

“Seeing is Eating: How and When Activation of a Negative Stereotype Increases Instrumental  
Behavior”

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PRELIMINARY: PLEASE DO NOT CITE OR QUOTE WITHOUT PERMISSIONS

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In four studies we examine the effect of a social stereotype prime on instrumental behavior. Exposure to a social stereotype can lead to an increase in a behavior that is perceived to be instrumental to membership in a negatively stereotyped group, in part by influencing involvement with an associated, competing goal. Importantly, increasing the accessibility of the competing goal or increasing the perceived instrumentality of the behavior moderates the behavioral effect of the social stereotype prime.

## INTRODUCTION

On the way to lunch Marilyn stops and chats with Cathy, who is about 20 pounds overweight. Will seeing someone overweight influence Marilyn's food choices when she decides what to eat for lunch? Will exposure to Cathy lead Marilyn to eat more than she would if she hadn't seen her overweight friend or is Marilyn likely to eat less after having seen Cathy? This research examines the question of how social stereotype activation influences instrumental behaviors, that is, behaviors that are perceived to increase the probability of joining a stereotyped group.

A substantial body of research on social stereotype activation reliably shows that exposure to someone in a stereotyped group influences related behavior. Generally, this research shows assimilation effects such that there is an increase in stereotype-consistent behaviors (for reviews see Dijksterhuis and Bargh 2001 and Wheeler and Petty 2001). A classic example showed that exposure to the elderly led young study participants to walk more slowly than those who were not exposed to the elderly stereotyped group (Bargh, Chen and Burrows 1996). Interestingly, despite the significant amount of research demonstrating stereotype prime-to-behavior effects, careful examination of the literature reveals a lack of research that investigates the effect of stereotype activation on instrumental behaviors. That is, whereas there is a great deal of research that shows that activation of both positive and negative (i.e., stigmatized) stereotypes influences behaviors associated with the stereotypes, the behaviors studied are not causally linked to membership in the stereotyped group. Since people typically are motivated to avoid being a member of a stigmatized group, this leads to the important question of whether activation of a negative stereotype will produce increases in instrumental behaviors, as has been shown with non-instrumental behaviors.

The primary objective of the research presented here is to examine the impact of activation of a negative stereotype on instrumental behavior. Specifically, we explore the impact of exposure to an overweight other on a consumer's own eating behavior. First, we examine whether activation of a negative stereotype increases behavior perceived to be instrumental to group membership. Second, we explore the way in which such an increase could arise. Specifically, does stereotype activation influence involvement with the associated competing goal that is counter to engaging in the instrumental behavior? Third, we ask whether increasing the accessibility of this competing goal can moderate the impact of activation of the negative stereotype. When a competing goal is accessible are consumers no longer influenced by social stereotype activation to increase the instrumental behavior? Lastly, we further examine the role of the instrumentality of the behavior, asking whether increasing the salience of the impact of the behavior on group membership limits the behavioral influence of negative stereotype activation.

The next section presents a theoretical discussion of stereotype activation effects, the differences between instrumental and non-instrumental behaviors, and the important role of motives and goals in consumer behavior. Four studies then demonstrate that exposure to a negative stereotype (someone overweight) can indeed increase instrumental behaviors (eating). Importantly, we find that negative stereotype exposure serves to decrease reported involvement with a competing goal (health involvement) and that involvement with the competing goal partially mediates the effect of stereotype exposure on instrumental behavior (study 2). Further, accessibility of the competing goal (an individual's health goal) moderates the effect of the stereotype on instrumental behavior (study 3). Lastly, study 4 demonstrates that the salience of behavioral instrumentality moderates the impact of stereotype exposure on the instrumental behavior.

## THEORETICAL DEVELOPMENT

There are four steps in our theoretical development. First, we discuss stereotype activation effects on behaviors and current models of how such effects arise. Then we discuss differences between instrumental behaviors and the non-instrumental behaviors that have been studied in existing research. We next discuss how the accessibility of the competing goal could moderate the effect of stereotype activation on instrumental behavior. Lastly, we discuss how increasing the saliency of behavioral instrumentality could moderate the impact of stereotype activation on an instrumental behavior. The accessibility of the competing goal and the saliency of behavioral instrumentality are proposed to provide important theoretical and practical boundaries of the effect of negative stereotype activation on instrumental behaviors.

### **Stereotype Activation**

Stereotypes are traits, attributes, attitudes and behavioral tendencies that are associated with the members of a social category (e.g., Fiske and Taylor 1991; Hilton and Von Hippel 1996; Kunda 1999; Stangor and Lange 1994). Activation of a social stereotype refers to the increased accessibility of the set of associations with members of a particular social group. A number of studies have demonstrated that exposure to a category member can result in the automatic activation of stereotypic characteristics including traits, attributes, attitudes, and behavioral motivations (e.g., Blair and Banaji 1996; Devine 1989; Gilbert, Giesler and Morris 1995; Kawakami, Dion, and Dovidio 1998; Kawakami, Dovidio, and Dijksterhuis 2003). Research demonstrates that both conscious and nonconscious exposure to someone in person, by

a photograph or by description, who is a member of a stereotyped group, can activate the social category stereotype (e.g., Wheeler and Petty 2001).

Activation of social stereotypes can affect people's relevant behaviors. Research demonstrates that the activation of a variety of social stereotypes, including Asians, African Americans, the elderly, males, females, and more, influences associated behaviors, typically resulting in increased consistency with the activated stereotype, even when the stereotype and related behavior are somewhat negative (for reviews, see Dijksterhuis and Bargh 2001; Wheeler and Petty 2001). For example, college students' scores on general knowledge questions were decreased after exposure to a supermodel (Dijksterhuis and van Knippenberg 1998), and hostility was increased after exposure to photos of African Americans (Bargh et al. 1996). While there are several different specific processes proposed for how these effects arise, there is general agreement that assimilation effects occur because the active stereotype functions as a general framework for action, such that highly accessible constructs direct behavior (e.g., Dijksterhuis et al. 1998; Wheeler and Berger 2007). That is, attitudes, behaviors, and so on associated with the stereotype are accessible and thus influence actual behaviors.

