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**I'M SEXY AND I KNOW IT: THE IMPACT OF SEXUAL SELF-ESTEEM AND BODY  
SATISFACTION ON DISORDERED EATING BEHAVIOR**

**BY**

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**SUBMITTED TO SCRIPPS COLLEGE IN PARTIAL FULFILLMENT  
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### **Abstract**

Rates of dieting, disordered eating, and eating disorders are continuing to rise in the United States. Many factors influence decisions to engage in problematic eating, including body satisfaction and self-esteem. This paper outlines two studies that examined these relationships and proposed an intervention to reduce disordered eating. In the first study participants were primed to think about a time when they had negative thoughts about their intelligence, their body, or their sexual self-esteem and then measured body image avoidance, self-esteem, sexual self-esteem, disordered eating behaviors, well-being, and depressive symptoms. Consistent with previous research, it was found that having participants recall a moment when they felt negatively toward their body predicted an increase in scores of disordered eating behaviors. Both direct and indirect relationships between body image avoidance, depressive symptoms, and well-being were also found. The second study proposed a 6-month acceptance and commitment therapeutic intervention that includes a control group, a group that adds a focus on body image and health, and a group that adds a focus on sexual self-esteem. This study will measure the same variables as the first study four times: pre-intervention, post-intervention, 1 year after the intervention, and 5 years later. It is expected that the body image and sexual self-esteem intervention groups will improve on all measures more than the control group over time. This research is expected to inform therapeutic practices and interventions for people with disordered eating to prevent the onset of eating disorders.

## I'm Sexy and I Know it: The Impact of Sexual Self-Esteem and Body Satisfaction on Disordered Eating Behavior

Some people say that it is best to eat every three hours, while others say that every three days is a better way to go. Those who claim that it is best to eat infrequently might say that is important to a healthy lifestyle, but clinicians may call this behavior disordered eating. Engaging in dieting behavior, such as skipping meals and fasting, is associated with many negative psychosocial and health behavior risk factors (French, Story, Downes, Resnick & Blum, 1995). It has also been found that dieting is the most important predictor of developing eating disorders (Golden, Schneider, & Wood, 2016). Additionally, 95% of all people who diet regain their lost weight within 1 to 5 years (Grodstein, Levine, Spencer, Colditz & Stampfer, 1996). Given this information and the prevalence of dieting behavior in today's society, it is especially important to investigate which variables influence decisions to engage in dieting behaviors. Specifically, this thesis will focus on self-esteem and body satisfaction as potential factors.

### **Disordered Eating Behavior**

There is a large overlap between what is considered a "diet" and what is considered disordered eating behavior. According to the Academy of Nutrition and Dietetics ("What Is Disordered Eating," n.d.), the following are signs and symptoms of disordered eating: frequent dieting; anxiety associated with specific foods or meal skipping; chronic weight fluctuations; rigid rituals and routines surrounding food and exercise; feelings of guilt and shame associated with eating; preoccupation with food, weight, and body image that negatively impacts quality of

life; a feeling of loss of control around food, including compulsive eating habits; and using exercise, food restriction, fasting, or purging to make up for the consumption of “bad foods.” Despite these phenomena being signs and symptoms of disordered eating, they remain very prevalent in society. For the purpose of this study, all of these symptoms will be considered Disordered Eating Behavior (DEB).

Many factors can contribute to DEB, such as the idealization of a thin body (Culbert, Racine, & Klump, 2015), racial identity (Beccia et al., 2019; Stein, Lee, Corte & Steffen, 2019), Body Mass Index (BMI; Da Luz et al., 2018; Lowe et al., 2019), alcohol use (Calzo, Turner, Marro & Phillips, 2019), and mood (Ferreira, Silva, Mendes & Trindade, 2018). Lowe et al. (2019) conducted a longitudinal study looking at whether they could predict girls’ BMIs and eating behaviors over a long period of time. First measuring the girls at age 11 and then again every 3-4 years until age 29, the researchers explored whether participants’ younger attitudes would apply to their adult lives. They found that body dissatisfaction and weight preoccupation at a young age predicted negative eating attitudes and reduced growth in BMI later in life across participants. These results suggest that body dissatisfaction and weight preoccupation may account for some of the changes in eating attitudes and body size over time.

