

Prevalence and Stigmatization of Eating Disorders:
A Quantitative Analysis of Athletic Activity,
Body Image, and Stigmatized Attitudes



By
Shirley L. Fang

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Professor Yusaku Horiuchi, Advisor
Program in Quantitative Social Sciences
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Abstract

Emphasis on appearance and social pressure to achieve a certain ideal have always pervaded society but have recently become much more pervasive due to the rise of social media. With edited images of models on every advertisement and website, is it any wonder that rates of body dissatisfaction are on the rise? In Project 1 of this study, I compare rates of eating disorders (EDs) among undergraduate students at Dartmouth College—specifically dancers, other athletes, and the remainder of the student body, as well as between men and women. My findings suggest that overall, women are at a higher risk for EDs than men, but participation in dance or other sports is correlated positively with body satisfaction for women, whereas men’s body image does not change significantly with athletic activity. Project 2 of this study examines whether stigmatized attitudes towards individuals with EDs differ by gender. The results of Project 2 demonstrate that on average, women with EDs are more likely to be taken seriously than men with the same condition. Furthermore, women may be more inclined than men to suspect that an individual suffers from an ED. Given that EDs have the highest rate of mortality of any mental illness, understanding the prevalence, effects, and perceptions of EDs among different populations is crucial to developing effective measures of prevention and treatment.

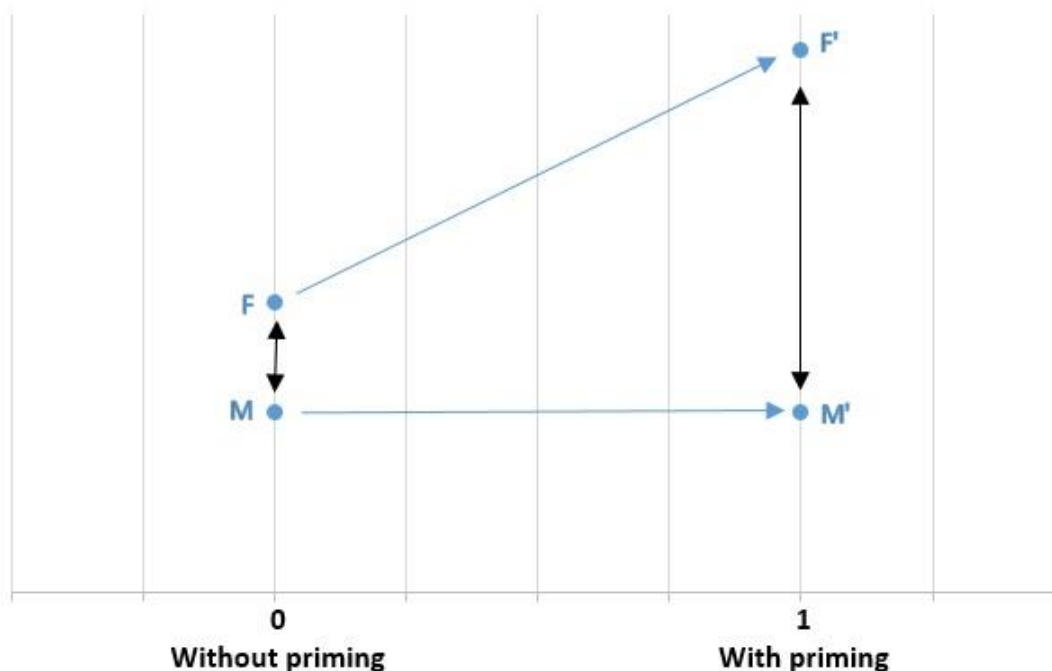
Research Questions

To address current gaps in existing literature on the effect and prevalence of eating disorders (EDs) among different populations, this study poses a series of questions concerning the multiple factors at play. First, how do certain athletic subgroups—specifically dancers, other athletes, and the remainder of the population—differ in terms of body image and disordered eating patterns? Given the inconclusive and contradictory state of the current literature concerning elite athletes, it is difficult to predict how rates of EDs will vary between the two latter groups. However, a survey conducted by NEDA demonstrated that athletes in aesthetic sports were at the highest risk of developing EDs, with no additional information on those who did not participate regularly in sports at the professional level. Thus, I hypothesize that of the three groups, the greatest percentage of dancers will demonstrate disordered eating behaviors, but how the rest of the population compares to athletes remains to be determined.

Secondly, this study will combine two major factors in order to explore the following question: How are ED rates affected when sport and gender are considered in conjunction with one another? Numerous studies have consistently shown that body dissatisfaction and disordered eating patterns are more prevalent among women than men, but how do these statistics change when we account for athleticism as well? For example, how do ED rates differ between male dancers and female athletes?

Finally, I seek to explore whether stigmatized attitudes towards individuals with EDs differ by gender. Despite the commonly-held belief and statistics demonstrating that men with EDs are more stigmatized than women, several studies have shown no significant difference between genders. This study aims to clarify these discrepancies by asking subjects to respond to hypothetical individuals with disordered eating symptoms. I make the following three hypotheses

in regard to the stigmatization of EDs. First, I hypothesize that when subjects are primed to believe that EDs are “women’s issues,” hypothetical women will be perceived to have more EDs than hypothetical men ($F' > M'$). Secondly, I hypothesize that even when respondents are not primed in this manner, hypothetical women will still be perceived to have more EDs than hypothetical men ($F > M$). Finally, I hypothesize that this perceived gender difference will be greater from primed respondents than from non-primed respondents ($F' - M' > F - M$). In other words, I believe that respondents will be much more likely to perceive a woman as having an ED than a man, even when the two individuals are in identical situations; furthermore, I believe that this discrepancy between genders becomes even more pronounced when EDs are framed as a “women’s issue.”



Introduction

What Is An Eating Disorder?

Eating disorders (EDs) are illnesses that often lead to serious mental and physical health problems and have life-threatening consequences. They can typically be categorized into one of the four following types: Anorexia Nervosa (AN), Bulimia Nervosa (BN), Binge Eating Disorder (BED), or Other Specified Feeding or Eating Disorder (OSFED), previously described as Eating Disorder Not Otherwise Specified (EDNOS). Some symptoms of AN include inadequate food intake, severe weight loss, obsession with weight, and intense fear of weight gain. Both BN and BED are characterized by frequent episodes of consuming large amounts of food, but those with BN typically follow binges with purgatory behaviors to prevent weight gain, such as vomiting or abusing laxatives. In both cases, the individual typically feels out of control, ashamed, and guilty during and after binge eating episodes. Finally, OSFED is an eating disorder that, like the others, causes significant distress or impairment, but does not meet the criteria for any of the above EDs. A few examples of OSFED include atypical anorexia nervosa (where the individual is not underweight), bulimia nervosa or binge eating disorder with less frequent occurrences, and purging disorder (purging without binge eating). Though symptoms vary depending on the disorder, all of these illnesses are linked to significant comorbidity, functional impairment, and suicidality. Eating disorders have the highest mortality rate of any mental illness,¹ which is unsurprising, given that over half of those with an ED also meet the criteria for depression due to lack of nourishment and negative self-image.

¹ “Eating Disorder Statistics,” *National Association of Anorexia Nervosa and Associated Disorders*, accessed April 12, 2017, <http://www.anad.org/get-information/about-eating-disorders/eating-disorders-statistics>.

According to the National Eating Disorders Association (NEDA) and the National Association of Anorexia Nervosa and Associated Disorders (ANAD), up to 30 million people of all ages and genders currently suffer from an eating disorder in the United States,² and this rate has been steadily increasing for several decades.³ Approximately 95% of those diagnosed with an ED are between the ages of 12 and 26, with adolescents and college students being at the highest risk for developing irregular eating behaviors.⁴ Furthermore, several studies have demonstrated that disordered eating patterns and body dissatisfaction may be correlated with gender and physical activity. Despite the steady growth and prevalence of EDs and the serious, potentially fatal consequences of these physiological illnesses, societal pressure to be thin continues to be pervasive, insurance coverage for treatment remains inadequate, and research continues to be under-funded.

Overview of Research

Understanding the effect of EDs on different populations is crucial to the customization and thus improvement of prevention and treatment. Project 1 explores how body image differs by gender and athletic group within a small college population, while Project 2 examines variance by gender in stigmatized attitudes towards individuals with EDs. First, in my literature review, I will analyze the research that has already been done and the gaps that remain. After identifying these gaps in knowledge, I will state the methods I use to address my research questions and hypotheses. Then, the methodology section will describe the sampling methods and anonymous surveys I use to collect data. Next, I will report my results and discuss their

² “Eating Disorder Statistics,” *National Association of Anorexia Nervosa and Associated Disorders*.

³ “Get the Facts on Eating Disorders,” *National Eating Disorders Association*, accessed April 12, 2017, <http://www.nationaleatingdisorders.org/get-facts-eating-disorders>.

⁴ “Eating Disorder Statistics,” *National Association of Anorexia Nervosa and Associated Disorders*.

implications. Finally, I will conclude this study with a discussion of its limitations, significance, and relevance to modern ED research and treatment.

Literature Review

Gender and Eating Disorders

Current statistics demonstrate that a greater percentage of women exhibit eating disorder (ED) symptoms and are diagnosed with anorexia nervosa or bulimia nervosa than men.⁵ The prevalence of EDs among women can be explained, in part, by the expectations set upon them by society. Although physical appearance is important in society's perception of both men and women, it is much more central in the evaluation of women.⁶ Because women are so often judged based on their appearance, when a woman believes that she fails to meet cultural standards of beauty, she is more likely to feel inadequate and thus develop thoughts of body dissatisfaction and eating disordered behaviors. In one study examining gender differences in college students' eating patterns, 20% of the female students surveyed scored in the abnormal range on the Eating Attitudes Test (EAT) scale, while only 2% of male students exhibited abnormal scores, demonstrating a statistically significant difference between the two genders.⁷ The women in this study were shown to be significantly more conscious of their weight and obsessed with the desire to be thin.

⁵ "Get the Facts on Eating Disorders," *National Eating Disorders Association*.

⁶ Miranda E. Reiter and Shannon N. Davis, "Gendered Personalities and Development of Eating Disorders in College Students," *International Review of Modern Sociology* 40, no. 1 (2014): 36.

⁷ Sharlene Hesse-Biber, "Eating Patterns and Disorders in a College Population: Are College Women's Eating Problems a New Phenomenon?," *Sex Roles* 20, no. 1-2 (1989): 74.

However, recent studies have demonstrated that rates of eating disorders among men are on the rise as well. Furthermore, due to the social stigma of eating disorders being “women’s diseases,”⁸ men may be more reluctant to report or seek treatment for problematic eating behaviors, making eating disorders among men more difficult to identify and treat. Thus, rates of EDs among men may actually be higher than the current literature suggests, particularly among elite male athletes, some of whom “will go to any length to gain a competitive edge.”⁹ More research must be done in order to understand the ED gap between men and women, and to explore the role that gender plays in body dissatisfaction and eating patterns.

Physical Activity, Body Image, and Eating Disorders

In addition to gender, the level and type of physical activity in which someone participates can have a substantial effect on body image and eating behavior. One particular sport that merits thorough analysis is dance, due to its demanding nature both physically and aesthetically. The visual aspect of dance emphasizes buoyancy, sleek and lengthened lines, and the illusion of weightlessness. Because dancers are constantly under scrutiny—both by themselves, surrounded by mirrors in the studio, and by the public—many are prone to treat their appearance and weight in obsessive ways that are characteristic of eating disorder behaviors. Even their skin-tight attire, which puts their bodies completely on display and open to criticism, often contributes to body dissatisfaction. In one study, dancers reported significantly more positive body and self-perceptions after attending rehearsal wearing “junk” (defined as loose-fitting clothing, such as sweatpants) instead of their typical uniform comprised of form-fitting

⁸ Lisa DeFeciani, “Eating Disorders and Body Image Concerns among Male Athletes,” *Clinical Social Work Journal* 44, no. 1 (2016): 114.

