

**Awareness of Implicit Weight Bias and the Inclination to Change Behavior**

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### **Abstract**

This study examined awareness of bias as a catalyst to behavioral change among individuals. Previous research regarding weight bias and stigma have concluded that they have substantial negative psychological and physiological effects, and can lead to damaging coping behaviors. IAT's (Implicit Association Tests) have been used in scientific studies to measure bias towards weight and have been key in many studies who have looked to mitigate weight stigma at a large scale. Our study used a sample of 30 individuals who completed two rounds of the Harvard ('Fat - Thin' IAT). Two groups of participants were separated, with the experimental group receiving their first test's results before taking the test again. The findings of this study back up past research that has looked at the effects of the awareness of bias and mitigating actions and feelings of bias. No statistically significant results were found between the control and experimental groups, however, there was a considerable trend in data that implies awareness of bias mitigates bias.

### **Awareness of Weight Bias and the Inclination to Change Behavior**

Ideas about weight tend to vary based on culture, trends, and past experiences. As a society, we put a lot of pressure on individuals to meet certain beauty standards, which often leads to unfavorable consequences. While we are growing more body positive with each passing year, there are still many strides to be made when it comes to weight biases. The Butterfly Foundation defines fatphobia as “the negative attitudes and stereotypes surrounding and attached to larger bodies. Further, fatphobia is an abnormal and irrational fear of being fat or being around fat people ” (Bradbury, 1). Fatphobia is very prevalent in our society, and if it is not addressed, many will continue to suffer from internalized shame, bullying, and disordered eating.

A staggering statistic from the National Association of Anorexia Nervosa and Associated Disorders shows that 35-57% of adolescents, specifically females, engage in some form of disordered eating behaviors such as purging, extreme dieting, and usage of laxatives or other supplements to lose weight (Boutelle, 2002). This percentage is far too high to ignore, as it seems to be heading towards the majority in terms of participation of adolescents in these dangerous behaviors. Not only are these behaviors unhealthy, they are also tremendously dangerous. Eating disorders, while classified as a mental illness, are extremely deadly and come in second in mortality when compared to addiction; specifically opioid overdose (Arcelus, 2011).

Young adults as a group tend to be more unsure of themselves and are more likely to suffer from unstable sense of self and self esteem, and this is why they are so greatly impacted by societal standards of beauty. A study conducted on a college campus with a sample of 41 female students found that 91% of these individuals have/had used dieting and dieting techniques in order to change or control their weight/figure (Noordenbos, 2002). The idea that bodies must

look a certain way is only further perpetuated through fatphobia and normalization of disordered eating habits.

Weight bias and fatphobia are also harmful in many other aspects. Another study found that weight bias/stigma has substantial consequences for those who experience such discrimination. While we know it is known to cause eating disorders/disordered eating, other consequences of weight stigma include but are not limited to stress-eating, off-and-on dieting, weight gain, decrease in physical activity, depression, avoidance of healthcare, and spiked cortisol levels or chronic stress (Tomiyama, 2015). In order to address and mitigate the issues that weight bias and stigma cause, it is important to understand first how prevalent it is, what risk factors/key indicators of participation of weight stigma are at play, and what possible solutions are available to catalyze change.

One study which was similar in nature to ours aimed to see whether those who believed that they were less biased than others would respond more defensively to their weight - IAT results, using measures of defensiveness post-test. This particular study concluded that those who believed that they were less biased than the general population tended to respond with defensiveness to their results (Howell, 2016). This study was very similar to our study, as we also aimed to see if individuals would respond differently based on them being informed of their biases.

Another historical study that used an IAT to measure weight bias was one study that used a sample of 51 radiology faculty reviewers who had been previously documented as exhibiting discriminatory behavior when dealing with radiology applicants. By administering two IAT's (race and weight), researchers discovered a moderate correlation between those who received results indicating implicit bias, and acting upon those biases with discriminatory actions. The

study also observed the possible mitigative effects of implicit bias awareness, which proved to be considerable (Maxfield, 2020). This study provides evidence that awareness of bias is a possible solution in mitigating weight bias/stigma.

