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## Alleviating obesity bias: does information content matter?

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ALLEVIATING OBESITY BIAS:  
DOES INFORMATION CONTENT MATTER?

by

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A thesis submitted in partial fulfillment of the requirements  
for the Honors in the Major Program in Psychology  
in the College of Science  
and in The Burnett Honors College  
at the University of Central Florida  
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## **ABSTRACT**

Obesity bias has become the most acceptable form of prejudice in American society (Latner, O'Brien, Durso, Brinkman, & MacDonald, 2008). Stigmatization of the obese has tremendous social and economic costs both for the stigmatized population and for society as a whole. Few studies have been done to show effective ways to reduce obesity bias. This study looked to expand the research on effective ways to reduce obesity bias. Using a between-participants experimental design, the present study investigated whether multi-faceted information content about the causes of obesity (including psychological, social, and physiological causes) would be more effective in reducing obesity bias than any one of these causes presented alone. Results showed that participants' evaluations of a target woman who was overweight did not differ between the information content conditions, nor did they differ from a control condition. Implications, as well as limitations in the current study, are discussed.

Keywords: obesity, bias, prejudice against fat people

## **DEDICATION**

For my sons, Cheo and Petie.

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## INTRODUCTION

Currently, obesity bias is the most socially acceptable form of prejudice, greater than the acknowledged dislike of smokers, homosexuals, and fundamentalist Muslims (Latner, O'Brien, Durso, Brinkman, & MacDonald, 2008). Bias against people who are overweight or obese comes under many names - anti-fat bias, obesity bias, fat bias, weightism and sizeism - which are, at times, used interchangeably. Washington (2011) defines obesity or weight bias as "the inclination to form unreasonable judgments based on a person's weight" (p. A94). No matter what the label, the costs are the same. The awareness of belonging to a stigmatized group negatively affects its members emotionally and mentally. Belonging to a group that suffers under a socially acceptable stigma has consequences in many areas of life, including: education, health, peer and romantic relationships, career and finances, and even longevity (e.g., Brown, et al., Puhl & Heuer, 2009; Wann, 2009). Unlike other stigmatized populations, such as homosexuals, felons, or sexual deviants, the overweight have no ability to hide that which stigmatizes them. Individuals who are overweight not only elicit reactions of disgust for the physical excess of their bodies but they also are judged as being of poor moral character by others and by themselves (Crocker, Cornwell, & Major, 1993; Puhl & Heuer, 2009). In a society that values thinness and fitness, being fat is unacceptable (Puhl & Brownell, 2001).

Author and activist Marilyn Wann wrote, "Every person who lives in a fat-hating culture inevitably absorbs anti-fat beliefs, assumptions and stereotypes ... None of us can ever hope to be completely free of such training ..." (2009, p. xi). It is important to find ways to reduce bias against obesity given the adverse effects that correspond with the stigma of being identified as

overweight. This study intends to examine the effectiveness of various kinds of information content on reducing obesity bias.

## **OBESITY BIAS TODAY**

A plethora of existing studies demonstrate American society's general dislike of fat and those who wear it (e.g., Latner et al., 2008; Puhl & Heuer, 2009; Wann, 2009). The medical, educational, and public health communities have all jumped onto the anti-obesity bandwagon, and have called for a war on obesity. Perhaps what these policy makers, medical providers, and other well-meaning professionals do not realize is that they have called for a war against a condition that affects at least 1/3 of our nation's population, i.e., about 70 million people (Komlos & Brabec, 2010). There is a nationwide assumption that overweight people choose to be fat and, therefore, need to be cured. This assumption results in prejudice that is encouraged and sometimes sanctioned by these authorities (Wann, 2009). Bukavina and Li (2011) found that adolescents are especially vulnerable to these anti-obesity campaigns and that the negative stereotypes reinforced by these messages create self-blame and guilt.

This study does not argue that there is not a worldwide issue with obesity. Strong statistical analysis agrees that the problem exists and is growing. Problems with overweight and obesity now start at a young age (Elgar, Roberts, Tudor-Smith, & Moore, 2005; Latner & Stunkard, 2003). Rather than questioning the existence of the obesity issue, the current study seeks to show that there are more effective ways of having a social discourse about the problem than by stigmatizing the obese and declaring war on them.

In 1963, Erving Goffman coined the term "spoiled identity" to define the way a stigmatized person feels and behaves in the presence of a normal person. He described how, in a functional society, the stigmatized learn to avoid pushing to be accepted by the normal and thus accept a lower lot in life. The overweight and obese in American society are a stigmatized population (e.g., Allon, 1982; Andreyeva, Puhl, & Brownell, 2008; Crocker, et al., 1993; DeJong, 1993) and are thus likely to experience this spoiled identity. Harris, Milich, Corbitt, Hoover, and Brady (1992) showed that negative expectations from biased observers have a corresponding negative result in stigmatized people's behavior and on their expectation of social rejection. Nestler and Egloff (2013) found that facing stigmatization for reasons believed to be under a person's control, such as weight, tends to reduce belief in self-efficacy.

Prejudice of any kind costs society dearly (Allport, 1979). Obese persons are less likely to seek out health care or pursue higher education (Puhl & Brownell, 2001; Puhl & Heuer, 2010). They are discriminated against in the workplace and in the media (Bissell & Hays, 2011; Puhl & Heuer, 2011). There are costs to society as a whole when one section of a society is stigmatized, including reduced productivity, higher medical costs, higher taxes, and increased stress (Bassanini & Saint-Martin, 2008, Puhl & Brownell, 2001).

In studies comparing self-reporting of weight to accurate weight measurement, overweight children show awareness that their excess weight is not acceptable by underreporting their weight. Compared to about 1% of normal weight children, 30-50% of overweight and obese children and adolescents will underreport their weight. Females will underreport more than

males (Elgar, et al., 2005), which suggests an innate acknowledgment of society's lack of acceptance of excess weight.

Olson (2003) posited that women bear the brunt of American attitudes towards obesity. American eating habits encourage weight gain yet American media and culture idealize a thin figure. American women are encouraged to believe the myth that thinness equals happiness. Young women continue to be valued more for their looks than for their accomplishments (Brumberg, 1998; Olson, 2003; Pipher, 2005). Condemnation for being fat and attempting to imitate the thinness ideal are more likely to result in young women and girls developing some form of eating disorder – anorexia, bulimia, binge eating and/or chronic dieting. A bestselling memoir chronicling 23-year old Marya Hornbacher's journey through anorexia and bulimia, while cautioning against the experience, actually proved the point that eating disorders and the resulting thinness can be very rewarding socially. The author lauded the worst stages of her disease as the most fulfilling and rewarding of her young life because of the attention she received. Olson noted that many young women use this book, a supposed cautionary tale, as a how-to guide for eating disorders and a continuing demonization of obesity.

