AWARENESS OF IMPLICIT BIAS: WHAT MOTIVATES BEHAVIOR CHANGE?

by

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Certificate of Approval

This is to certify that the accompanying thesis by Noah Henry-Darwish and Courtney Sanford has been accepted in partial fulfillment of the requirements for graduation with Honors in Psychology.

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Abstract

Informing people who believe themselves to be low-prejudiced that they are implicitly biased against certain groups may cause them to experience cognitive dissonance, feelings of guilt that arise when perceived attitudes are inconsistent with the self-concept. To reduce this guilt, people often change their behaviors to be consistent with their self-concept. In the present study, we examined the effect of giving participants predetermined feedback following a weight-based Implicit Association Test (IAT). Participants were either given no feedback, low bias feedback, or high bias feedback. We then administered a value-affirmation task, where participants were either given a self-affirmation or other-affirmation task, to determine if motivation to change evaluation of overweight and thin job applicants comes from the self or from a desire for social acceptability. We hypothesized that if participants experienced cognitive dissonance after being told that they were biased against overweight people, they would be less likely to exhibit explicit bias against the overweight target in the job-hiring task. Furthermore, we hypothesized that self-affirmation could limit behavior change. Our results indicate that while making people aware of implicit biases may help to reduce prejudiced behavior, perceptions of social expectations also affect explicit behaviors toward targeted groups.

Awareness of implicit bias: What motivates behavior change?

In the analysis and study of human social behavior, research on individual attitudes provides important information about the ways in which human beings operate and make decisions about others. Attitudes are characterized by the positive or negative feelings that human beings have toward other people, places, things, or events (Greenwald & Banaji, 1995). Attitudes that represent a shared set of beliefs or assumptions characterizing a specific group of people are often referred to as stereotypes; stereotypes can guide behavior and actions toward a target group of individuals (Greenwald & Banaji, 1995). Prejudice and discrimination are often the result of negative stereotypes about a certain group of individuals. These individuals can then become targets of prejudice and discrimination by those who hold these attitudes.

As a result of current social norms against expressing prejudice, various legal protections for targeted individuals, and organizations dedicated to advocacy and representation, members of discriminated groups experience less overt and explicit prejudice than they have in the past (Rudman, Feinberg, & Fairchild, 2002). This change in discrimination patterns may be motivated by an increase in individual desires for social approval or acceptance; people are less likely to explicitly discriminate against a target group if they think it will reflect poorly on them (Hall & Derryberry, 2010). However, even though explicitly prejudiced behaviors and actions are less common, discrimination and prejudice still exist against certain social groups. One example of this is in the workplace, where wage payment and employment status has been shown to vary significantly depending on the employee's race, sex, weight, or

other demographic factors (Agerström & Rooth, 2011; Pager & Shepherd, 2008; Perry & Gunderson, 2011). The persistence of discrimination, prejudice, and inequality against target groups can be partially explained by underlying attitudes that people may not be aware of.

Historically, psychologists have used explicit measures, such as introspection and self-report scales, to discover and evaluate the attitudes that people have. While this information has been valuable to psychological research in the study of behavior and of the ways that people perceive themselves, it focuses entirely on the conscious and knowable attitudes that people have. In doing so, research on explicit attitudes neglects to evaluate the ways that attitudes and perceptions may operate unconsciously, or outside the range of what can be reported or known by the person displaying the attitude.

In order to address the need for a theory that more comprehensively studies and evaluates human attitudes and behaviors, Greenwald and Banaji (1995) introduced the theory of implicit social cognition. The study of implicit cognition focuses on the way in which attitudes, perceptions, and behaviors toward others are based on our own past experiences and knowledge about various groups of people. Implicit cognition and behaviors are differentiated from conscious or explicit cognition by the idea that an individual can not know or may not be consciously aware of the way in which their past experiences influence their judgments or perceptions of target groups or individuals (Greenwald & Banaji, 1995). These implicit attitudes and biases can manifest as implicit stereotypes, which are often acted upon even by people who might believe that they explicitly deny or reject them (Greenwald & Banaji, 1995). In order to

learn more about the effects of the implicit beliefs and feelings that people have, a broadly applicable and externally valid method for discovering and evaluating implicit attitudes was needed.

The development of the Implicit Association Test (IAT) gave psychologists an empirical method to begin exploring how exactly these implicit biases and prejudices might be measured (Greenwald, McGhee, & Schwartz, 1998). A computerized, timed word association task, the IAT measures the response times of participants in the pairing of words expressing positive or negative feelings with words that are associated with the target group being studied. Based on a comparison of response times between group association with positive and negative words, the IAT determines whether participants have an automatic preference for one group over another. For example, slower associations of a positive attribute (good) with a target group (overweight) would suggest an implicit bias against that target group. Using a quick response measure such as the IAT is valuable when studying implicit bias because it relies on data from participants' automatic responses. Automatic response tasks elicit responses that reflect a less deliberate thought process, as participants are required to use readily available information such as attitudes and stereotypes to inform their decision (Agerström & Rooth, 2011). Using this information, researchers can evaluate the impulsive attitudes and internalized stereotypes of participants based on results that are not influenced by participants' concerns about social desirability (Agerström & Rooth, 2011). The validity of the IAT as a test of implicit cognition has been repeatedly supported in literature assessing its psychometric properties (Greenwald, Smith, Siriam, Bar-Anan, & Nosek, 2009; Nosek, Greenwald, & Banaji, 2005).

One of the goals of studying implicit cognition and attitudes is to determine their relationship with and influence on behavior. Research has shown that the tendency to categorize people based on certain characteristics is human nature; infants as young as three months old can distinguish between faces of different races, and actually show a preference for faces of their own race (Kelly et al., 2005). Therefore, it is important to understand how these implicit attitudes influence daily behavior. Use of the IAT in research on implicit associations has provided important information on the extent and scope of implicit biases that people hold and has demonstrated a correlation between implicit attitudes and behaviors (Bessenoff & Sherman, 2000; Hall & Derryberry, 2010). For example, McConnell and Leibold (2001) found that participants who showed stronger negative attitudes against Black people on a race-IAT tended to have more negative interactions with a Black experimenter than a White experimenter. Implicit attitudes and biases are present in everyday evaluations and decision-making processes. If spontaneous or automatic reactions manifest explicitly into behaviors or decisions, these implicit biases are likely affecting important decisions that are made about the lives of a variety of individuals.

Although individuals may be unaware of prejudiced behaviors against target groups, they may still be uncomfortable learning that they hold prejudiced attitudes against a certain social group. In research on implicit racism, when individuals exhibiting low explicit bias and high implicit bias were informed that they held negative implicit attitudes, they experienced increased levels of guilt and discomfort (Son Hing, Li, & Zanna, 2002). The discomfort that individuals feel when they learn that they may be implicitly prejudiced is an important factor to look at when studying

strategies for reducing discrimination. Research has shown that when participants experience guilt and discomfort when informed of their negative implicit attitudes, they tend to show a reduction in prejudiced behavior in a post-test evaluation (Son Hing et al., 2002). This finding demonstrates that individuals may make a conscious effort to reduce their prejudices when given information that is inconsistent with their beliefs of themselves as non-biased and non-prejudiced individuals (Plant & Devine, 2009).