Overall, research demonstrates that the associations made accessible by an activated stereotype typically produce behavior that is consistent with the stereotype. However, existing research has looked at behaviors that are *associated* with an activated social stereotype, but not ones that are *instrumental*, that is, causally linked, to group membership. For example, whereas walking slowly is associated with the elderly, the act of walking slowly does not cause a college student to become old. The lack of examination of instrumental behaviors may arise from the fact that the social groups that have been examined are most often ones in which group membership is deterministic. That is, people generally can not engage in behaviors that will

make them elderly (versus young), male (versus female), Asian, African American, Caucasian, etc. However, even when non-deterministic groups have been examined, the behaviors that are studied are not causally linked to group membership; for example, a low number of correct answers on Trivial Pursuits-type questions is not believed to increase one's probability of becoming a supermodel.

The examination of instrumental behaviors is important to further understand stereotype activation effects because of the motivational processes involved with these behaviors. The perceived causal linkages between instrumental behaviors and group membership raise the possibility that these behaviors are subject to self-regulation motivations (e.g., Shah, Kruglanski and Friedman 2003). That is, a consumer's attitudes toward group membership could influence the extent to which the consumer engages in an instrumental behavior. If a consumer wishes to become a member of a stereotyped group, she or he may be more motivated to engage in behavior perceived to be instrumental to group membership. Alternatively, a consumer is likely to be motivated to limit behaviors instrumental to membership in a negatively stereotyped group. This latter case is particularly interesting in that stereotype activation increases the accessibility of behaviors associated with the stereotype, including instrumental behaviors that conflict with the consumer's goal to avoid group membership.

It is thus possible that a consumer's underlying goal to avoid stereotype membership could limit the typical stereotype-behavior assimilation effect on instrumental behaviors. However, the behavioral outcome is dependent upon what is actually activated by a social stereotype prime. Social stereotypes are complex sets of associations, including human traits, attributes, attitudes, and behaviors (Hilton and Hippiel 1996). For example, exposure to the social category of skinheads has been shown to increase stated prejudiced attitudes (Kawakami et al.

2003). This effect occurred even though one can assume that many of the participants (undergraduates at a Dutch university) did not want to join the stereotyped group and, in fact, may have had the “competing goal” to be open minded that directly conflicts with the prejudiced attitudes that resulted from stereotype activation. Thus, it appears that part of negative stereotype activation includes attitudes that can be in conflict with an associated existing goal, such that involvement with this competing goal is decreased. That is, even though someone is motivated to avoid membership in a negatively stereotyped group, stereotype exposure activates attitudes consistent with the stereotype and thus inconsistent with the competing goal. Because the accessible attitudes direct behavioral responses, all else being equal, the active stereotype-consistent attitudes are likely to increase even instrumental behaviors.

However, as discussed above, consumers tend to hold goals that are counter to the attitudes activated by a negative social stereotype. For example, the overweight stereotype includes overeating and eating indulgent foods, concepts that run counter to consumers’ goals of maintaining a healthy weight. Thus, increasing the accessibility of the competing goal may inhibit the extent to which people engage in an instrumental behavior. That is, even when a social stereotype is active, if a goal that competes with the attitudes and behavioral motivations activated by the social stereotype is accessible, this goal may moderate the effect of stereotype activation on instrumental behaviors. Macrae and Johnston (1998; experiment 2) found that priming the concept of helpfulness increased the extent to which participants helped an experimenter except when participants knew they were running late for another experiment. Being timely to another experiment could be a goal that is counter to the primed concept being helpful when the behavior is taking the time to help the experimenter pick up spilled papers. We

propose that, similarly, increasing the accessibility of a competing goal could moderate the impact of social stereotype activation.

An additional factor that could impact the effect of the stereotype-behavior link is the perceived instrumentality of the behavior. As noted earlier, instrumental behaviors are those that are perceived to be causally linked to group membership. Increasing the saliency of the causal link could moderate the stereotype-behavior effect. That is, when the impact of the behavior on group membership is highly salient to a consumer, negative stereotype activation may not lead to the same increase of an instrumental behavior as when the instrumentality is less salient. For example, Johnston (2002) found that people mimicked the behavior of stigmatized others except when the behavior seemed to be causally-linked to the stigma; this may be because seeing the person engage in the behavior may have increased its perceived instrumentality.

Pulling together the ideas discussed, we present a framework for understanding the impact of social stereotype activation on instrumental behaviors. We propose that social stereotype activation can increase instrumental behavior, in part by impacting involvement with the associated competing goal. We further propose that the impact of stereotype activation on instrumental behaviors is moderated both by the accessibility of a competing goal and the saliency of the instrumentality of the behavior (see Figure 1).

We use the overweight stereotype and the instrumental behavior of eating to explore the proposed framework. Research confirms that there is a common stereotype of people who are overweight. While a few traits associated with being overweight are positive, such as jolly and friendly, the overweight stereotype is predominantly negative, including unhealthy, overeats, unfit, lazy, sloppy, inactive, undisciplined, and self-indulgent (e.g., Crandall 1994; Roehling 1999; Wertheim et al. 1997). These stereotypical beliefs have been well documented among the

general population, even among children as young as four (e.g., Cramer and Steinwert 1998), people who are themselves overweight or obese (e.g., Schwartz, Vartanian, Nosek and Brownell 2006), and health care providers (Price, Desmond, Krol, Snyder and O’Connell 1987). Overweight adults suffer stigmatization including workplace discrimination (Pagan and Davila 1997; Puhl and Brownell 2001).

Research indicates that desire not to be overweight is very common. Recent studies show that the majority of Americans would like to lose weight (NPD 2007). On any given day, about 29 percent of men and 44 percent of women in the U.S. are actively trying to lose weight, fueling a \$33 billion diet industry (Spake, 2004). Importantly, research shows that it is commonly believed that overeating and self-indulgence regarding food are causes of being overweight (e.g., Bacon, Scheltema and Robinson 2001). Overall, there is a societal belief that “getting fat results from a failure of willpower, a condition that could be remedied if obese people simply made a personal choice to eat less” (Spake 2004).

