	–	–	–	–	–
Somewhat	0.807***	0.327	0.144	0.779***	0.504*	0.467	0.153	0.317
Very	1.243***	0.638**	0.138	1.163***	0.892**	0.266	0.153	0.774**
Frequency of getting bullied	0.301***	0.336***	0.347***	0.383***	0.285***	0.242**	0.247***	0.385***
Camp Shane	–	–	–	–	–	–	–	–
Wellspring	0.043	−0.354*	−0.728***	−0.196	0.048	−0.439**	−0.681***	−0.248
Constant	−2.052*	−0.951	−0.101	−2.057*	−2.838**	0.07	0.804	−0.904
N	206	204	199	201	200	198	195	194

Dependent variables are z-standardized mean scales. Only students who reported some desire for intervention (desire of intervention > 1) from peers or friends, respectively, are included in these analyses. Desire for intervention refers to the question: "Would you want a <peer, friend, teacher, PE teacher/sport coach, or parent> to intervene if he/she saw or knew you were being teased or bullied because of your weight at school?"

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

responses. Participants who perceived an increasing likelihood of intervention expressed a stronger desire for practical help interventions. Finally, participants from Wellspring expressed lower preferences for weight-loss and aggressive interventions from peers compared to participants from Camp Shane. Generally, with increasing belief that the intervention would be helpful (with the exception of aggressive interventions) and increasing experiences of weight-based victimization, adolescents were more likely to desire all types of peer intervention.

Friends

Similar to peer interventions, participants with lower grades were less likely to endorse inclusion interventions from friends (see Table 3). Participants who were Black/African American were more likely to endorse weight-loss interventions. Participants who perceived a higher likelihood of intervention were more likely to endorse inclusion and practical help interventions. Finally, participants from Wellspring expressed lower preferences for weight-loss and aggressive interventions from friends compared to participants from Camp Shane. Generally, with increasing belief that the intervention would be helpful (with the exception of weight-loss and aggressive interventions) and increasing experiences of weight-based victimization, participants were more likely to endorse all types of friend intervention.

Strategies for teacher and PE teacher/coach intervention were categorized into two types through principal-component factor analyses: target support (e.g., "encourage you") and bully-focused (e.g., "tell the bully to stop").

Table 4 Adolescents' preferred forms of intervention from adults, linear regression models

	Adult intervention strategies						
	Teachers		PE teachers/coaches		Parents		
	Victim support	Bully-focused	Victim support	Bully-focused	Victim support	Bully-focused	School/ institutional
Female	–	–	–	–	–	–	–
Male	0.108	0.091	0.237	0.016	0.200	0.157	0.376*
Age (in months)	0.009*	0.000	0.009*	−0.002	0.005	−0.009*	0.004
White	–	–	–	–	–	–	–
Black	0.046	−0.197	0.035	−0.280	−0.330	−0.036	0.289
Other	−0.095	−0.217	0.163	−0.128	−0.016	−0.043	0.231
Grades: mostly A's	–	–	–	–	–	–	–
Grades: mostly B's	−0.088	−0.150	−0.064	−0.190	−0.359	−0.007	−0.240
Grades: mostly C's/D's	−0.190	−0.257	−0.228	−0.554**	−0.385	0.076	−0.317
BMI: normal weight	–	–	–	–	–	–	–
BMI: overweight	−0.277	0.068	−0.299	−0.131	−0.200	−0.165	−0.211
BMI: obese	−0.019	0.396	−0.194	0.457*	0.607**	0.093	−0.004
Social support: family	0.003	0.005	0.004	0.011**	0.002	−0.002	0.003
Social support: friends	−0.002	−0.001	−0.002	−0.004	0.002	0.002	0.000
Perceived likelihood of other's intervening	0.209**	0.055	0.279***	0.144	0.233**	0.092	0.011
Intervention from […] would be helpful?	–	–	–	–	–	–	–
Somewhat	0.963***	0.879***	0.739***	0.510*	0.469*	1.094***	0.772**
Very	1.067***	1.084***	0.636**	0.720*	0.610*	1.688***	1.062***
Frequency of getting bullied	0.356***	0.252***	0.441***	0.261**	0.216*	0.274***	0.363***
Camp shane	–	–	–	–	–	–	–
Wellspring	−0.079	0.269	−0.147	0.112	−0.222	−0.095	0.069
Constant	−3.381***	−1.377	−3.222***	−0.872	−2.608*	0.106	−1.888
N	182	183	167	169	162	162	162