Olson (2003) described the writing of women authors who focus on experiences with eating disorders and the battle against overweight as having a "Gothic quality". They perceive food as threatening and laden with either good or bad value judgments, the people who would feed them as having malicious intent, and their experiences while binging similar to a hallucinogenic-induced dream. The authors judge the obese harshly and reflect this attitude the most back onto themselves. The acceptance of a lower status, reduction of self-efficacy,

overwhelmingly negative views from authority figures and others, and expectation of rejection, highlight the necessity for research on reducing weight bias.

To date, few studies have investigated methods of reducing participants' obesity bias. Puhl, Schwartz, and Brownell (2005) performed various experiments in an attempt to identify factors that would effectively reduce weight bias. In a pre-test/post-test study using three different conditions, pre-test scores showed no statistically significant differences between groups. Two scales were used to measure both positive and negative aspects of bias: Obese Persons Trait Survey and Beliefs About Obese Persons Scale. One group of participants was led to believe that their peers had rated obese people more positively than they the participants had. Another group of participants was presented with pseudo-factual documents presenting positive traits of people who are obese. A third group was shown a scenario of genetic and biological causes of obesity. Both the first and second group increased their approval ratings in post-tests, and those participants in the second group showed the greatest increase in post-test approval scores. In the third group, post-test results showed no increase in approval ratings of people who are obese, but their scores did demonstrate a reduction of bias. There were statistically significant differences between the post-test ratings of the control group and the test groups. Groups one and two showed significantly higher approval ratings and all three test groups showed significant reduction of bias compared to the control group.

Bell and Morgan (2000) endeavored to discover if children's anti-fat stereotypes could be changed and if they could be persuaded to be more accepting of an obese child as a playmate. The experimenters presented videos of either a boy or a girl actor in three situations: a normal

sized classmate that was new to the school, the same child wearing a fat suit that added approximately 40 pounds in appearance, and the child wearing the fat suit with an adult voiceover that explained the child's weight as a medical condition. Participants' positive and negative bias was measured with the Adjective Checklist and social desirability was measured with the Shared Activity Questionnaire. The results of the study showed that a medical explanation for the child's weight either had no effect or a negative effect on the fat child's social desirability. Interestingly, although boys rated an obese child less positively, girls did not. DeJong (1993) studied high school girls and found that a medical explanation, while reducing negative judgments about the obese persons' self-discipline and self-indulgence, did not increase the person's social acceptability or likability. This study, together with the findings of Bell and Morgan (2000) and Puhl et al. (2005), reinforce the finding that being presented with a medical explanation of the causes of obesity does not increase social desirability or acceptance.

For the most part, although information content about an individual's lack of control over medical, genetic, or biological causes of obesity has not succeeded in increasing likability, it has been shown to decrease negative bias. These results have not been consistent, however. Wiese, Wilson, Jones and Neises (1992) found that it took an intense intervention of five weeks using multimedia components including video, audio, and written materials to shift medical students' attitudes away from negative stereotypes about the obese, even considering these were individuals who were already well educated about the physiological causes of fat. If education about the physiological causes of obesity does not work consistently to reduce bias, then what

might? Looking at how being overweight became socially unacceptable might provide some insight.

## **HISTORY AND BACKGROUND OF OBESITY IN THE U.S.**

Historically, only the very rich had enough food supply to put on excess weight. Yet in the 20th century, this trend reversed. German pediatrician Hilde Bruch observed that, among the children of lower socioeconomic class in New York City, poverty became linked with obesity. Bruch noticed that, in the middle of the Great Depression, American children were substantially more overweight than European children. Many of the children treated in Bruch's childhood-obesity clinic were not only overweight but also malnourished, suggesting that obesity was not simply a matter of excess calories. In historical studies of poverty and obesity, the rate of obesity for women typically rests around 30%, much like the current rate of obesity in our American population (Taubes, 2001). The answer to the apparent contradiction between scarce food supply and obesity is the reliance on inexpensive carbohydrates in the diet, often supplied by government or charitable programs. Poorer populations rely on cheaper foods that are high in carbohydrates (Taubes, 2011).

Negative attitudes towards overweight individuals have become increasingly polarized (Andreyeva, et al., 2008; Latner & Stunkard, 2003). Until the late 1920s, being fat in America was not only acceptable but desirable. When food was scarce, fat signified health and affluence. Attitudes against fat began a gradual shift towards the end of the 1800s as the nation's economy shifted from rural agricultural to urban industrial. As a result of improvements in transportation

and farming methods, more food became available for less effort. Food production and distribution changed from the hands of the farmer to the corporation.

During this period, vast numbers of immigrants arrived to work in the industrial machine. These working poor, for reasons noted above, had higher rates of obesity. Overweight began to be associated with poverty and the immigrant population. The affluent layer of fat was no longer prestigious. Protestant and puritanical beliefs about gluttony and excess contributed to the denigration of what was perceived as an over-indulgence of food among the poor (Fraser, 2009). Crandall (1994) identified this Protestant attitude as *symbolic racism*, the disparagement of a class of people who do not fit in accordance with the Christian values of self-discipline and self-control.

Around the same time, endemic tuberculosis among the popular artists and writers of the day created a fad for appearing thin and sickly. Keats, Shelley, Emily Brontë, Poe, and Chekhov were all sufferers. The English poet Lord Byron emulated their physical state and encouraged his many admirers to do the same, admonishing women for eating in public (Sontag, 1977). Thinness became associated with class and snobbery (Fraser, 2009).

During this same period from the 1880s to the 1920s, a scientific revolution was under way. Americans became enamored with empirical science's ability to find ideal measurements and weights. As societal attitudes changed, the scientists' opinions and research focus changed with it, leading to a trend toward villainizing obesity and celebrating thinness (Fraser, 2009; Taubes 2011).

## **THE ROLE OF PHYSIOLOGICAL FACTORS**

Multiple factors have contributed to the demonizing of the obese: socioeconomic, cultural, moral, and scientific. Just as there are many different factors involved in forming prejudice against fat, there are many different factors involved in becoming fat. For some, obesity begins in childhood. Others start gaining extra weight around college age. Still others begin to struggle with weight during middle adulthood. Dieting methods meet with limited success. Many studies (e.g., Drewnowski & Holden-Wiltse, 1992; Grodstein et. al, 1996) concluded that under-eating, although leading to short term weight loss in some clients, inevitably boomerangs and increases weight retention. Reduced calorie dieting not only is relatively ineffective on its face, it tends to rebound and cause an increase in fat retention within a year after initial weight loss. Dieting usually does not work for more than a few months. If under-eating does not cure obesity, perhaps overeating is not the cause (Taubes, 2011).