Given the negative overweight stereotype, the fact that many consumers would like to maintain a healthy weight in order to avoid being overweight, and the widespread belief that eating is an important cause of becoming overweight, the domain of overweight and eating is useful to explore our framework. Part of the overweight stereotype includes enjoyment of eating (an instrumental behavior) and low involvement with health and a healthy lifestyle. Exposure to someone overweight can thus increase eating. However, increasing accessibility of an individual’s health goals is likely to moderate the effect of overweight stereotype activation on eating behavior. We examine the overweight social stereotype in all of our studies and food choices as the associated instrumental behavior. We explore the impact of activation of the overweight stereotype on participants’ eating choices and involvement with health. Moreover,

we investigate the moderating impact of accessibility of the competing health goal and the salience of the instrumentality of eating to becoming overweight.

## **Overview of Studies**

A pretest verifies that exposure to someone overweight activates a negative overweight stereotype. This pretest is followed by four studies that explore the effects of priming an overweight stereotype on instrumental eating behavior. Study 1 establishes the basic effect that activation of a stereotyped group in which membership is undesired can increase behavior perceived to be instrumental to group membership. Study 2 investigates the process by which the increased instrumental behavior arises by examining involvement with the competing goal as well as attitudes toward the behavioral object. Study 3 further explores the role of the competing goal by manipulating competing goal accessibility. Study 4 investigates behavioral instrumentality, manipulating the salience of perceived instrumentality, i.e., the extent to which the behavior is perceived to lead to group membership. Overall, these studies provide evidence for the proposed framework.

### **PRETEST: VERIFYING THAT EXPOSURE TO SOMEONE OVERWEIGHT ACTIVATES AN OVERWEIGHT STEREOTYPE**

A pretest was conducted to investigate whether exposure to an overweight other increases the accessibility of overweight stereotypic associations. We used a typical priming paradigm in which participants were randomly assigned to either see an overweight person or not and were

later asked to complete a lexical-decision task (e.g., Kawakami, Young, Dovidio 2002). An effect of the prime condition on the speed with which participants respond to stereotypic, but not nonstereotypic, words is a standard method of indicating stereotype activation (e.g., Blair and Banaji (1996); Kawakami et al., 1998).

## **Method**

*Participants and design.* Fifty-seven undergraduate students from a large western university participated for class credit. The subjects' ages ranged from 19 to 25, 62% were male and 38% were female. A 2 (prime: overweight, none) X 2 (word type: nonstereotypic, stereotypic) mixed design where the priming condition was manipulated between subjects and the type of word to which subjects responded varied within subjects was used to test whether exposure to someone overweight activated an overweight stereotype.

*Procedure and stimulus materials.* Participants seated in individual cubicles were randomly assigned to one of two experimental conditions. Participants in the overweight prime condition were asked to write about a person in a photograph (pretested as overweight) for five minutes (instructions based on DeMarree, Wheeler and Petty 2005, study 1). After completion of that study, all participants in both the prime and no prime conditions participated in a word recognition study in which they looked at character strings on a computer screen and determined as quickly as they could whether the string was a word or a non-word. Prior to each word an asterisk appeared in the center of the screen for 300 ms, followed by a blank screen for 500 ms. A letter string then appeared and remained on the screen until the participant indicated whether it

was a word or non-word by using designated keys on the keyboard. After a practice session of 6 trials, participants responded to 32 test trials including 16 non-word letter strings (e.g., ninocefdt), eight nonstereotypic words (e.g., rectangle, briefcase, key) and eight overweight stereotype consistent words taken from earlier research (e.g., unhealthy, indulgent, fat). Upon completing the lexical-decision study, participants completed a funneled suspicion check (e.g., Bargh et al., 1996; Bargh and Chartrand 2000) and several demographic questions.

## **Results and Discussion**

Prior to analyzing the latencies for correct responses, we followed standard procedures to reduce variability in the response latency data (e.g., removing participants who did not follow instructions (2), were suspicious (3) and response latencies more than three standard deviations from the mean response time for each subject (< 2%); (Fazio 1990). The remaining latencies were subjected to a 2 (prime: overweight, none) X 2 (word type: nonstereotypic, overweight stereotypic) mixed-model analysis of variance with word type treated as a repeated measure. (There was no effect of gender, so only analyses without gender are reported).

As expected, the prime X word-type interaction was significant ( $F(2, 49) = 5.61, p < .05$ ). Participants who saw the picture of the overweight person in the first study responded significantly faster to overweight stereotypic words ( $M = 588$  ms) than did control participants who did not see the prime ( $M = 710$  ms;  $t(49) = 2.46, p < .05$ ). In contrast, there was no significant effect of prime condition on response times to nonstereotypic words ( $t(49) = 1.63, p > .12$ ). These results indicate that exposure to a picture of someone who was overweight activated an overweight stereotype.

## **STUDY 1: THE EFFECT OF SEEING SOMEONE OVERWEIGHT ON FOOD CHOICE**

Study 1 addresses the question of whether activation of a negative stereotype increases behavior perceived to be instrumental to group membership. This study examines whether exposure to a picture of someone overweight will increase eating choices, even though many consumers wish to avoid membership in the stereotyped group (i.e., do not wish to be overweight) and believe that the behavior (eating indulgent foods) is casually linked to group membership. As previously discussed, we predict that activating the overweight stereotype, by exposure to an overweight person, can influence food choice and eating behavior, even though these are associated with becoming overweight.

Following the tradition of much of the behavioral priming literature, this study was designed to minimize participants' awareness that the dependent variable was part of the study. Thus, a researcher went to a natural environment where people who were in the environment for their own reasons were asked to participate in a short survey. Embedded in the survey was one of three pictures that manipulated the prime condition. After completing the survey, participants could help themselves from a bowl of candy as a thank you for their help. The number of candies that each participant took was surreptitiously recorded and served as the dependent variable. We hypothesized that people would take more candies after being exposed to a picture of someone who was overweight than after exposure to a control.

### **Method**

*Participants and design.* Fifty-nine people walking through a building lobby at a large western university were recruited to participate in a short, anonymous survey. Participants were students, faculty, staff and visitors to the university; ages ranged from 18 to 69, 64% were male. A pretest ( $n = 37$ ) was conducted to identify pictures of women perceived to be overweight ( $M = 6.4$  on a 9-point weight scale) and healthy weight ( $M = 3.9$ ;  $t = 7.4$ ,  $p < .0001$ ). Participants were randomly assigned to one of three prime conditions. Each participant received a survey that included one of three pictures: the overweight woman; the healthy weight woman; or a lamp. The image of the lamp was used to provide a benchmark of behavior with no person prime.

