Active Versus Inactive Portrayals of Children With Obesity

Jacob M. Burmeister
University of Dayton

Samantha Zbur and Dara Musher-Eizenman
Bowling Green State University

Public health campaigns targeting childhood obesity have been criticized for being unnecessarily stigmatizing. Some images used in these campaigns depict children with obesity in a sad and stereotyped manner. Children who are victimized because of their weight suffer a spectrum of psychological and physical health problems, and bias against people who have excess weight emerges in children as young as 3 years old. A within-subjects experiment tested whether preschool children would rate children with obesity portrayed in active nonstereotypical roles more positively than those portrayed in inactive stereotypical roles. In addition, we sought to measure gender differences in attitudes toward the children in the images. Findings demonstrate that boys and girls rate children with obesity in images differently depending on how they are depicted. Boys had a more favorable impression of children with obesity shown in active roles than in inactive roles, whereas this did not tend to be true for girls. These findings offer hope that the use of nonstigmatizing media portrayals of children with obesity may decrease discriminatory attitudes and behaviors and promote greater tolerance and acceptance. Although girls’ antifat attitudes may be particularly resistant, images depicting overweight individuals in a wide range of roles may at least challenge weight-based stereotypes and prevent antifat attitudes from worsening, even among children at the preschool level.

Keywords: stigma, obesity, preschool, weight bias, media

Obesity is now widely considered a public health concern of epidemic proportions, and it has received a large amount of media attention over the past several decades (Bray & Bouchard, 2014). Correspondingly, the media have been used as a source of public health messages about obesity treatment and prevention through the use of billboards, TV, and Internet advertisements. For example, the U.S. government’s *Let’s Move* child health initiative produced ads depicting a young girl holding a calendar that read “Today is Three Veggie Thursday.” A different ad by the city of Atlanta’s *Strong4Life* campaign utilized signs placed inside grocery carts featuring text reading “What goes in here, goes in them.”

Some images used by media campaigns have been criticized for being unnecessarily stigmatizing (Puhl, Luedicke, & Peterson, 2013). For example, one series of ads featured black and white images of children with obesity looking sadly into the camera. Various captions under the photos read “It’s hard to be a little girl, when you’re not,” “Fat kids become fat adults,” or “Being fat takes the fun out of being a kid.” In tests of viewers’ reactions to campaigns such as these, Puhl, Luedicke, and Peterson (2013) found that adults rated stigmatizing ads as engendering less self-efficacy for health behaviors while instilling no more motivation compared to more neutral ads. Similarly, Pearl, Puhl, and Brownell (2012) found that viewers exposed to stigmatizing images of people with obesity reported more negative attitudes toward others with obesity compared to participants who saw positive portrayals. It has been found that pairing stigmatizing images with news stories can...
affect antifat attitudes (McClure, Puhl, & Heuer, 2011) as well as negatively affect readers’ level of support for beneficial medical treatments for women with obesity (Brochu, Pearl, Puhl, & Brownell, 2014). Even viewers’ enjoyment of disparaging (although intended to be humorous) media depictions of people with obesity has been linked to antifat attitudes (Burmeister & Carels, 2014).

Criticisms levied at public health messages that stigmatize children may be especially warranted. Children who are victimized because of their weight suffer a spectrum of psychological and physical health problems (Puhl & Latner, 2007), and bias against people who have excess weight has been found in children as young as 3 years old (Cramer & Steinwert, 1998). Furthermore, even young children may be susceptible to subtle messages about body shape. For example, preschoolers who believe weight to be controllable exhibit greater bias against individuals who are overweight (Musher-Eizenman, Holub, Miller, Goldstein, & Edwards-Leeper, 2004).

Weight stigmatization in children may manifest differently for girls and boys (Brylinsky & Moore, 1994). Holub (2008) found that girls reported more negative attitudes toward other children with obesity than boys did. Another study suggested that girls’ negative attitudes toward obesity may be based on an overall preference for thinness rather than an aversion to obesity compared to boys (Kraig & Keel, 2001). However, others have not found clear differences in the ways in which girls and boys react toward children with obesity (Cramer & Steinwert, 1998; Tiggemann & Anesbury, 2000).