Why does bias exist today and why is it more prevalent based on where you are geographically? Understanding the geographical and cultural influences on social structures and ultimately beliefs and feelings about weight is very important to understanding how to stop the stigma surrounding weight and larger bodies. One study provides us insight into these ideas through their use of a race/ethnicity IAT paired with historical and geographical data surrounding slavery. It was discovered through this study that places with high concentration of slavery are highly correlated with high racial bias scores on IAT's taken by inhabitants of said area (Payne 2019). While this study focused on race rather than weight, it is important to draw conclusions from such studies on the impacts of cultural and social influences and their ability to normalize bias. Even some character and personality traits serve as correlational factors to susceptibility to bias. One study found that weight bias was significantly predicted by certain characteristics such as being exposed to mostly thinner bodies and being told they are better, being less educated, being younger, and being male (Stewart, 2021). Throughout our study, we integrated ideas and historical facts about weight bias and its effects.

Studies that have shown the usefulness of IAT's in uncovering implicit weight biases also include a study from Germany that aimed to observe possible weight bias among individuals who were trained to be weight-sensitive in a healthcare setting, who were in attendance at a national obesity related conference (Jungnickel, 2022). This study found slight to moderate evidence of unconscious bias among participants. Another study used a weight IAT in tandem with a survey regarding participants attitudes about their weight as well as questions regarding

eating disorder symptomatology. 99 female undergraduate students were studied and the results found that those who had exhibited more positive feelings for thin bodies versus larger bodies when taking the IAT were much more likely to have eating disorder symptomatology as well as negative attitudes about their weight (Ahern, 2008). This study further proves the negative impacts of weight stigma and bias on society, specifically young adult women.

IAT's (Implicit Association Tests) have been useful throughout many scientific studies in measuring unconscious or implicit biases of individuals in many different areas such as gender, race, sexuality, disability, and weight. Many studies have used IAT's as an instrument in observing and studying the prevalence of weight bias/stigma among individuals. In this study, our use of the Harvard University ('Fat - Thin' IAT) helped us measure the implicit biases of participants, as we aimed to test our singular hypothesis that individuals who are informed of their bias after one administration of an IAT will show less bias in the second IAT administration in response.

## **Method**

### **Participants**

Thirty participants (25 female, 5 male) were recorded as valid participants in this study. The participants in this study were from a diverse set of racial/ethnic backgrounds with the most represented being White (n = 13), followed by Hispanic/Latinx (n = 9), African American (n = 4), and Israeli, Asian, Bi-Racial (n = 1) with one non-response. Twenty-six participants were in the 18-22 year old age group, with (n = 4) being distributed from age 23 to 69. No incentives were promised to participants for their participation in the study. Sampling was partially random, as participants were mostly recruited out of Texas Woman's University students who had classes with and/or associated with study coordinators. This did not skew data, as participants varied in

age and other demographics like political affiliation, race, and religion. The education level of participants varied with most being full-time college students ( $n = 20$ ), finished some college ( $n = 6$ ), graduated high school ( $n = 3$ ), and graduated college ( $n = 1$ ). Employment status of participants varied as well, with most being part-time ( $n = 19$ ), unemployed ( $n = 10$ ), and full-time being the least represented ( $n = 1$ ). Participants were asked to provide political affiliation, religious affiliation, weight, and height on a voluntary basis with the ability to opt out for any reason. Although not all participants decided to participate in the voluntary data collection, those who did allowed us insight into specific demographics that helped us understand extenuating correlations between our data. Political affiliation varied with ( $n = 14$ ) being on the liberal spectrum, ( $n = 9$ ) being on the conservative side, and ( $n = 1$ ) identifying as independent. Religious affiliation was mixed with Christianity/Catholicism being the most represented ( $n = 22$ ) then Agnostic ( $n = 4$ ), and Judaism, not religious, and prefer not to say all ( $n = 1$ ). The mean BMI (Body Mass Index) of participants who decided to disclose their weight and height ( $n = 28$ ) was 23.58 ( $SD = 3.65$ ). Inclusion criteria were that participants must be 18 or older, be able to read English, and be able to use a computer. Exclusion criteria were not needed.