*Procedure and stimulus materials.* A research assistant stood in the lobby and asked passersby if they would be willing to complete a short survey. Each person who agreed was handed a survey. The surveys had a cover page that allowed the researcher to remain blind to condition and contained the cover story and initial demographic questions (gender, age and affiliation).

Participants read that they were helping to calibrate pictures for use in subsequent studies. They were told that they would find a picture on the following page and were to answer a few short questions regarding the image. Upon turning the page they were exposed to one of the three pictures and asked to “list the first three things that come to your mind,” and to rate the picture on typicality, quality and clarity. They were instructed to close the survey booklet and return it to the research assistant. After a participant completed the questionnaire and handed back the survey, the assistant held out a bowl of candy and said, “Thank you for your time! Please help yourself.” Each bowl contained a predetermined number of chocolate candies; after the participant left the area, the research assistant unobtrusively counted the remaining candies and wrote the number of candies taken on the back of the questionnaire.

## Results

The dependent variable of interest in this study was the number of candies taken by each participant. The number of candies taken was analyzed as a function of prime, with age and affiliation (e.g., staff, faculty, undergraduates and visitors) as covariates. The results revealed a significant effect of prime on the number of candies taken ( $F(2, 52) = 3.88, p < .03$ ). In support of our predictions, those who were exposed to the image of an overweight person took significantly more candies ( $M = 2.2$ ) than either those in the healthy weight condition ( $M = 1.4, t = 2.65, p < .01$ ) or those in the neutral control condition ( $M = 1.5, t = 2.18, p < .03$ ). There was no difference in candies taken between those in the healthy weight and neutral prime conditions ( $t = .5, p > .5$ ).

## Discussion

These results, together with the pretest, reveal that activating a negative stereotype can lead to assimilation in a behavior that is believed to be instrumental to group membership. That is, when exposed to a person who is overweight, people took more candies compared to those who were exposed to either a neutral prime or a healthy weight prime (there was no effect of gender). One limitation to this study is that the measured behavior was the number of candies taken; we do not know whether the candies were actually eaten, although it is assumed that participants took the number of candies that they intended to eat. Additionally, because of the natural environment, study 1 does not include process measures. Study 2 is designed to

investigate the process that may give rise to the increase in instrumental behavior, and also examine actual eating.

## **STUDY 2: THE MEDIATING ROLE OF HEALTH INVOLVEMENT**

The purpose of study 2 was to replicate the effect of exposure to overweight others found in study 1 and explore how this effect arises. By moving into a lab setting, we were able to use actual food consumption as the dependent variable and measure variables to provide insight into the underlying process. In particular, we measured involvement with the competing health goal to see whether, as predicted, overweight stereotype activation influences involvement with the competing goal. Since we propose that one way in which activation of the overweight stereotype influences eating is by affecting involvement with the competing health goal, it was important to verify that “unhealthy” is part of the overweight stereotype, as found in earlier research. Thus, a pretest ( $n = 135$ ) was conducted in which participants saw eight pictures; four of healthy and four of overweight people. Participants rated each person on a 7-point scale from unhealthy to healthy and indicated perceived weight on an 18-point scale. Each of the four overweight people was perceived to have a higher weight than each of the four healthy weight people (all  $p$ 's < .0001). Importantly, all of the overweight people were rated as less healthy than all of the healthy weight people (all  $p$ 's < .0001). We also measure attitude toward the food item to examine the alternative hypothesis that, because the overweight stereotype includes liking for food, stereotype activation increases attitude toward the food, which drives increased food choice.

### **Method**

*Participants and design.* One hundred eighteen English-speaking students (average age 21, range from 18 to 38; 70% male/30% female) were recruited to participate in several studies. In an initial study, participants were randomly assigned to either an overweight or neutral prime condition. After completing that study, participants participated in two additional studies, counterbalanced for order. One study was an unrelated product response study, in which participants evaluated a variety of pictured products. The other study was a taste test for a new food item; this allowed examination of how much participants ate.

*Procedure and stimulus materials.* Participants were seated in private cubicles with a computer and writing space and were told that they would participate in several different studies. After signing a disclaimer and rating current level of hunger, participants were given a picture perception study with a cover story of the importance of understanding aspects of digital pictures. Participants were asked to look carefully at a few pictures and to, “be sure to absorb the use of colors, framing, etc. prior to answering the questions.” Each participant saw and responded to three pictures. Participants were randomly assigned to either the overweight prime condition, in which they saw one neutral picture and two pictures of overweight people from the pretest, or the neutral prime condition, in which they saw three neutral pictures; pictures in both conditions were counterbalanced for order. Each picture was displayed on the computer screen, participants wrote three things about the picture and then rated the color, typicality, quality, and clarity on five-point scales.

After completion of the picture evaluation study, participants were given two additional studies, an unrelated product study and a taste test, randomly counterbalanced for order between

sessions. The product study involved providing evaluations of nine products (e.g., Band Aids, sweatpants, a living room side table), and took about 5 minutes. When this study was first, this provided a break between the prime manipulation and the taste test, but also raised the possibility that the prime effect would diminish over the time period or, if a goal was activated, increase (Chartrand et al. 2009). However, no order effect was found, indicating that whether the taste test was presented following the picture study (the prime manipulation) or after a delay and distraction had no influence on the effect of the prime; we collapsed across order in all subsequent analyses.

The study that included the instrumental behavior dependent variable was introduced as a taste test of a new product. Participants were provided with a bowl of eight small cookies and asked to eat at least one and answer several questions. Participants indicated attitude toward the cookies on three, seven-point scales (bad/good, dislike/like, negative/positive). The attitude toward the cookie measures were highly correlated ( $\alpha = .89$ ) and averaged to form one attitude score. After the taste test, participants completed a final questionnaire that included a four-item measure of health involvement (e.g., “I reflect a lot about my health,”  $\alpha = .85$ ; Gould 1988), indicating the individual’s involvement with the competing health goal, demographic information, and a funneled suspicion check. The number of cookies each participant ate was recorded after all participants were thanked and left the lab.