In order to explain why individuals experience guilt after receiving information that challenges their beliefs about themselves, Leon Festinger (1957) offered the theory of cognitive dissonance. Festinger (1962) proposed that when individuals come to know various things that are not psychologically consistent with one another, they try to make them more consistent. Festinger (1957) applies this theory to social cognition by arguing that when individuals learn information about themselves that differs from what they believe to be true, they experience dissonance, or a level of disbelief. Just experiencing dissonance is so uncomfortable and disorienting that people will actively avoid situations that would increase these feelings (Festinger, 1957). Additionally, dissonance is a strong enough negative experience that individuals will actually be motivated to change their behaviors in an effort to achieve consonance, where behaviors align with values (Festinger, 1957). Contrary to "general wisdom" that people will change their behaviors once they change their attitudes, Festinger's (1957) explanation of dissonance suggests that in order to change an individual's attitudes, one must first change his/her behavior (Aronson, 1992). Aronson (1992) advanced the cognitive dissonance framework by suggesting that dissonance theory is most accurate and applicable to changing behavior and attitudes when dissonant cognitions involve

the self-concept of an individual. In other words, individuals are most likely to experience guilt from dissonance when they engage in a behavior that violates their self-concept.

For those individuals who do not believe themselves to be prejudiced against a target group, learning that they harbor implicit biases could be enough to induce dissonance. For many people, discovering information about a potential bias that they have would violate their self-concept enough to cause them to actively work toward reducing biased behavior. Feelings of guilt, however, do not always arise from the experience of dissonance; there are multiple underlying factors involved in the guilt-activating process. An individual's experience of guilt can either come from the violation of an internal moral expectation of oneself or from a concern about violating external social norms and acceptable behaviors (Plant & Devine, 2009). Individuals who experience dissonance as a result of threats to their self-concept actually work to reduce prejudice in all aspects of their lives, regardless of whether or not it is visible to others (Plant & Devine, 2009). On the other hand, individuals who are motivated to change behavior as a result of social pressures and societal expectations only attempt to reduce prejudices that can be seen by others, holding strong to their internal biases (Plant & Devine, 2009). Individuals who are intrinsically motivated to preserve their self-concept tend to demonstrate a longer lasting reduction of prejudiced behavior than those who change their behavior only to hide prejudice from others (Plant & Devine, 2009). This is because the intrinsically motivated person recognizes prejudice as inconsistent with his or her self-concept, experiences dissonance, and has a strong desire to reduce prejudiced behavior and attitudes. In contrast, a reduction in the level

of prejudiced behavior for the socially motivated individual is only temporary, as they care only to eliminate prejudice that is visible to the outside world.

Although research shows that prejudiced attitudes and behaviors can be reduced, there are some cases in which the reduction of prejudiced behavior never occurs. As stated previously, challenging the self-concept leads to dissonance and negative self-esteem; a subsequent reduction in dissonance occurs as a result of the guilt that an individual feels in this process. If, however, an individual is able to restore their self-esteem prior to the reduction of dissonance, the guilt that they feel from the challenge to the self-concept is reduced, and prejudiced behaviors and attitudes are allowed to continue. Research has shown that for individuals whose self-concept is threatened and whose self-esteem is reduced, allowing them to complete tasks that reaffirm core values can even eliminate the dissonance that they experience altogether (Steele & Liu, 1983). These value-affirmation tasks, which include completing value-relevant scales and writing exercises about important values, often have little to do with the threat to the individual's self-concept, yet they are still able to reduce defensiveness, dissonance, and an individual's desire to change his or her behavior (Sherman et al., 2009). When facing a serious threat to self-concept, self-affirmation tasks can reduce the dissonance that an individual experiences and, as a result, reduces their desire to change prejudiced behaviors. Those individuals who experience guilt because of societal influences, however, might be unaffected by a value affirmation task and still change their behavior due to a desire to fit in. The literature on self-esteem maintenance and the role of value-affirmation exercises in reducing dissonance

in judgment and behavior is important to the study of how individual experiences and implicit biases can be manipulated.

Implicit Bias Against Overweight Individuals

Although social desirability concerns and changing social norms may have reduced explicit bias for many social groups, certain other groups continue to feel the effects of implicit and explicit prejudice and discrimination. Stigma research has recently brought increased attention to the negative experiences of overweight individuals as a result of stereotypes and discrimination that they face (Agerström & Rooth, 2011). Research shows that prejudice and discrimination against overweight individuals affects their self-esteem, financial stability, and employment potential (Agerström & Rooth, 2011; Bessenoff & Sherman, 2000; Vartanian, 2010; Wang, Brownell, & Wadden, 2004). Negative implicit and explicit attitudes against the overweight population have been observed in children, adults, health care professionals, and even among overweight people themselves (Vartanian, 2010).

Although obesity stigma research demonstrates similarities to past stigmas of other target groups, the persistence of an anti-fat bias in society demonstrates the failure of social desirability concerns to reduce this bias. Education and other efforts to inform and change individual beliefs about the lack of control that people have over their weight has also been unsuccessful in reducing negative attitudes against overweight individuals (Vartanian, 2010). Existing research on weight stigma, the negative experiences of overweight individuals, and the fact that this social group is not explicitly protected under employment non-discrimination laws in the United States can be taken together to reflect an anti-fat bias that society has not yet overcome

(Agerström & Rooth, 2011). However, the fact remains that many individuals find discrimination of any form to be morally wrong. Based on this information and on findings about implicit bias, it is unclear whether or not people experience more guilt about their prejudiced attitudes due to their desire to appeal to social norms and not appear prejudiced against overweight individuals, or if the guilt experienced is caused by a desire to reduce dissonant cognitions that arise when the individual does not believe him/herself to be prejudiced. In order to explore this question further, we can use a value-affirmation task to discover why people experience guilt for certain prejudices and what might motivate them to change their behavior, using the overweight population as a target group.

Study Overview and Hypotheses

This study used a 3 (Feedback: High Bias, Low Bias, No Feedback) x 2 (Affirmation: Self-affirmation Task, Other-affirmation Task) x 2 (Weight of job applicant: overweight, thin) mixed design to determine the effect of informing people of their implicit biases on judgments of an overweight target. Participants completed a weight-based IAT, after which they received predetermined feedback indicating that they had a high or low degree of implicit weight bias. After receiving the feedback, half of the participants were given the chance to self-affirm prior to completing a job selection task where they evaluated two job applicants for a fictitious position; one applicant was overweight. They were then asked to evaluate the applicants and to rank them on various measures, including likelihood to hire.

