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**Applying the contact hypothesis to anti-fat attitudes: Contact with overweight people is related to how we interact with our bodies and those of others**

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**Abstract**

This paper is the first to apply the contact hypothesis, a social psychological theory of prejudice reduction, to the field of weight bias. It aims to investigate whether contact with overweight people is associated with the extent to which people report weight bias, as well as vigilance around their own bodies. In 2013 we recruited 1176 American participants to complete surveys regarding prejudice toward overweight people, as well as a suite of measures capturing people's relationship to their own weight (fat talk, drive for thinness, and body-checking behavior). Positive contact with overweight people predicted decreased prejudice, regardless of whether participants were overweight ( $p < .001$ ) or not ( $p = .003$ ). However, negative contact was a stronger predictor of increased prejudice ( $p < .001$  for both samples). For non-overweight participants, any contact with overweight people (whether positive or negative) predicted increased body-checking behaviors (positive- $p = .002$ , negative- $p < .001$ ) and fat talk (positive- $p = .047$ , negative- $p < .001$ ), and negative contact predicted increased drive for thinness ( $p < .001$ ). However, for those who were overweight a different picture emerged. While negative contact predicted increased body-checking behaviors ( $p < .001$ ) and fat talk ( $p < .001$ ), positive contact was protective, predicting decreased drive for thinness ( $p = .001$ ) and body-checking behaviors ( $p < .001$ ). This paper demonstrates that the interactions we have with overweight people are inherently tied to both our attitudes towards them and our relationship with our own bodies.

**Keywords:** United States, weight bias, anti-fat attitudes, obesity, prejudice, stigma, discrimination

## **Applying the contact hypothesis to anti-fat attitudes: Contact with overweight people is related to how we interact with our bodies and those of others**

Negative attitudes towards overweight<sup>1</sup> people are pervasive and widespread (Latner & Stunkard, 2003). Being subject to discrimination because of one's body size is an overwhelmingly negative experience, leading to psychological distress, lower self-esteem and poor body image (Ashmore, Friedman, Reichmann, & Musante, 2008). As such, we must identify factors that reduce weight bias.

Prejudice reduction research presents positive interactions or contact between group members as an antidote to intergroup hostility (Pettigrew & Tropp, 2006). However, researchers have never investigated whether having overweight friends reduces weight bias. Accordingly, we look at how both positive and negative contact with overweight people predicts anti-fat attitudes. We also examine how contact with overweight people is associated with our feelings about our own bodies, and how we monitor and talk about our bodies. This paper is one of the first to apply theory and knowledge from social psychological prejudice reduction research that is well established in other domains (such as race, sexuality) to further the field of weight bias. We demonstrate that interactions with overweight people influence both our attitudes towards them, and our relationship with our own bodies.

### **Weight Bias**

Despite people getting fatter (Mokdad et al., 1999), negative attitudes against fat people are prevalent, widespread, and begin in early childhood (Latner & Stunkard, 2003). Furthermore, anti-fat attitudes are one of the last socially acceptable forms of prejudice, and fat people some of the last acceptable targets (Annis, Cash, & Hrabosky, 2004; Gumble & Carels, 2012). As a result, both implicit and explicit anti-fat attitudes are prevalent (O'Brien, Hunter, Halberstadt, & Anderson, 2007), and predictive of discrimination based on size (O'Brien et al., 2013).

The influence of weight bias is far-reaching. Overweight people get lower grades (MacCann & Roberts, 2013), and are less likely to be accepted into higher education (O'Brien et al., 2007;

O'Brien et al., 2008; Puhl & Brownell, 2006) or to be employed (O'Brien et al., 2007; O'Brien et al., 2008; Robinson et al., 1993). Furthermore, they receive substandard mental and physical health care in comparison to 'normal'-weight individuals. Many doctors and health practitioners prefer not to treat fat patients, and spend less time with them, often dismissing or overlooking health problems unrelated to weight (O'Brien et al., 2007; O'Brien et al., 2008; Robinson et al., 1993). Weight bias also manifests in other settings, including the media, adoption services, and the legal system (Schvey, Puhl, Levandoski, & Brownell, 2013).

### **Reducing Weight Bias**

Given the prevalence of weight bias, a number of researchers have attempted to reduce anti-fat attitudes. A stable predictor of anti-fat attitudes is the belief that weight is controllable, and that excess weight is due to poor self-control or laziness (Robinson et al., 1993). Consequently, weight bias reduction interventions have focused predominantly on providing information about the uncontrollable biological and genetic factors that influence obesity, and the difficulties of losing weight and maintaining weight loss. In general, this approach has reduced anti-fat attitudes, especially if the person presenting the information was overweight (Crandall, 1994; Robinson et al., 1993; Diedrichs & Barlow, 2011; but see Teachman, Gapinski, Brownell, Rawlins, & Jeyaram, 2003). Anti-fat attitudes have also been reduced by telling participants that others hold favorable beliefs about overweight people (Puhl, Schwartz, & Brownell, 2005). However, interventions focusing on evoking empathy towards overweight people have been largely unsuccessful in reducing negative attitudes towards them (Gapinski, Schwartz, & Brownell, 2006; Teachment et al., 2003).

The interventions reviewed above come predominantly from a public and clinical health psychology perspective. However, social psychologists have spent the past 50 years researching prejudice, and to date very few researchers have wed together the insights from clinical, health and social psychology. Accordingly, we suggest that the approaches identified as effective by social psychologists have been underutilized in the field of weight bias. From a social psychology

perspective, and in light of strong existing evidence on prejudice reduction in other domains (e.g., race, sexual orientation), we suggest that interpersonal factors that influence our weight-based attitudes also need to be examined. Thus, we introduce the contact hypothesis and argue that contact with overweight people might be critical in influencing how we feel about them.

### **The Contact Hypothesis**

The contact hypothesis, formalized by Gordon Allport (1954), proposes that face-to-face contact between opposing group members can reduce prejudice. Since the contact hypothesis was developed, many studies have demonstrated that the premise holds. Contact with outgroup members (that is, members of a group to which one does not belong) is typically linked to reduced prejudice towards the outgroup. Such effects hold cross-sectionally and experimentally, and across multiple intergroup contexts, such as different races and sexualities (for a meta-analysis see Pettigrew & Tropp, 2006).