Another study examining eating attitudes in children found that the influence of peers and prevalence of the thin body ideal in the media may also impact people’s DEB and self-esteem, and as early as 5 years old (Dohnt & Tiggemann, 2006). In a study on girls’ desire for thinness, body satisfaction, and self-esteem, Dohnt and Tiggeman asked 5 to 8 year old girls about their friends and how they felt about their bodies. One year later, they followed up with participants and found that those who had reported having friends who desired a thin body were more likely

to desire a thin body and have lower body satisfaction than those who did not. This study highlighted the effects of social comparison, which can affect DEB. Festinger's (1954) social comparison theory suggests that when there is no objective way to measure a construct, people look toward those around them to see how they measure up. Corning, Krumm, and Smitham (2006) examined how the presence of social comparison behaviors affected people's eating disorder symptoms. They found that a greater tendency to engage in social comparison predicted more DEB and that self-esteem partially mediated this relationship. While Corning et al. investigated general social comparison, Fitzsimmons, Ciao, & Accurso (2016) looked at body, eating, and exercise social comparisons more specifically. The researchers used ecological momentary assessments to ask college women about their thoughts and behaviors three times a day over a two week period. They found that body comparison predicted higher levels of disordered eating thoughts and that eating comparisons predicted an increase in most DEB. Overall, social comparison theory provides an explanation for why ideal images and expectations of beauty affect DEB. In addition to social influences, this aforementioned research has shown that body satisfaction and self-esteem may be among the many factors that contribute to DEB.

### **Body Satisfaction, Self-Esteem, and Sexual Self-Esteem**

Research has found that many young women who are within 10% of their ideal body weight still have negative body image and self-satisfaction (Wardle & Foley, 1989). Wardle and Foley (1989) additionally found that restrained eaters, those who diet or otherwise restrict their food intake, had a significantly more negative body image than unrestrained eaters. Body dissatisfaction has been repeatedly shown to be strongly related to DEB (Breines, Toole, Tu &

Chen, 2014; Graziano & Sikorski, 2014; Vartanian, Smyth, Zawadzki, Heron & Coleman, 2014). Graziano and Sikorski (2014) examined the depressive symptoms, perfectionistic tendencies, and body dissatisfaction of people of varying levels of eating dysfunction. They found that those with disordered eating attitudes displayed more body dissatisfaction and depressive symptoms than those with normal eating attitudes and behaviors. However, they found no difference in perfectionistic tendencies between groups. This further confirms the relationship between body dissatisfaction and DEB and brings up the additional variable of depressive symptoms in relation to DEB.

Also investigating body dissatisfaction, Vartanian et al. (2014) asked female college students about their early negative experiences, self-esteem, relationships, body dissatisfaction, disordered eating, and exercising behavior in a large online study. They found a strong positive correlation between body dissatisfaction and DEB. Additionally, they created a structural equation model that demonstrated that fewer intrapersonal resources, such as self-esteem and social support, were associated with more body dissatisfaction. More body dissatisfaction was then positively correlated with DEB. In this model, the researchers found an indirect relationship between self-esteem and DEB, but the relationship needed to be further explored. Furthering the connection between self-esteem and DEB, Rhea and Thatcher (2013) found that self-esteem is directly related to disordered eating. The researchers examined high school women's ethnic identity, self-esteem, and DEB through self-report measures. They found a significant correlation between self-esteem, drive for thinness, and engagement in behaviors associated with bulimia. As self-esteem increased, the drive for thinness and engagement in DEB decreased.

Many of the studies that examine DEB primarily have female-identifying participants. This may be the case because research has found that women exhibit more body dissatisfaction and DEB than men (Ålgars, Santtila & Sandnabba, 2010). And while it is important to study how gender-specific pressures affect women, disordered eating is nearly as common in males as it is in females (Mitchison, Slewa-Younan & Mond, 2014). Parent and Bradstreet (2017) found a similar relationship between self-esteem and disordered eating in both heterosexual and gay/bisexual men. They specifically looked at how the drive for masculinity affected disordered eating behaviors and depressive symptoms. They found that the relationship between those variables was moderated by one's physical self-concept, global self-concept, and self-esteem. This research suggests that self-esteem is an important factor in men's eating behaviors, in addition to sexual identity and conformity to gender norms.

Tylka and Sabik (2010) also investigated the connection between self-esteem and DEB in young women, and they did so through the lens of sexual-objectification via appearance feedback, body surveillance, body shame, and body comparison. Sexual objectification is a way of treating or thinking about a person that takes away their individuality and instead regards them as an object of sexual desire (Szymanski, Moffitt & Carr, 2011). Tylka and Sabik conducted a correlational study and proposed a model that connected self-esteem and sexual-objectification via appearance feedback to disordered eating through the mediating variables of body surveillance, body comparison, and body shame. They found that their model accounted for more than 60% of the variation in DEB. Despite the existence of an indirect relationship between self-esteem and DEB via (sexual-objectification) appearance feedback, the researchers found that the direct relationship between self-esteem and DEB was not significant. This provides support

for the idea that there is a relationship between self-esteem and DEB, but that other factors that mediate that relationship. The researchers additionally found an unexpected direct relationship between (sexual-objectification) appearance feedback and disordered eating above and beyond the variance accounted for by body shame. This finding indicates that sexual-objectification via appearance feedback directly impacts people's eating behaviors, such that more positive appearance feedback decreases engagement in DEB. This direct relationship means that an intervention designed to reduce DEB may be improved by considering sexual-objectification.