⁹ DeFeciani, “Eating Disorders and Body Image,” 120.

leotards and tights.¹⁰ Furthermore, the occupational culture of the dance world promotes the tolerance and even acceptance of both pain and hunger. Because dancers strive to make their movements appear effortless and their bodies as lithe as possible, they train themselves to ignore pain and hunger cues. While attempting to mold their figures into the ideal ballet body, many dancers “knowingly silence their own material bodies” and “purposely misunderstand the ‘language of the organs,’ ignoring their hunger and lack of energy.”¹¹ Pain and hunger are viewed not as signals to stop, but rather as boundaries to cross, encouraging restriction, purging, and other ED behaviors.

It should come as no surprise, therefore, that the designation of overcoming pain as heroic, as well as the visually demanding aspect of dance, produce a breeding ground for skewed self-perception and eating disorders. But how do body image and eating patterns manifest themselves in those who participate in less aesthetic sports or in those who do not participate in regular physical activity?

Given that obsessions with exercise and healthy eating often develop in athletes and are characteristic of disordered eating behaviors, it is important to consider how athleticism affects ED rates. The results produced by existing research are unclear and contradictory. One such study, performed on non-professional athletes, regular gym users, and non-competitive body builders, concluded that these “athletes...have a high degree of body uneasiness and disordered eating attitudes and behaviors.”¹² Another study, however, drew on interviews with a wide

¹⁰ Brena R. Price and Terry F. Pettijohn II, “The Effect of Ballet Dance Attire on Body and Self-Perceptions of Female Dancers,” *Social Behavior and Personality: An International Journal* 34, no. 8 (2006): 994.

¹¹ Anna Aalten, “Listening to the Dancer’s Body,” *The Sociological Review* 55, no. 1 (2007): 122.

¹² Claudia Ravaldi, Alfredo Vannacci, Teresa Zucchi, Edoardo Mannucci, Pier Luigi Cabras, Maura Boldrini, Lorian Murciano, Carlo Maria Rotella, and Valdo Ricca, “Eating Disorders and Body Image Disturbances among Ballet Dancers, Gymnasium Users and Body Builders,” *Psychopathology* 36, no. 5 (2003): 253.

variety of both college student and professional athletes—bodybuilders, ski jumpers, and soccer players—and determined that “despite being generally concerned about their bodily appearance, most athletes were satisfied with how they looked.”¹³ Furthermore, in their article examining students at a southwestern university in the United States, Peden, Stiles, Vandehey, and Diekhoff suggest that athletes may demonstrate higher body satisfaction than other, non-athletic populations, because they “focus more on their abilities and less on their appearance” and attribute their capacity to deal more effectively with societal pressures to the existence of a “supportive athletic subculture.”¹⁴ On the other hand, DeFeciani condemns this very subculture as one that “promotes the use of unhealthy measures, such as restrictive eating, bingeing and purging.”¹⁵

Overall, it is unclear exactly how large a role—if any—participation in sports plays in body image and eating behaviors, especially when considered in conjunction with gender. This study aims to clarify the existing discrepancies and fill the gaps in current research by exploring how male and female dancers, elite athletes, and non-athletes differ in terms of body dissatisfaction and disordered eating patterns.

Stigma and Eating Disorders

One of the greatest barriers to treatment is the stigmatization of EDs, which is still a relatively unexplored phenomenon. Until recently, very little research on the stigmatization of EDs had been done, and the existing research offers contradictory results. Many believe that men

¹³ Nina Waaler Loland, “Some Contradictions and Tensions in Elite Sportsmen’s Attitudes towards Their Bodies,” *International Review for the Sociology of Sport* 34, no. 3 (1999): 294.

¹⁴ Jamie Peden, Beverly L. Stiles, Michael Vandehey, and George Diekhoff, “The Effects of External Pressures and Competitiveness on Characteristics of Eating Disorders and Body Dissatisfaction,” *Journal of Sports & Social Issues* 32, no. 4 (2008): 424-425.

¹⁵ DeFeciani, “Eating Disorders and Body Image,” 114.

with EDs are more stigmatized than women, in part because EDs are usually perceived as “women’s diseases.” Furthermore, men who struggle with body image are sometimes labeled as feminine and thus ridiculed for their perceived lack of masculinity. Men are expected not to be “emotionally vulnerable in our present culture, yet they encounter pressures on a daily basis to be more muscular and meet the current male body shape ideals.”¹⁶ Thus, men must navigate the difficulty of watching their figures, while simultaneously showing no emotional signs of doing so, in order to meet society’s standards of masculinity. Those who do express emotional vulnerability may be ridiculed, presumably more so than women. On the other hand, in their study comparing stigmatization of eating disorders and obesity in men and women, Murakami, Essayli, and Latner found no statistically significant difference in attitudes towards men and women with EDs.¹⁷ Although it is clear that stigmatized attitudes towards individuals struggling with EDs exist, it remains to be determined whether these attitudes are actually more prevalent regarding men than women.

Methodology

This study is divided into two separate projects.¹⁸ Project 1 examines EDs, athletic activity, and gender within the Dartmouth College undergraduate population. Project 2 evaluates stigmatized attitudes towards EDs and individuals struggling with EDs among the larger U.S. population.

¹⁶ Eric Strother, Raymond Lemberg, Stevie Chariese Stanford, and Dayton Turberville, “Eating Disorders in Men: Underdiagnosed, Undertreated, and Misunderstood,” *Eating Disorders* 20, no. 5 (2012): 353.

¹⁷ Jessica M. Murakami, Jamal H. Essayli, and Janet D. Latner, “The Relative Stigmatization of Eating Disorders and Obesity in Males and Females,” *Appetite* 102 (2016): 80.

¹⁸ This study and both of its projects were approved by the Committee for the Protection of Human Subjects (CPHS) at Dartmouth on April 7, 2017. The approval number for this study is STUDY00030224.

Research Design (Project 1)

In order to answer my research questions, I designed and administered an observational (i.e.: non-experimental) survey that was fielded during Dartmouth's 2017 spring term. On April 11, 2017, I sent one wave of e-mails to the entire Dartmouth undergraduate population (see Appendix A), which contained a total of 4,310 students at the time of the study, asking them to participate in an online survey designed with Qualtrics. Two days later, on April 13, 2017, I sent a second wave of e-mails, asking students to participate (see Appendix A). The survey took approximately 5 minutes to complete, which was not such a sizable time commitment that it deterred subjects from responding. Additionally, I offered a raffle for one of three \$50 Amazon.com gift cards in order to incentivize subjects to participate.

In total, the survey was completed by 1,049 participants, or approximately 24.3% of all Dartmouth undergraduate students, which is a significant portion of the population. Of these 1,049 respondents, 35.1% (n = 368) identified as a man, 63.7% (n = 668) identified as a woman, and 1.2% (n = 13) identified as non-binary. Participants were allowed to select all races and ethnicities with which they identified; 60.2% (n = 632) identified as Non-Hispanic White or Euro-American, 20.3% (n = 213) as East Asian or Asian American, 4.5% (n = 47) as South Asian or Indian American, 6.0% (n = 63) as Black, Afro-Caribbean or African American, 9.4% (n = 99) as Latino or Hispanic American, 1.5% (n = 16) as Middle Eastern or Arab American, 3.4% (n = 36) as Native American or Alaskan Native, and 4.3% (n = 45) as Other. Additionally, 84.5% (n = 886) identified as heterosexual or straight, 3.7% (n = 39) as gay or lesbian (or homosexual), 7.8% (n = 82) as bisexual or pansexual, 1.9% (n = 20) as questioning or unsure, 1.0% (n = 11) as asexual, 0.9% (n = 9) as other; 2 participants declined to answer. Finally, 17.5% (n = 184) respondents selected their annual household income as \$49,999 or lower, 18.2% (n =

191) as between \$50,000 and \$99,999, 26.9% (n = 282) as between \$100,000 and \$199,999, and 35.0% (n = 367) as \$200,000 or higher; 25 participants declined to answer.

According to the Office of Institutional Research, of the 4,310 undergraduate students currently enrolled at Dartmouth, 50.0% (n = 2,154) are male and 50.0% (n = 2,156) are female.¹⁹ Of these undergraduates, 51.9% (n = 2,235) identify as White, 18.5% (n = 799) as Asian, 8.0% (n = 343) as Black or African-American, 10.0% (n = 433) as Hispanic or Latino, 2.3% (n = 99) as American Indian or Alaskan Native, 0.3% (n = 11) as Native Hawaiian or Other Pacific Islander, 5.2% (n = 222) as belonging to two or more races, and 3.9% (n = 168) did not specify their race.²⁰ While there is an overrepresentation of women, underrepresentation of men, and slight overrepresentation of Non-Hispanic White individuals, overall, my sample is fairly representative of Dartmouth's undergraduate population. Because there was an insufficient number of non-binary participants (n = 13) to comprise a significant sample, I excluded these responses from my analysis. All other responses were included.

In this first project, I examine three variables: physical activity, gender, and EDs (see Appendix B). I operationalize gender by asking participants how they identify: man, woman, or non-binary. Similarly, type of physical activity is self-reported by participants as well. I ask subjects if they participate in dance, sports, both, or neither, and to identify the dance style(s) and sport(s) if applicable. Then, I sort their responses into one of the three categories of physical activity. For those who reported participation in both dance and other sports, I include their responses in the dancer subgroup for my analysis. Because I hypothesize that dance is the predominant risk factor and thus more likely to affect an individual's chances of developing an

¹⁹ Enrollment, *Office of Institutional Research*, accessed May 2, 2017, <https://www.dartmouth.edu/~oir/data-reporting/factbook/enrollment.html>.

²⁰ Ibid.

ED, it makes sense to categorize them as such. Doing so—as opposed to placing them in multiple categories—also prevents the overrepresentation of these individuals in my analysis. I create visualizations of my results separately by gender and athletic activity, then by athletic activity within genders, and finally by gender within types of athletic activity.

With these independent variables, my dependent variable is the manifestation of negative body image and/or problematic eating patterns and behaviors. I operationalize my dependent variable using a compositional index based on 13 survey items. Specifically, the level of measurement for each survey item pertaining to ED behaviors is ordinal. With the exception of one question whose responses are based on a numeric scale from 1-10, all 12 other survey items include six answer choices of decreasing intensity, such as “Always, Usually, Often, Sometimes, Rarely, Never.” These questions were taken from the EAT-40 questionnaire and modified.²¹ Behaviors pertaining to restraint and restriction, eating concerns, weight concerns, shape concerns, purging (e.g.: self-induced vomiting, misuse of laxative or diuretics), binge-eating, and exercise habits were examined in this survey. Each question’s responses were assigned a value from 1-6, with the response alluding to lowest body satisfaction (i.e.: Always) representing a 1 and that alluding to highest body satisfaction (i.e.: Never) representing a 6. To standardize the range of values each question can take, I then recode all responses to a 0-1 scale; that is, each ordinal value on the 1-6 scale is recoded to 1/6, 2/6, 3/6, and so on, while each ordinal value on the 1-10 scale is recoded to 1/10, 2/10, 3/10, and so on. Finally, I take the average of all 13 recoded outcome variables, producing each subject’s final ED score, which is a value between 0 and 1. The lower an individual’s body satisfaction, and thus the more at risk an individual is of

²¹ David M. Garner and Paul E. Garfinkel, “The Eating Attitudes Test: An Index of the Symptoms of Anorexia Nervosa,” *Psychological Medicine* 9, no. 2 (1979): 278; David M. Garner, Marion P. Olmsted, Yvonne Bohr, and Paul E. Garfinkel, “The Eating Attitudes Test: Psychometric Features and Clinical Correlates,” *Psychological Medicine* 12, no. 4 (1982): 874.

developing an eating disorder, the lower their numeric response is. Similarly, as the numeric response within a particular attribute of an independent variable decreases, the prevalence of ED risk within that attribute becomes more pronounced. In order to elicit truthful responses from my participants, I include general health and lifestyle “dummy” questions in the survey, so that it is not immediately evident that I am researching ED behaviors, which are a sensitive topic for many. In my analysis, however, I exclude these “dummy” questions and include only those that pertain to EDs and body image.