Recently, focus has shifted towards examining negative aspects of intergroup contact. Not all contact is positive, and it makes sense that negative contact might intensify rather than ameliorate prejudice. In addition, there is evidence that people are primed to attend more to negative than positive experiences. For example, people focus more on negative stereotypes than positive ones (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). Theorists have thus posited a positive-negative asymmetry such that negative contact should have a stronger and more consistent influence on increasing prejudice than positive contact should have on reducing it (Paolini, Harwood, & Rubin, 2010). Evidence for this positive-negative asymmetry has been found across a range of inter-ethnic contexts (Barlow et al., 2012).

Irrespective of valence, a contact framework has never been applied to anti-fat attitudes. This presents an exciting opportunity to use existing social psychology knowledge and apply it to the weight bias field (for example, in interventions to reduce weight bias). Thus, in the present paper we examine whether contact with overweight people predicts how we feel about them. A traditional contact perspective would state that positive contact with overweight people would

reduce anti-fat attitudes, and negative contact would increase them. However, we argue that various factors indicate important differences when looking at contact with a weight-based group compared to other domains.

### **The Special Case of the Overweight**

When applying the contact hypothesis to anti-fat attitudes, several considerations must be noted. First, both overweight and ‘normal’-weight people display weight bias (Schwartz, Vartanian, Nosek, & Brownell, 2006). As such, the relationship between contact and prejudice should be examined for both groups. Second, overweight people often do not accept that they are part of this group, and may believe that they can move out of it (if they lose weight; Johnson, Cooke, Croker, & Wardle, 2008). Third, this is a group that anyone can join (if they gain weight), and the fear of joining is a strong concern for both genders (potentially due to the discrimination that overweight people face; Herek & Capitano, 1996). In short, the permeability of the boundary between overweight and ‘normal’-weight people presents a different psychological dynamic from other groups typically examined in the contact literature (e.g., race, sexual orientation). Critically, it is both possible to move into this group *and* difficult to control whether one does.

One consequence of this is that for ‘normal’-weight people, any contact with overweight people might be aversive – a reminder of whom they fear becoming. Given the potentially aversive consequences of contact outlined above, contact with overweight people may also have a less positive influence on prejudice than one would normally expect on the basis of the contact hypothesis. However, for those who are already overweight we suggest that contact should function as expected. People who are overweight already belong to the stigmatized group, and thus do not face the same anxieties about migrating into the group as do people with a low BMI. They do, however, face substantial prejudice as a consequence of their group membership. As such, research looking at race-relations in the United States might provide some clues as to what the relationship between contact with overweight people and associated outcome variables might be for those that are overweight themselves. Past research typically suggests that being embedded in, and feeling a

part of, a minority group is protective. Specifically, multiple studies have found that Black Americans who are embraced by their group, and identify with them are happier and healthier (see Branscombe, Schmitt, & Harvey, 1999; Miller & MacIntosh, 1999). Here, we might expect something similar for those who are overweight – positive contact should be protective, and negative contact damaging. Consequently, for overweight people the classic contact pattern should emerge: negative contact should increase prejudice, and positive contact should decrease it.

**Self-focused attitudes and behaviors.** In the present paper we examine not just how contact with overweight people predicts anti-fat prejudice, but also the extent to which contact is associated with how people think about and monitor their *own* weight. Our argument is to some extent an intuitive one. We know that people are very aware of others' weight, and that fear of fat is prevalent (Cash, Counts, & Huffine, 1990). Consequently, we suggest that interacting with fat people should shine a light on our own weight concerns. While no one has explicitly tested this assumption before, there is theoretical reason to suspect that contact with overweight people might have the potential to make us more aware of our own bodies. Literature on friendship groups demonstrate that body image concerns and eating behaviors are innately social in nature, and to some extent a product of who we spend time with (Crandall, 1988; Hutchinson & Rapee, 2007; Paxton, Schutz, Wertheim, & Muir, 1999).

How contact is associated with body monitoring, however, should depend on one's own weight. Above, we made the case that any contact with overweight people might be somewhat aversive for 'normal'-weight people. As a downstream consequence of this response, we propose that 'normal'-weight people may reflexively experience an increase in drive for thinness (an excessive desire to be thin; Garner et al., 1983) following contact with overweight people. In addition to being associated with drive for thinness, we suggest that for 'normal'-weight people, such contact may increase vigilance around one's body, and result in behaviors such as body-checking (compulsively checking the body to monitor changes) and fat talk. Fat talk is another way people monitor their bodies via conversations about their own and others' weight, including ideal



exercise and eating habits, comparison of eating and exercise behaviors, and discussion of appearance. Note that while the aforementioned behaviors and attitudes may at face value seem like positive factors that help control weight, they have all been linked to body dissatisfaction, and none have been shown to lead to weight loss or healthy weight maintenance (Arroyo & Harwood, 2012; Garner, Olmstead, & Polivy, 1983; Reas, Whisenhunt, Netemeyer, & Williamson, 2002).

For people who are overweight themselves we suspect that the picture is different. While we would expect negative contact with overweight people to be linked to indicators of negative body-related behavior (i.e. drive for thinness, body-checking behavior, and fat talk), positive contact may have the opposite effect. As highlighted above, there is evidence that for stigmatized group members, being embedded within the group can help to shield from the effects of pervasive discrimination (see Branscombe et al., 1999; Miller & MacIntosh, 1999). While this work is on ethnic identification and race, rather than contact and weight, parallels may be drawn. In particular, friendly and pleasant interactions with other fat people may serve as protective social factors that work to reduce body insecurities and consequent behaviors. Although there is no existing direct evidence to support this point, anecdotally, overweight people who have come together to work as ‘fat activists’ report benefits of positive interactions with other fat people (Johnston & Taylor, 2008). Should positive contact be protective for overweight people, we would expect a moderated relationship, such that positive contact would predict increased drive for thinness, body-checking and fat talk for ‘normal’-weight people, but the opposite would be true for people who are overweight themselves.

### **The Current Study**

Participants disclosed their weight and how much positive and negative contact with overweight people they experienced. These measures then predicted prejudice towards overweight people. In addition, we used various constructs relating to how people feel about their own bodies as outcome variables (fat talk, drive for thinness, and body-checking behaviors). In line with our theoretical arguments, and the literature reviewed throughout the introduction, we predicted that

positive contact with overweight people would be linked to decreased anti-fat attitudes (although this pattern may be less pronounced for ‘normal’-weight people), and that negative contact would be linked to increases in anti-fat attitudes. We further hypothesized that there would be a positive-negative asymmetry such that negative contact would emerge as a stronger predictor than positive contact (see Barlow et al., 2012). Finally, taking into account the special nature of the context of weight we suggested that contact with overweight people would reliably predict how people felt about their own bodies. We argued that for ‘normal’-weight people *any* contact might be associated with detrimental outcomes (i.e., increased drive for thinness, body-checking behavior, and fat talk). Conversely, we suggested that contact with fellow overweight people might be protective for those who were overweight themselves (i.e., associated with decreased drive for thinness, body-checking behavior and fat talk).