The other part of the equation of calories-in minus energy-expended is the energy expended. Increasing calories expended through exercise should make us thinner. According to First Lady Michelle Obama's "Let's Move" website (n.d.), "physical activity ... decreases the risk of obesity". Yet Taubes (2011) found that this is not true. People who do hard physical labor for a living tend to fall into or close to the poverty level yet poor people have higher, not lower, levels of obesity. Moreover, as fitness spending and participation has increased, obesity rates have increased just as quickly. Even the American Heart Association and the American College of Sports Medicine did not prove the statistical significance of exercise in controlling obesity. In 2007, they issued a report that said that although they believe that exercising an hour a day

would help prevent obesity, they did not find much evidence to support that hypothesis (Haskell et al., 2007). Those people who are lean and fit do tend to exercise. As any undergraduate psychology major will tell you, correlation does not mean causation. Yet this is where the theory that exercise prevents obesity originates (Taubes, 2011).

Sigal, Kenny, Wasserman, Castaneda-Sceppa and White (2006) unequivocally showed that exercise prevents or improves adult-onset diabetes even without weight loss. Lesniak and Dubbert (2001) showed even mild exercise three times per week for 20 minutes helps lower blood pressure. For these health benefits alone, exercise is worthwhile. However, exercise also increases hunger. Many of the modern theories of exercise's effectiveness in preventing or curing obesity originated from the work of a physiological chemist, Jean Mayer. Unfortunately, Mayer's theories of obesity and its relationship to sedentary living and his hundreds of papers on nutrition were never tested on human subjects. Mayer had considerable political and academic clout, which served to spread his misinformation even further. He even wrote a syndicated column on nutrition (Taubes, 2011). In 1972, he claimed that exercise would make the pounds "melt away" and would not "stimulate your appetite," yet his own research did not support those conclusions, and in a particular study, actually refuted them (Mayer, Roy, & Mitra, 1956; Taubes, 2011).

Why do some people get fat and others do not? We all metabolize fat in the same way, yet some people never struggle with overweight or eating issues. Some people stay lean their entire lives. Although plenty of evidence to the contrary has been provided by scientific research, medical and governmental establishments continue to stick to the formula that calories-in minus calories-out equals weight gain or loss. Based on current research in metabolism and

endocrinology, a certain percentage of people, approximately the 30% seen in historical studies of impoverished populations, have a paradoxical reaction to the simple and complex carbohydrates which are endemic in today's American diet. While eating carbohydrates, overproduction of insulin causes the body to convert the calories directly to fat even though the body's cells and organs are craving those calories. Even though the body is full of food, the cells and organs are starving. Thus the body signals its hunger again as soon as the stomach is partially empty (Taubes, 2002, 2011).

#### The role of psychological factors

In a 2011 report from Trust for America's Health, a non-profit health advocacy organization, a list of factors that contribute to obesity included the acknowledgement that psychological factors can affect weight. A person's own concern about body image and feelings of stigma can lead to the use of food as a coping mechanism and can create further concerns about body image and stigma. An 11 year longitudinal study in Norway found that normal weight adolescent girls who believed they were overweight as girls actually became overweight as young adults, indicating that the self-perception of being overweight may link to actually becoming overweight (Cuypers et al., 2012). Some people gain weight when depressed or under stress (Levi, Segal, St. Laurent, & Kohn, 2011). As the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (2000) states, "Significant (>5% body weight) weight loss or gain, or increase or decrease in appetite" is one of the nine symptoms of depression. Such research illustrates that psychological factors should not be ignored when considering obesity issues.

In the early 1990s, Dr. Vincent Felitti developed what he believed to be a successful weight loss program for his overweight and obese clients. He discovered that, although the program was very successful at helping the patients lose weight, many chose to drop out of the program even when it was working successfully for them. He began asking questions about their reasons for dropping out and discovered that, for some patients, being thin was psychologically uncomfortable for them. They expressed the implicit belief that being fat was a form of protection. Based on the information his patients shared, he determined that his patients had been using fat as a form of defense from the fear of sexual or physical attack, a holdover from having been abused as children. After surveying 286 such patients, he developed a 10 question survey asking about their adverse childhood experiences (ACE). From 1995 to 1997, over 17,000 of these questionnaires were distributed to clients of California's Kaiser Permanente health care network. The results of the study showed that, more than any other contributing factor, the adverse experiences that an adult undergoes during childhood determines their physical health (Brown et al., 2009; Redding, 2003, n.d.).

The ACE survey asks 10 short questions about events that occur during the first 18 years of life. The questions require a Yes or No response. The following areas are covered: verbal abuse and threats of physical harm, physical abuse, sexual abuse, emotional neglect, physical neglect, parental divorce or separation, domestic partner violence, addiction or alcoholism in the home, mental illness in the home, and having a convicted felon in the home or in prison. The assessment is scored simply by adding up all of the Yes answers (Anda, Tietjen, Schulman, Felitti, & Croft, 2010).

The results of the surveys show correlations between numerous health issues and adverse childhood experiences. Not only are the correlations strong enough to almost be considered causative, they are also found to be cumulative. The higher a participant scores, the greater the likelihood they will suffer severe physical health consequences. It should be pointed out that not all of the participants in the study were seeking treatment for illness. Many of them were simply coming in for annual checkups or preventative medical checkups. Fully 67% of those who responded reported at least one adverse childhood experience and one fourth reported 2 or more adverse childhood experiences. When a person scores 4 or greater on the ACE survey, the risks of multiple psychological and health repercussions increase substantially. These include: obesity, heart disease, lung disease, liver disease, depression, drug addiction, high risk sexual behavior, increased risk of sexually transmitted diseases, early or unintended pregnancy, increased risk of suicide, smoking, alcoholism, and generally poor health (Anda et al., 2010; Brown et al., 2009; Redding, n.d.).

Williamson, Thompson, Anda, Dietz, & Felitti performed an examination of the ACE study for specific correlations to obesity in 2002. The authors were able to use 76% of the original sampling, a total of 13,177 participants. They determined obesity as having a BMI equal to or greater than 30 and severe obesity as a BMI equal to or greater than 40., Every type of abuse recorded in the ACE study correlates with increased weight over normal among the participants. The greatest increase in weight over normal occurs in respondents who report having been hit and injured. For those determined to be severely obese, the adverse childhood experiences most influential with excess weight are, in order from greatest to least, verbal abuse,

physical abuse (being hit and injured), sexual abuse, and, lastly, the verbal threat of physical abuse. When multiple types of abuse are reported, the likelihood of obesity increases. The authors of this study noted their surprise that they found no other studies linking the long term effects of childhood abuse with obesity apart from Lissau and Sorensen (1994), noted below.

A ten-year longitudinal study performed in Sweden that looked strictly at childhood neglect found that children who were classified as suffering from parental neglect at age 9-10 were 10 times more likely to be obese at the age of 19-20 (Lissau & Sorensen, 1994). Although the study did not look at other areas of abuse or dysfunction, this one correlation speaks very strongly of the link between childhood neglect and adult obesity.