## **Results**

*Food Consumption.* Responses from three participants who failed to follow instructions and four participants who indicated a connection between the priming task and the taste test in the suspicion measure were removed. We examined the number of cookies actually consumed

during the taste test. As predicted, individuals in the overweight versus the neutral prime condition ate more cookies during the taste test ( $2.6 > 1.9$ ;  $F(2,108) = 7.38, p < .01$ ). Thus, the effect of the stereotype prime seen in study 1 on the amount of food taken was replicated on the amount of food actually consumed. (Gender had no significant effects and so is not discussed).

*Process.* The next step was to examine possible routes by which the prime influenced the instrumental eating behavior. To test the idea that exposure to a member of the social group influenced the associated motivation, we examined the effect of prime condition on reported health involvement. Condition significantly impacted reported health involvement; participants exposed to the overweight pictures reported lower involvement with their health (Mean = 3.5) than participants in the neutral picture condition (Mean = 3.9;  $F(1, 106) = 4.31, p < .04$ ).

An alternative explanation is that exposure to the overweight prime results in more positive attitudes towards food, which then leads to increased consumption. Thus, we also examined the impact of prime condition on attitude toward the food item. Prime did not significantly impact attitude toward the cookies (MeanOw = 5.33; MeanControl = 5.30;  $F < 1$ ) and so this is not examined further.

Given the significant effects of prime on both the instrumental eating behavior and health involvement, we examined whether reported health involvement mediated the effect of the stereotype exposure on food consumption. Following Baron and Kenny (1986), we analyzed the effect of condition on the number of cookies eaten including health involvement as a covariate. This analysis showed a significant effect of both the stereotype condition ( $F(1, 105) = 5.6, p < .02$ ) and health involvement ( $F(1, 105) = 7.15, p < .01$ ) on the number of cookies eaten. Importantly, the effect of the stereotype condition was significantly reduced by the inclusion of health involvement (Sobel = 1.78,  $p < .04$ ), indicating partial mediation.

## **Discussion**

The results of study 2 suggest that exposure to an overweight person activates an overweight stereotype that includes low health involvement. The overweight stereotype and low health involvement lead to increased food consumption. Given that the overweight person prime resulted in lower health involvement, consistent with an overweight stereotype, we next explore the potential moderating effect of increasing accessibility of a consumer's individual health motivation. That is, does increasing accessibility of the competing goal buffer a consumer against the effects of social stereotype activation? Increasing accessibility of the competing health goal may moderate the impact of the overweight stereotype on instrumental eating behavior. Study 3 was designed to examine this possibility.

### **STUDY 3: THE MODERATING EFFECT OF COMPETING GOAL ACCESSIBILITY**

The purpose of study 3 was to replicate the basic effect of stereotype activation on an instrumental behavior and to provide support for the proposed role of the competing goal. Study 2 showed that activation of the overweight stereotype included lower health involvement. Study 3 was designed to increase health goal accessibility to examine the extent to which this offsets the effect of social stereotype activation on instrumental behavior. Thus, this study included three tasks presented as three separate studies. A prime manipulation and a goal accessibility manipulation were counterbalanced for order prior to a taste test.

*Design and Procedure.* One hundred and seven women from a business subject pool participated for partial course credit. Only women were recruited for study 3 because, while the first two studies showed no effects of gender, there were more men than women in those studies and it is possible that differences in gender matching result in additional variance such that matching the gender of participants and photos is desirable (we thank a reviewer for this suggestion). Participants were randomly assigned to a 2 (goal accessibility: low vs. high) X 2 (prime: healthy weight vs. overweight) X 2 (order: goal first vs. prime first) between-subjects design.

The same basic study procedure as used in study 2 was followed. After participants were seated in individual cubicles, they participated in two studies counterbalanced for order. Goal accessibility was manipulated in a study in which participants were asked to write for three minutes either about the geography of their home state (health goal accessibility low; from Wheeler and Berger 2007 or their health goals (health goal accessibility high). Social stereotype prime was manipulated in a picture perception study in which participants saw two pictures: a tree and either a healthy weight or an overweight woman. A pretest,  $n = 66$ , verified weight perceptions ( $M_{\text{healthy weight}} = 6.9$ ,  $M_{\text{overweight}} = 12.9$ ,  $F(1, 64) = 161.99$ ,  $p < .0001$ ). Participants evaluated each picture on five-point scales of color, originality, quality and clarity. A taste test, following the procedure used in study 2, was presented next. This was followed by a suspicion check and background information questionnaire.

*Results.* We first ran analyses with a full 2 (stereotype prime) X 2 (goal accessibility) X 2 (order) ANOVA. Order showed no significant effects, so we collapsed across order for all other analyses. Analysis of the number of cookies eaten during the taste test by a 2 (stereotype prime) X 2 (goal accessibility) ANOVA revealed a significant effect of stereotype prime ( $F(1, 102) = 4.83$ ,  $p < .03$ ), qualified by a significant interaction ( $F(1, 102) = 6.47$ ,  $p < .01$ ; Figure 2). When

health goal accessibility was low, stereotype prime significantly influenced the number of cookies eaten ( $t = 3.38, p < .001$ ); participants ate fewer cookies after exposure to the healthy weight ( $M = 2.1$ ) than the overweight person ( $M = 3.7$ ). When, however, health goal accessibility was high, participants ate the same number of cookies regardless of the stereotype prime ( $M_{HW} = 2.5; M_{OW} = 2.4; t = .24$ ).

Insert Figure 2 about here.

## **Discussion**

Study 3 replicates the basic finding of a stereotype prime effect on an instrumental behavior seen in studies 1 and 2. Participants ate more indulgent food after exposure to an overweight than a healthy weight person when health goal accessibility was not increased. Importantly, increasing the accessibility of an individual's health goal buffered the effect of the stereotype prime on eating. When health goal accessibility was heightened, participants ate the same number of cookies regardless of whether they were exposed to a healthy or overweight person. This demonstrates an important boundary condition on the effect of stereotype activation.