## Method

### Participants

Participants were recruited from the survey platform socialsci.com. Of the 1452 people who clicked on the study, 1176 (54% male) completed all measures. Participants were from the United States and at least 18 years old. Ages ranged from 18 to 91 ( $M=28.41$ ,  $SD=8.84$ ) and their BMI ranged from 13.21 to 60.47 ( $M=25.85$ ,  $SD=6.28$ ). The World Health Organization (1995) categorizes a BMI between 18.5-25 as ‘normal’-weight and over 25 as overweight. Therefore, 45.3% of participants were categorized as overweight or obese and 54.8% as under- to ‘normal’-weight. Sixty-two were excluded due to incorrect responses regarding weight (a BMI of under 13 or over 70). Participants were reimbursed with points from socialsci.com, to be redeemed for prizes.

### Ethics

Ethical approval was received from the Behavioral and Social Sciences Ethical Review Committee at the University of Queensland, Australia. Participants were provided with an information sheet before completing the study, detailing the aims and content, as well as warning them that they would be asked potentially sensitive questions about body image. The information

sheet also specified that participants were able to withdraw at any time or leave any question blank without penalty. The survey was only accessible to participants who indicated that they were 18 years of age or older. Finally, participants were only directed to the main survey if they indicated that they had read and understood the information provided, and that they consented to participation on the basis of this information.

### **Procedure and Measures**

**Demographics** included age, biological gender, income, education, and percentage of fat family members.

**BMI** was measured by asking for height in feet and inches and weight in pounds. We converted their height into centimeters and weight into kilograms and then divided participants' weight by the square of their height to produce their BMI (Eknoyan, 2008).

**Positive contact** with overweight people was measured with a single item as per Barlow and colleagues (Barlow et al., 2012): "On average, how frequently do you have POSITIVE/GOOD contact with overweight or obese people?" (1=never; 7=extremely frequently).

**Negative contact** with overweight people was also measured by asking "On average, how frequently do you have NEGATIVE/BAD contact with overweight or obese people?", using the above scale (Barlow et al., 2012).

Note that above we have measured positive and negative contact with single items, in line with past studies. In their work on contact, Pettigrew and Tropp (2000) state that single item IVs and DVs yield moderate effect sizes (and the single item measures yield stronger effects than multi-item measures with low or unknown reliabilities). Barlow et al. (2012) also examined both positive and negative contact and their effects on prejudice, using traditional measures of contact as well as the single-item measures that we use in this paper. Both types of measures found that positive contact was associated with decreased prejudice while negative contact was associated with increased prejudice. Further, both types of measures revealed predictive validity and similar effect sizes. Multiple other researchers have also used single-item measures of contact, with similar results

(e.g., Barlow et al., 2012; De Tezanos-Pinto, Bratt, & Brown, 2010; Pettigrew, Christ, Wagner, & Stellmacher, 2007; Tropp & Pettigrew, 2005).

**Anti-fat attitudes** were measured using 13 items adapted from Crandall (1994; 1=strongly disagree; 7=strongly agree;  $\alpha=.88$ ). This scale comprises three subscales: Dislike (7 items,  $\alpha=.91$ , e.g. “I really don’t like fat people much”); Willpower (3 items,  $\alpha=.80$ ; e.g. “Fat people tend to be fat pretty much through their own fault”); and Fear of Fat (3 items,  $\alpha=.87$ ; e.g. “I worry about becoming fat). Note that the first two of these subscales most closely approximate our goal to measure other-focused anti-fat prejudice. The third subscale – Fear of Fat – is more aligned with the other constructs (outlined below) measuring vigilance around one’s own body.

**Fat talk** was measured with a 4-item original scale based on qualitative data (Ousley, Cordero, & White, 2007), with high scores indicating more fat talk. The questions were: “How often do you and your friends: Discuss how your current eating habits compare to what they ‘should’ be?; Discuss how much you fear becoming overweight?; Compare your eating habits to those of others?; Evaluate the appearance of others?” (1=never; 5=always;  $\alpha=.85$ ).

**Drive for thinness** is measured via the 7-item Drive for Thinness Scale, a subscale of the Eating Disorder Inventory (Garner et al., 1983). Examples are “I feel extremely guilty after overeating” and “I am not terrified of gaining weight” (reverse scored) (1=never; 6=always;  $\alpha=.85$ ).

**Body-checking behaviors** were measured via 28 positively-worded items (5 added to be gender-inclusive regarding checking for muscularity; the remainder drawn from Reas et al., 2002). Examples are: “I check to see if my thighs spread when I’m sitting down”; and “I look to see if I have muscle definition” (1=never; 5=very often;  $\alpha=.98$ ).

Upon completion, participants were given a debriefing sheet with information about body image, the study and researchers, and links and phone numbers for counseling services. Participants could also provide their emails if they wanted to receive information about results, and were able to provide feedback via personal messages on Social Sci.

## Results

Means, standard deviations and intercorrelations for all measures ( $N=1176$ ) are displayed in

Table 1.

Table 1  
Correlations (means and standard deviations) between variables

	Means	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	28.41	8.84	1.00	-	-	-	-	-	-	-	-	-	-	-
2. Income	2.36	1.44	.38***	1.00	-	-	-	-	-	-	-	-	-	-
3. Education	3.85	1.24	.24***	.36***	1.00	-	-	-	-	-	-	-	-	-
4. Sex	1.56	0.50	-.07**	0.02	-0.02	1.00	-	-	-	-	-	-	-	-
5. Percentage of fat family members	28.97	28.06	.07*	-0.04	0.04	-.14***	1.00	-	-	-	-	-	-	-
6. Negative contact	3.05	1.38	-.07*	.09**	0.01	-0.04	0.03	1.00	-	-	-	-	-	-
7. Positive contact	5.11	1.40	0.05	0.04	0.05	-.17***	.30***	-.26***	1.00	-	-	-	-	-
8. BMI	25.85	6.28	.22***	0.03	0.00	.06*	.29***	-.12***	.17***	1.00	-	-	-	-
9. Anti-fat attitudes	3.43	1.18	-0.03	.16***	.09**	0.01	-0.04	.47***	-.27***	-.17***	1.00	-	-	-
10. Fat talk	2.44	1.00	-0.02	.11***	0.01	-.16***	.10**	.36***	-0.02	-0.04	.43***	1.00	-	-
11. Drive for thinness	3.17	1.10	.08**	.13***	.11***	-.22***	.24***	.16***	0.05	.22***	.40***	.48***	1.00	-
12. Body checking behavior	2.21	0.85	-0.03	.13***	0.04	-.19***	.08**	.37***	-.06*	-.08**	.50***	.61***	.61***	1.00

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

### Regression Analyses

Hierarchical regression analyses were conducted to test the model predicting the effects of BMI, positive contact, and negative contact with overweight people on four dependent variables: anti-fat attitudes, fat talk, drive for thinness, and body-checking behaviors. BMI, positive contact, and negative contact were mean-centered. For each set of analyses, control variables were entered at Step 1: age, sex (1=female; 2= male), income, education, and the percentage of fat family members. The predictors were entered at Step 2. At Step 3, two-way interactions (between BMI and positive contact, and BMI and negative contact) were entered.