## **THE ROLE OF PERSONALITY**

Personality differences have also been explored in relation to obesity. Stereotypical negative attributes of fat people include laziness, impulsivity, lack of self-discipline, and uncleanliness (see Allon, 1982; Andreyeva, et al., 2008; Bell & Morgan, 2000). Rydén et al. (2003) did a comparison study of severely obese inpatients seeking treatment for weight reduction and a control group of non-obese participants. They looked for a significant difference in personality traits between obese and non-obese individuals, with a specific look at impulsivity as had been implicated in other studies. The only significant trait difference they found was that obese men scored slightly higher in impulsivity than non-obese men. They also found that women scored significantly higher in tests of anxiety compared to men, whether there were obese or not. Powers and Oltmanns (2012) studied 1051 adults and found a significant correlation between Borderline Personality Disorder (BPD) and obesity. Given that up to 73% of

BPD sufferers self-report having been exposed to childhood abuse or neglect (Salters-Pedneault, 2008), this correlation between BPD and obesity may be related to the previously mentioned correlation between obesity and ACEs (Anda et al., 2010; Williamson et al., 2002). Fassino et al. (2002) found obese women to be more anxiety-prone, weak, timid, irritable, and impulsive. The fact that poor impulsivity control and high levels of anxiety correlate with obesity is not unexpected given Lutter et al.'s (2008) findings that relate stress to overeating. Lutter et al. found that inducing social stress in mice increased the hormone ghrelin, which increases hunger. Highly stressed mice gained weight.

## **THE ROLE OF SOCIETAL FACTORS**

The results of historical measures of Body Mass Index (mass in kilograms/height in meters squared) collected from 1880 show that Americans have been getting fatter for over a century but the largest jump occurred in white Americans born after World War II, especially white women. Technology, including the widespread use of automobiles and computers, has contributed to the increased weight of Americans by decreasing physical activity. A second contributor to the increased weight of Americans is the aggressive marketing of convenience and fast foods. The highest jump in average BMI coincides with the increased availability of automobiles and radio in the 1950s and widespread availability of television and fast food in the 1970s (Komlos & Brabec, 2010).

Oswald and Powdthavee (2007) argued that our affluent society is a principal contributing factor to obesity. They proposed that the very prosperity that makes food more accessible and affordable also contributes to greater levels of stress, weakens mental health, and

contributes to the precipitous rise in Body Mass Index in industrialized countries. They also argued that the affluence of current society and the availability of increasingly new and updated technology and media increases impulsivity in all members of society (Oswald & Powdthavee, 2007). Given that the personality attribute of impulsivity is linked with obesity (Fassino et al., 2002; Rydén et al., 2003) , this does make sense as a partial correlation in the societal rise in obesity.

The federal government first began publishing dietary guidelines in 1894. In 1916, the first food guide was published, which consisted of five food groups. By the 40s, the guide expanded to seven groups but was then considered too complicated and reduced to four. The Basic Four, as it was called, emphasized eating relatively equal amounts of milk products, meat, fruits and vegetables, and grains. A fifth category was added to remind people to consume fewer empty calorie foods. The first United States Department of Agriculture (USDA) food pyramid was published in 1995 and recommended six to eleven servings of carbohydrates per day (Frazao, 1999). The current USDA dietary guidelines (2011), promoted as My Plate, have reduced the 1995 recommendations and now suggest three to eight servings per day of "grain foods" of which 50% should be whole grains. If, as Taubes (2011) asserts, consumption of complex carbohydrates of any kind sets up a metabolic reaction that makes the body believe it is starving, then these guidelines actually contribute to the population's increasing rates of obesity. Carlson, Mancino and Lino (2005) reported the percentages of the United States population that actually consume the minimum suggested amount of grain at around 30%. This number just happens to correlate with the current rate of obesity in Americans (Komlos & Brabec, 2010).

According to Wansink (2006), the choices Americans make about food are influenced not by our own logic, but by our surroundings and the marketing that we are exposed to. Almost every one of the 200 decisions the average person makes about food every single day is likely influenced by something other than hunger. These influences are subtle and not something that most Americans are conscious of. Although studies show that people believe they make conscious and informed choices about what goes into their mouths and bodies, Wansink's work proves this to be a self-deception. Marketers and the food companies that employ them use science and psychology to make sure that the consumer's choice swings to them.

Wansink (2006) addresses the issue of overeating as something that is built into our environment. In a study of moviegoers who received free popcorn, even though the popcorn was five days stale, participants that were given larger containers of popcorn ate an average of 173 calories more than those given medium sized containers. The clues in the environment - lack of focus on what was being eaten, the sounds of other people eating, and the common practice of movie going being associated with eating popcorn - all influenced the moviegoers to not only eat stale tasteless popcorn but to eat more than they might have desired from pure hunger.

Other studies done at the Department of Food Science and Human Nutrition, University of Illinois at Urbana-Champaign, show how consumers are influenced by atmosphere, branding, food descriptions, quantity served, value perceived, and even the perception of how upscale a particular food or beverage is. In one study, different diners at a psychology food lab's restaurant received the exact same meal that included a free glass of wine. Half of the diners were told that the wine was from California; the other half of the diners believed the wine to be from North

Dakota. Those diners who believed their meal to include a California wine, with its perception of being more upscale than a North Dakota wine, spent more time eating and ate more of the food on their plates. In another study, if a consumer perceived that there was a limit placed on how much he or she could purchase or consume, the consumer would tend to buy or eat more than if there were no limits. Simply by telling people that the amount they consume is restricted, a desire to have more is triggered (Wansink, 2006).

Writing in the New York Times Magazine, Pollan (2003) asserted that, when food is cheap, people will eat more. He compared today's current glut of inexpensive food with the glut of alcohol in the early 19th century. This historic abundance of inexpensive alcohol resulted in American men consuming an average of a half pint of whiskey every day, leading to an epidemic of alcoholism that would eventually trigger Prohibition. Just as in that time of cheap whiskey, corn and wheat are now abundant and cheap, resulting in inexpensive fodder for animals, and low prices on grain, meat, dairy, and grain by-products such as high fructose corn syrup. With the glut of grain, food prices are kept so low that it is difficult for end producers to make a profit, so their best strategy is to encourage the consumer to eat more (Pollan, 2003).

### **RATIONALIZATIONS FOR OBESITY BIAS**

Saguy and Almeling (2008) put much of the blame for America's hatred of fat on the media and government alarmism. They quoted Surgeon General Richard Carmona as actually comparing obesity in America to terrorism from within. The authors pointed out that, not only do media reports emphasize excess weight as unhealthy, they also portray it as socially irresponsible, thus demonizing it. Parents of overweight children may be accused of child abuse.