Based on previous research we hypothesized that if participants were not made aware of a suggested implicit bias or prejudice against overweight people, then they

should be less likely to hire an overweight individual due to traditional weight bias. If participants were made aware of a significant implicit bias or prejudice against overweight people, then we believed that they should be more likely to hire an overweight individual to compensate for the guilt that they experienced when their self-esteem was threatened. If, however, participants were made aware of results suggesting a significant implicit bias or prejudice against overweight people, but were then given a value (self-affirmation) task, then we hypothesized that they would be less likely to hire an overweight individual because the dissonance they experienced would have been accounted for and remedied. This would only be the case if the dissonance that participants experience was caused by a threat to the self-concept, as opposed to a desire to behave in a socially acceptable way.

Method

Participants

The present study included 73 college-aged students from a small, private liberal arts college; 63 women and 10 men participated in our study. The average weight of participants was 141 pounds, and the average height was 5 ft 7 in. The average Body Mass Index (BMI) was 22, falling into the normal weight category.

Materials

The present study was conducted on a computer using MediaLab and DirectRT software (Jarvis, 2010). Participants were first given a weight-based Implicit Association Test (IAT) (Greenwald et al., 1998). The IAT uses reaction time data to measure how participants differentially associated between two target-concepts (obese and thin) and an attribute (good or bad). For the purposes of our study, we manipulated

participants' perceptions of their anti-fat bias by giving them predetermined IAT

feedback. Typically, IAT's are used to suggest biases or prejudices that participants

hold but may not be consciously aware of. In order to determine these biases, IAT

reaction time data is used under the assumption that faster response times represent

stronger associations, and slower response times represent weaker associations. For

example, if it takes longer for an individual to pair the word *good* with a word

describing an obese individual than it does for them to pair the same word with a word

describing a person of average weight, or if an individual is faster to pair the word *bad*

with a word describing an obese individual, this would indicate a potential anti-obesity

implicit bias.

In each computerized task, the target-concept categories and the attribute

dimension categories were presented in the upper left and right hand corners of the

screen, and the word to be categorized was presented in the center of the screen.

Participants performed the category discrimination task by pressing one of two keys (*e* or

i) on a computer keyboard to indicate whether the word in the center fit in the category

on the left (*e* key) or on the right (*i* key). In the first task, participants sorted 4 pleasant

attribute words (e.g. joy, love, happy) and 4 unpleasant attribute words (e.g. pain, terrible,

agony) into one of two attribute categories (good and bad). In the second task of this

weight-based IAT, participants sorted 4 target-concept words describing overweight

individuals (e.g. fat, heavy, overweight) and 4 target-concept words describing

individuals of average weight (e.g. thin, skinny, slender) into one of two attribute

categories (obese and average weight). In the third task, these two tasks were combined

so that two categories now shared each side of the computer screen and corresponding

computer response key, and participants continued to sort the target-concept and the

words into their respective categories. In this third task, the target category *obese* shared a

response key and side of the screen with the attribute category *good*, whereas the target

category *thin* shared a response key with the attribute category *bad*. The fourth task was

similar to the first task, but required participants to relearn how to sort the target-concept

categories with reverse response key mapping; participants who had previously mapped

the target-concept category *obese* to the *e* key now mapped it to the *i* key, and switched

the category *thin* to the *e* key. The fifth task was a paired category response, similar to the

third task, but the category pairings were reversed so that the target category *obese* shared

a response key with the attribute category *bad*, and the target category *thin* shared a

response key with the attribute category *good*.

The present study also consisted of a value affirmation activity (Appendix A),

which served as our self-esteem booster. Participants were asked to rank 11 values and

personal characteristics on a scale from 1 to 11, with 1 being the value they found most

important and 11 being the one that they found least important. The values and

personal characteristics evaluated were justice, sense of humor, relationships with

friends/families, spontaneity, courage, modesty, musical appreciation, respect,

creativity, honesty, and romantic values (Sherman et al., 2009). In the self-relevant

value affirmation task, participants were then asked to write a short essay about why

their highest ranked value was the most important one to them, and to describe a

situation in which it would be meaningful to them. In the other-relevant value

affirmation task, participants were asked to write about their 9th-ranked value, and how

it could be important for an average peer of the same age. Participants were instructed that the computer would automatically move on after two minutes.

Next, participants read a job description for a Real Estate Agent and evaluated two fictitious job applications, with photos of the applicants included, for this position (Appendix B). Job applicants were all female in the study because overweight women tend to experience greater employment discrimination than overweight men (Brochu & Morrison, 2007; Pingitore, Dugoni, Tindale, & Spring, 1994). Other demographic information and job qualifications, including education level, work and volunteer experience, leadership experience, and special skills and proficiencies, were held constant between the two applications. The only notable difference between applicants was that one applicant pictured was thin and one applicant pictured was overweight.

We determined what pictures to include with the applications by performing a pilot experiment prior to our study. Individuals were shown pictures of seven overweight individuals and seven thin individuals and were asked to evaluate the individuals on five areas to ensure the pictures were fairly standardized in all areas except for weight (Appendix C). These areas included how attractive the pictured individuals were, how neat the individuals' appearance was, how friendly they appeared, how likable they were, and how the participants would describe the weight of the women pictured. Participants were also asked to estimate the height, weight, and age of the women pictured. We used this feedback to determine which four pictures should be used in our study. Using two pictures, one of an average weight woman and one of an overweight woman, we created similar pairs based on the ratings that participants gave on levels of attractiveness, likability, neatness, and friendliness;

paired pictures did not differ significantly between ratings of the applicant's likability, neatness, and friendliness. Although we conducted a pilot study for confounding variables of perceived attributes from the photographs, we still wanted to reduce the likelihood that our results would be affected by differences in the pictures other than the applicant's weight. To do so, we used two pairs of pictures (each pair consisted of one overweight and one thin person) for the actual study so that half of the participants were looking at one pair and the other half were given another pair.

Participants were given a questionnaire asking them to rate each of the applicants on a 1-7 Likert-type scale based on several characteristics (Appendix D). Some of the characteristics used in ratings were productive/nonproductive, decisive/indecisive, and attractive/unattractive. Participants were then asked to rate their likelihood of hiring the applicant on a 7-point scale where 1 = definitely not hire and 7 = definitely hire. An overall mean application index was made by finding the sum of the ratings of each applicant (Pingitore et al., 1994). In order to ensure a positive correlation between the questions on the seven-item application evaluation questionnaire, which would allow us to sum the scores and create an application index rating, we ran a reliability analysis on the seven questions for both the thin job applicant and the overweight job applicant. When we ran reliability analysis we found that the items in the questionnaire were highly reliable for both the thin job applicant (Cronbach's α = .85) and for the overweight job applicant (Cronbach's α = .78). In our statistical analyses, we chose to look at applicant perceived attractiveness separately from the other questions on the application because we believed that attractiveness would be the main area where explicit weight bias might be more prominent.