In sum, the evidence that children and adults stigmatize individuals with obesity is robust. Additionally, experiments have shown that adults respond more favorably to images of others with obesity when they are depicted in a nonstigmatizing and empowering manner. Research has not yet examined how children react to images of children with obesity who are portrayed disparagingly. This study investigated whether young children exhibit greater bias when they are exposed to stereotypical negative images of children with obesity (inactive and eating food) versus those portrayed more positively (engaging in activities that would promote health such as exercising or playing a sport).

For the current study, a within-subjects experiment tested children’s reactions to a series of images of children depicted as active (e.g., playing a sport) versus inactive (e.g., watching TV). We hypothesized that participants would rate children with obesity portrayed in active roles more positively than those portrayed in inactive roles. In addition, we sought to determine whether boys and girls would rate children with obesity differently depending upon how they were depicted.

Method

Participants

Participants (N = 44) were girls (45.5%) and boys (54.5%) recruited from daycares in a suburban Midwestern community. Participants were White (89.5%), Black (5.3%), and multiracial (5.3%). Mean age was 4.7 years (SD = .49), and mean body mass index (BMI) percentile ranking was 73.30 (SD = 25.93). Participants came from families earning less than $35,000 per year (26.3%), $35,000 to $75,000 per year (21.1%), and over $75,000 (52.6%). For the year the study was conducted, median family income for the state was $46,000.

Procedure

After parents of participants provided consent via a form handed out by daycare staff, individual children participated in the study while at their daycare in one-on-one interactions with researchers. Participation took approximately 5 min. Participants were offered several breaks and were granted as many as they desired. Children participating in this experiment were taking part in a larger research project consisting of several cross-sectional surveys lasting approximately 30 min. All hypotheses tested in this experiment and reported here were generated a priori and do not overlap with other studies. Data were collected over a period of several weeks in the spring and summer of 2013. Demographic data were obtained from parents via a separate questionnaire.

Participants were instructed, “Now we are going to look at some pictures. And I’ll ask you some questions about the kids in the pictures and you will pick an answer.” Upon agreeing to con-
Materials

Images. Six color photographs of children were used in the study. The photos were approximately 4 × 6 in. and were printed on 8 × 11.5 in. pieces of white paper with study questions printed beneath. The images for the active condition comprised three images of children with obesity in active poses. Specifically, these three images showed a boy holding a basketball, a boy playing baseball, and a girl walking in a park. Three other images depicted children with obesity in stereotypical poses for the inactive condition. These images depicted a boy watching TV, a girl sitting and eating candy, and a boy sitting alone at a table. The images were stock photos chosen to be similar to those used in childhood obesity prevention and public health campaigns. The number of images (six total) was chosen to balance adequate stimuli sampling with participants’ ability to attend to a task.

The images were pretested with a sample of 14 faculty and doctoral students in developmental psychology, health psychology, and clinical child psychology, all of whom were familiar with childhood obesity research. Pretesting indicated that the children in the images were judged to be 11.5 years old on average (SD = 1.1). Pretest participants were asked to estimate whether the children in the images had body types that were underweight, average weight, overweight, obese, or very obese. Participants rated all children depicted as obese, suggesting that the images accurately depicted children with obesity.

Liking scale. Participants rated the child in each image via six questions designed to elicit their overall liking of the child in the image. The questions were as follows: “How much would you want to help this girl/boy?” “How nice is this girl/boy?” “How good does this girl/boy look?” “How much would you want to play with this girl/boy?” “How much would you want to tease this girl/boy?” and “How much would you want to be friends with this girl/boy?” The last question was reverse scored. The ratings were on a 4-point scale ranging from 1 (not at all) to 4 (a lot). Scores on these items were added together and summed across the three pictures in each condition. On the same scale, participants rated how much they liked the activity pictured in each image (e.g., watching TV, going for a walk) so that it could be controlled for.