Using this dependent variable and the intersections of my independent variables, I then perform regression analyses and estimate differences in ED scores across groups after holding other important, self-reported demographic and socioeconomic variables—race, ethnicity, SES, sexual orientation, and age—constant (Appendix C). I utilize a standard ordinary least-squares (OLS) regression method of analysis, using male respondents and respondents who participate in neither dance nor sports as baselines for comparison.

Research Design (Project 2)

In order to answer my research questions concerning the stigmatization of EDs, I designed and administered a randomized experiment during Dartmouth’s 2017 spring term. I applied for and received an undergraduate research grant from Dartmouth College, which I used to find subjects on Amazon.com mechanical turks (MTurks). Then, on April 12, 2017, I asked people pre-registered at MTurks to answer an online survey designed with Qualtrics. As with Project 1, the survey for Project 2 took approximately 5 minutes to complete, which is not such a sizable time commitment that it deterred subjects from responding. Additionally, I offered a \$0.75 reward for accepting the Human Intelligence Task (HIT), which served as an incentive to participate in this study. In total, I received 2,185 responses, 42 of which were incomplete. There

was also not a sufficient number of non-binary participants (n = 14) to comprise a significant sample; thus, I excluded these responses from my analysis. Overall, I used data from 2,132 respondents, 1,135 of which identified as a man and 997 of which identified as a woman, to analyze my results.

Participants were randomly divided into two groups, a treatment group and a control group. The treatment group was given a survey in which EDs were implicitly framed as a “women’s issue” in order to test whether doing so affects stigmatized attitudes towards EDs, particularly among men. More specifically, subjects in the treatment group were shown the below description:

“Mirror, Mirror on the wall...who’s the thinnest one of all?” According to the National Eating Disorders Association, the average American woman is 5’4” and weighs 140 pounds, while the average female American model is 5’11” and weighs 117 pounds. All too often, society associates “thin” with “hard-working, beautiful, strong and self-disciplined.” On the other hand, “fat” is associated with “lazy, ugly, weak and lacking willpower.” As a result, women are rarely satisfied with their image and often feel great anxiety and pressure to achieve or maintain a specific, idealized appearance.

In contrast, the control group did not receive such a description and were given only simple instructions. All participants were then asked to read and answer questions about three vignettes describing hypothetical individuals with different EDs—specifically, binge-eating disorder, anorexia nervosa, and Other Specified Feeding or Eating Disorder. These vignettes were based

on those used by Murakami et al.²² and modified such that they met the DSM-5 criteria for BED, AN, and OSFED.²³

Respondents were given identical vignettes, except I randomized the order in which the vignettes appeared, as well as the gender of the individual described in the vignettes, in order to prevent biases and to examine the impact of gender and type of ED on stigmatized attitudes.

These vignettes depicting three types of eating disorders were as follows:

BED: “Jessica/Stanley is 32 years old and has been overweight since she/he was an adolescent, but in recent years has been told she/he has “severe obesity.” Over the years, Jessica/Stanley has tried a number of diet and healthy eating plans, none of which have worked. She lives by herself/himself and often feels lonely. To counteract these feelings, she/he treats herself/himself with snacks and desserts. However, Jessica’s/Stanley’s diet is regular, with 3 meals a day, and contains a wide variety of foods. When Jessica/Stanley gets home from work, she/he often goes to the fridge for a small snack, but sometimes finds that she/he is unable to stop eating, and continues to eat. For example, she/he may consume an apple, a slice of cheesecake, a sandwich, 5 Oreo cookies, and a glass of milk. Jessica/Stanley often feels guilt and sadness after she/he has eaten all this and despises the shape of her/his body. She/He has often thought about different ways to control her/his weight (i.e.: exercise, vomiting after meals, laxatives), but she/he has never done them.”

AN: “Jane/John is a 30-year old parent of two. Despite major efforts to lose weight in the last three years with a number of diets, she/he has not had much success until recently. In the last 6 months, Jane/John has started jogging every night. If she/he misses a night, she/he feels guilty and jogs twice as far the next day. She/He also limited her/his calorie intake by skipping breakfast and eating

²² Murakami, Essayli, and Latner, “Stigmatization of Eating Disorders and Obesity,” 81-82.

²³ American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*, American Psychiatric Pub, 2013.

salads with lean meats for lunch and dinner. She/He thinks she/he is fat and worthless she/he enjoys compliments from her husband/his wife regarding weight loss. Jane/John is 5'4" tall and weighs 90 pounds/5'10" tall and weighs 130 pounds."

OSFED: "Christine/Andrew is a 24-year old female/male of normal weight with good muscle tone, but feels that she/he has a rounded belly and wants to further tone her/his muscles and lose fat. Every night, Christine/Andrew spends an hour in the gym lifting weights and runs 10 miles every Saturday. Recently, she/he has started replacing her/his breakfast meal with a high protein sports drink. She/He also tries to eat high protein foods through the rest of the day. She/He occasionally (about twice a month) has uncontrolled eating "binges" where she/he eats three slices of pizza in the late afternoon. Christine/Andrew does not have many friends and feels that if she/he changes her/his shape, she/he will be more attractive and well-liked."

I operationalize Project 2's dependent variable—whether the individuals described in vignettes are perceived as exhibiting disordered eating behaviors—using several survey items. The level of measurement for each of my questions is ordinal. For BED, two questions include eleven answer choices ranging on a scale from 0-10, with 0 representing "Very unhealthy" and 10 representing "Very healthy." I use this same scale with three questions pertaining to AN and three questions pertaining to OSFED. However, the last question ("Would you speculate that [name of individual] has an eating disorder?") shown for each of the three hypothetical vignettes includes only three answer choices: Yes (1), Maybe (2), No (3). As with Project 1, I recode all outcome variables to a scale of 0-1 so that each question is given equal weight, then take the average of all outcome variables in order to produce respondents' final scores for each vignette. Thus, the less satisfied with their body the hypothetical individual is perceived to be, the lower the numeric response.

Using these data, I then estimate the effects of the exposure to having EDs framed as a “women’s issue,” the hypothetical individual’s gender, and the interaction of the two, on the dependent variable, based on the OLS regression.

Results

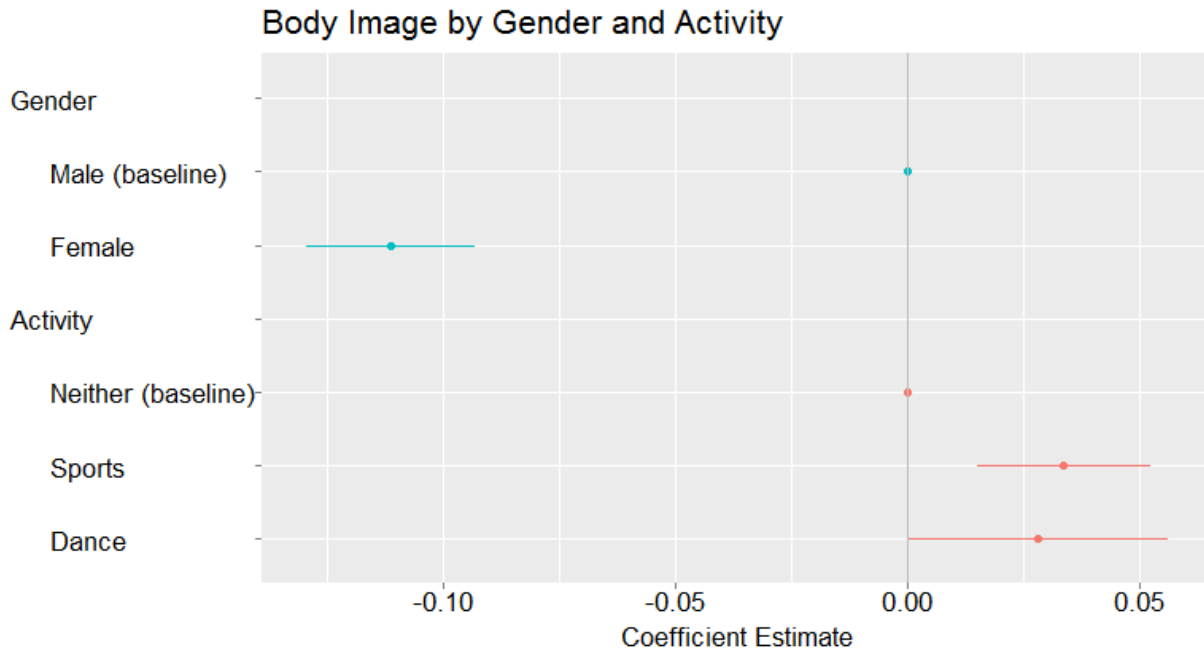
Gender, Athletic Activity, and Eating Disorders (Project 1)

Unsurprisingly, women respondents reported significantly lower body satisfaction than men ($\beta = -0.111$, $p \approx 0$). Furthermore, those who participated in a non-dance athletic activity reported significantly higher levels of body satisfaction than the baseline, those who participated in neither sports nor dance ($\beta = 0.034$, $p < 0.001$). Surprisingly, dancers also reported more positive body image than the baseline at a nearly statistically significant level ($\beta = 0.028$, $p = 0.047$). These results are summarized in Figure 1 below, which was produced based on an OLS regression using all data with no interaction variables.

Breaking down these results more closely, I examine how body image varies by athletic activity within gender categories. Men deviated from the overall trend of body image and athletic activity. Like the trend shown by all respondents, male athletes reported higher body satisfaction than men who did not participate in athletic activity, though not by a statistically significant amount ($\beta = 0.011$, $p = 0.474$). Similarly, male dancers reported more positive body image than the baseline, though, again, not by a statistically significant amount ($\beta = 0.016$, $p = 0.591$).

In contrast, women closely followed the overall trend of body satisfaction and athletic activity in terms of statistical significance. Both female athletes and dancers reported significantly more positive body image than those who participated in neither. However, this

Figure 1: Body Satisfaction and ED-Associated Behaviors

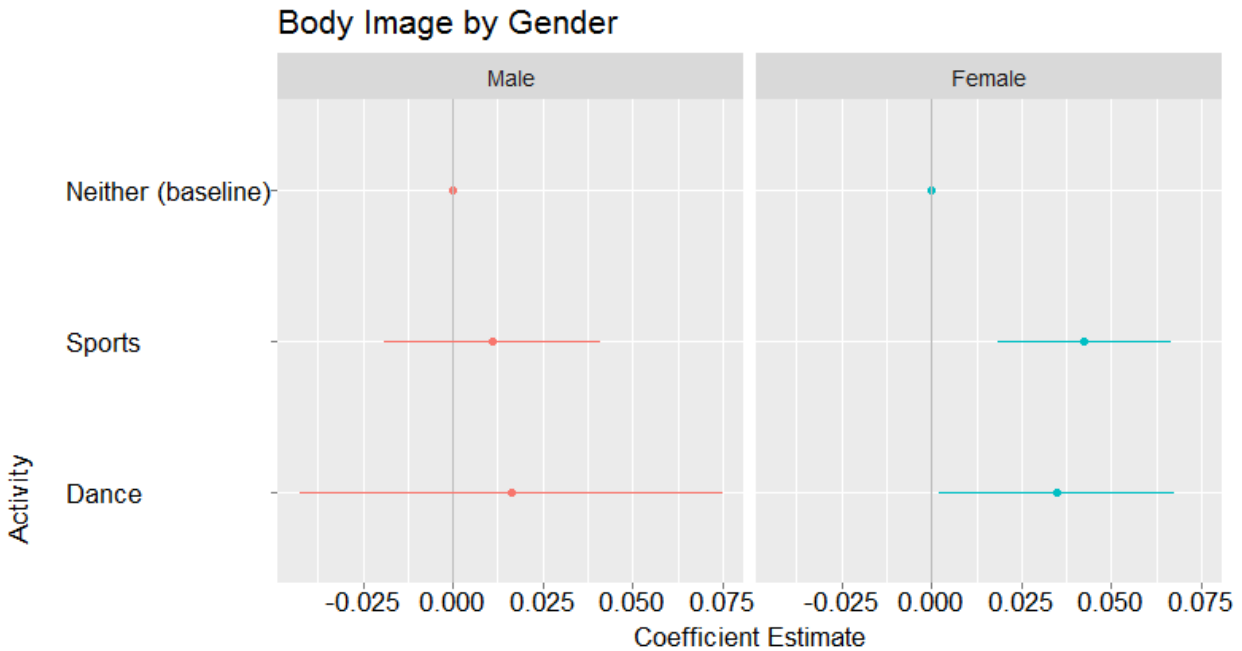


Note: Figure displays self-reported body satisfaction, stratified by gender and then by athletic activity, using men and no athletic activity as the baselines for comparison, respectively. Higher coefficient estimates are associated with more positive body image. Horizontal bars contain 95% confidence intervals.

improvement was much more pronounced for female athletes ($\beta = 0.042$, $p < 0.001$) than for female dancers ($\beta = 0.035$, $p = 0.036$). Nevertheless, it appears that participation in both sports and dance are positively correlated with body image for female Dartmouth undergraduate students. These results are summarized in Figure 2 below, which was produced based on an OLS regression using data subsetted by gender with no interaction variables.

