

Research Note

# Might an overweight waitress make you eat more? How the body type of others is sufficient to alter our food consumption

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## Abstract

This paper investigates how people's food choices can be shaped by the body type of others around them. Using a professionally constructed obesity prosthesis, we show that the body type of a (confederate) server in a taste test study was sufficient to alter both the quantity (Experiment 1) and specific choices (Experiment 2) participants made but that chronic dieters and non-dieters exhibited opposite effects. While non-dieters ate more snacks when the server was thin, dieters ate more when the server was heavy. Dieters were also more persuaded by a heavy (vs. a thin) server, choosing both a healthy and unhealthy snack more often when she recommended it to them. We suggest these results may be attributable to identification with the server.

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Rising obesity rates are a critical concern in almost every developed country. In the United States, approximately 66% of adults and nearly one-third of preschoolers are overweight or obese (NHANES, 2004). An increase in consumption is largely blamed for this epidemic, and consumers make over 200 food choices per day. Such choices are affected by numerous contextual cues (Wansink, 2006), and thus it is important to understand how these cues affect decision-making. Studies have found that depending on the situation, social influence can have either a facilitating or attenuating effect on eating behavior (see Herman, Roth, & Polivy, 2003). Specifically, many studies have shown that the portion size one individual chooses can impact the quantity that others consume.

## Body types and consumption

While we know that others' choices can impact what we eat, might the body type of these others be sufficient to alter our consumption? McFerran, Dahl, Fitzsimons, and Morales (in press) examined how the interaction of another consumer's body type and food selection influences what we choose ourselves. Using a model of anchoring and adjustment, they found that when another consumer chose a large portion, participants in their study chose less when the other consumer was obese than when she was thin. Conversely, when the other consumer chose a small portion, participants selected a larger portion when the other was obese than when she was thin.

However, what has not yet been examined is how others whose consumption is *unobserved* might also affect what we eat. For instance, might the mere presence of an obese (versus a slender) server influence you to consume more (or less) food? What if she recommended an indulgent choice (e.g., chocolate lava cake) versus something healthy (e.g., steamed vegetables)? Might this change what you order and ultimately consume?

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Since we are more likely to be in proximity to obese individuals than we are to observe their actual consumption, this is an important question. Past research has shown that the mere presence of others can impact behavior (Argo, Dahl, & Manchanda, 2005; Zhou & Soman, 2003). The current research provides the first experimental evidence that the mere body type of a social presence (e.g., a server) can impact both how much and the types of food people eat, in counter-intuitive ways.

While some research claims obesity is socially contagious (Christakis & Fowler, 2007; although see Cohen-Cole & Fletcher, 2008 for a rebuttal), other work suggests people want to avoid overeating if it is linked with an undesirable outgroup (Berger & Rand, 2008). Since being thin is an ideal body standard in many societies, but obesity – associated with unhealthy eating and over consumption – is a stigma that most wish to avoid (Crandall, 1994), it is reasonable to predict that a heavier server might lead to less consumption (Berger & Rand, 2008) and should be less persuasive when recommending specific food choices. Indeed, research consistently shows more attractive people (such as thinner females) are more persuasive, suggesting people are more likely to follow their recommendations (e.g., Eagly, Ashmore, Makhijani, & Longo, 1991). However, past research has shown that dieters (restrained eaters) and non-dieters differ substantially in their food choices.

## Dieting

The dieting industry is now worth over \$40 billion annually in the US alone and approximately one in four people is on a diet (Business Week, 2006; Scott, Nowlis, Mandel, & Morales, 2008). Substantial research has shown behavioral differences between chronic dieters and non-dieters. For instance, Scott, et al. (2008) found dieters eat more rather than less from bite-sized food in small packages. In addition, dieters eat more (versus less) in anticipation of an impending diet, following a “preload” of calories, or after exposure to a food aroma (see Herman & Polivy, 2004); this behavior is known as a “backfire effect.” Thus, unlike non-dieters, this research suggests dieters may actually increase their food consumption when with obese others, or be *more* influenced by an obese service provider’s recommendation. We argue that the body type of another individual may act as a relevant cue for food consumption to both dieters and non-dieters since one’s body type can lead to inferences about the food choices s/he makes.