**Anti-Fat Attitudes.** Participants displayed higher prejudice towards fat people if they were younger ( $\beta=-.08$ ,  $p=.009$ , CI95%=-.019 to -.003), more educated ( $\beta=.06$ ,  $p=.048$ , CI95%=.000 to .116), and had a higher income ( $\beta=.14$ ,  $p<.001$ , CI95%=.059 to .169). More pertinent to our hypotheses, negative contact predicted higher prejudice towards those who are overweight ( $\beta=.38$ ,  $p<.001$ , CI95%=.267 to .367). In contrast, positive contact ( $\beta=-.18$ ,  $p<.001$ , CI95%=-.193 to -.099) and having a higher BMI ( $\beta=-.11$ ,  $p<.001$ , CI95%=-.029 to -.009) were associated with lower anti-fat prejudice. As predicted, the relationship between negative contact and anti-fat attitudes was stronger than the relationship between positive contact and anti-fat attitudes,  $t(1166)=12.53$ ,  $p<.001$ , signaling a positive-negative asymmetry.

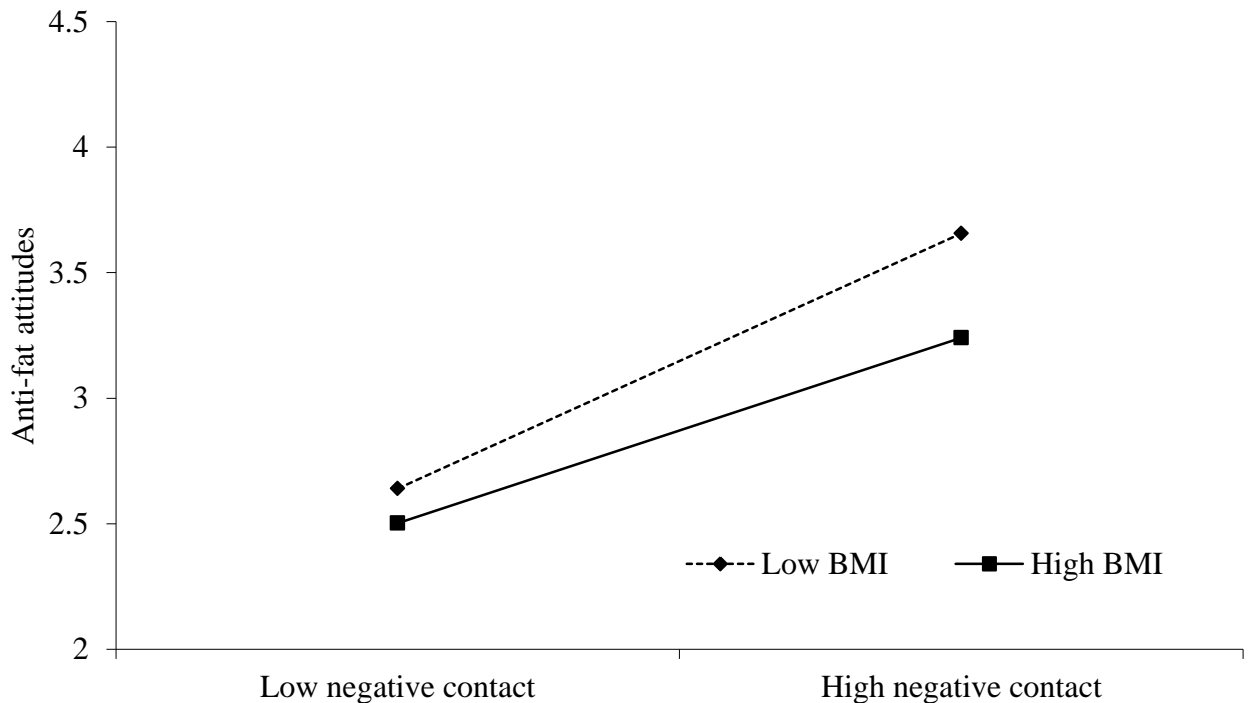


Figure 1. Interaction between BMI and negative contact on anti-fat attitudes

As can be seen in Figure 1, there was also the predicted interaction between BMI and negative contact ( $\beta = -.07$ ,  $p = .012$ ,  $CI_{95\%} = -.018$  to  $-.002$ ). This was decomposed by examining negative contact as a predictor of anti-fat attitudes at both low ( $-1SD$ ) and high ( $+1SD$ ) levels of BMI. Simple slopes revealed that for people with a low BMI increased negative contact predicted increased anti-fat attitudes ( $\beta = .44$ ,  $p < .001$ ,  $CI_{95\%} = .312$  to  $.436$ ). A weaker association was found for those with a high BMI ( $\beta = .29$ ,  $p < .001$ ,  $CI_{95\%} = .172$  to  $.320$ ).