The authors believe that the attempt to treat obesity as a medical problem rather than a social problem actually increases its stigmatization. Olson (2003) notes that the American myth that anything can be achieved if one works hard enough contrasts sharply with the reality of a nation growing ever more obese.

When Regina Benjamin, a plus-size woman, was named to the post of Surgeon General of the United States, she was immediately criticized in the press for her weight. In an interview discussing the repercussions of such a vehement public outcry, Marlene Schwartz of Yale's Rudd Center for Food Policy and Obesity noted that people who struggle themselves in maintaining their weight tend to project their own anger and frustration on other people. Andrew Geier of Yale believes that people will easily excuse their own failure to maintain their weight as due to outside circumstances but will quickly criticize others as weak-willed or lazy (Dailey & Ellin, 2009).

## **IMPLICATIONS OF OBESITY BIAS**

Given the current social acceptability of anti-fat bias, discrimination occurs easily and without consequence. Puhl and Brownell (2001) found evidence of open discrimination against the obese in employment, education, and health care, and anecdotal evidence of it in adoption proceedings, jury selection, and housing. They note the comments of a nationally syndicated physician who suggested that what the obese need is to be locked away in some kind of concentration camp. The implications of obesity bias are serious. In health care, obesity bias in diagnosis and treatment can not only lead to substandard treatment but may keep an obese person from seeking out health care.

In education, studies show that awareness of the stigma of being overweight and unacceptable to one's peers has long term repercussions. Colleges accept fewer obese women applicants even when their academic records are equal to their normal weight peers (Puhl & Brownell, 2001). Pascal and Kurpius (2012) published a cautionary study about obesity bias among mental health professionals, noting that current curriculums, while sensitive to multicultural concerns, do not address treating clients of varying sizes and weights.

### **OVERVIEW OF THE STUDY**

The goal of the study was to expand the research on effective ways to reduce obesity bias. Reducing negative bias has been shown to be more easily achieved than increasing positive bias. Puhl et al. (2005) found that presenting an article written in the style of the New York Times Science section, describing biological and genetic factors of obesity that were not under personal control, did reduce negative bias. Bell & Morgan (2000) showed that children in grades 3-4 who viewed a video about an obese subject, which explained medical factors of obesity not under personal control, reflected a reduction in negative bias. DeJong (1993) found that explaining a subject's obesity as caused by a glandular disorder, a physiological cause not under personal control, did reduce negative bias. All of the factual methods used in previous research presented physiological links to obesity. None of these studies addressed either the psychological or social factors not within personal control that contribute to obesity.

Information content messages based on physiological causes of obesity have been proven to be effective in various degrees. This study brought additional factors, social and psychological, to information content messages. The researcher hypothesized that a multiple

factors information content message would be significantly more effective than a neutral control condition and more effective than any of the single factor conditions at reducing negative evaluations of an overweight individual. Based on the emotional content of the psychological factors related to obesity, the researcher hypothesized that the psychological factors information content message would be the most effective of the single factor content conditions compared to the social, physiological, or control conditions. Participants were presented with one of four information content messages about the factors of obesity outside an obese person's control and then surveyed for likability and character assessment of a target person.

## **HYPOTHESIS**

The hypotheses for this study were as follows:

H1: A multiple factors information content message will be most effective at reducing bias, compared to any single factor message, as measured by scores of perceived likability and assessment of personality characteristics.

H2: A psychological factors information content message will be more effective than either a social factors or physiological factors message as measured by scores of perceived likability and assessment of personality characteristics.

## **METHOD**

### **PARTICIPANTS**

A total of 105 participants (36 men, 69 women) were drawn from two arenas. Twenty-seven students enrolled in the University of Central Florida (UCF), age 18 and up, chose to participate in the UCF Psychology Research Participation System for course credit. Although this is a convenience sample, the university has both urban and urban/rural campuses and should provide a diverse sample. Seventy-eight participants were drawn from invitations to participate distributed via social media, including personal and UCF Facebook pages, Twitter announcements to individuals and organizations with an interest in psychology, email invitations to students attending classes at UCF, and invitations to professional groups on LinkedIn.

### **PROCEDURE**

The study used an experimental between-subjects design. Informed consent was obtained from participants (see Appendix A). Protocols and procedures were approved by the University of Central Florida Institutional Review Board prior to data collection. All data collection took place online via the Qualtrics online survey website.

Participants were randomly assigned to one of 5 groups: Control, Psychological Factors, Physiological Factors, Social Factors, or Multiple Factors. The experiment was administered in two parts. In the first part, the participants were told that the purpose of the study was to explore how performing an intellectual task affects a person's ability to work as part of a team. They were presented with a media article written in the style of the Science section of *The New York Times* (Appendix B). Each article presented a different facet of the factors that contribute to

obesity - psychological, physiological, social, or a combination of the three. The articles were of consistent length and style. The Psychological Factors article emphasizes the correlation between adverse childhood experiences and obesity. The Physiological Factors article emphasizes the correlation between obesity and the high carbohydrate diet that Americans consume. The Social Factors article emphasizes the correlation between social influences and increasing rates of obesity. The Combined Factors article includes psychological, physiological, and social factors on obesity. A control group was presented with an unrelated article about bees. The participants then answered true/false questions about the content of the article to reinforce the content of the message (Appendix C).

Participants then continued to the second part of the study. Participants were presented with a photograph of an overweight young adult female and a short vignette (Appendix D). They were asked to read the vignette, consider this person as a team member on a school or work project, and answer the questions that followed. They were then asked to provide an evaluation of her using the Ten Item Personality Measure (TIPI; Gosling, Rentfrow, & Swann, 2003; Appendix E) and the Reysen Likability Scale (RLS; Reysen, 2005; Appendix F). Participants then answered demographic questions including gender, age, and student status (Appendix G). Lastly, participants received a debriefing disclosing the actual intent of the study (Appendix H).

## **MEASURES**

Participants' evaluations of the overweight individual in the vignette were measured with two scales. The first instrument, the TIPI, has ten items scored on a 7-point Likert-type scale. Gosling et al. (2003) showed convergent validity for the TIPI with the corresponding items of

Five-Item Personality Inventory and the Big-Five Inventory, discriminant validity with non-corresponding items, validity for peer evaluations, and high test-retest reliability. The TIPI measures extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience. Some examples of the items that are rated are: dependable, self-disciplined; disorganized, careless; critical, quarrelsome.

The second instrument, the RLS, has 11 items scored on a 7-point Likert-type scale. Reysen (2005) showed convergent validity with the agreeableness item of the 100-Adjective Big Five Personality Test and discriminant validity with extraversion, conscientiousness, emotional stability, and openness to experience items. The scale also shows high internal validity. Some examples of the items are: I would ask this person for advice, I would like this person as a coworker, I would like this person as a roommate.