Similarly, additional patterns in the results are revealed when we examine how body image varies by gender within categories of athletic activity. Unsurprisingly, women in all categories of athletic activity—dance, sports, and neither—demonstrate less satisfaction with their bodies than men who participate in the same activities. Surprisingly, however, this discrepancy is least pronounced among dancers; compared to male dancers, female dancers

Figure 2: Body Satisfaction by Gender



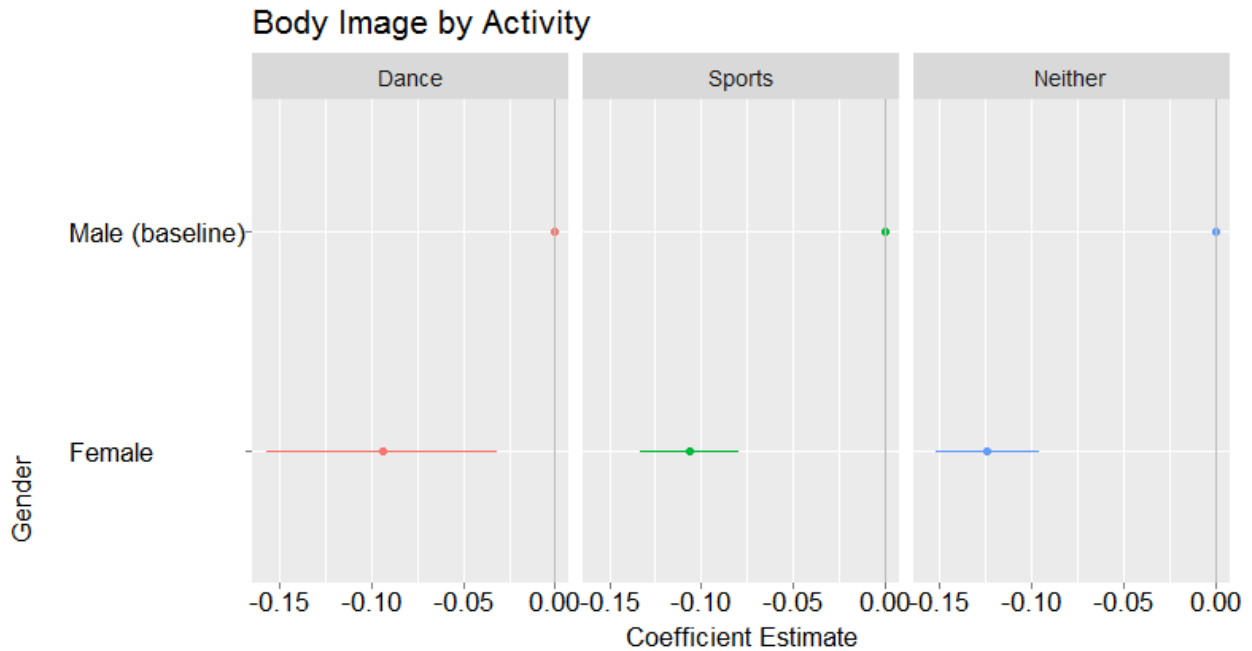
Note: Figure displays self-reported body satisfaction by gender, using no athletic activity as the baselines for comparison. Higher coefficient estimates are associated with more positive body image. Horizontal bars contain 95% confidence intervals.

exhibit significantly more negative body image ($\beta = -0.094$, $p = 0.004$), but this difference is much smaller than that of female athletes compared to male athletes ($\beta = -0.106$, $p \approx 0$) and that of women compared to men who participate in neither sports nor dance ($\beta = -0.124$, $p \approx 0$).

These results are summarized in Figure 3 below, which was produced based on an OLS regression using data subsetted by athletic activity with no interaction variables.

Taken together, the results of Project 1 demonstrate three important trends. First, both dance and sports are positively correlated with body satisfaction for women. On the other hand, men's body image does not vary significantly with participation in any type of athletic activity, or lack thereof. This leads to my final conclusion: overall, the students who demonstrate the least

Figure 3: Body Satisfaction by Athletic Activity



Note: Figure displays self-reported body satisfaction by athletic activity, using men as the baselines for comparison. Higher coefficient estimates are associated with more positive body image. Horizontal bars contain 95% confidence intervals.

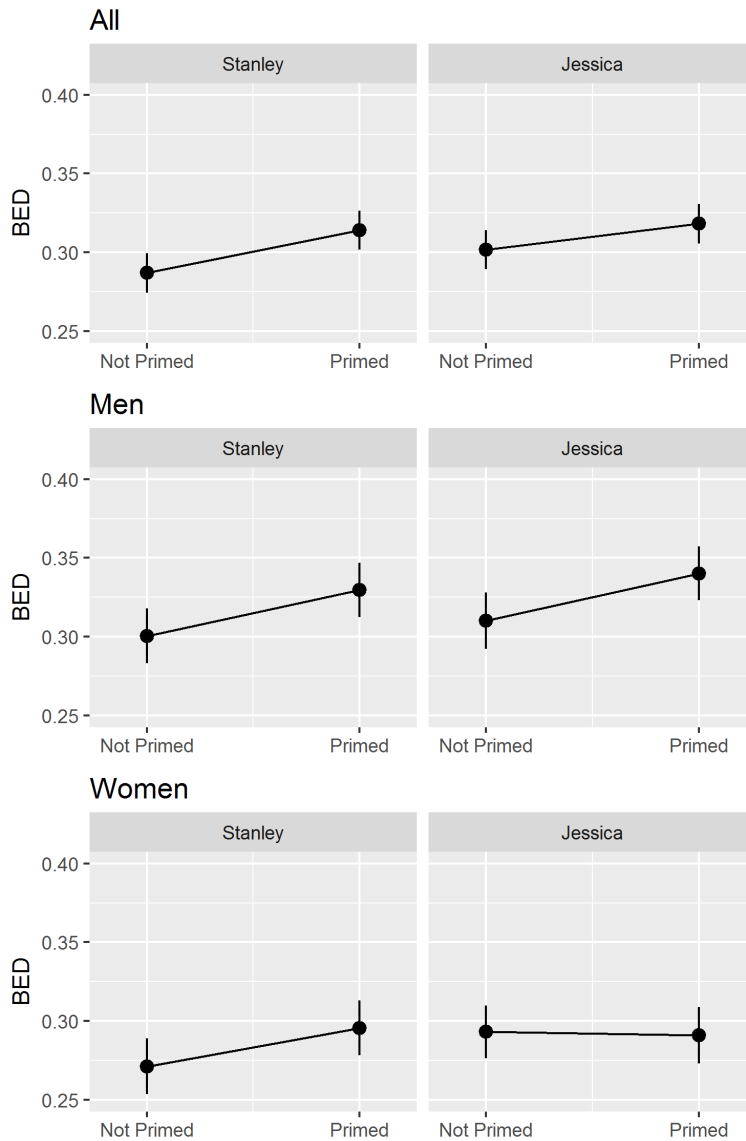
body satisfaction and greatest frequency of behaviors associated with EDs are women who participate in neither dance nor sports.

In addition to the above subsetted regression models, I also ran an interactive regression model using the gender and athletic activity variables, again controlling for race, ethnicity, age, socioeconomic status, and sexual orientation. Overall, the results of this interactive regression model demonstrate that there is no statistically significant interaction effect (Appendix C).

Stigmatized Attitudes (Project 2)

When given the vignette describing an individual with binge eating disorder, respondents were presented with either a standard masculine name of “Stanley” or feminine name of

Figure 4: Perceptions of BED



Note: Figure displays predicted perceptions of hypothetical individuals with symptoms of BED. Results are stratified by respondents’ gender, as well as by gender of the hypothetical individual. Higher coefficient estimates are associated with greater perceptions of ED risk. Vertical bars contain 95% confidence intervals.

“Jessica.” Overall, both male and female participants who were primed to perceive EDs as exclusively a “women’s issue” were significantly less likely to view Stanley as being at risk for an ED ($\beta = 0.027$, $p = 0.003$). However, this discrepancy was more pronounced in men ($\beta =$

0.029) than in women ($\beta = 0.024$) respondents. On average, Stanley's behaviors were viewed to be significantly more unhealthy by women than by men ($\beta = -0.032$, $p < 0.001$).

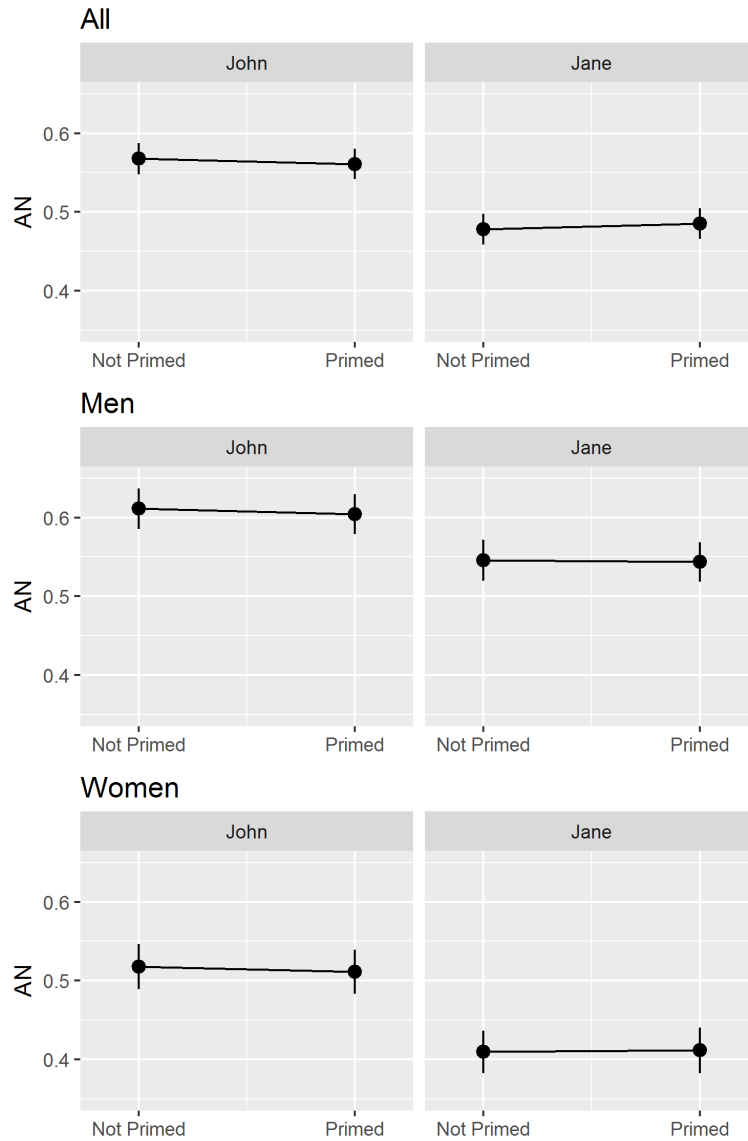
As expected, in regards to Jessica, the effect of priming on respondents was not statistically significant ($\beta = 0.017$, $p = 0.06$). When primed, men were slightly less likely to view Jessica as being at risk for an ED ($\beta = 0.030$, $p = 0.017$), whereas women's opinions did not change drastically at all ($\beta = -0.002$, $p = 0.848$). As with Stanley, women were more likely than men to view Jessica's behaviors as unhealthy ($\beta = -0.034$, $p < 0.001$).