Fredrickson and Roberts (1997) proposed objectification theory to explain how women are raised to internalize societal gazes as their primary view of their own physical body. They further suggested that this way of thinking can lead to frequent body monitoring, which may, in turn, lead to increased DEB and body dissatisfaction. The theory has also been used to explain body distortion, which can result in trying to control body size by increasing DEB. Research (Brewster, Velez, Breslow & Geiger, 2019; Moradi, Dirks & Matteson, 2005) has extended our knowledge of objectification theory in the context of disordered eating and has confirmed both direct and indirect relationships between self-objectification, DEB, and body dissatisfaction. For instance, Moradi, Dirks, and Matteson (2005) conducted a study with young women to examine the relationship between sexual objectification experiences and disordered eating related variables. They found that there was an indirect relationship between sexual objectification experiences and DEB that was mediated by sociocultural standards of beauty. This framework can help to explain some of the complexities surrounding the prevalence and causes of disordered eating.

Higher levels of sexual objectification have also been correlated with lower levels of sexual self-esteem (SSE), which is made up of several components including emotional and behavioral factors (Calogero & Thompson, 2009). Many authors define SSE as one's sense of self as a sexual being, and some have considered aspects such as perceptions of sexual acceptability (Mayers, Heller & Heller, 2003). In this paper, SSE will refer to one's perception of one's ability to relate to others intimately. Additionally, other sexual identity factors, such as sexuality and dating status, have been linked to body image and DEB (Salafia & Benson, 2013). Salafia and Benson (2013) tested the body satisfaction and SSE of participants with different BMIs and dating statuses using self-report measures. They found that overweight women had lower body satisfaction, higher self-consciousness, and more avoidance regarding their body image, but that BMI was not directly correlated with SSE. They also found that dating status was correlated with SSE, such that participants who were dating had greater SSE than those who were not. Contrary to the findings of Salafia and Benson (2013), Jafari, Khodarahimi, and Rasti (2016) found that women with a higher BMI had lower SSE than women with a lower BMI. Hannier, Baltus, and De Sutter (2018) found that BMI did not directly influence SSE, but body image did. Due to the conflicting findings of these studies, the relationship between BMI, body image, and SSE remains unclear. The factors that contribute to SSE have not been clearly defined, and thus there needs to be more research on how SSE is formed to learn how to effectively improve it.

In addition to not knowing what factors affect SSE, there is also limited research looking at how negative SSE affects people's lives, including engagement in DEB. SSE has been linked with self-objectification and body shame, both of which have been connected to DEB (Calogero

& Thompson, 2009; Tylka & Sabik, 2010). Calogero and Thompson (2009) explored the relationship between self-objectification and DEB and how that relationship is mediated by SSE and body shame. This correlational research found that more self-objectification is correlated with lower SSE and more body shame, and that accounts for the majority of the variance in DEB. These findings suggest that self-objectification, SSE, and body shame may affect willingness to engage in DEB, but further research is needed to establish a causal relationship between these variables. In sum, given the literature on body satisfaction and sexual objectification, it is not enough to just consider the general concepts of body image and self-esteem, but instead it is important to specifically study sexual self-esteem in relation to DEB.

### **Well-being and Depression**

Well-being is an abstract concept that is loosely defined as a generally positive state (Dodge, Daly, Huyton & Sanders, 2012). Well-being can encompass and refer to many different variables, so for the purpose of this paper, subjective well-being will be used. Subjective well-being refers to how one reports their life is going and can be measured by asking people how satisfied they are with their lives (Diener, Emmons, Larsen & Griffin, 1985). There are many different factors that can influence one's subjective well-being, including social and emotional factors. For example, it has been found that for Black Americans, the frequency of contact with friends is a significant predictor of well-being (Ellison, 1990). It has also been found that perceived financial strain on unemployed youth is negatively correlated with well-being (Ullah, 1990). Additionally, studies have found that severe mental illness and related

discrimination are associated with lower well-being (Schauman, MacLeod, Thornicroft & Clement, 2019).

Disordered eating has also been shown to significantly affect people's satisfaction with life (Góngora, 2014; Magallares, Jauregui-Lobera, Gamiz-Jimenez, & Santed, 2014). Magallares, Jauregui-Lobera, Gamiz-Jimenez, and Santed (2014) compared the subjective well-being of participants with eating disorders and those without. Consistent with their hypothesis, they found that subjective well-being was higher in those without eating disorders. These results suggest that there is a relationship between DEB and well-being. To further examine that connection, Góngora (2014) sought to establish a relationship between DEB, body dissatisfaction, and dissatisfaction with life. In a study of adolescents, it was found that dissatisfaction with life was the most common predictor of both DEB and body dissatisfaction. Thus, satisfaction with life and DEB are closely connected, which can affect people's lives in a variety of ways. Better understanding the factors that influence DEB is critical so that we can help create interventions and improve well-being.