Dependent variables are z-standardized mean scales. Only students who reported some desire for intervention (desire of intervention > 1) from teachers, PE teachers/coaches, or parents, respectively are included in these analyses. Desire for intervention refers to the question: "Would you want a <peer, friend, teacher, PE teacher/sport coach, or parent> to intervene if he/she saw or knew you were being teased or bullied because of your weight at school?"

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Teachers

With increasing age and perceived likelihood of intervention, participants were more likely to desire target support interventions from teachers (see Table 4). With increasing perceptions of the intervention's helpfulness and increasing frequency of weight-based victimization, participants were more likely to endorse both target support and bully-focused interventions from teachers.

PE Teachers/Sport Coaches

Similar to teacher interventions, with increasing age and perceived likelihood of intervention, participants were more likely to want target support interventions from PE teachers/coaches (see Table 4). Participants with lower grades were less likely to endorse bully-focused interventions, and those who were obese or reported more social support from their families were more likely to endorse bully-focused interventions. Similar to teacher interventions, with increasing perceptions of intervention helpfulness and increasing frequency of weight-based victimization, participants were more likely to endorse both target support and bully-focused interventions from PE teachers/coaches.

Parents

Strategies for parent intervention were categorized into three types through principal-component factor analyses: target support (e.g., "encourage you"), bully-focused strategies (e.g., "tell the bully's parents"), and school/

institutional actions (e.g., "change your class or school"). Participants who were obese or perceived more likelihood of intervention were more likely to desire target support interventions from parents (see Table 4). With increasing age, participants were less likely to desire bully-focused interventions from parents. Male participants expressed stronger endorsement of school/institutional interventions. Similar to the aforementioned intervention preferences, adolescents who expressed increasing perceptions of intervention helpfulness and increasing frequency of weight-based victimization were more likely to endorse all types of interventions from parents.

Intervention Preference Profiles

Profiles of intervention preferences for friends, teachers, and parents were examined using latent class regression modeling for ordered categorical data. These three intervention groups were selected to represent the most (friends) and least (parents) desired interveners as well as the midpoint (teachers). The five original response options were collapsed into three categories to avoid sparse tables and to secure better model fit. Two main profiles of intervention preferences emerged based on the Bayesian Information Criterion (Schwarz 1978) and substantial considerations (see Fig. 1). Latent class 1 (n = 117, 53 %) endorsed interventions from friends, but not from teachers or parents. Latent class 2 (n = 103, 47 %) endorsed interventions from friends, teachers, and parents. These classes were further examined to determine if the profiles differed according to key demographic characteristics. Participants in class 1 were more likely to be obese (odds ratio = 4.68, $p = .030$) and less likely to report lower grades (odds ratio = 0.21, $p = .017$) compared to class 2, yet participant classes did not differ significantly by age or race.