Overall, the effect of priming on respondents' perceptions was significant regarding Stanley but not regarding Jessica. Furthermore, in comparison to men, women showed an increased tendency to perceive individuals—regardless of gender—as being at risk for an ED. These results are summarized in Figure 4 above.

Next, the hypothetical individuals with symptoms of anorexia nervosa were named “John” and “Jane” to represent a man and woman, respectively. Regarding both John and Jane, there was no statistically significant difference between the perceptions of participants who were primed versus those who were not ($\beta = -0.007$, $p = 0.635$ for John; $\beta = 0.007$, $p = 0.603$ for Jane). On average, both men and women perceived John's behaviors similarly, regardless of whether they were placed in the treatment or control group; the same applies to Jane. As with the previous case of BED, women were far more likely than men to view individuals as being at risk for EDs ($\beta = -0.114$, $p \approx 0$). This was demonstrated both in the case of Jane ($\beta = -0.134$, $p \approx 0$) and of John ($\beta = -0.093$, $p \approx 0$), though slightly less so. It is also important to note that all respondents—regardless of gender—viewed Jane's behaviors as significantly less healthy than those of John's ($\beta = -0.083$, $p \approx 0$). Although men and women were both far more likely to view Jane as being at risk for an ED than John, this discrepancy was more pronounced among female

respondents ($\beta = -0.104, p \approx 0$) than male respondents ($\beta = -0.063, p \approx 0$). These results are summarized in Figure 5 below.

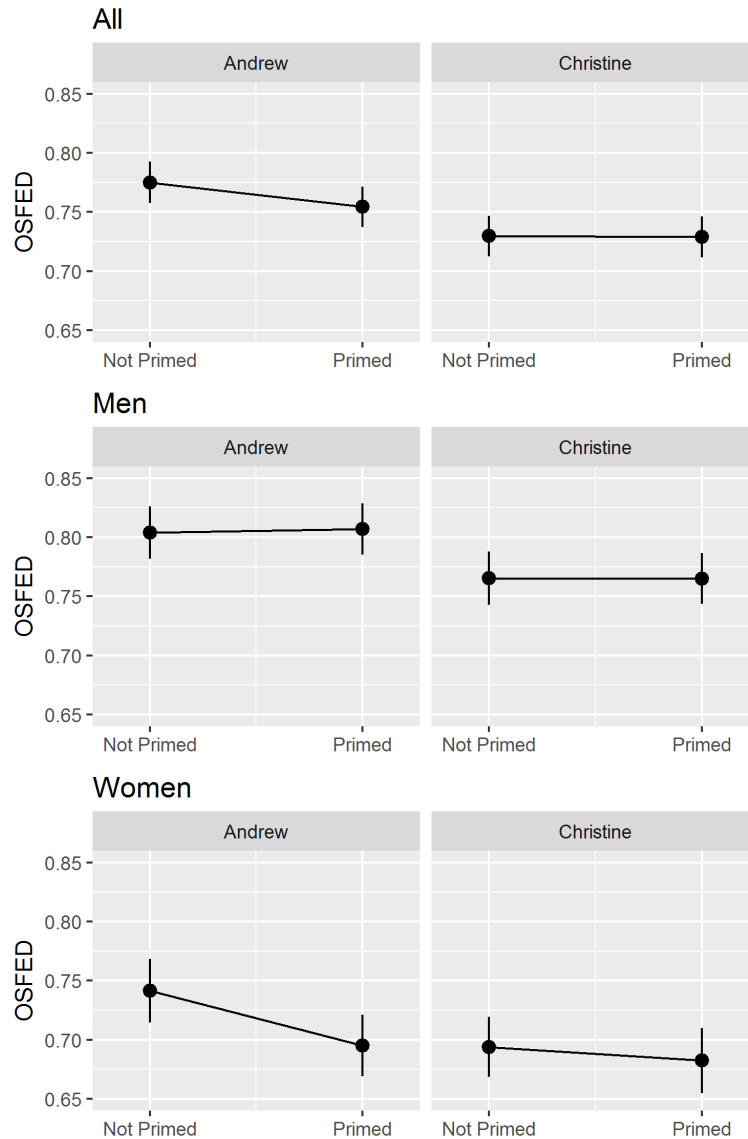
Figure 5: Perceptions of AN



Note: Figure displays predicted perceptions of hypothetical individuals with symptoms of AN. Results are stratified by respondents' gender, as well as by gender of the hypothetical individual. Higher coefficient estimates are associated with greater perceptions of ED risk. Vertical bars contain 95% confidence intervals.

Lastly, I used the names “Andrew” and “Christine” in the vignette describing a hypothetical individual with Other Specified Feeding or Eating Disorder. Surprisingly,

Figure 6: Perceptions of OSFED



Note: Figure displays predicted perceptions of hypothetical individuals with symptoms of OSFED. Results are stratified by respondents’ gender, as well as by gender of the hypothetical individual. Higher coefficient estimates are associated with greater perceptions of ED risk. Vertical bars contain 95% confidence intervals.

respondents who were primed to perceive EDs as exclusively a “women’s issue” were somewhat *more* likely to view Andrew’s behaviors as unhealthy, though not by a statistically significant amount ($\beta = -0.021$, $p = 0.091$). This strange outcome was due almost entirely to the responses of female participants; compared to those in the control group, women placed in the treatment group generally gave Andrew a lower ED score ($\beta = -0.046$, $p = 0.012$), indicating greater suspicion of unhealthy behaviors. On the other hand, there was no significant difference between primed and not primed male respondents ($\beta = 0.003$, $p = 0.839$).

As with the results discussed above for BED and AN, women were far more likely than men to view individuals’ behaviors as unhealthy ($\beta = -0.082$, $p \approx 0$). This discrepancy in perception occurred regarding both Andrew ($\beta = -0.088$, $p \approx 0$) and Christine ($\beta = -0.077$, $p \approx 0$). Similarly, as with the two previous cases, on average, all respondents viewed Christine’s behaviors as more unhealthy than Andrew’s ($\beta = -0.035$, $p \approx 0$). This discrepancy was evident among both male ($\beta = -0.040$, $p < 0.001$) and female ($\beta = -0.029$, $p = 0.031$) respondents, though it was much more pronounced for the former.

As expected, in regards to Christine, the effect of priming on respondents was not at all statistically significant ($\beta = -0.001$, $p = 0.961$). Overall, the effect of priming on respondents’ perceptions was not significant regarding Christine, but slightly significant regarding Andrew—but in an unexpected way. Those primed to view EDs as a “women’s issue” were actually more likely to consider Andrew’s behaviors unhealthy than those who were not primed, particularly the female respondents. In comparison to men, women showed an increased tendency to perceive individuals—regardless of gender—as being at risk for an ED. Finally, Christine’s behaviors were consistently perceived to be healthier than those of Andrew’s. These results are summarized in Figure 6 above.

Overall, the results of Project 2 demonstrate a number of important findings. First, on average, women are significantly more likely than men to view an individual's behaviors as unhealthy, regardless of that individual's gender. Secondly, in comparison to the hypothetical male individuals, the hypothetical female individuals were perceived by both men and women to be unhealthier and at a higher risk for an ED. Finally, while priming had a significant effect on both men and women's perceptions of Stanley (BED), it did not drastically change any respondents' opinions of John or Jane (AN), and actually had the opposite effect on women's perceptions of Andrew (OSFED).

Discussion

Gender, Athletic Activity, and Eating Disorders (Project 1)

The results of Project 1 support some, though not all, of my original hypotheses. Unsurprisingly, compared to men, women at Dartmouth indisputably demonstrate lower body satisfaction and a significantly greater number of behaviors associated with eating disorders, such as restriction, bingeing, purging, and body checking. Additionally, I received several comments from male participants stating that the survey appeared to "unfairly target" women, since men tend to focus more on increasing muscle mass, as opposed to losing weight. These comments, however, fail to take into account that these two phenomena are not mutually exclusive; men can and often do turn to unhealthy diets in an effort to simultaneously burn fat and gain muscle.²⁴ As is the case with most EDs, attempts and driving reasons to build muscle

²⁴ T.C. Pickett, R.J. Lewis, and T.F. Cash, "Men, Muscles, and Body Image: Comparisons of Competitive Bodybuilders, Weight Trainers, and Athletically Active Control," *British Journal of Sports Medicine* 39, no. 4 (2005): 221.

mass—namely, unhealthy diets, body dissatisfaction, and compulsive body checking—can become a slippery slope that ultimately results in the development of an ED. Gender normative comments such as these demonstrate just how deeply ingrained societal standards of beauty are for men and women alike, and unfortunately contribute to the continued invisibility and stigmatization of EDs among men.

Surprisingly, female dancers and athletes at Dartmouth reported much higher rates of body satisfaction than women who participated in neither activity. This finding is inconsistent with my hypothesis that female dancers would exhibit the highest likelihood of developing an ED; rather, women who do not engage in regular athletic activity appear to be at the highest risk for EDs in comparison to all other respondents. I propose several explanations for this unexpected finding. First, Dartmouth does not offer formal, institutionalized dance classes. With the exception of one ensemble, dance groups are entirely student-run and thus offer a relaxed, enjoyable, and comfortable space which dancers share with their peers and friends. Furthermore, due to the informal atmosphere of dance at Dartmouth, no student is required to wear form-fitting attire, such as leotards and tights. In fact, the majority of dancers wear loose tank tops, leggings, or shorts to practice—clothes that Price and Pettijohn would consider “junk.” Because dancers who rehearse while wearing “junk” report significantly higher rates of body satisfaction than those who do not,²⁵ dancers at Dartmouth likely exhibit more positive body image than I originally hypothesized due to the freedom to wear what is comfortable for them.

Another possible explanation for the relatively high body satisfaction of female dancers and athletes in this study is the high baseline rate of EDs at Dartmouth. High-functioning college

²⁵ Price and Pettijohn II, “Effect of Ballet Dance,” 994.

students, particularly those at elite Ivy League institutions, are more susceptible to thoughts and behaviors relating to perfectionism and anxiety, which have been shown to contribute to the onset, severity, and persistence of EDs.²⁶ It may not be surprising, then, that the prevalence of EDs at Dartmouth has always been relatively high in comparison to the rest of the United States, and that this prevalence has been increasing in recent years.²⁷ Several students at Dartmouth report that participation in athletic activity allows them to appreciate and feel “strong about what [their] body can do,”²⁸ rather than focusing on their appearance. Thus, both dance and sports may serve as protective mechanisms that help students embrace the physicality of their body. In this way, exercise may improve female dancers’ and athletes’ body image, particularly in comparison to women who are sedentary but still exposed to the same academic and psychological pressures.

Although athletic activity clearly plays a large role in female Dartmouth students’ body satisfaction, it appears to have no significant impact on men’s body image. Why might this be the case? First, due to the limited number of male dancers on campus, the extremely small sample size ($n = 27$) resulted in a wide margin of error, making it very difficult to draw statistically significant conclusions. Furthermore, the fairly similar levels of body satisfaction between male athletes and non-athletes may be attributable to the somewhat narrow definition of athletic activity in my survey instrument. Approximately 75% of students are involved in at least one Division I varsity or Club sports team,²⁹ contributing to a campus atmosphere that heavily

²⁶ See Hilde Bruch, *The Golden Cage: The Enigma of Anorexia Nervosa*, Harvard University Press, 2001, 59; Christopher G. Fairburn, Zafra Cooper, and Roz Shafran, “Cognitive Behaviour Therapy for Eating Disorders: A “Transdiagnostic” Theory and Treatment,” *Behaviour Research and Therapy* 41, no. 5 (2003); Lisa R.R. Lilienfeld, Stephen Wonderlich, Lawrence P. Riso, Ross Crosby, and James Mitchell, “Eating Disorders and Personality: A Methodological and Empirical Review,” *Clinical Psychology Review* 26, no. 3 (2006).