At this point, this research shows three important things. First, activation of a stereotype can increase an instrumental behavior, i.e., seeing a picture of an overweight person increases eating. Second, the effect of stereotype activation appears to be driven in part by influencing involvement with a goal associated with the stereotype, i.e., the competing health goal. Third, increasing accessibility of an individually-held competing goal, i.e., a health goal, moderates the effect of the stereotype on the instrumental behavior. Thus, we now turn to further examination of the role of behavioral instrumentality in the stereotype-to-behavior effect. As discussed earlier, an instrumental behavior is one that is perceived to be causal to group membership. Thus,

it is possible that a consumer will engage in self control of an instrumental behavior in order to reduce the likelihood of joining a negatively stereotyped group. In the first three studies, we see an increase in the instrumental behavior after exposure to a group member, except in the case when competing health goals were made more accessible. Now we ask whether increasing the saliency of the instrumentality of the behavior will moderate the stereotype prime effect. That is, when the role of the instrumental behavior is highly salient, will the effect of stereotype activation on the behavior be limited? Study 4 is designed to examine this question.

#### **STUDY 4: THE MODERATING EFFECT OF PERCEIVED INSTRUMENTALITY**

The primary purpose of study 4 is to investigate the role of instrumentality in the stereotype-behavior relationship. We manipulate the saliency of the instrumentality of eating to being overweight to allow examination of any moderating effect. This study also provides an additional replication of the basic effect of overweight stereotype activation on amount eaten with a new set of stimuli.

*Design and Procedure.* This study used the same basic method to manipulate stereotype activation as the other three studies. In a digital picture study, participants saw a picture of a tree, followed either by a picture of a healthy weight woman, or a picture of an overweight woman. The saliency of the behavior instrumentality was manipulated by whether the person in the picture was eating or not eating. Research on mimicry has found that participants did not mimic eating behavior of an obese confederate, although a healthy weight confederate's eating behavior was mimicked (Johnston 2002). The lack of mimicry of a behavior associated with becoming a member of the stigmatized group suggests that seeing the behavior being performed by a

stereotyped person may increase the saliency of the instrumental role of the behavior. Similarly, McFerrin (?) finds that exposure to an obese person ordering a large amount of food leads to less food being order compared to when a thin person orders a large amount of food. This is further supported by research demonstrating a lay belief in causal linkages between co-occurring events (Shanks 1995). A picture of an overweight person eating should thus increase the salience of the idea that eating can lead to weight gain. A pretest ( $n = 63$ ) showed that a picture of an overweight woman eating an indulgent food resulted in a perception that overweight people have less self control ( $M = 1.9$ ) than a picture of the same overweight woman not eating ( $M = 2.4$ ). Thus, pictures of the same overweight woman eating or not eating were used to manipulate instrumentality salience.

Participants, 119 women from a business school subject pool, were randomly assigned to a 2 (stereotype exposure: healthy weight vs. overweight) X 2 (instrumentality salience: not eating vs. eating) between-subject design. Participants in individual cubicles first completed a study on digital picture quality; this included both the stereotype and instrumentality salience manipulations. A taste test, following the same procedure as studies 2 and 3, provided participants with the opportunity to eat indulgent food (cookies). Participants also completed a filler task, a manipulation check, demographics, and a suspicion check.

*Results.* After the taste test was completed, participants completed a manipulation check in which they were asked to write in the first thing that came to mind to complete, “I believe that the primary reason people are overweight is \_\_\_\_\_.” Answers were coded as eating related or not. This binary variable was submitted to a 2 X 2 logistic regression, which showed only a significant interaction effect (Wald Chi-square (1, 118) = 4.6,  $p < .03$ ). Follow-up analysis revealed a higher proportion of eating-related reasons after seeing a picture of an overweight

woman eating (73%) than not eating (48%; Chi-square (1, 57) = 3.8,  $p < .05$ ). The fact that participants were more likely to think of eating as the primary cause of becoming overweight after seeing the picture of the overweight woman eating versus not eating supports the successful manipulation of instrumentality salience.

The number of cookies eaten was submitted to a 2 (stereotype) X 2 (instrumentality salience) ANOVA. This revealed a significant effect of the stereotype condition ( $F(1, 115) = 4.89, p < .03$ ), qualified by a significant interaction effect ( $F(1, 115) = 4.07, p < .05$ ). Participants in the overweight picture, not eating condition ate significantly more cookies ( $M = 2.6$ ) than those in the overweight, eating condition ( $M = 1.9, t = 2.4, p < .02$ ), the healthy weight, not eating condition ( $M = 1.8, t = 2.99, p < .003$ ), and the healthy weight, eating condition ( $M = 1.9, t = 2.5, p < .01$ ).

These results provide another replication, with a different set of stereotype members, of the basic effect of overweight stereotype activation on the instrumental behavior of eating. In addition, this shows that increasing the saliency of the instrumentality of the behavior serves as a boundary condition for the effect. The differences between eating and not eating of healthy weight versus overweight people provides support that it is not just something about seeing someone eating that modifies the prime effect, but that it is the association between the specific stereotyped group, i.e., the overweight, and the instrumentality of the behavior, i.e., eating. That is, participants' eating behavior is primed by seeing someone overweight, but the stereotype effect is limited by seeing someone overweight eating.

## **GENERAL DISCUSSION**

The studies reported in this research provide a variety of important findings. Four studies demonstrate that exposure to someone in a negatively stereotyped group can lead to increases in behavior that is perceived to be instrumental to group membership. Using four different examples of stereotyped group members with two different controls – 1) neutral or 2) people not from the stereotyped group – we demonstrate that the active social stereotype can lead to increases in instrumental behavior. We examine the process underlying this effect, showing that stereotype activation includes involvement with an associated, competing goal and that this temporary goal involvement partially mediates the effect of the stereotype prime on the instrumental behavior (study 2). Further support for the important role of goals is provided by showing that increased accessibility of a competing goal attenuates the effect of the stereotype prime (study 3). Study 4 demonstrates that increasing the saliency of the behavioral instrumentality can similarly attenuate the effect of the stereotype prime on instrumental behavior.