Participants’ ratings were totaled across the photos within each condition to create the six individual response items for each group of photos (i.e., one for active images and one for inactive images). The factor structure of these six items was examined separately for each image type. That is, one principal components analysis was conducted for responses to active images and another for ratings of inactive images. Preliminary analyses indicated that factor analyses were appropriate to use with these data; Kaiser-Meyer-Olkin = .86 for active images and .84 for ratings of inactive images (Kaiser, 1974). Bartlett’s test of sphericity was significant for both sets of analyses (active: $\chi^2(15) = 118.49, p < .001$; inactive: $\chi^2(15) = 149.76, p < .001$), all communalities for both principal components analyses above .30, and a case to variable ratio of 7:1 indicating sufficient sample size (Gorsuch, 1997). Analyses supported one-factor solutions for the items for both types of images explaining 71.65% (active images) and 77.96% (inactive images) of the variance. One item, which asked participants how much they would tease the child in the picture, was dropped because it did not load onto the primary component in either analysis, and it predicted only a small amount of variance as part of a second component. Composite scores determined by these factor analyses were created using the value of the items on each component.

Results

Preliminary Analyses

Preliminary analyses using Pearson $r$ correlations found no significant relationships between participant BMI percentile and ratings of active images, $r = .03, p = .35$, or inactive
images, \( r = .03, p = .19 \). Similarly, participant age was not associated with ratings of active images, \( r = .03, p = .89 \), or inactive images, \( r = -.01, p = .98 \).

A two-tailed paired samples \( t \) test was used to test whether participants’ liking of the activities pictured differed by condition. There was a significant difference between how much participants liked the activities in each condition (active images: \( M = 10.70, SD = 1.47 \); inactive images: \( M = 10.70, SD = 1.47 \)), \( t(40) = 2.50, p = .017 \). Analysis of variance was used to test whether females and males differed in their liking of the active and inactive activities depicted in each condition. There was no difference in liking of the active activities between females and males (females: \( M = 9.06, SD = 2.36 \); males: \( M = 10.09, SD = 1.90 \)), \( F(1, 38) = 2.36, p = .13 \). Similarly, there was no difference in liking of the inactive activities between females and males (females: \( M = 10.67, SD = 1.41 \); males: \( M = 10.73, SD = 1.55 \)), \( F(1, 39) = .02, p = .89 \). These preliminary findings suggest that as separate groups, females and males liked the activities depicted in each condition equally. However, when the participants were grouped together, they tended to like the inactive activities better than the active activities. Participants’ ratings of how much they liked the activities pictured were controlled for in subsequent tests of the study’s hypotheses described below.

**Main Effects and Interaction Analyses**

A mixed between and within subjects analysis of variance was conducted to compare ratings of active versus inactive images across participant gender. The within-subjects independent variable was image type (active vs. inactive), the between-subjects independent variable was participant gender, and the dependent variable was participants’ rating of the child depicted in the images. Participants’ liking of the activities depicted in the images was entered as a covariate; it is worth noting that the results of subsequent analyses remained the same when participants’ liking of the activities was left out of the analyses.

There was no significant main effect for image type, Wilks’s \( \lambda = .98, F(2, 40) = 0.66, p = .42 \), with the children depicted in both image types being rated similarly. There was also no main effect for gender, \( F(2, 40) = .03, p = .86 \), suggesting male and female participants rated the images similarly on average when images were treated as a single group. There was no effect for participants’ liking of the specific activity depicted, Wilks’s \( \lambda = .97, F(2, 40) = 0.01, p = .97 \).

However, there was a significant interaction between type of image and participant gender, Wilks’s \( \lambda = .98, F(2, 42) = 7.57, p = .009 \), partial \( \eta^2 = .17 \) (see Figure 1). The significant interaction suggests that the activity level of the child depicted in the images affected female and male participants differently, with boys rating active images more positively than inactive images (see Table 1).

Subsequent analyses using two-tailed \( t \) tests indicate that boys’ ratings were significantly different by condition with higher ratings of active images (\( M = 46.64, SD = 15.04 \)) versus inactive images (\( M = 43.07, SD = 15.13 \)), \( t(20) = 2.91, p = .008 \), Cohen’s \( d = .24 \). Girls’ ratings were not significantly different for active (\( M = 43.22, SD = 8.03 \)) versus inactive images (\( M = 45.17, SD = 8.13 \)), \( t(20) = -1.19, p = .25 \).