²⁷ Erin Lee, “Eating Disorders Increase in Severity, Impact a Wide Variety of Students,” *The Dartmouth*, October 8, 2015, accessed April 29, 2017, <http://www.thedartmouth.com/article/2015/10/eating-disorders-increase-in-severity-impact-a-wide-variety-of-students/>.

²⁸ Erin Lee, “Eating Disorders Increase in Severity,” *The Dartmouth*.

²⁹ “Athletics & Recreation,” *Dartmouth College*, accessed April 29, 2017, <http://dartmouth.edu/life-community/athletics-recreation>.

emphasizes and values athleticism. Thus, male students who do not participate in a sports team may still regularly exercise, lift weights, or go to the gym—all of which are behaviors that can contribute to positive body image if done in a healthy manner.³⁰ The lack of difference in body satisfaction between male athletes and non-athletes, then, may be due in part to the inclination of men who are not members of sports teams to work out nevertheless.

Overall, this study reveals several important implications for men and women from a variety of athletic backgrounds. First, it supports Price and Pettijohn's findings that dancers may be more likely to report higher levels of body satisfaction when permitted to wear clothes in which they are comfortable. Secondly, my results demonstrate a generally positive correlation between participation in physical activity and body image. Of course, this correlation is not linear, as over-exercising and obsession with exercise are often indicators of EDs. Regardless of what athletic activities an individual chooses to pursue, it is imperative that they do so in a healthy manner.

Stigmatized Attitudes (Project 2)

The results of Project 2 reveal several important issues regarding perception of individuals struggling with poor body image, disordered eating behaviors, and EDs. First, women were consistently perceived to exhibit more disordered eating behaviors and to be at a higher risk for an ED than men, regardless of whether respondents were placed in the control or treatment group. Women who show symptoms of disordered eating are more likely to be taken

³⁰ Sarah E. Lowery, Sharon E. Robinson Kurpius, Christie Befort, Elva Hull Blanks, Sonja Sollenberger, Megan Foley Nicpon, and Laura Huser, "Body Image, Self-Esteem, and Health-Related Behaviors among Male and Female First Year College Students," *Journal of College Student Development* 46, no. 6 (2005): 621.

seriously than men who show identical symptoms. This suggests that, with or without priming, individuals still largely consider EDs primarily a “women’s disease” today. Doing so poses severe dangers to men who struggle with EDs by rendering them invisible to the eyes of society. Furthermore, men who suffer from an ED may be more reluctant to seek treatment or reach out to loved ones for support due to this stigmatizing attitude. Ultimately, the societal disregard of men with EDs ignores and obscures their experiences, and poses a serious challenge to their chances of recovery.

Secondly, this study demonstrates that women are generally more likely than men to recognize unhealthy behaviors, regardless of whether the individual exhibiting those behaviors is male or female. This suggests that in comparison to men, women may be more aware of or concerned about the existence and symptoms of EDs. There are a number of reasons why this may be the case. First, research has shown that while men’s actual and ideal figures are nearly identical, the type of female body that men find most attractive is far thinner than the average female figure in the U.S. today.³¹ Thus, men may considerably underestimate what constitutes a healthy weight for women, as well as the unhealthy behaviors (e.g.: restriction, bingeing, and purging) women may use in order to reach that weight. Additionally, due to the higher prevalence of EDs among women, they are perhaps, on average, more knowledgeable about disordered eating and more adept at identifying problematic behaviors than men.

Finally, my findings indicate that the effect of priming individuals to view EDs as a “women’s issue” largely depends on context. Although primed respondents perceived Stanley, the hypothetical man with binge eating disorder, to be at a much lower risk of developing an ED

³¹ April E. Fallon and Paul Rozin, “Sex Differences in Perceptions of Desirable Body Shape,” *Journal of Abnormal Psychology* 94, no. 1 (1985): 102.

than non-primed respondents, perceptions of individuals with anorexia nervosa were largely unchanged, and primed women unexpectedly viewed Andrew, the hypothetical man with OSFED, as being at a *higher* risk for an ED. Perhaps these differences are due in part to the different ways in which BED, AN, and OSFED are portrayed or ignored in popular media. While the reasons for these discrepancies are unclear, it nevertheless remains evident that the ways in which EDs are framed have a significant impact on the ways in which individuals who struggle with EDs are perceived.

Conclusion

With the overall growth and increasing prevalence of eating disorders in recent decades, improving the understanding and treatment of these illnesses is imperative. My study contributes to existing literature in the field by helping to fill gaps in knowledge about the relationships between gender, physical activity, awareness, stigma, body image, and irregular eating behaviors. Furthermore, the majority of research on EDs has used surveys and other qualitative methods, such as interviewing. While important, these studies can only determine correlations between variables. With the use of my second project, I was able to demonstrate that framing EDs as a “women’s issue” causes differences in stigmatizing attitudes. Doing so contributes to a deeper understanding of how stigma directly affects ED recovery, since those who do not accept and internalize diagnoses are much less likely to seek treatment.

More importantly, both Projects 1 and 2 can serve as a springboard for a plethora of practical applications. My findings identify several methods that can be used to mitigate the incidence and severity of EDs among a variety of populations. For example, modifying uniforms

to be less form-fitting or granting dancers and athletes the freedom to wear clothing that makes them feel confident can greatly increase body satisfaction and reduce rates of EDs. Additionally, body positivity movements for people of all genders are essential in order to demonstrate that there is no one “ideal” body shape or size. Movements such as these that raise awareness and increase body satisfaction can play a large role in diminishing the rate and severity of EDs. Project 2 also suggests that women may be more attuned to and cognizant of ED symptoms than men. Further research should work on identifying reasons and explanations for this phenomenon. These results also reveal that we should continue to work on increasing awareness and education of EDs—and of mental illness in general—for children of all ages and genders. Finally, given the impact of framing on perception and opinion, we must remain conscious of how EDs are discussed in a variety of settings—news media, schools, social media, and among peers—and consider the consequences of these discussions.

While my study has revealed a number of important results and implications, it does come with a few limitations. First, Project 1 did not separate “aesthetic sports” (e.g.: ice skating, gymnastics, cheerleading) from the broader category of “sports,” despite evidence that rates of EDs may be higher among the former. Secondly, the questions posed in Project 2 only addressed respondents’ perceptions of health (See Appendix D), which is only one factor among many that affect stigmatized attitudes. Overall, however, these two projects will help both researchers and the general population—especially those who suffer from eating disorders—understand the serious consequences of these mental illnesses. This in turn paves the way for further, more in-depth research and contributes to the development of improved prevention and treatment methods. By understanding the impact of gender, physical activity, mental health awareness, and stigmatization on certain individuals, researchers and doctors alike may customize medical care

to maximize patients' chances of recovery, thus steering the conversation and treatment of EDs in a more helpful, productive direction.

References

“Athletics & Recreation.” *Dartmouth College*. Accessed April 29, 2017.

<http://dartmouth.edu/life-community/athletics-recreation>.

“Enrollment.” *Office of Institutional Research*. Accessed May 2, 2017.

<https://www.dartmouth.edu/~oir/data-reporting/factbook/enrollment.html>.

“Eating Disorder Statistics.” *National Association of Anorexia Nervosa and Associated*

Disorders. Accessed April 12, 2017. <http://www.anad.org/get-information/about-eating-disorders/eating-disorders-statistics/>.

“Get the Facts on Eating Disorders.” *National Eating Disorders Association*. Accessed April 12,

2017. <http://www.nationaleatingdisorders.org/get-facts-eating-disorders>.

American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*, American Psychiatric Pub, 2013.

Aalten, Anna. “Listening to the Dancer’s Body.” *The Sociological Review* 55, no. 1 (2007): 109-125.

Bruch, Hilde. *The Golden Cage: The Enigma of Anorexia Nervosa*. Harvard University Press, 2001.

DeFeciani, Lisa. “Eating Disorders and Body Image Concerns Among Male Athletes.” *Clinical Social Work Journal* 44, no. 1 (2016): 114-123.

- Fairburn, Christopher G., Zafra Cooper, and Roz Shafran. "Cognitive Behaviour Therapy for Eating Disorders: A "Transdiagnostic" Theory and Treatment." *Behaviour Research and Therapy* 41, no. 5 (2003): 509-528.
- Fallon, April E., and Paul Rozin. "Sex Differences in Perceptions of Desirable Body Shape." *Journal of Abnormal Psychology* 94, no. 1 (1985): 102-105.
- Garner, David M. and Paul E. Garfinkel. "The Eating Attitudes Test: An Index of the Symptoms of Anorexia Nervosa." *Psychological Medicine* 9, no. 2 (1979): 273-279.
- Garner, David M., Marion P. Olmsted, Yvonne Bohr, and Paul E. Garfinkel. "The Eating Attitudes Test: Psychometric Features and Clinical Correlates." *Psychological Medicine* 12, no. 4 (1982): 871-878.
- Hesse-Biber, Sharlene. "Eating Patterns and Disorders in a College Population: Are College Women's Eating Problems a New Phenomenon?" *Sex Roles: A Journal of Research* 20, no. 1-2 (1989): 71-89.
- Lee, Erin. "Eating Disorders Increase in Severity, Impact a Wide Variety of Students." The Dartmouth. October 8, 2015. Accessed April 29, 2017.
<http://www.thedartmouth.com/article/2015/10/eating-disorders-increase-in-severity-impact-a-wide-variety-of-students/>.
- Lilenfeld, Lisa R.R., Stephen Wonderlich, Lawrence P. Riso, Ross Crosby, and James Mitchell. "Eating Disorders and Personality: A Methodological and Empirical Review." *Clinical Psychology Review* 26, no. 3 (2006): 299-320.

- Loland, Nina Waaler. "Some Contradictions and Tensions in Elite Sportsmen's Attitudes towards Their Bodies." *International Review for the Sociology of Sport* 34, no. 3 (1999): 291-302.
- Lowery, Sarah E., Sharon E. Robinson Kurpius, Christie Befort, Elva Hull Blanks, Sonja Sollenberger, Megan Foley Nicpon, and Laura Huser, "Body Image, Self-Esteem, and Health-Related Behaviors among Male and Female First Year College Students," *Journal of College Student Development* 46, no. 6 (2005): 612-623.
- Murakami, Jessica M., Jamal H. Essayli, and Janet D. Latner. "The Relative Stigmatization of Eating Disorders and Obesity in Males and Females." *Appetite* 102 (2016): 77-82.
- Peden, Jamie, Beverly L. Stiles, Michael Vandehey, and George Diekhoff. "The Effects of External Pressures and Competitiveness on Characteristics of Eating Disorders and Body Dissatisfaction." *Journal of Sport & Social Issues* 32, no. 4 (2008): 415-429.
- Pickett, T.C., R.J. Lewis, and T.F. Cash. "Men, Muscles, and Body Image: Comparisons of Competitive Bodybuilders, Weight Trainers, and Athletically Active Control." *British Journal of Sports Medicine* 39, no. 4 (2005): 217-222.
- Price, Brena R. and Terry F. Pettijohn II. "The Effect of Ballet Dance Attire on Body and Self-Perceptions of Female Dancers." *Social Behavior and Personality: An International Journal* 34, no. 8 (2006): 991-998.
- Ravaldi, Claudia, Alfredo Vannacci, Teresa Zucchi, Edoardo Mannucci, Pier Luigi Cabras, Maura Boldrini, Lorian Murciano, Carlo Maria Rotella, and Valdo Ricca. "Eating

Disorders and Body Image Disturbances among Ballet Dancers, Gymnasium Users and Body Builders.” *Psychopathology* 36, no. 5 (2003): 247-254.