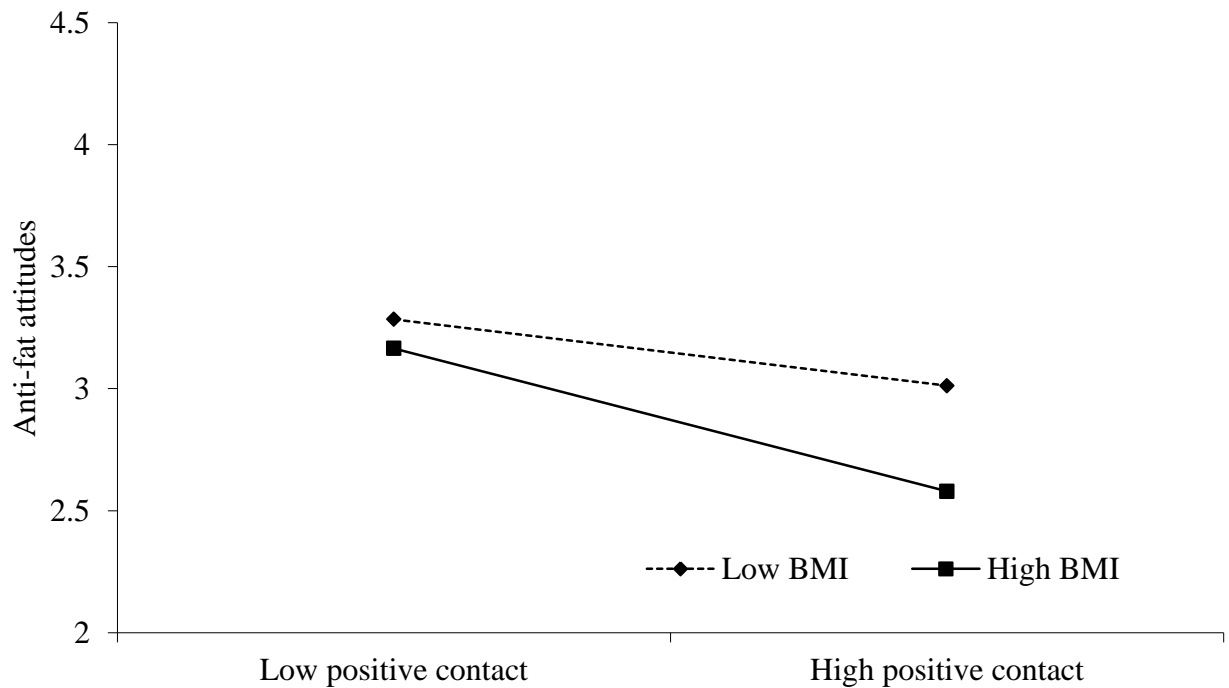


Figure 2. Interaction between BMI and positive contact on anti-fat attitudes

As seen in Figure 2, an interaction also emerged between BMI and positive contact ( $\beta=-.07$ ,  $p=.019$ ,  $CI95\%=-.017$  to  $-.001$ ). For participants with a low BMI increased positive contact predicted decreased anti-fat attitudes ( $\beta=-.12$ ,  $p=.003$ ,  $CI95\%=-.160$  to  $-.032$ ). For participants with a high BMI, the same pattern of results was found, but even stronger ( $\beta=-.26$ ,  $p<.001$ ,  $CI95\%=-.282$  to  $-.140$ ).

**Ancillary analyses.** For the sake of thoroughness we conducted a series of ancillary analyses looking at each subscale of the anti-fat attitudes measure separately. In terms of main effects, the pattern of results was the same when looking at the Dislike subscale as it was when looking at anti-fat attitudes as a whole; that is, positive contact was associated with decreased dislike of fat people ( $\beta=-.28$ ,  $p<.001$ )

while negative contact it was associated with increased dislike of fat people ( $\beta=.39$ ,  $p<.001$ ). As was found for the initial Anti-Fat Attitudes Scale, BMI was negatively linked to disliking overweight people ( $\beta=-.15$ ,  $p<.001$ ). There was an interaction between negative contact and BMI ( $\beta=-.07$ ,  $p=.008$ ). Simple slopes revealed that for all participants, the more negative contact people reported having with overweight people the more they disliked them, however this effect was more pronounced for participants with a lower BMI ( $\beta=.46$ ,  $p<.001$ ) than for participants with a higher BMI ( $\beta=.31$ ,  $p<.001$ ).

When examining the Willpower subscale, negative contact was positively linked to the belief that weight was due to willpower ( $\beta=.17$ ,  $p<.001$ ), while BMI and willpower were negatively linked ( $\beta=-.10$ ,  $p=.001$ ). The association between BMI and negative contact was marginally significant ( $\beta=-.06$ ,  $p=.051$ ). For participants with a low BMI, negative contact predicted an increased belief that weight was reliant on willpower ( $\beta=.23$ ,  $p<.001$ ). The same association was found for participants with a high BMI, although to a lesser extent and non-significantly ( $\beta=.10$ ,  $p=.054$ ). However, there was no significant interaction between BMI and positive contact ( $\beta=.00$ ,  $p=.993$ ).

Lastly, negative contact was linked to increased scores on the Fear of Fat subscale ( $\beta=.20$ ,  $p<.001$ ). The interaction between BMI and positive contact was significant ( $\beta=-.13$ ,  $p<.001$ ), revealing that for participants with a low BMI, positive contact was positively linked to fear of fat ( $\beta=.11$ ,  $p=.007$ ) while the reverse association was found for participants with a high BMI ( $\beta=-.14$ ,  $p=.002$ ).

**Fat talk.** Participants reported more fat talk when they were younger ( $\beta=-.08$ ,  $p=.016$ , CI95%=-.015 to -.002), had a higher income ( $\beta=.12$ ,  $p<.001$ , CI95%=.038 to .131), were female ( $\beta=-.19$ ,  $p<.001$ , CI95%=-.489 to -.262), and had a higher

percentage of fat family members ( $\beta=.08$ ,  $p=.010$ ,  $CI95\%=.001$  to  $.005$ ). As predicted, negative contact predicted increased fat talk ( $\beta=.33$ ,  $p<.001$ ,  $CI95\%=.197$  to  $.280$ ) while positive contact ( $\beta=.02$ ,  $p=.605$ ,  $CI95\%=-.031$  to  $.054$ ) and BMI ( $\beta=-.00$ ,  $p=.911$ ,  $CI95\%=-.010$  to  $.009$ ) were unrelated to fat talk. The association between negative contact and fat talk was significantly stronger than the association between positive contact and fat talk,  $t(1166)=8.69$ ,  $p<.001$ , again demonstrating the positive-negative asymmetry.

The interaction between BMI and negative contact ( $\beta=-.04$ ,  $p=.180$ ,  $CI95\%=-.012$  to  $.002$ ) was not significant. Hence, increased negative contact was linked to increased levels of fat talk, regardless of BMI. The interaction between BMI and positive contact, however, was significant ( $\beta=-.07$ ,  $p=.017$ ,  $CI95\%=-.015$  to  $-.002$ ).