### **Implications for Research on Stereotype Activation Effects**

The current results provide two important contributions to the stereotype activation literature. First, this research provides the first examination of the effect of stereotype activation on instrumental behaviors. Four studies demonstrate clear increases in behaviors that are considered instrumental to membership in a negatively stereotyped group. While previous work has shown increases in behaviors associated with group membership (e.g., Wheeler and Petty 2001) this has not previously been tested with behaviors that are perceived to be causally linked to group membership. The fact that a negative stereotype prime can increase instrumental

behaviors is an important addition to our understanding of stereotype effects and the powerful influence of stereotype activation.

Second, our work provides the first evidence of the important finding that stereotype effects on behavior can be moderated by environmental factors. The results of study 4 show that increasing the saliency of the instrumentality of the behavior to membership in the negatively stereotyped group attenuates the effect of the stereotype prime; this moderating effect is based on the instrumentality of the behavior, demonstrating that it is important to expand consideration of priming effects to these types of behaviors. In study 3, we show that increasing the accessibility of a competing goal significantly attenuates the effect of a stereotype prime. This is an interesting result that can have important implications for the stereotype prime literature. An interesting question that our research does not address is the extent to which this effect of goals is limited to goals that directly compete with the potential outcome of the instrumental behavior. That is, would increasing the accessibility of competing goals have the same effect on behaviors that are associated with, but not instrumental to, the stereotyped group? This is an intriguing question for future research.

### **Implications for Consumers and Consumption**

While this research contributes to the theoretical literature on stereotype prime effects, the specific domain used, overweight and eating, is of very important practical importance. The number of consumers who are overweight and obese is rapidly increasing worldwide. In the U.S, the percentage of adult consumers considered to be overweight (defined as body-mass index  $\geq$  25) increased from 47% in 1980 to 67% in 2004 (National Center for Health Statistics 2006).

This increase is worrisome because being overweight is associated with a variety of adverse health consequences, including Type II diabetes, heart disease, and some types of cancers (CDC 2007).

While it is clear that people are gaining weight because of an imbalance in the equation of energy consumed to energy expended, reasons for the precipitous increase in this imbalance remain unclear. Recent research emphasizes a need to explore social and environmental factors that influence weight gain. Intriguing recent research proposes that there are person-to-person influences on weight gain, showing that individuals' social networks influence the probability of gaining weight (Christakis and Fowler 2007). Specifically, examination of a network of 12,067 people showed that a person's chance of becoming obese significantly increased when a close other (e.g., friend, sibling, or spouse) became obese. This research provides intriguing support for social influences on weight gain, but the nature of the data set precludes examination of how these influences might occur. The findings of our research are consistent with the demonstration that being overweight spreads through social networks. In fact, it is possible that behavioral assimilation arising from seeing other people who are overweight could be one way in which the demonstrated social network effects arise. People see, both in person and in photos, the people with whom they have close social ties. When those close others are overweight, the research presented here suggests that stereotype activation would lead to increased food consumption relative to when close others are healthy weight.

The results of our research provide insight into the important question of consumers' eating behavior. This is one of few pieces of research to show that seeing people who are overweight influences a consumer's own decisions about eating. One important aspect of our research is that the effects appear with both women and men. Studies 1 and 2 sampled both men

and women. These studies show the effect of overweight stereotype activation for both, with no significant effects of gender. Since, because of the pools of participants, these two studies sampled male majorities, studies 3 and 4 limited participation to women. Importantly, the basic effect of stereotype activation was the same across all four studies. In all four studies exposure to someone overweight lead to increases in food choice and consumption. The majority of consumer research on food and eating restricts participants to women (e.g., Smeesters and Mandel 2006). This is done to limit variance on important variables, such as restrained eating. However, given that both men and women are gaining weight (although the percentage of overweight and obese women is currently higher than the percentage of men), it is important for research to provide insight into whether factors influence eating choices of men and women in the same way.

These results may also be relevant to those interested in decreasing overweight bias. While it is clear that prejudice based on weight is undesirable, it is less clear how to moderate such bias. It has been noted that the inclusion of people who are overweight and obese in the popular media is much lower than the incidence in the population and it has been suggested that such inclusion should be increased (e.g., Greenberg et al. 2002). However, thought should be given to potential unintended consequences. Consideration of whether increased exposure to overweight people in the media increases the potential of weight gain among viewers is warranted. Further research into the effects of greater representation of people who are overweight on a variety of variables including bias, attitudes and eating behaviors is needed at this time. In particular, consideration should be given to whether showing someone who is overweight, for example in an ad, would have the ironic effect of causing consumers to eat more.

## **Implications for Future Research**

Future research could examine the extent to which both the stereotype prime and the goal and instrumentality effects are automatic and/or unconscious. We did not directly test the extent to which the observed stereotype effects were unconscious. However, research suggests that stereotype activation often does operate outside of awareness (Bargh, Chen et al. 1996) and that goals can be pursued nonconsciously (e.g., Bargh 2002; Chartrand et al. 2008). In our research, funneled suspicion checks in all studies indicated that few participants were suspicious of connections between the stereotype prime and behavioral studies; the few that indicated suspicion were dropped from analysis. We also conducted a study to examine consumers' naïve theories about the influence of exposure to overweight others on their own behavior. We conducted a short scenario study of 19 consumers in which we asked people to imagine that they saw someone overweight and that after seeing the person, they were offered some chocolates or cookies. The survey then asked, "What do you think that you would be most likely to do?" None of the respondents selected the answer, "I would take more than if I hadn't seen the overweight person." Rather, 42.1% said that they would take the same amount as they would without the exposure, 26.3% said that they would take some, but less than if they had not seen the overweight person, and 31.6% said that they would not take any. Given these results, it appears that consumers are unaware of the possibility that others' overweight could increase their own eating and will be especially vulnerable to the behavioral effects of seeing overweight others because they do not see a need for vigilance.

More research on instrumental behaviors would be important as well. The studies in this research examine just one instrumental behavior, eating, for one negatively stereotyped group,

the overweight. It would be useful to examine additional instrumental behaviors for additional groups. Within the specific stereotype, it would also be interesting to examine additional behaviors. For example, the behavior examined here is consumption of indulgent foods; it could be useful to see whether the overweight stereotype is such that eating of all types of foods, healthy as well as indulgent, would increase, or whether activation of the overweight stereotype would have different effects on consumption of healthy foods. Likewise, future research could examine other types of instrumental behaviors, such as exercising.