## Priming and identification

Our predictions are grounded in research that shows people’s behavior can be shaped by exposure to stimuli that may occur incidentally in the environment (Chartrand, 2005; Dijksterhuis & Bargh, 2001; Wheeler & Petty, 2001). This research posits that behavior is guided by the activation of associated constructs in memory and can occur outside of conscious awareness (Bargh & Chartrand, 1999). However, an individual’s personal associations with the prime can moderate the effects it has on behavior. For example, Wheeler and Berger (2007) found that a shopping prime led men to choose more purpose-driven

activities (e.g., taking a direct route on a trip), whereas the same prime led women to choose more possibility-driven activities (wandering around a city), consistent with the different associations that “shopping” activated for men versus women. People’s reactions to primes are determined in part by their personal identification (or perceived similarity) with the primed construct, resulting in assimilation towards similar primes but contrasting away from dissimilar primes (Mussweiler, Rüter, & Epstude, 2004a; for an excellent discussion on identity, see Oyserman, 2009). Since chronic dieters feel a constant desire to lose weight, it is possible that they identify more with those who are overweight or obese (rather than thin), resulting in assimilation towards behaviors associated with obesity (eating more) and selecting food choices that they explicitly recommend. However, non-dieters should assimilate to a greater degree towards a thin (vs. obese) server, resulting in the opposite effects.

The relationship between server body type and the food consumption choices people make was tested in two studies. The same confederate was used in both “thin” and “obese” conditions and was the same ethnicity as the vast majority of the participants. To manipulate body type, a professionally constructed obesity prosthesis was worn by the confederate (see Fig. 1). The suit was custom designed for the confederate by an Academy Award®-winning costume studio. Her natural height was 5 feet 2 inches (157.5 cm), weight was 105 lb (47.6 kg), with a BMI of 19.2 (on the low end of normal, but not underweight), and she wore clothing size 00. With the suit on, she appeared approximately 180 lb (81.8 kg, BMI approximately 33) and wore a size 16, making her appear obese. Identical clothes were tailored in both small (to fit her natural body type) and large (over the prosthesis) sizes to ensure the strictest internal consistency, and different sets of clothes were chosen at random for each session.

## Experiment 1

### Participants and procedure

Eighty female students participated for \$10 remuneration. Females have been shown to be more sensitive to social comparisons regarding body type (Trampe, Stapel, & Siero, 2007), and following previous research in this domain (Smeesters & Mandel, 2006), we focused only on women. We used a mixed design with one manipulated factor (server body type: thin vs. obese) and a measured variable for restrained eating (dieting), which was measured with a 10-item scale (Herman & Polivy, 1980), including items such as “How often are you dieting?” ( $\alpha = .79$ ) (Fig. 2).

Participants were invited to a study on “taste testing” and were presented two bite-sized snacks (chocolate chip cookies or sugar-glazed rice cakes) by the confederate server. The snacks were almost identical in diameter, and twenty-five pieces of each were on separate plates. Participants were told to choose a snack to answer questions about and they could eat as many of their chosen snack as they wished. Participants made their selection, ate their snacks, and completed a survey containing measures of restrained



Fig. 1. The confederate server with and without the prosthesis.

eating (dieting) orientation, body mass index (BMI), a suspicion probe, and a manipulation check. To manipulate server body type, the obesity prosthesis was worn by the confederate in the obese (but not thin) condition. In both experiments, the effects held irrespective of participants' own BMI and no participants were suspicious that the server's obesity was not genuine.