Reiter, Miranda E. and Shannon N. Davis. “Gendered Personalities and Development of Eating Disorders in College Students.” *International Review of Modern Sociology* 40, no. 1 (2014): 27-39.

Strother, Eric, Raymond Lemberg, Stevie Chariese Stanford, and Dayton Turberville. “Eating Disorders in Men: Underdiagnosed, Undertreated, and Misunderstood.” *Eating Disorders* 20, no. 5 (2012): 346-355.

Appendices

Appendix A: Recruitment Materials for Project 1

First Recruitment Message

Hi everyone,

We are a research team conducting research on general health and lifestyle. We are writing to ask for your participation in a short survey, which should only take about 5 minutes. We thank you for your attention and responses.

Your participation is voluntary, and you may decline the survey or withdraw at any time. No information that identifies you will be collected or retained by the researchers. However, any online interaction carries some risk of being accessed. **At the end of this survey, you will have the opportunity to enter a raffle for one of three \$50 Amazon.com gift cards.**

Please follow this link to the survey:

https://dartmouth.co1.qualtrics.com/jfe/form/SV_cOU7xWOhCdxGRLl

Thanks in advance for your help with our research!

Shirley Fang, Class of 2017, QSS Major

Yusaku Horiuchi, Professor of Government and Mitsui Professor of Japanese Studies

Follow-Up Message

Hi everyone,

We are following up on the message we sent earlier this week, inviting you to participate in a survey on health and lifestyle. We understand that you are busy and receive many survey requests. Ours is very short—only about 5 minutes. If you already responded to our request and participated in the survey, we apologize for this extra email.

Your participation is voluntary, and you may decline the survey or withdraw at any time. No information that identifies you will be collected or retained by the researchers. However, any online interaction carries some risk of being accessed. **At the end of this survey, you will have the opportunity to enter a raffle for one of three \$50 Amazon.com gift cards.**

Please follow this link to the survey:

https://dartmouth.co1.qualtrics.com/jfe/form/SV_cOU7xWOhCdxGRLl

Thank you for your consideration!

Shirley Fang, Class of 2017, QSS Major

Yusaku Horiuchi, Professor of Government and Mitsui Professor of Japanese Studies

Appendix B: Research Instrument for Project 1 (Survey)

consent* Thank you for your interest in participating in this study, which is conducted by Shirley Fang and Yusaku Horiuchi at Dartmouth College. In this survey, we will ask you about your lifestyle behaviors. Please read each question carefully and provide your honest answers. It should take approximately 5 minutes to complete the survey. Your participation is voluntary and you may exit the survey at any time. No identifiable information will be collected or retained by the researchers. However, any online interaction carries some risk of being accessed. The researchers can be reached at Shirley.L.Fang.17@dartmouth.edu or Yusaku.Horiuchi@dartmouth.edu. At the end of this survey, you will have the opportunity to enter a raffle for one of three \$50 Amazon.com gift cards. Do you consent to participate in the survey?

- Yes (1)
- No (2)

overall Overall, how healthy do you consider yourself?

- The healthiest I've ever been (1)
- Very healthy (2)
- Moderately healthy (3)
- Moderately unhealthy (4)
- Very unhealthy (5)
- The unhealthiest I've ever been (6)

bodycheck* How often do you weigh or measure yourself?

- More than once a day (1)
- Once a day (2)
- 2-6 times a week (3)
- Once a week (4)
- 1-3 times a month (5)
- Once a month or less (6)

exercise How often do you participate in at least 30 minutes of exercise?

- More than 7 times/week (1)
- 6-7 times/week (2)
- 4-5 times/week (3)
- 2-3 times/week (4)
- Once a week (5)
- Less than once a week (6)

calories* Do you think about burning up calories when you exercise?

- Always (1)
- Usually (2)
- Often (3)
- Sometimes (4)
- Rarely (5)
- Never (6)

motivation What is your main motivation for exercising?

- To be healthy (1)
- To lose weight (2)
- To feel good about myself (3)
- To have fun (4)
- Other: (5) _____

control* How often do you exercise in order to lose or control your weight?

- Always (1)
- Usually (2)
- Often (3)
- Sometimes (4)
- Rarely (5)
- Never (6)

pressure* How much do you agree or disagree with the following statement? “I feel pressure from my peers, family, and/or environment to be thin.”

- Strongly agree (1)
- Agree (2)
- Somewhat agree (3)
- Somewhat disagree (4)
- Disagree (5)
- Strongly disagree (6)

betterlife* How much do you agree or disagree with the following statement? “My life would be better if I lost weight.”

- Strongly agree (1)
- Agree (2)
- Somewhat agree (3)
- Somewhat disagree (4)
- Disagree (5)
- Strongly disagree (6)

feelbetter* How much do you agree or disagree with the following statement? “I would feel better about myself if I lost weight.”

- Strongly agree (1)
- Agree (2)
- Somewhat agree (3)
- Somewhat disagree (4)
- Disagree (5)
- Strongly disagree (6)

diet A balanced diet consists of foods that give your body the nutrients it needs to be function correctly. In general, how would you describe your diet?

- Extremely balanced (1)
- Very balanced (2)
- Moderately balanced (3)
- Somewhat balanced (4)
- Not very balanced (5)
- Not at all balanced (6)

counting* How accurate is the following statement? “I count calories and/ or grams of fat, sugar, or carbohydrates.”

- Always (1)
- Usually (2)
- Often (3)
- Sometimes (4)
- Rarely (5)
- Never (6)

thoughts* Do you find yourself preoccupied with thoughts of food and/or weight loss?

- Always (1)
- Usually (2)
- Often (3)
- Sometimes (4)
- Rarely (5)
- Never (6)

snack Which of these would you consider a healthy snack? Please select all that apply.

- A granola bar (1)
- A handful of popcorn (2)
- A handful of mixed nuts, raisins, and dark chocolate (3)
- An apple (4)
- Half a sweet potato (5)

avoid* Have you ever avoided food or eating for any reason?

- Always (1)
- Usually (2)
- Often (3)
- Sometimes (4)
- Rarely (5)
- Never (6)

meals How or when do you typically eat your meals?

- With friends (1)
- While watching TV or performing a mindless activity (2)
- While doing work or studying (3)
- Other: (4) _____

binge* Have you ever felt like you were unable to stop eating and/or felt sick or nauseous after eating?

- Always (1)
- Usually (2)
- Often (3)
- Sometimes (4)
- Rarely (5)
- Never (6)

guilt* When this happens, do you feel guilty or unhappy with yourself?

- Always (1)
- Usually (2)
- Often (3)
- Sometimes (4)
- Rarely (5)
- Never (6)

purge* Have you ever considered or engaged in methods (vomiting, diet pills, laxatives, diuretics, etc.) to alleviate this guilt?

- Always (1)
- Usually (2)
- Often (3)
- Sometimes (4)
- Rarely (5)
- Never (6)

appearance* Please rate how you generally feel about the way you look.

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

message You are almost finished! Please answer the following questions. These questions will be used solely for statistical purposes and will not be used to identify you in any way.

activity* Do you participate in any of the following?

- a) Dance (1)
- b) Other sport (2)
- c) Both a & b (3)
- d) None of the above (4)

dance* If you dance, please name the style(s).

sport* If you participate in a sport, please name the sport(s).

age* What is your age?

- 17 or younger (17)
- 18 (18)
- 19 (19)
- 20 (20)
- 21 (21)
- 22 (22)
- 23 or older (23)

gender* With what gender do you identify?

- Man (1)
- Woman (2)
- Non-binary (3)

race* Which of the following best represents your racial or ethnic heritage? Please select all that apply.

- Non-Hispanic White or Euro-American (1)
- Black, Afro-Caribbean, or African American (2)
- Latino or Hispanic American (3)
- East Asian or Asian American (4)
- South Asian or Indian American (5)
- Middle Eastern or Arab American (6)
- Native American or Alaskan Native (7)
- Other (8)

class* Which of the following best represents your annual household income?

- \$24,999 or lower (1)
- \$25,000-\$34,999 (2)
- \$35,000-\$49,999 (3)
- \$50,000-\$74,999 (4)
- \$75,000-\$99,999 (5)
- \$100,000-\$149,999 (6)
- \$150,000-\$199,999 (7)
- \$200,000 or higher (8)

sexuality* Which of the following terms best describes your sexual orientation?

- Gay or lesbian (or homosexual) (1)
- Bisexual or pansexual (2)
- Questioning or unsure (3)
- Heterosexual or straight (4)
- Asexual (5)
- Other (6)

comment Do you have any comments on the survey? Please let us know about any problems you had or if any aspects of the survey were confusing.

thanks Thank you for participating. To protect the integrity of this study, please do not share information on the questions or your responses with other potential participants. To be entered in the raffle for a \$50 Amazon.com gift card, please continue to the next page. Thanks again!

-Shirley Fang (Dartmouth College)
-Yusaku Horiuchi (Dartmouth College)

Appendix C: Tables of Statistics for Project 1

Table 1: Non-Interactive Model (All Respondents)

Non-Interactive Model	
	Coefficient Estimate
Women	-0.111*** (0.009)
Sports	0.034*** (0.010)
Dance	0.028** (0.014)
Constant	0.775*** (0.062)
Observations	1,010
R2	0.173
Adjusted R2	0.152
Residual Std. Error	0.138 (df = 984)
F Statistic	8.246*** (df = 25; 984)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table 2: Non-Interactive Model (Subsetted by Gender)

Non-Interactive Model subsetted by Gender		
	Coefficient Estimate	
	Men	Women
Women	0.011 (0.015)	0.042*** (0.012)
Sports	0.016 (0.030)	0.035** (0.017)
Dance	0.035 (0.137)	-0.029 (0.067)
Constant	0.725*** (0.141)	0.680*** (0.071)
Observations	360	650
R2	0.083	0.063
Adjusted R2	0.018	0.027
Residual Std. Error	0.130 (df = 335)	0.141 (df = 625)
F Statistic	1.269 (df = 24; 335)	1.757** (df = 24; 625)
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table 3: Non-Interactive Model (Subsetted by Activity)

Non-Interactive Model Subsetted by Activity			
	Coefficient Estimate		
	Neither	Sports	Dance
Women	-0.124*** (0.014)	-0.106*** (0.014)	-0.094*** (0.032)
Constant	0.811*** (0.089)	0.788*** (0.113)	0.805*** (0.154)
Observations	452	436	122
R2	0.202	0.177	0.181
Adjusted R2	0.159	0.131	-0.011
Residual Std. Error	0.139 (df = 428)	0.138 (df = 412)	0.132 (df = 98)
F Statistic	4.710*** (df = 23; 428)	3.846*** (df = 23; 412)	0.943 (df = 23; 98)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 4: Interactive Model

Interactive Model	
	Coefficient Estimate
Women (No Activity)	-0.124*** (0.014)
Men x Sports	0.022 (0.015)
Men x Dance	0.002 (0.030)
Women x Sports	0.019 (0.019)
Women x Dance	0.035 (0.034)
Constant	0.782*** (0.063)
Observations	1,010
R2	0.175
Adjusted R2	0.152
Residual Std. Error	0.138 (df = 982)
F Statistic	7.688*** (df = 27; 982)

Note: *p<0.1; **p<0.05; ***p<0.01

Appendix D: Recruitment and Consent for Project 2

Information provided to potential MTurk participants:

HIT title: A Research Survey on General Health and Lifestyle

HIT description: This research survey contains questions about general health and lifestyle. It should take about 5-10 minutes to complete.

HIT keywords: survey, health, lifestyle, exercise

Consent form (first screen if worker accepts the HIT):

This study is being conducted by Shirley Fang (Dartmouth College) and Yusaku Horiuchi (Dartmouth College). We ask for your attention for a few minutes, and we thank you for your attention and responses. Your participation is voluntary, and you may decline the survey or withdraw at any time. No information that identifies you will be collected or retained by the researchers. However, any online interaction carries some risk of being accessed.