The study also included a post-evaluation questionnaire to assess the level of dissonance that participants experienced (Appendix E). Participants were asked to indicate on a 7-point scale their agreement with statements about the feedback they received on the IAT. The statements that they responded to indicated that they felt surprised, guilty, defensive, or that the feedback they received accurately represented their attitudes toward overweight individuals.

Procedure

When participants arrived, they were seated at a computer and asked to read an information sheet. The information sheet told participants that we were studying the way that people evaluate others, informed them that they may choose to end the study at any time, and assured them that all information would be kept confidential. After participants read over the information sheet, they took a computerized, weight-based Implicit Association Test (IAT). After taking the test, participants were randomly assigned to one of six conditions. The computer either told participants that they "showed a significant preference for thin people over overweight people", "showed a slight preference for thin people over overweight people", or asked participants to proceed to the next section without receiving feedback. Within each test group participants were randomly divided in half so they either completed the self-relevant value affirmation task or the other-relevant value affirmation task.

After being administered the appropriate level of feedback and completing the corresponding writing task, all participants were then asked to review and compare the two job applications and complete the applicant evaluation questionnaire (Appendix D). Participants were then asked to complete the form indicating the amount of

dissonance they experienced (Appendix E). Next, they were asked to provide

demographic information, including their age, sex, height, and weight. Following these

tasks they were debriefed, told the true research question and goals of the study, and

asked to sign a data release consent form to allow the use of their data in our study.

Results

Of the total participants in the present study (N = 73), there were 24 participants

in the No Feedback condition, 25 in the Low Bias condition, and 24 in the High Bias

condition. Of these participants, 36 completed the self-affirmation task, while 37

completed the other-affirmation task. Participants' ratings of the applicants did not differ

significantly by participant sex, BMI level (underweight, normal weight, or overweight),

or other demographic information requested. There was also no significant difference in

applicant evaluation between the two different sets of pictures used or the order in which

they were presented in the study.

3 x 2 x 2 Mixed-Model ANOVAs

In order to test our hypotheses, we ran a 3 x 2 x 2 mixed-model ANOVA on the

mean application index, where feedback condition and affirmation level were between-

subjects and applicant weight was a within-subjects variable. We found that the mean

application index rating, which included all measures except for attractiveness, for the

overweight applicant ($M = 5.83$, $SE = 0.08$) was significantly greater than for the thin

applicant ($M = 5.49$, $SE = 0.10$), $F(1, 67) = 10.82$, $p = 0.002$. These results demonstrate

that although we hypothesized a main effect of weight, the main effect was in the

opposite direction of what we expected; participants actually showed a preference for the

overweight applicant rather than the thin applicant. The mixed-model ANOVA showed

no main effect of bias feedback condition or value affirmation condition (all p's > 0.05).

Recall that our hypotheses predicted that participants in the High Bias and Low Bias

conditions would rate the overweight applicant higher than those who did not receive

feedback. Furthermore, we predicted that there would be a three-way interaction between

weight, bias feedback condition, and affirmation. However, inconsistent with these

hypotheses, there were no significant two-way or three-way interactions (p's > 0.05).

We also ran a 3 x 2 x 2 mixed-model ANOVA on the question that asked

participants how likely they were to hire each participant. Contrary to our hypothesis

about a main effect of weight, no significant main effects were found on the likelihood to

hire measure (all p's > 0.05). We did, however, find a significant interaction between

weight and bias feedback, $F(2, 67) = 3.96$, $p = 0.025$. Recall that we expected

participants in the Low Bias and High Bias conditions to indicate an increased likelihood

to hire the overweight applicant compared to those in the No Feedback condition.

Consistent with our hypotheses, pairwise comparison analyses showed that participants

were more likely to hire the overweight applicant in the Low Bias condition than in the

No Feedback condition, $p = 0.041$. Furthermore, participants were marginally more likely

to hire the thin applicant in the High Bias condition than in the Low Bias condition,

which we did not predict, $p = 0.074$. Lastly, also consistent with our hypotheses, we

found that within the Low Bias condition, participants were significantly more likely to

hire the overweight applicant than the thin applicant, $p = 0.008$ (see Figure 1). We did not

find any other significant two-way interactions (all p's > 0.05). Furthermore, results from

this ANOVA once again did not show the expected three-way interaction, $F(2, 67) =$

0.32, *ns*.

Next, we wanted to look at the results of the attractiveness measure since it was not included in the mean application index. In a 3 x 2 x 2 mixed-model ANOVA of the attractiveness measure we found the expected significant main effect of weight, $F(1, 67) = 32.76$, $p < 0.001$. However we also found a main effect of bias, $F(2, 67) = 5.43$, $p = 0.007$, as well as a marginally significant main effect of affirmation; both of which were unexpected, $F(1, 67) = 3.03$, $p = 0.086$. The main effect of weight showed that the overweight applicant ($M = 4.02$, $SE = 0.16$) was perceived as less attractive than the thin applicant ($M = 5.17$, $SE = 0.12$). In the main effect of bias, pairwise comparison analyses showed that participants in the Low Bias condition ($M = 4.87$, $SE = 0.17$) and High Bias condition ($M = 4.77$, $SE = 0.17$) were significantly more likely to judge both applicants as more attractive than those in the No Feedback condition ($M = 4.15$, $SE = 0.17$) (Low Bias $p = 0.003$, High Bias $p = 0.011$). In the marginally significant main effect of affirmation condition, participants in the self-affirmation condition ($M = 4.76$, $SE = 0.14$) were slightly more likely to say that both applicants were more attractive than those in the other-affirmation condition ($M = 4.43$, $SE = 0.14$). Inconsistent with our hypotheses, we found a two-way interaction between bias condition and affirmation condition, $F(2, 67) = 3.94$, $p = 0.024$. Pairwise comparison analyses showed that for participants who were self-affirmed, those in the Low Bias and High Bias conditions rated both applicants as significantly more attractive than those participants who were in the No Feedback condition (Low Bias $p = 0.001$, High Bias $p < 0.001$). Furthermore, within the High Bias condition, individuals who were self-affirmed rated both applicants as significantly more attractive than those who were not self-affirmed, $p = 0.006$ (see Figure 2). Once again, we were surprised to find that there were no other significant interactions (all p's > 0.05).