## **CONCLUSION**

Our research strongly suggests that consumers should be aware of the effects of environmental cues on their own behaviors. Consumers who are trying to lose weight or maintain a healthy weight should not put a picture of someone overweight on their refrigerators; instead, they should provide themselves with reminders of their health goals. There is a growing literature on the important effects of subtle environmental factors on consumers' behavior. For example, Brian Wansink and his colleagues demonstrate a variety of environmental factors that "mindlessly" influence consumers' eating behavior (see Wansink 2006). Similarly, there is a growing literature on unconscious effects on a wide variety of behaviors (e.g., Dijksterhuis et al. 2007). The research reported here fits into these research streams, showing that the people consumers see subtly influence their behaviors in ways that would be likely to surprise many consumers. Importantly, this research also provides evidence that other subtle factors can limit the effects. This serves to highlight that the world presents a rich and complex environment and further research on how factors interact with one another is important at this time.

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Figure 1

Framework of Stereotype Activation Impact on Instrumental Behaviors

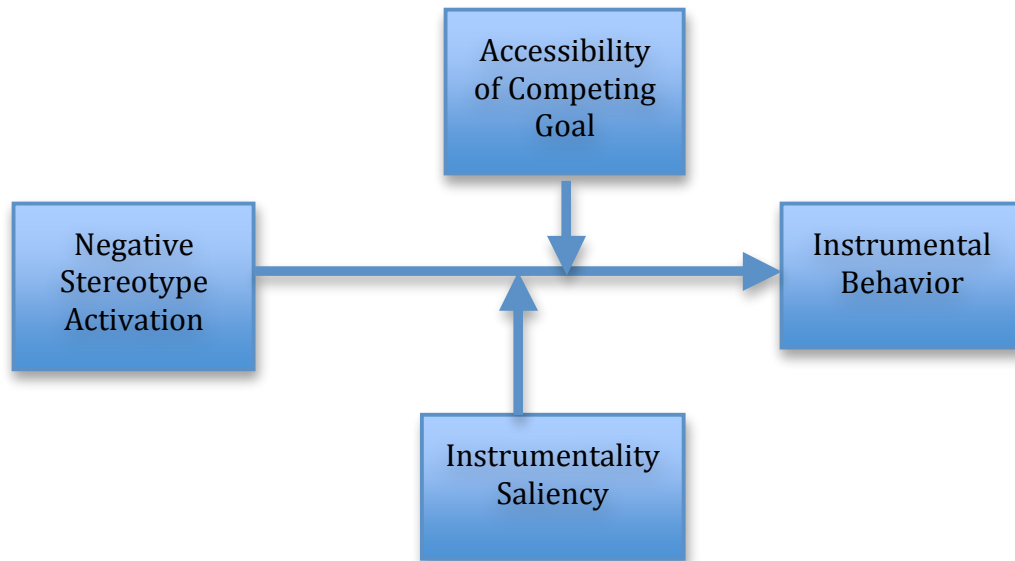
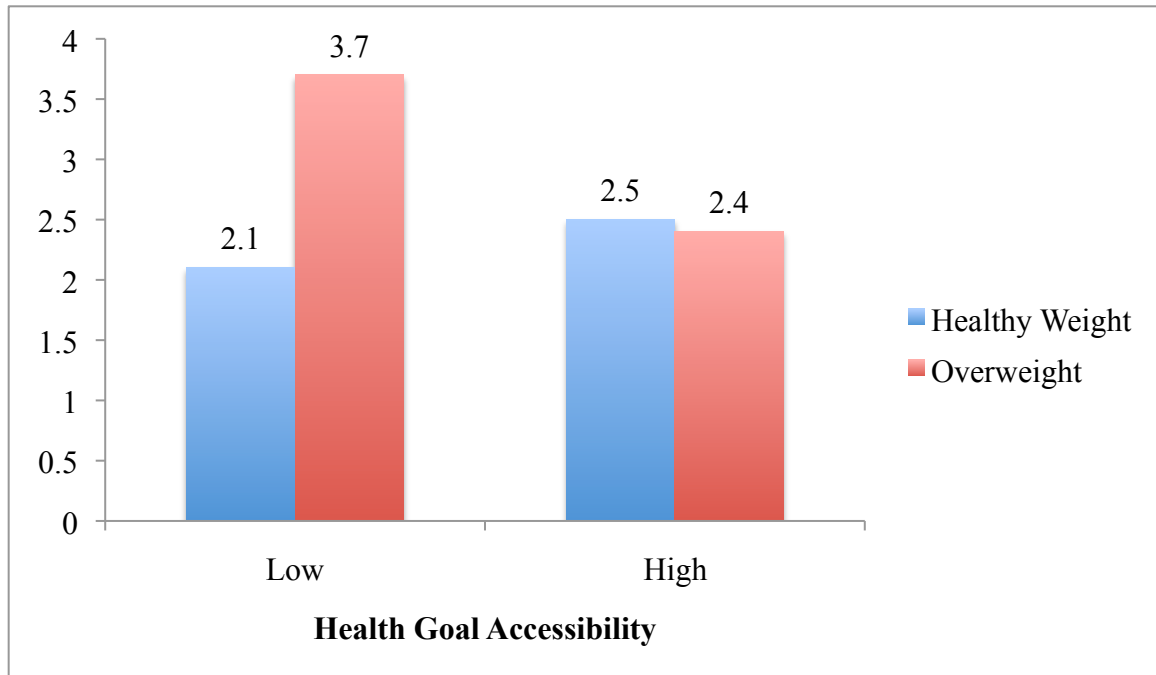


Figure 2

Study 3: The Influence of Stereotype Exposure and Health Goal Accessibility on Cookies Eaten



Pretest Results for Perceived Weight of Healthy Weight and Overweight Photos



M = 7



M = 12.4

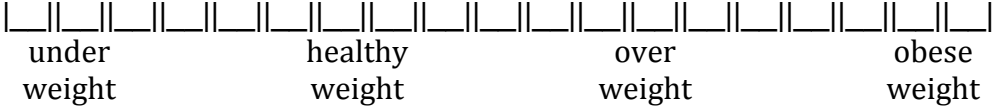


Figure X

Pretest Results: Perceived Weight of People in Images for Study 3