### Results

A manipulation check assessed the body type of the confederate, measured on three seven-point scales (−3 to +3): “The server in charge of this experiment is” (very overweight/very

underweight; very obese/very thin; very fat/very skinny,  $\alpha = .92$ ). The server was perceived to be heavier when she was in the prosthesis ( $M = -0.60$ ) than when she was not ( $M = 1.03$ ),  $F(1,76) = 50.18$ ,  $p < .01$ , but this was not moderated by dieting orientation.

A logistic regression analysis showed that snack choice did not differ as a function of dieting, server body type, or their interaction (all  $ps > .26$ ). Hierarchical regression was used to test quantity consumed (Aiken & West, 1991). Results revealed only a significant interaction,  $\beta = -.25$ ,  $t = 2.18$ ,  $p = .03$ . The pattern showed that dieters ate more snacks when the server was heavy ( $M = 7.41$ ) versus thin ( $M = 5.00$ ), but non-dieters ate more when she was thin ( $M = 7.41$ ) than when she was heavy

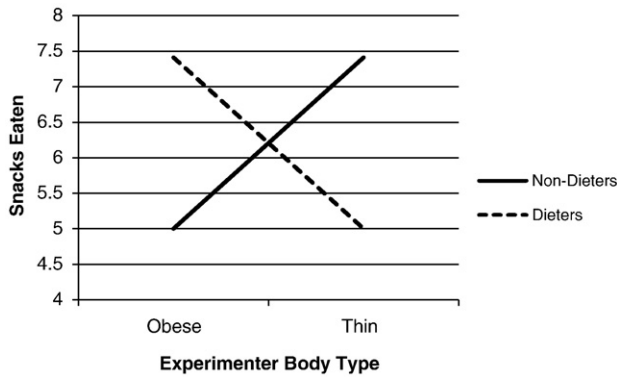


Fig. 2. Experiment 1. Snacks eaten by dieting orientation and experimenter body type.

( $M=5.00$ ),<sup>1</sup> consistent with differing reactions to the prime for dieters and non-dieters. While non-dieters showed effects consistent with assimilating towards the thin server and contrasting away from the obese server, dieters showed the opposite effect. More generally, this suggests that consumers will assimilate towards stereotypical behaviors that are consistent with a prime.

We initially proposed that personal identification with a prime (i.e., the server) is the underlying process driving these effects. Although this mechanism was not directly tested in experiment 1, we ran an additional follow-up study to provide preliminary evidence that this is indeed a plausible explanation for our findings. Three-hundred and eighty-one university students tested the prediction that dieters identify more with the obese server than non-dieters, while non-dieters identify more with the thin server. Participants were told to imagine they were at a restaurant and were shown a picture of their server. The server's picture was manipulated between subjects to be either thin or obese, using the images shot from the front in Fig. 1. Participants rated the extent to which they identified with the server: "I feel I can identify with the server" (1=not at all; 7=very much). The same regression analysis was used to test our hypotheses, with gender being treated as a control variable. Consistent with the results of experiment 1, we found an interaction between dieting orientation and server body type,  $\beta=-.33$ ,  $t=2.38$ ,  $p=.02$ .<sup>2</sup> Means estimated at  $\pm 1$  standard deviation on the dieting scale showed that when the server was obese, dieters ( $M=2.08$ ) identified with her to a greater degree than non-dieters ( $M=1.49$ ). However, when the server was thin, the pattern of results was in the opposite direction, with non-dieters ( $M=3.00$ ) identifying with her to a greater degree than dieters ( $M=2.80$ ).<sup>3</sup> Interestingly, while the interaction effect

<sup>1</sup> Simple slopes analysis (following Aiken and West, 1991) at one standard deviation above and below the mean for dieting showed the identical cross-over pattern: while non-dieters ate more when the waitress was thin than when she was obese  $b=-5.81$ ,  $SE=2.91$ ,  $t=2.00$ ,  $p<.05$ , dieters did the opposite, eating more when the waitress was obese than when she was thin  $b=5.60$ ,  $SE=2.93$ ,  $t=-1.91$ ,  $p<.06$ .