Manipulation Check

Since our hypotheses referred specifically to individuals who experienced dissonance, we wanted to find out if our language manipulation worked to induce dissonance for those who received feedback. We expected that those in the High Bias condition would experience more guilt than those in the Low Bias condition. However we found that individuals in the High Bias condition ($M = 4.42$, $SE = 0.35$) only experienced slightly more guilt when they were told their results than those in the Low Bias condition ($M = 3.64$, $SE = 0.34$); the results from a one-way ANOVA were not significant, $F (1, 48) = 2.56$, $p = 0.116$. Since the results were not significant enough to indicate that our manipulation worked as well as we had hoped, we ran statistical analyses once again, but this time looked only at the way in which individuals who felt a certain amount of guilt differed in their evaluations. We did this by excluding participants who were in the No Feedback condition because they were not prompted to experience guilt, and only looked at participants in the Low Bias and High Bias conditions. In the new 2 x 2 x 2 mixed ANOVA, the "level of feedback" independent variable was changed to "dissonance" with two levels: "yes", for those who experienced dissonance, and "no", for those who did not. We differentiated between those who experienced dissonance using a median split on the measure of guilt experienced following feedback. We found the median and mean response to this question to both be around 4, and therefore determined that we would consider those individuals who answered 4 and above to have experienced dissonance, and those who answered 3 and below to have not experienced dissonance for the purposes of this analysis.

2 x 2 x 2 Mixed-Model ANOVAs

In our 2 x 2 x 2 mixed-model ANOVA on the mean application index, we found a main effect of weight, where participants rated the overweight applicant ($M = 5.90$, $SE = .10$) higher than the thin applicant ($M = 5.44$, $SE = 0.14$), $F(1, 45) = 10.85$, $p = 0.002$. Once again, this main effect was in the opposite direction of what was predicted in our hypotheses. Also inconsistent with our hypotheses, we did not find any other significant interactions (all p's > 0.05).

Next, we ran the 2 x 2 x 2 mixed-model ANOVA on the likelihood to hire measure. Here we found a marginally significant main effect of weight that was again inconsistent with our hypotheses, where participants were slightly more likely to hire the overweight applicant ($M = 5.88$, $SE = 0.14$) than the thin applicant ($M = 5.52$, $SE = 0.19$), $F(1, 45) = 2.96$, $p = 0.092$. Again, we did not find any other significant interactions, which was inconsistent with our hypotheses (all p's > 0.05).

We also repeated the analysis of the attractiveness measure using the 2 x 2 x 2 mixed-model ANOVA. Here, we found a significant main effect of weight, where participants found the thin applicant ($M = 5.29$, $SE = 0.15$) to be more attractive than the overweight applicant ($M = 4.25$, $SE = 0.21$); which was consistent with our hypotheses, $F(1, 45) = 16.15$, $p < 0.001$. We also found an unexpected marginally significant main effect of affirmation, where participants in the self-affirmation condition ($M = 5.00$, $SE = 0.18$) found both applicants more attractive than those in the other-affirmation condition ($M = 4.55$, $SE = 0.18$), $F(1, 45) = 3.22$, $p = 0.079$. There was also an unexpected two-way interaction between dissonance experienced and affirmation level, $F(1, 45) = 8.36$, $p = 0.006$. Pairwise comparison analyses showed that within the self affirmation condition, participants who experienced dissonance judged both applicants to be significantly more

attractive than those who did not, $p = 0.009$. Furthermore, for participants who experienced dissonance, those who were self-affirmed judged both applicants as significantly more attractive than those who were not self-affirmed, $p < 0.001$ (see Figure 3). No other significant interactions were found, which was again inconsistent with our hypotheses (all p's > 0.05).

Discussion

Our experiment examined the effect of making people aware of an implicit bias against overweight individuals. The primary research question looked at how likely people would be to exhibit explicit bias in judgments after being told that they are implicitly prejudiced against overweight individuals. Furthermore, we wished to examine whether a change in participants' behavior on a job-hiring task could be attributed to external or internal motivations. We gave different groups of participants three different levels of feedback following an Implicit Association Test (IAT) to inform or not inform them of a potential bias against overweight people, then examined their evaluation of an overweight target compared to a normal weight individual in a job-hiring task. We also included a value-affirmation task to see if a boost in self-esteem was adequate to reduce the guilt that participants experienced from the feedback that they were given following the IAT. Although traditional weight biases were not observed, the current study found that participants who were told that they had a slight preference for thin people evaluated the overweight applicant more positively compared to the normal weight applicant. Furthermore, no difference was seen in the way people evaluated the overweight applicant and thin applicant when they were told that they had a significant preference for thin people over overweight people.

In our first hypothesis, we believed that the participants we studied would exhibit traditional weight biases. We assumed that our participants' results would be similar to those in other studies that looked at evaluations of overweight and thin job applicants, showing that people tend to have a strong preference for thin people compared to overweight people (Agerström & Rooth, 2011). The results that we found were not consistent with our hypothesis, instead showing that when people were asked to compare overweight and normal weight individuals on specific factors, such as productivity, likeability, competency, decisiveness, neatness, and social skills, their ratings of the overweight and thin applicant actually showed that they had a strong preference for the overweight applicant over the thin applicant. This information suggests that our participants were less likely to act in accordance with traditional weight biases than we expected. Aside from their deviation from past research, these results were also somewhat unusual because the likelihood to hire measure did not seem to be related to the attractiveness measure. While our participants judged the overweight applicant as less attractive than the thin applicant, we found that they still judged the overweight applicant higher on the mean applicant index than the thin applicant.

Since previous research has shown that attractiveness affects the perceived ability of the applicant to do a job and their likelihood to be hired, we would have expected to see similar results in our study (Gilmore, Beehr, & Love, 1986). One alternative explanation for these results is that participants in the No Feedback condition may have still experienced guilt as a result of taking the IAT, simply because of the way the test is designed. Although those who did not receive feedback following the IAT were never explicitly told that they had or did not have an implicit bias, some participants expressed

that they could tell that they were better at pairing good and bad words with either the overweight or thin categories. This observation alone may have caused participants to rate the overweight applicant more fairly or higher on various categories than they otherwise would have in order to help negotiate their internal conflict.

We also wanted to look at how making people aware of a potential implicit bias might cause them to change their behavior when rating the job applicants on a variety of different measures. In our second hypothesis, we expected to find that our participants in the Low Bias and High Bias conditions would experience a threat to their self-esteem due to the results that they were given following the IAT, and would therefore be more likely to rate the overweight job applicant higher on the various scales to compensate for these feelings of guilt. The results that we found partially supported this hypothesis; although participants in the Low Bias and High Bias conditions rated the applicants fairly similarly to those in the No Feedback condition on the mean application index, we found that participants in the Low Bias condition were more likely to hire the overweight applicant than participants in the No Feedback condition. We also found that within the Low Bias condition, participants were less likely to hire the thin applicant than the overweight applicant. While participants in the Low Bias condition did act in accordance with our hypothesis, the fact that those in the High Bias condition did not was surprising. We believed that if we were able to induce feelings of cognitive dissonance, they would be stronger in the High Bias condition than the Low Bias condition, and participants in the High Bias condition would therefore be more likely to indicate a higher "likelihood to hire" rating for overweight applicants than normal weight applicants. Our participants' preference for the overweight applicant over the thin applicant in the Low Bias condition

suggests that cognitive dissonance was likely at play; however, some other explanation is necessary for the High Bias condition.