## **Materials**

### ***Demographics***

We had participants fill out a demographic questionnaire using Google Forms, which also included a full page of informed consent that was required to be read and accepted before participation in the study was allowed. This form included basic demographic questions such as age, race/ethnicity, gender, employment, education level, and optional questions such as weight, height, religion, and political affiliation.

## *IAT*

To measure the implicit pre and post-test weight biases of our subjects, we used the Harvard Implicit Association Test ('Fat - Thin' IAT). The IAT we chose consisted of two parts. The IAT first prompts the participant to sort/match words with body shapes by clicking on two buttons on the keyboard ("e" or "i"). Two groups of words are provided for associations, one good (i.e. "Excitement, Appealing, Magnificent, Delightful, Triumph, Beautiful, Excellent, Joyous") and one bad ("Tragic, Horrible, Dirty, Rotten, Selfish, Nasty, Angry, Abuse"). Body shapes then pop up on the screen which are either bigger or smaller, and the participant must sort quickly which words go where and to which body. The test changes seven times with different categories changing which letter they are associated with, allowing for control. First instincts are tested with this method, as it is looking to see whether someone's first reaction to certain body types is positive or negative. The last part of the IAT includes questions regarding attitudes towards weight, both about themselves and others. Questions consist of things like "How warm or cold do you feel towards Fat/Thin people?", "How much do you feel similar to people who are thin/fat?", "How much control do people have over their weight?", "How important is your weight to your sense of who you are?", and "Do most people prefer Fat people or Thin people?". Answer choices for these questions are on a wide spectrum, allowing for more specific responses. At the end of the IAT tests, participants receive 1 of 7 possible results on a likert scale ranging from strong to little to no automatic preference between fat people to thin people, with two sides of the spectrum dedicated to either automatic preference for thin or fat people. Validity of this measure has proved through multiple scientific trials to be moderate to slight (Rezaei 2011).



## **Procedure**

Prior to the start of the administration of the IAT's, we had each participant fill out our Google Forms demographic questionnaire. Our goal was to reach at least 30 participants and we recruited most of them by asking people in our classes at Texas Woman's University. Recruiting consisted of but was not limited to GroupMe chats, text messages, emails, and word of mouth. We had every participant take the exact same test twice in a row with a between-groups experimental design.

We had two participant groups, the control group and the experimental group, who were decided by number randomization to get an equal but random number for each group. The control group ( $n = 15$ ) did not receive their results between administration of the two tests and were blind to their possible biases. The experimental group ( $n = 15$ ) received their results after finishing the first test and then were asked to complete the second test the same way they had before. This design allowed us to see whether results would change just because the test was taken two times (control), or if knowledge of weight bias would affect the way that the second test would be taken (experimental). Since, our hypothesis stated that we expected knowledge of bias will cause people to try to change their results by attempting to be less biased. The time needed for the entirety of the study (two IAT tests and the demographic form) was approximately 30 minutes.

## **Results**

We predicted that a participant's knowledge of an implicit weight bias after their first test would lead them to make an effort to change their bias and ultimately the results of the second. We found negligible statistical differences when comparing the pre and post scores of the control group and the experimental group by analyzing data using an independent samples t-test through

SPSS (Statistical Package for the Social Sciences),  $t(29) = -.762$ ,  $p = .226$ . Scores that improved, or decreased in bias were coded to show up as positive numbers while scores that got worse/went up were coded as negative. On average, the control groups score on the second administration of the IAT went up ( $M = -.133$ ,  $SD = 1.246$ ), while the experimental group on average tended to improve their score and decrease in bias on their second IAT ( $M = .200$ ,  $SD = 1.146$ ). While these differences are not statistically significant, there is a pattern in this data that showcases the differences between the control and experimental groups based on treatment administration (disclosure of results to the participant). This trend in data does support our hypothesis that those who are provided with evidence of their bias(s) are more likely to exhibit change.