<sup>2</sup> Non-dieters slope  $b=1.48$ ,  $SE=.51$ ,  $t=2.89$ ,  $p<.01$ ; dieters slope  $b=.78$ ,  $SE=.24$ ,  $t=3.20$ ,  $p<.01$ .

<sup>3</sup> If gender was included as a factor it did not moderate the results, showing that both genders identified with the obese (or thin) experimenter in the same manner given the same dieting orientation.

shows *relative* differences among dieters and non-dieters, there was also a main effect such that both dieters and non-dieters alike reported higher levels of identification with the thin server, an outcome that may be due to the different procedure or the fact that the identification question was explicit, whereas the true social comparison process underlying assimilation and contrast can occur outside of conscious awareness (e.g., Blanton & Stapel, 2008).

## Experiment 2

### Participants and procedure

Experiment 2 was designed to test if the types of foods dieters choose in addition to the quantity consumed might also be altered solely by a server's body type, in a manner supportive of our theorizing. Specifically, we investigated whether identification with a server could also change food choice as it altered consumption in experiment 1. Identification with the person making a recommendation is a key factor in determining persuasion (Brock, 1965; Woodside & Davenport, 1974). Since our results suggest that dieters and non-dieters differ in the cues with which they identify but not the assimilation and contrast process they employ, we recruited a sample consisting only of female dieters to show that dieters are *more* likely to choose an option recommended by an obese (versus a thin) server. While previous research has shown that thin, attractive people are more persuasive overall (and thus non-dieters should choose their recommendations more frequently than those made by an obese person), our theorizing suggests that because dieters identify more with the obese (versus the thin) server, we should expect that the obese server will be more, rather than less, persuasive with this target population. Sixty-eight female university students, all of whom indicated that they were currently dieting or had been in the past year, participated in experiment 2. Procedures followed experiment 1, except the server also recommended choosing one of the snacks, either a healthy choice (carrots) or an unhealthy one (cookies), depending on condition. Thus, a 2 (server body type: thin vs. obese)  $\times$  2 (recommended healthy vs. unhealthy snack) between-subjects design was utilized.

### Results

The manipulation check (same items as Experiment 1,  $\alpha=.95$ ) was significant  $F(1,64)=83.93$ ,  $p<.01$ , with participants indicating the server appeared heavier in the prosthesis ( $M=-0.89$ ) than without it ( $M=1.17$ ), and did not interact with her recommendation.

A logistic regression analysis with snack choice as the outcome variable and server body type, recommendation, and their interaction revealed only a significant interaction effect (Wald=3.90,  $p<.05$ ): when cookies were recommended, dieters chose cookies more often when the server was heavy than when she was thin (73% vs. 53%), but when carrots were recommended, they selected cookies with a greater frequency when she was thin than when she was heavy (53% vs. 79%). In

other words, participants selected the recommended choice relatively more often when the server was obese (59%) than when she was thin (36%).

## General discussion

In two experiments using a novel methodology, we demonstrate that how much we eat, as well as our specific food choices, can be altered merely by the body type of those serving us. Our results were consistent with both a priming explanation based on identification as well as the backfire effect found previously in research involving chronic dieters. In experiment 1, rather than decreasing consumption, for dieters an obese server actually *increased* the quantity of food consumed. This finding is important, clarifying past research that is equivocal on how obese others might influence our consumption. Experiment 2 replicates the influential effect of body type in the domain of recommendations, while also identifying a boundary condition of the physical attractiveness stereotype. Instead of shunning the suggestion of the obese server, dieters were *more* persuaded by her than a thin server, choosing both the healthy and the unhealthy snack relatively more often when she recommended it. Together these results augment the literature on how characteristics stereotypically associated with a group and the service they provide can impact perceptions and choices. Our results echo those of others who show benefits can accrue to the firm from greater diversity among its service providers (e.g., [Matta & Folkes, 2005](#)), as we find that for dieters, a recommendation from a heavier server was generally chosen more often than if she was thin.