The fact that our results indicated that participants judged both applicants as more attractive if they were given feedback than if they were not suggests that the feedback they were given had an effect on their evaluation of both applicants' attractiveness. This indicates that perhaps both groups experienced a level of dissonance, which made them judge both applicants more positively. Alternatively, it is possible that those who received High Bias IAT feedback were more likely to find other ways to overcome the cognitive dissonance they may have experienced because the feedback seemed more definitive and conclusive than the Low Bias IAT results. If participants were told that they had only a slight bias, as was the case in the Low Bias condition, this may have signaled to them that although they had a slight bias, it was still possible to work against this bias to change their behavior. These results are consistent with research on cognitive dissonance which says people will change their behavior to reduce feelings of guilt (Aronson, 1992). However, when participants were told that they had a significant bias, as in the High Bias condition, they might have seen these results as an insurmountable threat to their self-esteem, and may have accepted these implicit attitudes instead of changing their behavior. This could be explained by the fact that we did not find a significant difference between the guilt that people reported in the Low Bias and High Bias conditions; we expect that those in the High Bias condition did not report an increased level of guilt because they had accepted these views of themselves. Our results further support this explanation as participants in the High Bias condition were slightly more likely to hire the thin applicant than those in the Low Bias condition. Before

dissonance theory came about, it was believed that people must change their attitudes before a change in behavior could be observed (Aronson, 1992). Therefore, it is possible that instead of changing their behavior to boost the self-esteem, people were actually accepting the attitudes that were presented to them. This would have caused a reduction to any threat to their self-esteem such that a change in behavior would not have been observed, as is consistent with our results.

In our third hypothesis, we were curious about how a boost to self-esteem in the form of a value-affirmation task might have served as a moderating factor for the job applicant rating when a potential bias was suggested. The results that we found did not support our hypothesis, instead showing that there were no significant three-way interactions between bias, or in some cases dissonance experienced, affirmation, and weight. This information shows that our self-affirmation task did not have the same effect that previous literature has suggested (Steele & Liu, 1983). Furthermore, the fact that participants who received feedback and were self-affirmed judged both applicants to be more attractive than those who were not indicates that the self-affirmation task did not work in the way that we expected. It appears that instead of reducing the guilt that participants felt about their IAT results, the self-affirmation manipulation actually made participants more kind toward both applicants on the attractiveness measure. While we believed that the self-affirmation task would work more powerfully as a means of reducing guilt, our research showed that it had a stronger effect on reducing the likelihood to exhibit prejudice (Fein & Spencer, 1997). For participants in the Low Bias condition who experienced guilt and rated the overweight applicant significantly higher than the normal weight applicant, it is possible that the lack of an interaction of

affirmation could represent the fact that participants may have experienced guilt that was stronger than the affirmation task could have dealt with. If participants' perceptions of themselves were significantly negatively affected by the low bias IAT results that they received, a two-minute writing task where they were asked to write about a value of importance to them may not have required sufficient time or energy to alleviate the guilt that they felt. For those in the High Bias condition, if they did indeed accept the High Bias IAT results, as we previously suggested, then perhaps participants in both affirmation conditions had already resolved the threat to the self esteem, rendering the value-affirmation task pointless.

Limitations and Further Research

While our findings contribute to the existing literature, there are some limitations that need to be addressed. Since our manipulation of the dissonance participants would experience did not work as well as we had hoped, one factor that may have impacted our study is the possibility that the language of the IAT feedback was not strong enough. Saying that someone has a "strong preference for thin people compared to overweight people" might not have threatened someone's self-esteem as much as "strong bias against overweight people" so it may have been helpful to run another pilot study examining the differences in language effects on the induction of cognitive dissonance.

Another reason why the overweight applicant was judged more positively than we had expected could be explained by some of the demographic information from our study. One limitation of our sample is that our participants were overwhelmingly female, which may have caused them to identify as part of the targeted applicants' in-group, and thus to judge her more fairly. Research has shown that people tend to prefer members of

their own group over members of other groups (Brewer, 1979). This could be especially

relevant because participants were dealing with issues relating to weight bias, and

previous research has shown that women are more likely to face weight discrimination

than men (Brochu & Morrison, 2007; Pingitore et al., 1994). While women may have

evaluated the overweight applicant's potential job strengths positively, we still found that

they were harsh judges of the overweight applicant on a scale of attractiveness. This

finding is consistent with research that shows that women tend to be critical when

evaluating physical characteristics of other women (Grossbard, Neighbors, & Larimer,

2011).

Another demographic concern that arises in our study is the fact that our sample

consisted only of college students ages 18-22. An issue that presents itself here has to do

with a trend in recent generations regarding decreased levels of prejudice. Research has

found that younger generations are becoming more and more acceptable of minority

groups (Firebaugh & Davis, 1988). Since our sample consisted of a small group of

college-aged students used to represent a larger population, it is possible that expanding

the research to older generations could yield different results. Furthermore, past studies

that asked both students and professionals to evaluate job applicants showed that students

typically gave higher mean ratings than professional recruiters (Gilmore et al., 1986). It is

possible that students are not the best people to evaluate job applicants because they don't

have the same understanding and experience that a professional recruiter has. Therefore,

looking at how actual Real Estate professionals judge overweight applicants could give

more insight into weight bias in the workplace.

Although our study aimed to isolate people from external social factors so that

these factors would not affect the way participants evaluated overweight applicants, it is possible that just the presence of the experimenters caused participants to feel that they were being evaluated. Since it is becoming less socially acceptable to discriminate against target groups, participants may have therefore intentionally rated the overweight applicant higher to compensate for their perceived personal bias, regardless of whether or not that bias was the one suggested to them following the IAT (Rudman et al., 2002).

In order to keep participants engaged and streamline our study, we used a value-affirmation task that was somewhat shorter than those found in other studies (Steele & Liu, 1983). It is possible that this difference in time allowed to complete the affirmation tasks did not allow participants a chance to adequately self-affirm to the extent that might have been necessary to reduce dissonance.

Future research could expand on the current study by exploring more of the external factors that might motivate behavior change. A more in-depth analysis of the effect of asking people to make judgments about targeted individuals in front of their peers could give insight into the strength of social desirability in behavior change. Furthermore, research could investigate the possibility that people might come up with other excuses to explain results on an IAT that indicate a large amount of prejudice in order to justify their biased behaviors. For instance, people might feel like the test itself was trying to trick them into behaving differently than they normally would.

The findings of this study indicate that while self-threat can be a factor that influences the way in which people evaluate others in job hiring tasks, it is likely not the only factor mediating behavior change. While a more thorough analysis of external factors of behavior change is necessary, our research findings suggest that both internal

and external factors likely play a role in the threat that people feel when they are told they are prejudiced against targeted individuals and groups.