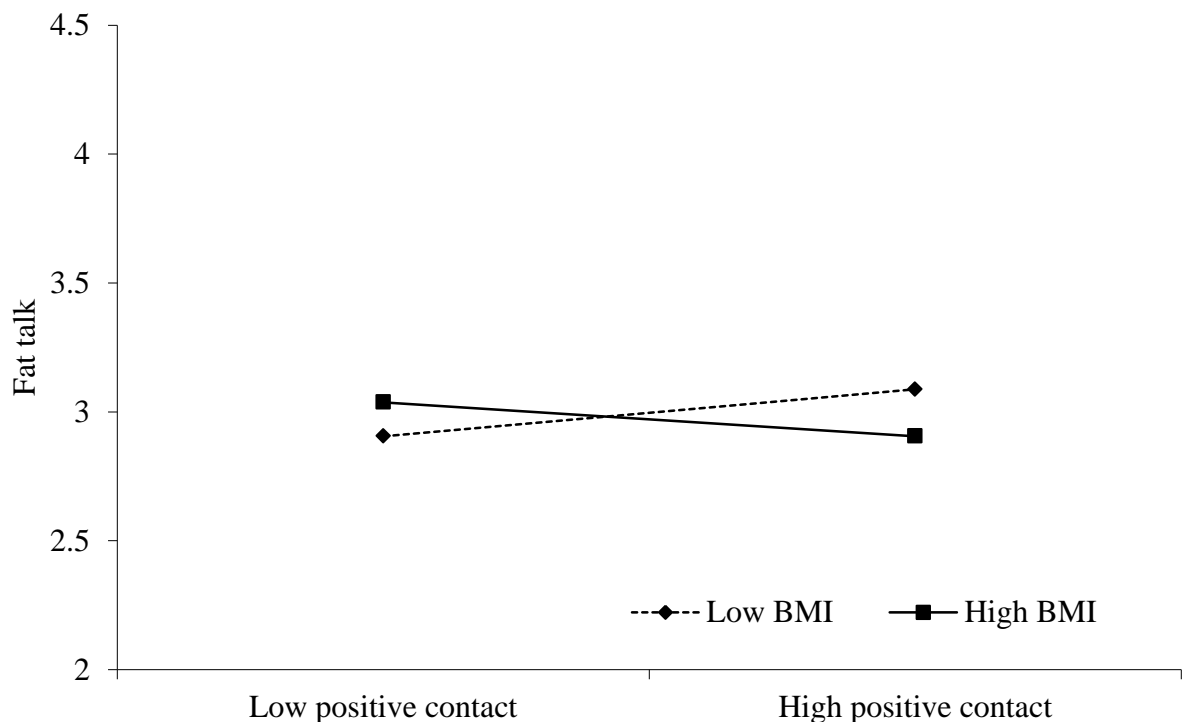


Figure 3. Interaction between BMI and positive contact on fat talk

As seen in Figure 3, for participants with a low BMI higher levels of positive contact were associated with increased fat talk ( $\beta=.08, p=.047, CI95\%=.001$  to  $.116$ ). However, no association was found between positive contact and fat talk for participants with a high BMI ( $\beta=-.07, p=.142, CI95\%=-.113$  to  $.016$ ).

**Drive for thinness.** Participants reported higher levels of drive for thinness when they had a higher income ( $\beta=.12, p<.001, CI95\%=.047$  to  $.146$ ), were female ( $\beta=-.22, p<.001, CI95\%=-.609$  to  $-.366$ ), and had a higher percentage of fat family members ( $\beta=.20, p<.001, CI95\%=.006$  to  $.010$ ). Negative contact predicted increased drive for thinness ( $\beta=.14, p<.001, CI95\%=.064$  to  $.156$ ) as did having a higher BMI ( $\beta=.20, p<.001, CI95\%=.024$  to  $.044$ ). Positive contact was unassociated with drive for thinness ( $\beta=-.04, p=.200, CI95\%=-.078$  to  $.016$ ). The association between negative contact and drive for thinness was significantly stronger than the association between positive contact and drive for thinness,  $t(1166)=2.77, p=.010$ .

An interaction emerged between BMI and negative contact ( $\beta=-.07, p=.022, CI95\%=-.017$  to  $-.001$ ) such that negative contact predicted increased drive for thinness among low ( $\beta=.19, p<.001, CI95\%=.094$  to  $.218$ ), but not high BMI participants ( $\beta=.05, p=.302, CI95\%=-.035$  to  $.113$ ; refer to Figure 4).

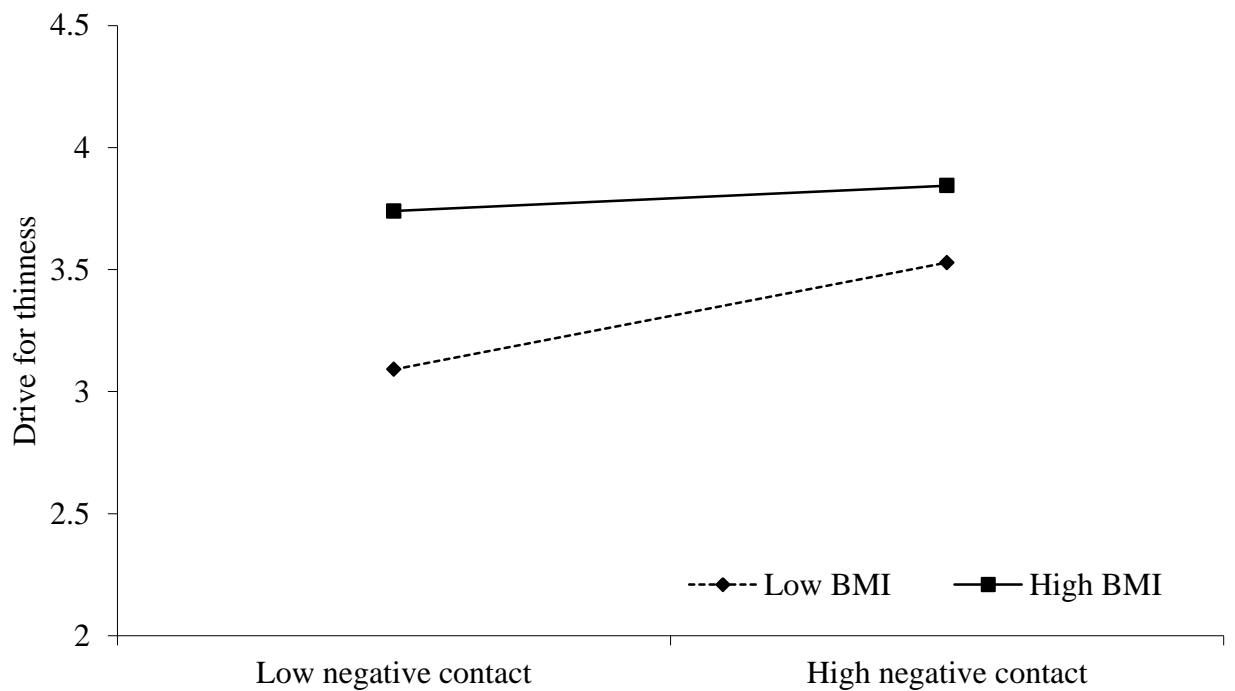


Figure 4. Interaction between BMI and negative contact on drive for thinness

The interaction between BMI and positive contact ( $\beta = -.10$ ,  $p = .001$ , CI95% =  $-.021$  to  $-.005$ ) revealed a mirror image of this pattern (see Figure 5): for participants with a low BMI positive contact was unassociated with drive for thinness ( $\beta = .05$ ,  $p = .199$ , CI95% =  $-.022$  to  $.105$ ) whereas for participants with a high BMI increased positive contact predicted decreased drive for thinness ( $\beta = -.16$ ,  $p = .001$ , CI95% =  $-.194$  to  $-.052$ ).