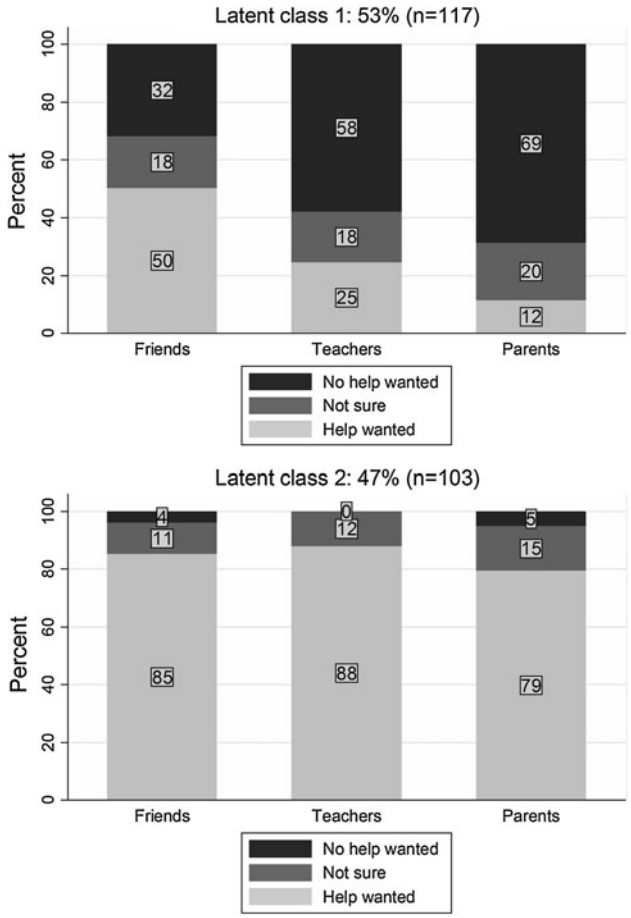

Fig. 1 Latent preference profiles for adolescent desire for intervention from friends, teachers, and parents. *Note*: Class sizes are based on most likely latent class membership; estimation using a latent class regression model for ordered categorical data. Percentages shown reflect estimated category probabilities. Likelihood-ratio test: $\chi^2_{(13)} = 34.6$, $p = .001$; entropy = 0.73

Discussion

Given the high prevalence of obesity and weight-based victimization in adolescence (Ogden et al. 2012; Puhl et al. in press), it is important to identify preferred groups/individuals that youth may seek out for support, and the types of strategies that they perceive will be most helpful in coping with and preventing additional victimization. This study is the first to document adolescents' preferences for intervention in response to experiences of weight-based teasing and bullying. Our findings show that a high proportion of adolescents who were targets of weight-based victimization desired intervention from others; friends and peers were the most highly preferred intervention agents followed by teachers, PE teachers/sport coaches, and parents. Previous experiences of weight-based victimization was reported by most of the sample, and with increasing frequency of victimization, participants were more likely to desire intervention from all groups.

In addition, to the extent that adolescents perceived intervention strategies would be helpful, they reported an increased desire for all types of support (except for aggressive responses). This suggests a need for increased education and training efforts to equip students, teachers, and parents with multiple tools and strategies to help those adolescents who may be most vulnerable to weight-based victimization and its consequences. Notably, inclusion and target-support strategies received the highest preference ratings by adolescents for peer, friend, and parental interventions, but bully-focused strategies were rated as more preferable from teachers and PE teacher/sport coaches. Obese youth were more likely to express preferences for these interventions compared to their normal weight peers.

This indicates that youth who are bullied or teased because of their weight may prefer supportive interventions from their classmates and parents, but more disciplinary or regulatory interventions from school staff. Thus, classmate and parental intervention strategies may be more likely sought if they are tailored to help adolescents cope with weight-based victimization, but school staff interventions may be more useful if targeted to prevent future victimization. Future research on the effectiveness of these different forms of intervention to reduce weight-based teasing and bullying in the school environment is needed.

Although adolescents' preferences for intervention were generally consistent across participants' characteristics, several findings emerged. For example, boys expressed a stronger preference for parents to intervene with school-based actions (e.g., changing schools) compared to girls. In addition, Black/African American students expressed higher preferences for weight-loss support from friends compared to Caucasian students. This was the only racial difference that emerged, but more research is warranted with more diverse samples of treatment-seeking youth to better understand intervention preferences for weight-based victimization (and potential reasons for different preferences) across racial and ethnic groups.

Obese adolescents, who are especially vulnerable to weight-based victimization and its consequences, were less likely to desire interventions from parents. Our findings suggest that parental weight and/or being teased about weight by a parent could contribute to less desire for parental intervention among obese adolescents. Given that adolescents who reported more social support from families were more likely to desire interventions from parents, and that when obese adolescents did express desire for parental intervention it was in the form of increased social support, it could be hypothesized that teaching parents strategies to provide more general social support to their children also could help facilitate their efforts to help their children cope with weight-based victimization. Additionally, it is important to recognize that, even if equipped with specific intervention strategies that are preferred by targets of victimization, and despite their good intentions, parents (and teachers, and friends) may themselves be perpetrators of weight bias (Puhl and Latner 2007; Puhl et al. in press). Thus, increased awareness about weight bias and how it affects youth, as well as strategies to facilitate sensitive communication about body weight with youth, may be important components of intervention from close friends, family members and teachers.