Admittedly, the specific mechanism underlying this priming effect is only speculative. While our findings are consistent with an explanation based on identification, we do not have direct causal evidence from which we can draw final conclusions. Another possible explanation for our effects is that the server's body type primes different goals for dieters and non-dieters. For instance, perhaps dieters look for permission to self-regulate, and seeing an obese server achieves this goal. On the other hand, seeing an obese server could be a reminder to reduce consumption to avoid becoming overweight. In either case, whether our (or another mechanism) explains the effects, understanding whether the outcomes are the result of deliberate versus nonconscious processes, or whether the persuasion effect found for dieters is limited to the food domain remain fruitful avenues for future investigation. While some research has begun to show differences in eating behavior or reactions to body types as a function of cognitive load (e.g., [Häfner & Trampe, 2009](#); [Ward & Mann, 2000](#)), this area has little integration with the research on spontaneous social comparison ([Blanton & Stapel, 2008](#); [Mussweiler, Rüter, & Epstude, 2004b](#)), visual processing ([Wyer, Hung, & Jiang, 2009](#)), or nonconscious goal activation ([Bargh, Gollwitzer, Lee-Chai, Barndollar, & Troetschel, 2001](#)).

Although using the obesity prosthesis allowed us to isolate the effects to the server's body type alone, a limitation in using it is that participants could not know the server. Some evidence suggests that consumers eat differently with people they know

(see [Herman et al., 2003](#)). This has implications for our identification explanation as well, as people should identify (and therefore assimilate towards) those that they are closer to personally. Other ways in which identification or similarity could be constructed or attenuated even among an identical prime should also be examined, as these may moderate our effects (e.g., [Häfner, 2004](#)). Future research should examine this distinction further as well as the role of the social other. For example, in our study, the "prime" was the server; what if she was a non-eating companion or the person you last saw as you entered the restaurant? The latter case we find of interest because in our study there is a link (implicit or explicit) between the food and the social other. What if this link did not exist? Might we eat differently if the restaurant was beside a plus-size clothing store or a weight-loss center? Understanding how the role of precommitment or implementation intentions (e.g., [Gollwitzer & Sheeran, 2009](#)) might moderate our effects would also be of value.

Although our experiments found no results for BMI, they must be viewed in light of recent work examining how consumer's own BMI can moderate how they perceive themselves in relation to the body types of others ([Smeesters & Mandel, 2006](#); [Smeesters, Mussweiler, & Mandel, in press](#)). Specifically, [Smeesters et al. \(in press\)](#) showed that individuals' social comparison processes were moderated by the body type of the perceiver. Their results are consistent with our explanation based on identification: people assimilated towards images seen as similar to the self but contrasted away from those viewed as dissimilar. Interestingly, we show that an identification-based explanation may extend to dieting orientation. While past research has sometimes shown that high and low BMI people exhibit different effects, other research has found that individual differences, such as restrained eating, body dissatisfaction, or appearance self esteem moderate the results but BMI does not. What is lacking in the literature, however, is a strong explanation disentangling when the mechanism is likely to be driven by physiological variables (like BMI, see [Smeesters et al., 2010](#)) and when they are driven by psychological mechanisms (including satisfaction with one's physical appearance, see [McFerran et al., 2010](#); [Trampe et al., 2007](#)). Understanding this at a theoretical level is especially important given that BMI and body satisfaction can have a weak or inverse relationship in many cases.

While the antecedents to obesity and how to address the epidemic remain active and contentious research questions, this research shows that the body type of others around us may be sufficient to alter our consumption choices. As a matter of maintaining a healthy body weight, these small "mindless" food influences have a larger impact than people realize on their own consumption ([Wansink, 2006](#)). Being aware of how these situational influences might impact our choices is important for ultimately correcting them and making healthier lifestyle decisions.

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