**Discussion**

The findings of the current study demonstrate that boys and girls rate children with obesity in images differently depending on how they are
That is, boys had a more favorable impression of overweight children shown in active roles than in inactive roles, but this was not true for girls.

The gender difference found in this study is especially interesting in light of the research on early socialization of body-related attitudes (Martin & Ruble, 2004). For example, some studies have shown that girls are more accepting than boys of hypothetical peers with undesirable characteristics, except those who are overweight (Barnett, Sonnentag, Livengood, Struble, & Wadian, 2012). Similarly, women and girls report that their primary motivations for exercise are weight control and physical attractiveness (McDonald & Thompson, 1992). Given that appearance and weight are such integral components of girls’ and women’s self-worth (Ferguson, Winegard, & Winegard, 2011; Mellor, Fuller-Tyszkiewicz, McCabe, & Ricciardelli, 2010), it is possible that girls in the present study sustained negative, stigmatizing attitudes toward images of overweight children in active roles because they continue to be overweight, regardless of any apparent desire or efforts to control their weight or improve their health.

Conversely, the sociocultural ideals for male appearance include factors such as masculinity and leanness rather than thinness (Smolak, Levine, & Thompson, 2001; Thompson, Heinberg, Altbe, & Tantleff-Dunn, 1999), and boys demonstrate less body dissatisfaction than girls (McCabe & Ricciardelli, 2004). Moreover, boys place greater value on physical activities and sports than girls (Eccles, Wigfield, Harold, & Blumenfeld, 1993). Thus, boys in the present study may have had more favorable attitudes toward overweight children in active roles because the thin-ideal is less salient for boys and because they hold athleticism and participation in sports in high esteem. It is important to note that in the current study, a majority of the images in each condition featured boys. There may have been more variation in ratings if there had been more images of girls. Additionally, the activities depicted could have featured girls in more stereotypical feminine forms of physical activity such as dance or jump rope, which might have appealed to female participants more.

Also worth noting is the finding that children in this study preferred the inactive and sedentary activities depicted (e.g., watching TV and eating) over the more active exercise-related activities (e.g., playing sports). However, they did not prefer the children engaging in those sedentary activities. This finding may be indicative of children’s ability to recognize the value of physical activity while at the same time holding a reluctance to engage in it. Perhaps it also demonstrates a lack of exposure to participation in physical activities. This curious finding is worth additional study.

Although further research is needed to replicate and fully understand the gender difference found here, the finding that, at least for boys, seeing children with obesity portrayed in nonstereotypical ways decreased stigma and increased liking is very important. Public health campaigns that portray children who are overweight engaged in sports and other nonstereotypical activities may have the added benefit of decreasing stigma while encouraging healthier lifestyles. Stigmatization does not lead to better health outcomes (Pearl & Dovidio, 2015; Smith & Hughes, 2014). Rather, feeling stigmatized can reduce healthy exercise and eating behaviors (Major, Hunger, Bunyan, & Miller, 2014; Pearl, Dovidio, Puhl, & Brownell, 2015; To-

### Table 1

Means and Standard Deviations of Participants’ Ratings of Children With Obesity by Sex and Image Type

<table>
<thead>
<tr>
<th>Participant sex</th>
<th>Active images</th>
<th>Inactive images</th>
<th>All images</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>43.22 (8.03)</td>
<td>45.17 (8.13)</td>
<td>44.19 (7.30)</td>
</tr>
<tr>
<td>Male</td>
<td>46.64 (15.04)</td>
<td>43.07 (15.13)</td>
<td>45.97 (13.30)</td>
</tr>
<tr>
<td>All participants</td>
<td>45.10 (12.36)</td>
<td>44.01 (12.38)</td>
<td>45.17 (10.92)</td>
</tr>
</tbody>
</table>

*Note.* Scores are the sum of participants’ ratings of images. Summed ratings of the images had a range of 45 for both active and inactive image groups, with ratings for each group ranging from 15–60.
miyama, 2014; Vartanian & Shaprow, 2008). Promoting physical activity and healthy eating without blame and shame should be core components of the charge to prevent and treat childhood obesity. The health implications of research in this area are serious given that lack of exercise is a contributing factor to many health problems that are increasingly common in children (Benjamin, 2010).