Finally, it is worth noting that participants with lower grades were less likely to endorse inclusion interventions from friends and peers, as well as bully-focused interventions. Recent research shows that students who report weight-based victimization in the school setting are more likely to avoid going to school and report that their grades are harmed by these bullying experiences, even after controlling for age, grades, gender and weight status (Puhl and Luedicke 2012). It may be that students whose grades or school attendance is negatively affected by weight-based victimization are more likely to withdraw from peers and/or strategies that involve confronting bullies. More research in this area is needed to clarify the association between these variables.

Several limitations of the study should be noted. Our sample was limited to treatment-seeking youth from two weight-loss programs. Although these programs have large enrollments with multiple locations across the U.S., participants self-selected into the study, which could have biased the representativeness of our sample. It is also possible that youth enrolled in weight-loss camps exhibit differences from broader samples of youth that might affect their intervention preferences. For example, youth attending weight loss camps generally may have more support compared to youth who do not attend such camps, which might in turn influence their preferred interventions; alternatively, some youth in these camps may not want to attend, and as a result feel less supported by their families. We did not assess these variables, and it will be important for future research to further examine sample characteristics such as these (or others) that may be unique to youth attending weight-loss camps. Also, adolescents self-reported their preferences for different sources and types of intervention, however, these strategies may not necessarily reflect the most effective intervention outcomes. Links between preferences for, and effectiveness of, interventions remains under-studied in the broader bullying literature, but some research suggests that youth may be likely to implement strategies that inadvertently increase victimization over time, suggesting the need for increased support from adults in helping them identify and practice effective responses to bullying (Craig et al. 2007). Thus, additional research, including longitudinal work, is needed to identify what types of intervention strategies (and from what sources) are ultimately effective in helping adolescents adaptively cope with and successfully prevent instances of weight-based victimization. Finally, although comparable to previous on-line surveys of bullying and victimization with adolescent samples (e.g., Ybarra et al. 2007), our response rate was relatively low. Thus, it will be important for future studies to assess intervention preferences in larger and more diverse samples of adolescents, in addition to those who may be teased or bullied for additional reasons (e.g., race/ethnicity or sexuality).

Overall, adolescents in the present study expressed a clear preference for support and intervention from friends (66 %) and peers (58 %) to help them cope with weight-based victimization, suggesting that students should be

primary targets for future intervention efforts. Unfortunately, recent research shows that, although adolescents perceive weight-based teasing to be the most common form of teasing toward their peers at school, they report often remaining bystanders during observed instances of weight-based victimization (Puhl et al. 2011). Thus, despite student awareness of weight-based victimization and desire from targets' of weight-based victimization for their support, a significant challenge remains in motivating students to act and intervene in these situations. While the passive bystander effect is not unique to weight-based victimization and is a common problem for other types of bullying (Hawkins et al. 2001), it seems warranted to increase efforts to address this challenge in the context of weight-based teasing and bullying in light of the prevalence of this form of teasing and targets' desire for help and support from friends and peers.

Conclusions

This study documented adolescents' preferences for whom and how others should intervene in response to weight-based victimization in a sample of youth who had experienced weight-based victimization. Friends and peers were the most highly endorsed interveners, and social/emotional support strategies (e.g., encouragement and inclusion in activities) were the most highly endorsed interventions. This was followed by more bully-focused interventions (e.g., verbal warning or punishment) implemented by teachers and parents. Participants who experienced more weight-based victimization expressed more desire for intervention, and several variables influenced participants' preferences for certain types of intervention (e.g., frequency of victimization, social support from friends and family, and perceived likelihood and helpfulness of intervention), however, participant intervention preferences remained generally consistent across personal and demographic characteristics. Such knowledge can inform students, school staff, and parents about specific kinds of support that can be offered to vulnerable youth (e.g., supportive versus disciplinary or regulatory intervention) by peers and adults, which may encourage intervention and potentially reduce future victimization.

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