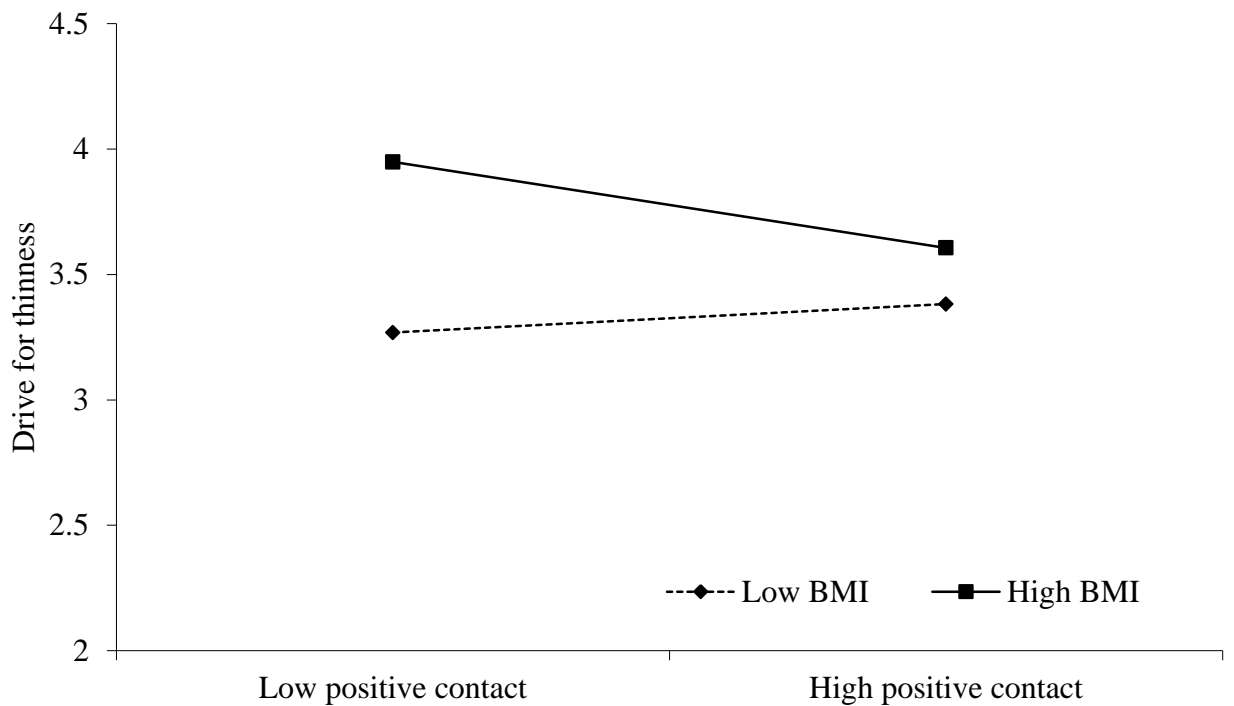


Figure 5. Interaction between BMI and positive contact on drive for thinness

**Body-checking behavior.** Participants were significantly more likely to engage in body-checking behavior if they were younger ( $\beta = -.08$ ,  $p = .009$ , CI95% =  $-.014$  to  $-.002$ ), had a higher income ( $\beta = .14$ ,  $p < .001$ , CI95% =  $.046$  to  $.124$ ), and were female ( $\beta = -.22$ ,  $p < .001$ , CI95% =  $-.471$  to  $-.279$ ). Negative contact predicted increased body-checking behavior ( $\beta = .31$ ,  $p < .001$ , CI95% =  $.156$  to  $.226$ ). Neither positive contact ( $\beta = -.03$ ,  $p = .313$ , CI95% =  $-.054$  to  $.017$ ) nor BMI ( $\beta = -.05$ ,  $p = .076$ , CI95% =  $-.015$  to  $.001$ ) significantly predicted body-checking behavior. As per the other outcome measures, the association between negative contact and body-checking behaviors was significantly stronger than the association between positive contact and body-checking behaviors,  $t(1166) = 3.80$ ,  $p < .001$ .

There was a significant interaction between BMI and negative contact ( $\beta = -.09$ ,  $p = .002$ , CI95% =  $-.016$  to  $-.003$ ). Analyses of simple slopes revealed that increased negative contact predicted increased body-checking behaviors, but this was stronger

for low ( $\beta=.38, p<.001, CI95\%=.190$  to  $.284$ ) than for high BMI participants ( $\beta=.19, p<.001, CI95\%=.061$  to  $.173$ ; see Figure 1 for a similar interaction pattern). The interaction between BMI and positive contact ( $\beta=-.17, p<.001, CI95\%=-.023$  to  $-.011$ ) revealed a different effect (see Figure 3 for a similar interaction pattern): for participants with a low BMI increased positive contact predicted increased body-checking behaviors ( $\beta=.12, p=.002, CI95\%=.027$  to  $.123$ ). Conversely, for participants with a high BMI, increased positive contact predicted decreased body-checking behaviors ( $\beta=-.23, p<.001, CI95\%=-.190$  to  $-.082$ ).

### Discussion

Negative attitudes against fat people are pervasive (Latner & Stunkard, 2003). To date, interventions to reduce these attitudes have primarily focused on shifting personal beliefs and have not included interpersonal factors that may influence anti-fat attitudes, such as the amount and type of contact people have with overweight people. This study is the first to examine how contact with overweight people is linked to how we feel about them and about our own bodies.