As mentioned previously, it is important to understand the factors that motivate participants to change their behavior on a job-hiring task because these could be indications of a larger cultural movement toward eradicating biased behavior. This study is valuable when looking at ways to decrease prejudice and discrimination in the workplace and more broadly in society because it helps to demonstrate the potential importance of making people aware of their biases. If we can start to determine some of the factors that might cause or motivate individuals to change their behavior, then we can use this information to help develop and implement specific strategies aimed at fighting bias and discrimination.

The findings of this study are also important in the context of the larger discussion about fairness in hiring practices and employment non-discrimination. For companies and professionals that espouse a philosophy of equal opportunity and oppose discrimination in the workplace, there is clear evidence that overweight individuals may still be at a disadvantage when it comes to gaining employment, especially in jobs where employees are highly visible to their clients (Pingitore et al., 1994; Agerström & Rooth, 2011). As society claims to place more emphasis and value on fairness and equality, this information adds to the body of literature that provides information on changes that must still be made before we live in a truly equal society and in a world without prejudice.

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Appendix A
Value Affirmation Task

Please rank the following values and personal characteristics in order of personal importance (1 indicating the MOST important trait and 11 indicating the LEAST important trait.

___Justice

___Sense of humor

___Relationships with friends/families

___Spontaneity

___Courage

___Modesty

___Musical appreciation

___Respect

___Creativity

___Honesty

___Romantic values

(Control Condition) Please choose your 9th ranked value and write a short essay (no more than three paragraphs or 300 words) on how it could be important for an average person of your age.

(Affirmation Condition) Please write a short essay (no more than three paragraphs or 300 words) about why your highest ranked value is especially important to you and describe a situation in which it is particularly meaningful.

Appendix B
Job Application Evaluation Task

In this section, you will be evaluating two job applicants based on the following applications for a position as a Real Estate agent at your Real Estate firm. You will be asked to rate these applicants based on characteristics listed on the next page. Please use the job description below to guide you.

Job Description
Best Value Real Estate Agency is looking for a qualified and experienced Real Estate agent. This person will work with clients to buy, sell, or rent properties, and perform duties, such as study property listings, interview prospective clients, accompany clients to property site, discuss conditions of sale, and draw up real estate contracts. Agents will work to provide clients with the best deals on properties that our company possesses, while still striving to meet the specific needs of clients. Agents must have good communication and interpersonal skills, as the majority of this job entails representing our company in the best possible light and working with clients on a daily basis.

Cynthia G. Clark

1234 Cornerstone Drive   Email: Cynthia.clark@nowson.com
Dallas, TX 75000   Phone: 214-638-7401

Objective:
A position as a Real Estate Agent – working with homebuyers and sellers to list and sell homes while ensuring positive experiences for everyone involved.

Education:
Bachelor of Science in Management, University of Texas - Austin, Texas, May 1999

Work Experience:
Real Estate Agent, Nowson Agency - Arlington, TX - June 2005 - present
Market homes in the local community by utilizing a proven successful marketing plan. Provide virtual tours on web site of homes listed providing them with additional exposure. Create sales brochures for each listing to profitably market the home. Promote sales of properties through advertisements, open houses, and participation in multiple listing services.

Real Estate Agent, Phellen Real Estate Agency - Garland, TX - February 2002 – June 2005
Guided homebuyers and sellers through the sale and purchase of properties. Generated lists of properties that were compatible with buyers' needs and financial resources. Coordinated appointments to show homes to prospective buyers. Established positive flow of communication with other agents, buyers and sellers, mortgage officers, title personnel and attorneys involved in the home buying and selling process. Presented purchase offers to sellers for consideration. Negotiated contracts on behalf of clients. Coordinated property closings, overseeing signing of documents and disbursement of funds.

Real Estate Agent, Juenger & Associates – Irving, TX - July 1999 – January 2002
Formed relationships with other agents to assist in the purchase and sale of homes. Worked closely with clients to offer helpful services and advice. Effectively showed residential properties to potential buyers. Determined the needs of buyers and sellers and worked to satisfy those needs. Acted as an intermediary in negotiations between buyers and sellers, generally representing one or the other. Ensured all paperwork was completed prior to closing.

Professional Affiliations:
National Association of Realtors
North Texas Association of Realtors

Becky Anderson

1034, West 67 Street,
Dallas, TX 75201
(469)-533 7906

Professional Objective:
To work with clients in the Real Estate market to ensure that they receive the best service and assistance in the homebuying, selling, or renting process.

Education
Bachelor of Science in Marketing, Rice University, 1998

Professional Experience

Real Estate Agent, Edward Meyers Real Estate (2004 - Present)
Show residential properties and demonstrate the features and benefits of available homes. Convert prospects to closed sales for clients located throughout Dallas. Provide close, personal client attention and tenacious follow-up to ensure best service. Prepare contracts and documentation; advise first home-buying clients on general escrow and title procedures. Design and update marketing material. Perform competitive product evaluations.

Real Estate Agent, Stephen F. James Realty (2002 - 2004)
Generated new leads by distinguishing thousands of direct mail advertisements in local neighborhoods. Marketed listings throughout the Dallas County and held open houses to aggressively grow area sales. Generate lists of properties for sale, their locations and descriptions, and available financing options, using computers. Maintain knowledge of real estate law, local economies, fair housing laws, and types of available mortgages, financing options and government programs. Check work completed by loan officers, attorneys, and other professionals to ensure that it is performed properly. Arrange for financing of property purchases. Appraise property values, assessing income potential when relevant.

Real Estate Agent, Parish Realty, Dallas, TX   (1999-2002)
Obtain agreements from property owners to place properties for sale with real estate firms. Monitor fulfillment of purchase contract terms to ensure that they are handled in a timely manner. Compare a property with similar properties that have recently sold, in order to determine its competitive market price. Act as an intermediary in negotiations between buyers and sellers over property prices and settlement details, and during the closing of sales.

Other Experience
Escrow Secretary / Loan Closer, CDE Bank, Houston, TX (2000 - 2002)
Loan Closer, FGH savings & Loan, Houston, TX (1998 - 2002)

Appendix C (Pilot)
Photograph Evaluation

Instructions: In this packet, you will be presented with several photographs of women followed by a series of questions. Please review each picture and answer the questions that follow for each picture. Remember that there are no right or wrong answers to the questions. The best answer is what you think is true **in your opinion**. Before you move on to the next picture, please indicate the number of the photograph you are reviewing at the top of each page (photograph numbers are listed on the back of each picture).