This study has several limitations that require consideration. Although the use of hypothetical peers as targets of children’s self-reported attitudes and behavioral intentions is a common practice in this area of research (Coplan, Girardi, Findlay, & Frohlick, 2007; Juvonen, 1991), it is unclear whether results obtained from this methodological approach reflect children’s actual attitudes and behaviors toward overweight peers. Furthermore, it is important to note that both types of images (i.e., active and inactive) used in this study portrayed only White girls and boys. This was intended to reduce variables other than weight that could affect participant ratings. Nonetheless, other research has found that the race of the people in the images makes a difference in how they are perceived (Puhl, Luedicke, & Heuer, 2013). Therefore, the findings of this study require extension and replication with images of overweight children of different racial and ethnic groups. An important addition to future studies will be images depicting children with lean body types. This will allow further parsing of the effects of the activities pictured from the body types depicted. Future studies should also enact tighter control over variability in the images by more precisely controlling for attributes such as children’s facial expressions, the color of their clothes, and so forth between conditions.

This study included primarily White, preschool-aged children. Although this limits examination of developmental and cultural differences, it does provide a good starting point to which future data can be compared. Given past research showing differences in attitudes about weight across sex, culture, and ethnicity (Abrams & Stormer, 2002; Latner, Stunkard, & Wilson, 2005), it is essential that future studies extend and replicate the present findings with children of varying ages, ethnic and racial backgrounds, and socioeconomic status.

Overall, our findings suggest that depicting children with obesity as inactive may have an especially negative effect on boys’ attitudes. These findings offer hope that the use of non-stigmatizing media portrayals of overweight children may decrease discriminatory attitudes and behaviors and promote greater tolerance and acceptance of children with obesity. Although girls’ antifat attitudes may be particularly resistant, images depicting individuals with obesity in a wide range of roles may at least challenge weight-based stereotypes and prevent antifat attitudes from worsening, even among children at the preschool level.

References


This document is copyrighted by the American Psychological Association or one of its allied publishers. This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.


Received March 25, 2015
Revision received August 18, 2015
Accepted August 18, 2015

**Members of Underrepresented Groups: Reviewers for Journal Manuscripts Wanted**

If you are interested in reviewing manuscripts for APA journals, the APA Publications and Communications Board would like to invite your participation. Manuscript reviewers are vital to the publications process. As a reviewer, you would gain valuable experience in publishing. The P&C Board is particularly interested in encouraging members of underrepresented groups to participate more in this process.

If you are interested in reviewing manuscripts, please write APA Journals at Reviewers@apa.org. Please note the following important points:

- To be selected as a reviewer, you must have published articles in peer-reviewed journals. The experience of publishing provides a reviewer with the basis for preparing a thorough, objective review.

- To be selected, it is critical to be a regular reader of the five to six empirical journals that are most central to the area or journal for which you would like to review. Current knowledge of recently published research provides a reviewer with the knowledge base to evaluate a new submission within the context of existing research.

- To select the appropriate reviewers for each manuscript, the editor needs detailed information. Please include with your letter your vita. In the letter, please identify which APA journal(s) you are interested in, and describe your area of expertise. Be as specific as possible. For example, “social psychology” is not sufficient—you would need to specify “social cognition” or “attitude change” as well.

- Reviewing a manuscript takes time (1–4 hours per manuscript reviewed). If you are selected to review a manuscript, be prepared to invest the necessary time to evaluate the manuscript thoroughly.

APA now has an online video course that provides guidance in reviewing manuscripts. To learn more about the course and to access the video, visit http://www.apa.org/pubs/authors/review-manuscript-ce-video.aspx.