The researchers can be reached at Yusaku.Horiuchi@dartmouth.edu.

Do you consent to participate in the survey?

-Yes

-No [redirected to end of survey]

Appendix D: Research Instrument for Project 2 (Survey)

consent* Thank you for your interest in participating in this study, which is conducted by researchers at Dartmouth College. In this survey, we will ask your opinion about individuals' lifestyle behaviors. Please read each question carefully and provide your honest answers. It should take approximately 5-10 minutes to complete the survey. Your participation is voluntary and you may exit the survey at any time. No identifiable information will be collected or retained by the researchers. However, any online interaction carries some risk of being accessed. The researchers can be reached at Yusaku.Horiuchi@dartmouth.edu. Do you consent to participate in the survey?

- Yes (1)
- No (2)

consent-age* Are you 18 years of age or older?

- Yes (1)
- No (2)

mturkid Please enter your MTurk ID. This information will not be used to identify you. We are asking for your ID in case you encounter technical issues during the survey.

inst1 Please read the following descriptions and answer the questions.

treatment* “Mirror, Mirror on the wall... who’s the thinnest one of all?” According to the National Eating Disorders Association, the average American woman is 5’4” and weighs 140 pounds, while the average female American model is 5’11” and weighs 117 pounds. All too often, society associates “thin” with “hard-working, beautiful, strong and self-disciplined.” On the other hand, “fat” is associated with “lazy, ugly, weak and lacking willpower.” As a result, women are rarely satisfied with their image and often feel great anxiety and pressure to achieve or maintain a specific, idealized appearance.

inst2 Please read the following descriptions and answer the questions.

bedf Jessica is 32 years old and has been overweight since she was an adolescent, but in recent years has been told she has “severe obesity.” Over the years, Jessica has tried a number of diet and healthy eating plans, none of which have worked. She lives by herself and often feels lonely.

To counteract these feelings, she treats herself with snacks and desserts. However, Jessica's diet is regular, with 3 meals a day, and contains a wide variety of foods. When Jessica gets home from work, she often goes to the fridge for a small snack, but sometimes finds that she is unable to stop eating, and continues to eat. For example, she may consume an apple, a slice of cheesecake, a sandwich, 5 Oreo cookies, and a glass of milk. Jessica feels guilt and sadness after she has eaten all this and despises the shape of her body. She has often thought about different ways to control her weight (i.e.: exercise, vomiting after meals, laxatives), but she has never done them.

bedf-q1* How would you describe Jessica's eating habits?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

bedf-q2* How would you describe Jessica's self-perception?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

bedf-q3* Would you speculate that Jessica has an eating disorder?

- Yes (1)
- Maybe (2)
- No (3)

bedm Stanley is 32 years old and has been overweight since he was an adolescent, but in recent years has been told he has “severe obesity.” Over the years, Stanley has tried a number of diet and healthy eating plans, none of which have worked. He lives by himself and often feels lonely. To counteract these feelings, he treats himself with snacks and desserts. However, Stanley’s diet is regular, with 3 meals a day, and contains a wide variety of foods. When Stanley gets home from work, he often goes to the fridge for a small snack, but sometimes finds that he is unable to stop eating, and continues to eat. For example, he may consume an apple, a slice of cheesecake, a sandwich, 5 Oreo cookies, and a glass of milk. Stanley feels guilt and sadness after he has eaten all this and despises the shape of his body. He has often thought about different ways to control his weight (i.e.: exercise, vomiting after meals, laxatives), but he has never done them.

bedm-q1* How would you describe Stanley's eating habits?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

bedm-q2* How would you describe Stanley's self-perception?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

bedm-q3* Would you speculate that Stanley has an eating disorder?

- Yes (1)
- Maybe (2)
- No (3)

anf Jane is a 30-year old parent of two. Despite major efforts to lose weight in the last three years with a number of diets, she has not had much success until recently. In the last 6 months, Jane has started jogging every night. If she misses a night, she feels guilty and jogs twice as far the next day. She has also limited her calorie intake by skipping breakfast and eating salads with lean meats for lunch and dinner. She thinks she is fat and worthless, although she enjoys compliments from her husband regarding weight loss. Jane is 5'4" tall and weighs 90 pounds.

anf-q1* How would you describe Jane's eating habits?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

anf-q2* How would you describe Jane's exercising habits?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

anf-q3* How would you describe Jane's self-perception?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

anf-q4* Would you speculate that Jane has an eating disorder?

- Yes (1)
- Maybe (2)
- No (3)

anm John is a 30-year old parent of two. Despite major efforts to lose weight in the last three years with a number of diets, he has not had much success until recently. In the last 6 months, John has started jogging every night. If he misses a night, he feels guilty and jogs twice as far the next day. He has also limited his calorie intake by skipping breakfast and eating salads with lean meats for lunch and dinner. He thinks he is fat and worthless, although he enjoys compliments from his wife regarding weight loss. John is 5'10" tall and weighs 130 pounds.

anm-q1* How would you describe John's eating habits?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

anm-q2* How would you describe John's exercising habits?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

anm-q3* How would you describe John's self-perception?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

anm-q4* Would you speculate that John has an eating disorder?

- Yes (1)
- Maybe (2)
- No (3)

ednosf Christine is a 24-year old female of normal weight with good muscle tone, but feels that she has a rounded belly and wants to further tone her muscles and lose fat. Every night, Christine spends an hour in the gym lifting weights and runs 10 miles every Saturday. Recently, she has started replacing her breakfast meal with a high protein sports drink. She also tries to eat high protein foods through the rest of the day. She occasionally (about twice a month) has uncontrolled eating "binges" where she eats three slices of pizza in the late afternoon. Christine does not have many friends and feels that if she changes her shape, she will be more attractive and well-liked.

ednosf-q1* How would you describe Christine's eating habits?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

ednosf-q2* How would you describe Christine's exercising habits?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

ednosf-q3* How would you describe Christine's self-perception?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

ednosf-q4* Would you speculate that Christine has an eating disorder?

- Yes (1)
- Maybe (2)
- No (3)

ednosm Andrew is a 24-year old male of normal weight with good muscle tone, but feels that he has a rounded belly and wants to further tone his muscles and lose fat. Every night, Andrew spends an hour in the gym lifting weights and runs 10 miles every Saturday. Recently, he has started replacing his breakfast meal with a high protein sports drink. He also tries to eat high protein foods through the rest of the day. He occasionally (about twice a month) has uncontrolled eating "binges" where he eats three slices of pizza in the late afternoon. Andrew does not have many friends and feels that if he changes his shape, he will be more attractive and well-liked.

ednosm-q1* How would you describe Andrew's eating habits?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

ednosm-q2* How would you describe Andrew's exercising habits?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

ednosm-q3* How would you describe Andrew's self-perception?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

ednosm-q4* Would you speculate that Andrew has an eating disorder?

- Yes (1)
- Maybe (2)
- No (3)

message You are almost finished! Please answer the following questions. These questions will be used solely for statistical purposes and will not be used to identify you in any way.

age* What is your age?

- 18 (1)
- 19 (2)
- 20 (3)
- 21 (4)
- 22 (5)
- 23 (6)
- 24 (7)
- 25 (8)
- 26 (9)
- 27 (10)
- 28 (11)
- 29 (12)
- 30 (13)
- 31 (14)
- 32 (15)
- 33 (16)
- 34 (17)
- 35 (18)
- 36 (19)
- 37 (20)
- 38 (21)
- 39 (22)
- 40 (23)
- 41 (24)
- 42 (25)
- 43 (26)
- 44 (27)
- 45 (28)
- 46 (29)
- 47 (30)
- 48 (31)
- 49 (32)
- 50 (33)
- 51 (34)
- 52 (35)
- 53 (36)
- 54 (37)
- 55 (38)
- 56 (39)

- 57 (40)
- 58 (41)
- 59 (42)
- 60 or older (43)

gender* With what gender do you identify?

- Man (1)
- Woman (2)
- Non-binary (3)

race* Which of the following best represents your racial or ethnic heritage? Please select all that apply.

- Non-Hispanic White or Euro-American (1)
- Black, Afro-Caribbean, or African American (2)
- Latino or Hispanic American (3)
- East Asian or Asian American (4)
- South Asian or Indian American (5)
- Middle Eastern or Arab American (6)
- Native American or Alaskan Native (7)
- Other (8)

class* Which of the following best represents your annual household income?

- \$24,999 or lower (1)
- \$25,000-\$34,999 (2)
- \$35,000-\$49,999 (3)
- \$50,000-\$74,999 (4)
- \$75,000-\$99,999 (5)
- \$100,000-\$149,999 (6)
- \$150,000-\$199,999 (7)
- \$200,000 or higher (8)

sexuality* Which of the following terms best describes your sexual orientation?

- Gay or lesbian (or homosexual) (1)
- Bisexual or pansexual (2)
- Questioning or unsure (3)
- Heterosexual or straight (4)
- Asexual (5)
- Other (6)

thanks Thank you for participating. To protect the integrity of this study, please do not share information on the questions or your responses with other potential participants. Thanks again!- Yusaku Horiuchi (Dartmouth College)

comment Do you have any comments on the survey? Please let us know about any problems you had or if any aspects of the survey were confusing.

Appendix E: Tables of Statistics for Project 2

Table 1: Binge Eating Disorder

Binge Eating Disorder			
	Respondents		
	All	Men	Women
Primed	0.027*** (0.009)	0.029** (0.013)	0.024* (0.013)
Female Name	0.015 (0.009)	0.010 (0.013)	0.022* (0.012)
Primed x Female Name	-0.010 (0.013)	0.001 (0.018)	-0.027 (0.018)
Constant	0.287*** (0.006)	0.300*** (0.009)	0.271*** (0.009)
Observations	2,132	1,135	997
R2	0.007	0.011	0.005
Adjusted R2	0.005	0.008	0.002
Residual Std. Error	0.146 (df = 2128)	0.150 (df = 1131)	0.140 (df = 993)
F Statistic	4.828*** (df = 3; 2128)	4.151*** (df = 3; 1131)	1.550 (df = 3; 993)
Note:	*p<0.1; **p<0.05; ***p<0.01		

Table 2: Anorexia Nervosa

Anorexia Nervosa			
	Respondents		
	All	Men	Women
Primed	-0.007 (0.014)	-0.007 (0.018)	-0.006 (0.020)
Female Name	-0.090*** (0.014)	-0.066*** (0.019)	-0.108*** (0.020)
Primed x Female Name	0.014 (0.020)	0.005 (0.026)	0.008 (0.029)
Constant	0.568*** (0.010)	0.611*** (0.013)	0.517*** (0.015)
Observations	2,132	1,135	997
R2	0.032	0.021	0.050
Adjusted R2	0.030	0.018	0.047
Residual Std. Error	0.229 (df = 2128)	0.218 (df = 1131)	0.227 (df = 993)
F Statistic	23.211*** (df = 3; 2128)	7.962*** (df = 3; 1131)	17.472*** (df = 3; 993)
Note:	*p<0.1; **p<0.05; ***p<0.01		

Table 3: Other Specified Feeding or Eating Disorder

Other Specified Feeding or Eating Disorder			
	Respondents		
	All	Men	Women
Primed	-0.021* (0.013)	0.003 (0.016)	-0.046** (0.019)
Female Name	-0.045*** (0.013)	-0.038** (0.016)	-0.048** (0.019)
Primed x Female Name	0.020 (0.018)	-0.004 (0.022)	0.035 (0.027)
Constant	0.775*** (0.009)	0.804*** (0.011)	0.742*** (0.014)
Observations	2,132	1,135	997
R2	0.009	0.011	0.011
Adjusted R2	0.007	0.009	0.008
Residual Std. Error	0.204 (df = 2128)	0.189 (df = 1131)	0.212 (df = 993)
F Statistic	6.172*** (df = 3; 2128)	4.312*** (df = 3; 1131)	3.666** (df = 3; 993)

Note: *p<0.1; **p<0.05; ***p<0.01