Consistent with the contact hypothesis, the more participants reported experiencing positive contact with overweight people, the more they had positive attitudes towards them. However, this effect was modest in size, and only emerged on one of the three sub-scales of anti-fat attitudes. Neither did the effect emerge on other indices such as fat talk, drive for thinness or body-checking behaviors. What did have a large and consistent association with attitudes and behaviors was *negative* contact with overweight people. Negative contact was positively associated with all three sub-scales of anti-fat attitudes. Overall, there was a consistent and strong positive-negative asymmetry effect: Positive contact had a much weaker relationship with attitudes and behavior than did negative contact.

As predicted, these effects were frequently moderated by the extent to which participants were overweight themselves. For people who were not overweight, the effects of contact were more negative overall than for overweight participants. In other words, for low-BMI people the constructive effects of positive contact on anti-fat attitudes were more subdued than for high-BMI people, and the destructive effects of negative contact were more pronounced. This general picture – that contact has a more negative impact for low-BMI than high-BMI people – emerged also on other relevant cognitions and behaviors. Indeed, for low BMI participants, even *positive* contact was linked to increased fear of fat, fat talk, and body-checking.

The notion that positive contact can have negative effects for low-BMI people contrasts sharply with the more traditional effects found for high-BMI people, where positive contact was associated with decreased fear of fat, drive for thinness, and body-checking. The one exception to this pattern was for fat talk, where positive contact failed to have a positive effect even for high-BMI people. This may be because the other outcome variables are primarily focused exclusively on the *self*, whereas fat talk also involves focusing on others (their appearance, weight, exercise and eating habits).

### **Theoretical and Practical Implications**

Together, the results indicate that contact with those who are overweight is intrinsically linked to how one feels about overweight people in general. Unfortunately, the effects were not always positive, and the overall picture is much more pessimistic than that implied by the broader contact literature. Most notably, the effects of contact skewed towards the negative among those who are the most obvious perpetrators of anti-fat discrimination: those with a low BMI (Schwartz et al., 2006). For them, negative contact had a consistently negative effect regarding their attitudes



and behaviors towards their own bodies. In contrast, the effects of positive contact ranged from neutral (drive for thinness) to mildly *negative* (body-checking and fat talk). However, positive contact did appear to have a small but positive effect for this group regarding their attitudes towards overweight people; those who reported more positive contact also reported slightly less dislike of fat people.

As outlined earlier, one possible reason why positive contact had different effects in this context than in other intergroup contexts is that the intergroup boundary is permeable: depending on fluctuations in their weight, people may find themselves slipping in or out of the stigmatized group. This is a qualitatively different intergroup context to those traditionally examined in the contact literature (race, sexuality) where group membership is largely static. Due to the strong social stigma attached to being overweight, it seems reasonable to suggest that the knowledge of permeability may not be a welcome prospect for those who are not overweight. For these people, contact with someone who is overweight may provide a reminder that this group is joinable, which may in turn trigger fear, self-consciousness, vigilance, and/or disgust toward the overweight.

These results have implications for other derogated and permeable groups, such as the elderly, those who are divorced, and those who are unemployed. It could be that the fear of joining a derogated and permeable group – predominantly where one has little or no control over whether one will join it - may influence how even positive contact with these groups influences attitudes towards them. These results also have implications for interventions aiming to reduce prejudice against the overweight. Potentially, increasing contact between overweight and average-weight people may not be as effective at reducing weight bias as is contact between opposite race interaction partners at reducing racism, for example. Specifically, we would suggest

that interventions should aim to reduce the amount of negative contact between overweight and 'normal'-weight people.

It should be noted, though, that the current story is not entirely pessimistic. For ingroup members (i.e., high-BMI participants), positive contact was beneficial in reducing prejudice towards their own group, and in reducing signs of self-consciousness and vigilance around their weight (i.e., drive for thinness, body-checking). These results are encouraging, as they suggest that those who are overweight may find benefits from engaging with their group membership. For people who are overweight, having positive contact with others who are overweight might be protective against body image concerns, and potentially even buffer the effects of weight bias that they face. In line with past work on how ethnic identification can help to defend members of racial minority groups from discrimination (Branscombe et al., 1999; Miller & MacIntosh, 1999), future studies could examine the strength of overweight people's group-based identification. It may be that for them, identifying with others who are overweight may lead to decreased internalized prejudice and self-criticism.

The pattern that emerged was clear. For overweight people, positive contact with fellow overweight people was associated with decreased drive for thinness and body-checking behavior. Extrapolating from this, it could be argued that the positive effects of contact among high-BMI individuals may encourage overweight people to find comfort in their weight, and potentially reduce the likelihood that they would take action to lose weight. However, research has indicated that people who are overweight *and* feel positive about their bodies often report increased well-being, improved confidence in performing exercise activities, and improved relationships with food. Interestingly, this positivity can also lead to weight stabilization or weight

loss (Dickins, Thomas, King, Lewis, & Holland, 2012). As such, it is unlikely that any positive benefits that may be experienced when overweight people have high levels of positive contact with other overweight people would lead to weight gain. Rather, it may have the reverse effect (if any).

### **Limitations**

Of course, cross-sectional data cannot be interpreted to present causal information. We have proposed a directional model in which contact influences prejudice. It is also possible, however, that the extent to which we are vigilant around our own bodies and are prejudiced against overweight people may feed back into how we interpret contact with them as positive or negative. It should also be noted that past research has demonstrated that the relationship between contact and prejudice does appear to be bidirectional and cyclical (Barlow, Louis, & Hewstone, 2009; Binder et al., 2009). As such we anticipate that it is likely that increased anti-fat attitudes may lead to more negative contact, and vice versa. It is unclear, however, how this reverse causal argument could be extended to some of our results; it is unlikely that increased body-checking and fat talk among low-BMI participants would lead them to seek out positive contact with overweight people.

Another limitation is the use of BMI as a measure of body fat. Studies have demonstrated that BMI may not be the most effective measure of adiposity, as it does not distinguish between those who are heavy because they are overweight or because they are muscular (Snijder, van Dam, Visser, & Seidell, 2006). Future studies should use a different method for assessing body fat, such as measuring weight circumference or using imaging techniques (Snijder et al., 2006).

### **Summary and conclusions**

This paper provides the first evidence that the day-to-day interactions that we have with those who are overweight are linked to how we view them as a group, as well as how we view ourselves. This study adds nuance to the weight bias literature by showing that for those who are thin- to 'normal'-weight, positive contact with those who are overweight may not always lead to positive results. This study also provides some encouragement, however, suggesting that for those who are overweight, positive relationships with other overweight people may lead to healthy outcomes.

Note:

<sup>1</sup>In the interest of brevity, the word 'overweight' is used to encompass both overweight and obese people

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