## RESULTS

Participants' composite scores for the RLS were computed (Cronbach's alpha = .77). The RLS yields one composite score of likability, which allowed a test of differences in likability of the target person based on participants' media message condition. This was done via an analysis of variance (ANOVA). No significant main effect of media message was found,  $F(4, 100) = .504, p = .77$ . Likability ratings for the psychological ( $M = 4.58, SD = 0.64$ ), social ( $M = 4.64, SD = 0.61$ ), physiological ( $M = 4.47, SD = 0.65$ ), combination ( $M = 4.66, SD = 0.59$ ), and control conditions ( $M = 4.47, SD = 0.60$ ) were not statistically different from one another.

The TIPI provided ten individual scores, two each in the following areas: extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience. The effect of the media message on each personality dimension was assessed using ANOVAs. Two interesting effects emerged on personality dimensions. There was a main effect of condition on perceived extraversion of the target woman,  $F(4, 100) = 2.65, p = .038$ . Post-hoc analyses indicated that perceived extraversion was higher in the combined condition ( $M = 4.95, SD = 0.81$ ) than in the psychological condition ( $M = 4.00, SD = 1.24$ ). No other significant differences occurred between conditions (social:  $M = 4.87, SD = 0.97$ ; physiological:  $M = 4.53, SD = 1.01$ ; control:  $M = 4.35, SD = 0.99$ ). There was also a marginal effect of condition on the target woman's perceived warmth,  $F(4, 98) = 1.69, p = .056$ . Participants in the combined condition perceived the woman as exuding more warmth ( $M = 5.05, SD = 0.81$ ) than did participants in the social condition ( $M = 4.36, SD = 0.58$ ). No other significant differences between conditions were

present (psychological:  $M = 4.86$ ,  $SD = 0.86$ ; physiological:  $M = 4.48$ ,  $SD = 0.99$ ; control:  $M = 4.53$ ,  $SD = 0.87$ ).

Exploratory analyses indicated that neither gender nor student status affected participants' evaluation of the target woman. Due to an error in the survey, age demographics were only collected from 56% of respondents. Therefore, results were compared between university students and non-students as an indicator of generational and educational differences. Further, self-reported underweight/normal weight participants (46%) and overweight/obese participants (54%) did not differ on their perceptions of the target woman. Weight categories were determined using BMI (weight in pounds x 703 / height in inches squared) (BMI formula, n.d.). Underweight to normal weight participants were identified using  $BMI < 25$  for normal weight ( $n = 47$ ) and  $BMI \geq 25$  for overweight ( $n = 55$ ) (BMI related disease, n.d.).

## DISCUSSION

The prediction that a multiple factors message on the causes of obesity would be significantly more effective at reducing negative evaluations of an overweight individual than would messages focusing on only a single cause of obesity or than no relevant message was not supported. There were no statistically significant differences between the multiple factors condition and single factor conditions. There was also no significant difference between the multiple factors condition and the control condition at reducing negative evaluations of an overweight individual.

The prediction that the psychological factors condition would be the most effective among the single factors at reducing negative evaluations of an overweight individual was also not supported. There were no significant differences between any of the single factor manipulations.

Although Puhl, Schwartz and Brownell (2005) found that educating people about the causes of obesity that are outside of one's personal control increased favorable attitudes towards overweight individuals, this study did not. Post-study feedback revealed the participants to be predominately well-educated individuals. Few of the participants had less than a four-year university education. Higher education correlates with lower prejudice (Allport, 1979; Wagner & Zick, 1995). The study could be replicated on a less educated population and return results more indicative of the population as a whole. As of 2009, only 22% of Americans have a four-year college education (Ryan & Siebens, 2012).

Some participants recognized immediately that the study's intent was to elicit an evaluation of the subject based on appearances and may have unintentionally scored towards the mean. Some expressed the opinion that it was not possible to evaluate the person in the vignette given so little information about her. Because the intent of the survey was to elicit evaluations based strictly on appearance, giving more information than very basic demographics would defeat the purpose of the survey. One participant stated that, because the photograph was not a full body image, he judged her appearance based only on her face and not her body. In future studies, it would be helpful to test the image to be used to determine if participants actually see the subject as overweight. This particular image was used as an example of an overweight person in another study (see Campbell & Mohr, 2011), so there is reason to believe it is a good representation.

Changing the assessment method for obesity bias is an important consideration for future research. It is possible that replicating the study with one or more of the measures used in the referenced studies (e.g., Obese Persons Trait Survey, Belief About Obese Persons, Puhl, et al., 2005; the Adjective Checklist, or the Shared Activity Questionnaire, Bell & Morgan, 2000) would result in a different outcome. Other valid measures to consider when replicating the study might include the Anti-fat Attitudes Questionnaire (Crandall, 1994) or the Attitudes Towards Obese Persons Scale (Allison, 1994). Using such surveys in a pre- and post-test design may provide evidence of a reduction in bias based on information content. Further, this study used a very abbreviated version measuring the five factors of personality, the TIPI scale, to avoid

participant fatigue. More significant results might be revealed with a 60-item version of the same scale - the NEO Five Factor Inventory or the 44-item Big Five Inventory (Gosling, et al. 2003).

Given the long-term negative effects of belonging to a stigmatized population and the tremendous amount of bias that exists in our country today, finding ways to reduce people's anti-fat attitudes and prejudices is necessary. The costs of prejudice to the individual and to society are well documented (see Allport, 1979; Bassannini & Saint-Martin, 2008; Puhl & Brownell, 2001; Puhl & Heuer, 2010). Although the multiple factor messages in this study did not show much significant effect, finding and implementing ways to reduce bias will reduce these tolls on Americans and promote the use of these resources in other arenas.

## **APPENDIX A: INFORMED CONSENT**



## EXPLANATION OF RESEARCH

Title of Project: Effects of Intellectual Tasks on Collaboration

Principal Investigator: Erin Murdoch, Ph.D.

Other Investigators: Kimberly Mendoza

You are being invited to take part in a research study. Whether you take part is up to you.

The purpose of this study is to explore how performing an intellectual task affects a person's ability to work as part of a team.

This study is fully online, using a survey website called Qualtrics. You will be asked to read one newspaper article and then answer some questions about it. You will then view a vignette and answer questions about teamwork. You do not have to answer every question or complete every task. You will not lose any benefits if you skip questions or tasks.

We expect that you will be in this research study for 30 minutes.

You must be 18 years of age or older to take part in this research study.

Study contact for questions about the study or to report a problem: If you have questions, concerns, or complaints Erin Murdoch, Ph.D., Psychology Department, College of Sciences, at (321)433-7934 or by email at erin.murdoch@ucf.edu.