	Group	N	Mean	Std. Deviation	Std. Error Mean
Pre	Yes	15	4.9333	1.53375	.39601
	No	15	5.6667	1.17514	.30342
Post	Yes	15	5.0667	1.43759	.37118
	No	15	5.4667	.99043	.25573
Difference	Yes	15	-.1333	1.24595	.32170
	No	15	.2000	1.14642	.29601

*Figure 1: Pre and post-test differences between the control (yes) and experimental (no) groups.*

The most statistically significant finding of this study is that participants who came in with the most bias as shown by their results of the first test administration showed the most change in their score from pre to post-test as shown by Pearson's Correlation,  $r(29) = .556$ ,  $p < .001$ ). Correlations between other demographic variables and pre and post-test results proved to be not statistically significant but may provide context for future research.

### **Discussion**

We hypothesized that individuals who are informed of their bias after one administration of an IAT will show less bias in the second IAT administration in response. We found no

statistically significant difference between the pre and post-test results of our experimental and control groups, however, we did uncover a trend that those who were provided their results after the first test administration tended to have less biased results on the second test round. These results show us that it is possible that when people are made aware of their bias(s) they tend to try and shift towards a more neutral stance, such as having no automatic preference for fat/thin people. We also found that those who acquired more biased results on their first round of the IAT tests showed the most drastic change in results from pre to post-test. This provides us insight that those who have the most considerable room for improvement tend to have the biggest change. We knew prior to beginning this study that people will tend to react defensively or try to change their actions when presented with the knowledge that they are biased, as shown in Howell's (2016) study. This historical data allowed us to make predictions on what we would most likely see when observing the results of our experimental group once they were informed of their bias.

Our study is consistent with the many other historical studies available that have used IAT's to measure bias and the correlation between predictors of developing/having weight bias. Studies such as Stewart's (2021) study between social exposure and predictors of weight bias and Noordenbos's (2002) study between eating disorder symptomology and weight bias helped us to gain insight into what creates and promotes weight stigma in society. While our results were not statistically significant, there is a clear trend in our data that allows us to speculate and predict what effect awareness of implicit bias may have on mitigating weight stigma at a larger scale.

### **Limitations**

This study had many considerable limitations that could have potentially caused results to not be as significant as we would have hoped. Due to the small scale of the study and the short amount of time to complete it, the sample size was not large enough to yield statistically

significant results. The sample size also consisted of about 17% males and 83% females, which does not provide a diverse enough sample. Due to the sample size being from one location, there were many demographic similarities between participants such as ethnicity/race, religion, political affiliation, age, education level, etc. With many participants having the same characteristics, it is difficult to say whether or not these results can be generalized to the population. However, it is promising that there was a trend in data between pre and post-tests in the experimental group even with such limitations.

The testing environments in which we had participants take both tests varied, as it was difficult to save one place for each participant to take the tests. Being in potentially distracting or disruptive environments may have skewed results and impacted our participants' actions. Individuals who struggle with visual processing or motor skills might have had difficulty taking such a fast-paced test, especially since IAT's are based on the initial quick reaction of the participant to measure bias. There is also some question regarding the validity and reliability of IAT's as an empirical measure of implicit bias. Little is known regarding both of these indicators of a good measure in relation to IAT's and thus is a limitation to the validity of our study.

While our study did not yield the statistically significant results we expected and wanted, it did give us plenty of direction and insight into what future research into this topic could look like. A study like ours on a larger scale with a larger and more diverse sample would provide even more evidence of awareness as a mitigating factor for weight bias and stigma. Future research may also look into what demographic features are correlated with developing or being susceptible to developing bias. For example, political ideas and tolerance for body positivity or religion and connections to ideas about weight.

As stated in the introduction, weight stigma and bias have insurmountable negative effects on the mental and physical health of those affected by it or experience it. With 35-57% of female adolescents engaging in disordered eating habits, the issue of normalized fatphobia and weight bias have become increasingly serious issues (Boutelle 2002). This is a problem to be taken seriously, as eating disorders are becoming more prevalent in society and are almost as deadly as opioid overdose in America (Arcelus 2011). With most studies coming out each year showing the negative impacts of weight stigma, the time has never been so right for more research to be done in this area in order to uncover why it occurs and how to mitigate it.

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