Photograph Number: _____

1. How attractive is this person?

        0----------1----------2----------3-----------4------------5------------6
  not at   very attractive
all attractive

2. How would you describe this person's appearance?
        0----------1----------2----------3-----------4------------5------------6
  very   very
  messy   neat

3. How friendly does this person look?
        0----------1----------2----------3-----------4------------5------------6
  not at   very
all friendly   friendly

4. How likeable does this person look?
        0----------1----------2----------3-----------4------------5------------6
  not at   very
all likeable   likeable

5. How would you describe this person's weight?
        0----------1----------2----------3-----------4------------5------------6
  very   very
  thin   overweight

6. If you had to estimate this person's weight and height, what would you guess?
        _____lbs. _____ feet _____ inches

7. If you had to estimate this person's age, what would you guess?

      _____ years old

Appendix D
Application Rating Form

Based on the information provided in the applications that you just read, please evaluate how qualified you believe each applicant would be in the following areas.

Not very productive   Very productive

1   2   3   4   5   6   7

Not very decisive   Very decisive

1   2   3   4   5   6   7

Not very attractive   Very attractive

1   2   3   4   5   6   7

Not very competent   Very competent

1   2   3   4   5   6   7

Not very friendly   Very friendly

1   2   3   4   5   6   7

Not very social   Very social

1   2   3   4   5   6   7

Definitely would not hire   Definitely would hire

1   2   3   4   5   6   7

Appendix E

Post-Evaluation Questionnaire

Did you receive feedback after taking the cognitive response time task at the beginning of the study?

Yes ___   No ___

On a scale from 1-7 (1 = strongly disagree, 7 = strongly agree), please indicate to what extent you agree or disagree with each of these statements.

___I think that the feedback I received was inaccurate.

___I felt guilty about the feedback that I received.

___I felt that the results accurately represented my attitudes toward overweight individuals.

___I was surprised by the feedback that I received.
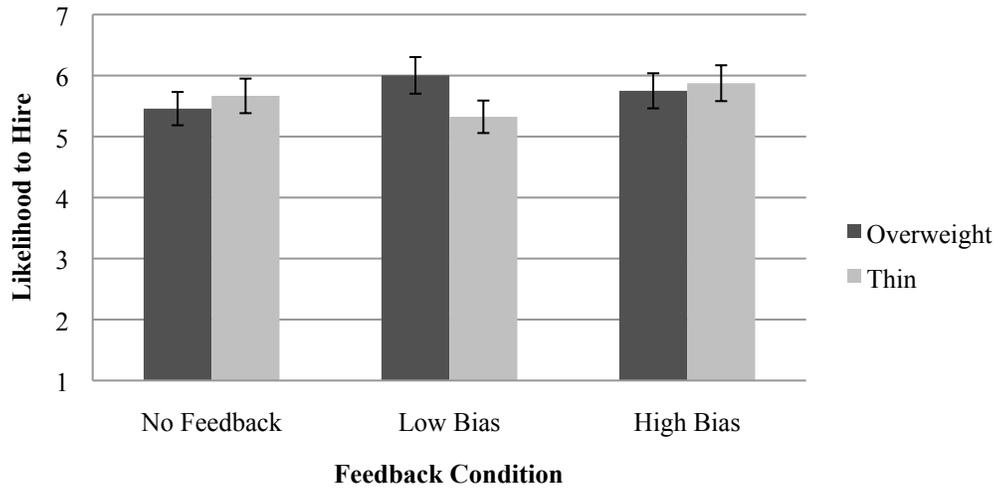
Figure 1. Average means on the likelihood to hire scale for the two-way interaction between feedback condition and applicant weight. Information for the value-affirmation task was not included. *Error Bars: 95% CI*
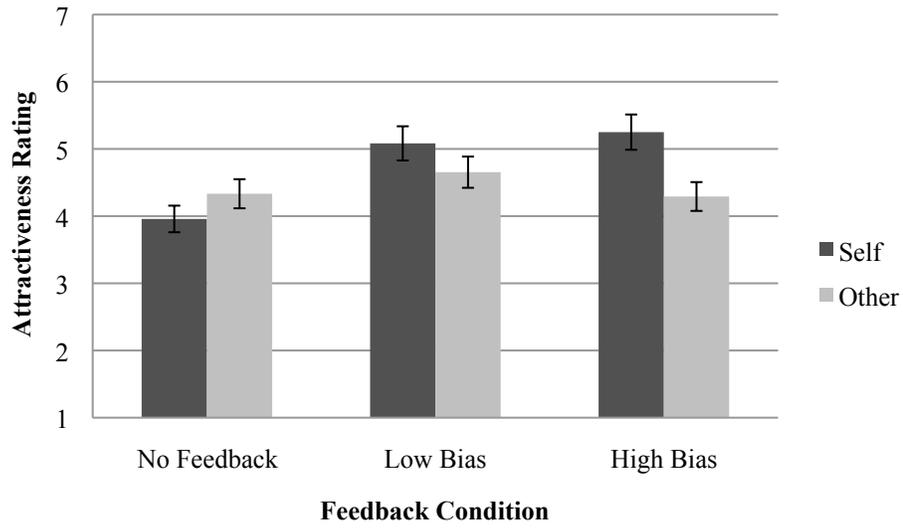
Figure 2. Average means on the attractiveness measure for the two-way interaction between feedback condition and affirmation condition. Information for weight was not included. *Error Bars: 95% CI*
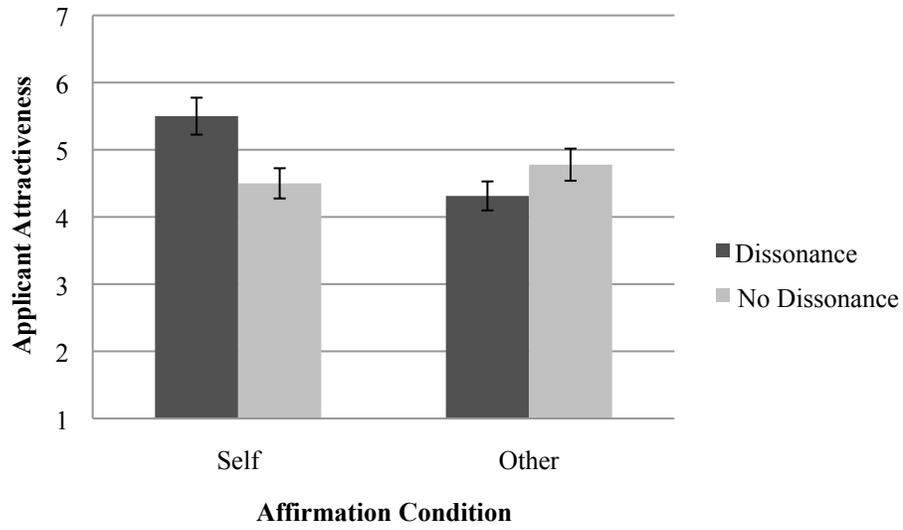
Figure 3. Average means on the attractiveness measure for the two-way interaction between dissonance experienced and affirmation condition. Information for weight was not included. *Error Bars: 95% CI*