IRB contact about your rights in the study or to report a complaint: Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

## **APPENDIX B: SAMPLE ARTICLES**

## Sample Article: Psychological Factors



Science

Psychological, Emotional Factors Tied to Obesity  
By Madison James

As Americans, we like to see ourselves as the shapers of our own destinies. Just as America is seen as the land of opportunity, we like to believe that we make our own opportunities and determine our own personalities and characters. A study published by the Centers for Disease Control shows that our childhood experiences influence our behavior to a greater degree than previously understood.

Americans have diverse childhood experiences and, while our childhood memories are unique, we like to reminisce that our childhoods were a happier, easier time. However, the CDC's Adverse Childhood Experiences (ACE) study shows that a majority of Americans suffered some form of abuse, neglect or other emotionally harmful influence as a child and that those experiences are associated with an increased risk of obesity.

Scientists polled the adult members of a health maintenance organization and asked each participant to fill out a short questionnaire about their childhood experiences in the areas of abuse, neglect, and exposure to drugs, addiction, crime, partner abuse or single parenthood. Among 17,337 respondents, 30% of men had been physically abused. Among the women, 25% had been sexually abused before the age of 14. Fully 67% of those who responded reported at least one ACE, about the same percentage of Americans that are overweight.

Although diet and lack of exercise were once thought to be the leading causes of obesity, the ACE study suggests the need to look further at the influence of negative childhood experiences.

## Sample Article: Physiological Factors



Science

Physiological, Genetic Factors Tied to Obesity  
By Madison James

As Americans, we like to see ourselves as the shapers of our own destinies. Just as America is seen as the land of opportunity, we like to believe that we make our own opportunities and determine our own personalities and characters. A new book by the New York Times Science writer Gary Taubes shows that genetic inheritance and physiology influence our eating behavior to a greater degree than previously understood.

Americans have diverse genetic and ethnic inheritances and, while each person is unique blend of biological influences, we like to imagine that we are all dealt similar physiological cards. However, the Taubes research shows that about one third of Americans have a genetic inheritance that predisposes the individual to an increased risk of obesity.

Taubes performed an extensive review of current research in metabolism and endocrinology and found that around 30% of people have inherited a contradictory reaction to simple and complex carbohydrates, staples of today's American diet. For that percentage of Americans, eating carbohydrates, especially those found in sugar, bread, rice potatoes, and corn, causes an overproduction of insulin. This leads the body to convert the calories directly to fat, even though the body's cells and organs are starving for those calories. The deprived cells crave nutrition and send out more hunger signals, leading to another cycle of non-nutritive eating.

Although diet and lack of exercise were once thought to be the leading causes of obesity, Taubes' research suggests the need to look further at the influence of physiological and genetic factors.

## Sample Article: Social Factors



Science

Economic, Social Factors Tied to Obesity  
By Madison James

As Americans, we like to see ourselves as the shapers of our own destinies. Just as America is seen as the land of opportunity, we like to believe that we make our own opportunities and determine our own destinies. A report published in Great Britain's Economic Journal and a book about eating behavior show that society and economics influence eating patterns to a greater degree than previously understood.

Americans have diverse socioeconomic experiences and, while our individual backgrounds are unique, we like to suppose that every American determines his own behavior. However, Andrew Oswald and Nattavudh Powdthavee show that societal influences are stronger than previously thought. Greater affluence and increasingly affordable food correlates with a corresponding rise in the average Body Mass Index of a society. Just as new and continually updated technologies encourage impulsivity, the availability of continually new varieties of processed and restaurant food encourages impulsive eating in all members of a population.

Researcher Brian Wansink explores social influences in the book *Mindless Eating: Why We Eat More Than We Think*. Corporate marketing uses science and psychology to influence both what and how much we eat. Most of the food choices we make are affected by social influences like advertising and packaging. As the profit margin on food decreases due to more efficient production, the only way for the companies to increase their profits is to persuade us to eat more. Wansink also cites our technology dependent lifestyle, in which we pay less attention to acquiring, preparing and eating food, as a factor in our overeating.

Although diet and lack of exercise were once thought to be the leading causes of obesity, the research suggests the need to look further at the influence of social and economic pressures.

## Sample Article: Combined Factors

# The New York Times

Science

Multiple Outside Factors Tied to Obesity  
By Madison James

As Americans, we like to see ourselves as the shapers of our own destinies. Just as America is seen as the land of opportunity, we like to believe that we make our own opportunities and determine our own life choices. A study published by Yale University shows that we have less individual control over our own eating habits and body weight than previously understood.

Americans are diverse people and, while we are all unique individuals, we like to believe that our body weight is completely under our own control. However, research at Yale's Rudd Center for Food Policy and Obesity shows that Americans have little say about weight. A combination of multiple factors determine whether we will be fat, thin or somewhere in between.

Childhood psychological experiences of abuse, neglect, addiction or crime have a high correlation with overweight, especially in women who experience physical or sexual abuse. Physiological studies show that about one third of Americans have an genetic predisposition to converting carbohydrates immediately to fat. Add in the socio-economic factors of abundant, inexpensive grains and meats, pervasive marketing by food companies, and a sedentary lifestyle, and the result is a combination of factors that result in a population that is one third obese and one third overweight.

Although diet and lack of exercise were once thought to be the leading causes of obesity, the Yale research suggests the need to look further at the influence of psychological, biological and social factors.

## Sample Article: Control Condition

# The New York Times

Science

Counting the Vanishing Bees  
By DYLAN WALSH

When United Nations experts noticed that crop production was flagging in seven countries around the world, from Brazil to Nepal, they contacted Gretchen LeBuhn, an associate professor at San Francisco State University who studies bees. Dr. LeBuhn was hired to see if it would be feasible to monitor this decline.

Her results, published in the most recent issue of *Conservation Biology*, outline a new monitoring method, which is remarkably cheap and efficient. The new method requires only a few hundred pan traps: bright shallow bowls partly filled with soapy water or propylene glycol. For national, regional or global bee populations, the pan traps can do the job at a cost of less than \$2 million over five years.

A critical feature of the published program is its ability to capture very slight population changes of 2 to 5 percent in a small window of time, thereby acting as an early-warning system. "Insect populations naturally go up and down a lot," Dr. LeBuhn said. "Because they're so variable, detecting a trend can be hard." An even subtler and more intractable challenge is identifying bees once they've been collected. Outside of about a half-dozen experts across the country, very few people can efficiently identify bees by genus, much less by species.

In the case of agriculture, poor productivity of a particular crop could be caused by the disappearance of a single, very efficient pollinator. Without data at the species level, this crucial fact might be overlooked. LeBuhn's pan traps are an effective and economical solution for bee tracking.

## **APPENDIX C: READING COMPREHENSION SURVEYS**

## Reading Comprehension Surveys

Answer True or False

### Psychological Factors

- 1) This article was published in The Wall Street Journal.
- 2) Diet and lack of exercise are the only cause of obesity.
- 3) The majority of study participants reported at least one negative childhood experience.
- 4) Childhood experiences have no influence on behavior.
- 5) Single parenthood is considered an adverse childhood experience.
- 6) Only 10% of the study participants reported physical abuse.
- 7) One fourth of women reported being sexually abused before their teens.
- 8) The ACE study was published by the World Health Organization.
- 9) There is no relationship between childhood abuse and obesity.

### Physiological Factors

- 1) This article was published in The Wall Street Journal.
- 2) Diet and lack of exercise are the only causes of obesity.
- 3) Approximately one third of Americans have a genetic tendency to store fat easily.
- 4) Genetic inheritance has no influence on obesity.
- 5) Rice, potatoes and corn are common in the American diet.
- 6) Only 10% of Americans inherit the biological tendency for obesity.
- 7) Eating carbohydrates of any kind causes the body to store fat in some people.
- 8) Gary Taubes is a writer for the Washington Post.
- 9) There is no relationship between genetics and obesity.

### Social Factors

- 1) This article was published in The Wall Street Journal.
- 2) Diet and lack of exercise are the only cause of obesity.
- 3) A study in Great Britain found a link between inexpensive food and obesity.
- 4) Advertising has no influence on eating.
- 5) Our technology rich lifestyle is considered a contributor to obesity.
- 6) Food manufacturers do not influence what we consume.
- 7) A greater variety of food choices increases impulsive eating.
- 8) Brian Wansink is the author of the book Economic Journal.
- 9) There is no relationship between technology and obesity.

### Combined Factors

- 1) This article was published in The Wall Street Journal.
- 2) Diet and lack of exercise are the only cause of obesity.
- 3) Obesity has been linked with negative childhood experiences.
- 4) Childhood experiences have no influence on eating behavior.
- 6) About 33% percent of Americans easily convert carbohydrates to fat.
- 7) Less than 50% of Americans are overweight.
- 8) The abundance of inexpensive food is linked to obesity.
- 9) The Rudd Center is at Harvard University.
- 10) The causes of obesity are entirely under one's individual control.

### Control Condition

- 1) This article was published in The Wall Street Journal.
- 2) Bee populations are increasing around the world.
- 3) Insect populations increase and decrease often.
- 4) Pan traps have not been shown to be effective for bee monitoring.
- 5) Bee populations are important to the agriculture industry.
- 6) Pan traps are filled with plain water.
- 7) Gretchen LeBuhn studies bees at San Francisco State University.
- 8) Fluctuations in bee populations have no effect on agriculture.
- 9) Individual bee species are hard to identify.

**APPENDIX D: SUBJECT PHOTO AND VIGNETTE**

### **Subject Photo and Vignette**



Karen is a 20 year old student at a university in the southeastern United States. She has two siblings. She is a full-time student, taking 4 to 5 classes per semester. She lives in an off-campus house with 3 housemates. She commutes to both school and a part-time job in an older model car.

## **APPENDIX E: REYSEN LIKABILITY SCALE**

## Reysen Likability Scale

1 very strongly disagree to 7 very strongly agree

This person is friendly

This person is likeable

This person is warm

This person is approachable

I would ask this person for advice

I would like this person as a coworker

I would like this person as a roommate

I would like to be friends with this person

This person is physically attractive

This person is similar to me

This person is knowledgeable

Reysen, S. (2005). Construction of a new scale: The Reysen likability scale. *Social Behavior & Personality: An International Journal*, 33(2), 201-208.

## **APPENDIX F: TEN ITEM PERSONALITY INVENTORY**

### **Ten-Item Personality Inventory-(TIPI)**

Here are a number of personality traits that may or may not apply to you. Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement.

You should rate the extent to which the pair of traits applies to the person above, even if one characteristic applies more strongly than the other.

Disagree strongly (1) – Disagree moderately (2) – Disagree a little (3) - Neither agree nor disagree (4) - Agree a little (5) – Agree moderately (6) – Agree strongly (7)

I see her as:

1. \_\_\_\_ Extraverted, enthusiastic.
  2. \_\_\_\_ Critical, quarrelsome.
  3. \_\_\_\_ Dependable, self-disciplined.
  4. \_\_\_\_ Anxious, easily upset.
  5. \_\_\_\_ Open to new experiences, complex.
  6. \_\_\_\_ Reserved, quiet.
  7. \_\_\_\_ Sympathetic, warm.
  8. \_\_\_\_ Disorganized, careless.
  9. \_\_\_\_ Calm, emotionally stable.
  10. \_\_\_\_ Conventional, uncreative.
- 

TIPI scale scoring (“R” denotes reverse-scored items):

Extraversion: 1, 6R; Agreeableness: 2R, 7; Conscientiousness; 3, 8R; Emotional Stability: 4R, 9; Openness to Experiences: 5, 10R.

Gosling, S. D., Rentfrow, P. J., & Swann Jr, W. B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality*, 37(6), 504. doi:10.1016/S0092-6566(03)00046-1

## **APPENDIX G: DEMOGRAPHICS**

## **Demographics**

Age

Gender

University student: Yes or No

Class standing: Freshman, Sophomore, Junior, Senior, Graduate

Race

Height

Weight

## **APPENDIX H: DEBRIEFING**

## Debriefing



### Debriefing Statement

For the study entitled:  
Effects of Intellectual Tasks on Collaboration

Dear Participant;

During this study, you were asked to read one newspaper article and then answer some questions about it. You then viewed a vignette and answered questions about teamwork. You were told that the purpose of the study was to explore how performing an intellectual task affects a person's ability to work as part of a team. The actual purpose of the study was to examine the effectiveness of emotional versus educational appeals in reducing obesity bias. The actual title for this research is "Alleviating Obesity Bias: Does an Emotional Appeal Work?"

We did not tell you everything about the purpose of the study because knowledge of the topic may have influenced your responses. It is important to find ways to reduce bias against obesity given the adverse effects that correspond with the stigma of being overweight. Withholding the true purpose of the study from you was necessary so that we can accurately evaluate whether emotional appeals are more effective than are educational appeals in reducing the obesity bias.

You are reminded that your original consent document included the following information: "You do not have to answer every question or complete every task. You will not lose any benefits if you skip questions or tasks."

If you have any concerns about your participation or the data you provided in light of this disclosure, please discuss this with us. We will be happy to provide any information we can to help answer questions you have about this study.

The responses in this study are de-identified and cannot be linked to you.

Study contact for questions about the study or to report a problem: If you have questions, concerns, or complaints or think the research has hurt you: Erin Murdoch, Ph.D., Psychology Department, College of Sciences, at (321)433-7934 or by email at [erin.murdoch@ucf.edu](mailto:erin.murdoch@ucf.edu).

IRB contact about your rights in the study or to report a complaint: Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

Please again accept our appreciation for your participation in this study.

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