In addition to improving people's well-being, it is equally important to consider how to help alleviate negative thoughts and symptoms of mental illness. In several studies that have already been described, researchers have linked DEB with depressive symptoms (Graziano & Sikorski, 2014; Parent & Bradstreet, 2017). As previously mentioned, Parent and Bradstreet (2017) found that the relationships between gender conformity, DEB, and depressive symptoms are partially mediated by self-concept and self-esteem. The various relationships between variables in this study brings to light possible strategies for targeting negative feelings and behaviors associated with both DEB and depressive symptoms. Given that depressive symptoms

are generally closely related to DEB and self-esteem, it is important to consider how possible intervention programs affect these variables. Further, the existing research and intervention programs have not been able to take into account the entire picture and alleviate DEB or the negative outcomes that are associated with these behaviors.

### **Existing Interventions**

Whether aiming to combat the obesity epidemic, improve public health, or increase well-being, many disordered eating interventions have been proposed with varying success. In 1998, Ciliska proposed two alternative, non-diet interventions for fat women and compared both physical and emotional results to those from a no intervention control group. One of the interventions was educational, in the style of a lecture class on health behaviors, while the other was psychoeducational and covered cognitive therapy strategies in addition to the health information presented in the educational intervention. When compared to the no intervention control group, the educational intervention group did not differ on either emotional or physical factors. However, those in the psychoeducational intervention had greater improvement than those in the control condition on the emotional factors. Specifically, they had greater positive changes in self-esteem, eating restraint, and body dissatisfaction. This study thus demonstrated the positive effects of therapeutic strategies on eating behaviors and self-concept.

An evidence-based body acceptance program that is particularly effective at preventing disordered eating behavior for high school aged women is called The Body Project. Stice, Marti, Spoor, Presnell, and Shaw (2008) randomly assigned approximately 500 female students between the ages of 14 and 19 to one of several conditions. They were either put into the

dissonance based body acceptance program or one of several control groups, which had the students do more commonly accepted programs or no program at all. The participants provided interview and survey data in a pretest, posttest, 6-month, 1-year, 2-year, and 3-year follow-ups. The researchers found that for those who were in the dissonance based program, there was significantly lower thin-ideal internalization, body dissatisfaction, negative affect, bulimic symptoms, and psychosocial impairment than assessment-only controls at 2-year follow-up and at the 3-year follow-up. This demonstrated that the program is effective for a population of adolescent girls, but it remains unknown how these interventions impact more diverse populations.

Another increasingly popular intervention that similarly focuses on psychoeducation and well-being is Lindo Bacon's Health at Every Size (HAES; Bacon, 2010) approach to health and well-being. The HAES approach is a way to address health and well-being by focusing on adopting healthy behaviors, rather than focusing on weight. In one of many studies examining HAES, Bacon et al. (2002) conducted a six month randomized clinical trial that looked at obese, middle aged, female, chronic dieters. The participants had 6 months of weekly group interventions, either a traditional diet program or a health centered non-diet approach. The outcome variables examined were physical (weight, BMI, blood pressure, blood lipids, energy expenditure), psychological (eating behavior, self-esteem, depression, body image), and treatment-related (attrition, attendance, and participant evaluations of treatment helpfulness). These variables were all assessed at 3 months, 6 months, and 1 year from the start of the intervention. The results showed that after a year, both groups demonstrated significant improvement in many metabolic fitness, psychological, and eating behavior variables, but only

the diet group lost weight. This study suggests that one does not need to lose weight in order to obtain the physical and psychological health benefits typically associated with thinness.

However, it is important to note that more people in the diet group dropped out of the study than those in the non-diet group. This indicated that a diet approach may not be as sustainable as a non-diet approach to health. It is thus also possible that the weight loss variable effects could be because only participants who were successful at losing weight through the diet approach remained in the study.

Humphrey, Clifford, and Neyman (2015) further investigated the HAES approach. They looked specifically at the intuitive eating part of the intervention (how participants listened to internal hunger and fullness cues) and how introducing participants to HAES using a class format affected intuitive eating, body esteem, cognitive behavioral dieting, and anti-fat attitudes. Students in the class improved on all measures when compared to the control and comparison groups. This suggests that teaching young adults about a non-diet approach to health has the power to improve their physical and mental well-being. Integrating the HAES approach with general self-acceptance based therapy, Berman, Morton, and Hegel (2016) designed an intervention using acceptance and commitment therapy (ACT) to help treat depressed obese women. The program (Accept Yourself! Accept Yourself!) was found to improve depressive symptoms, blood pressure, and quality of life significantly post-treatment, and the improvements were sustained at a three-month follow-up.

Thus, interventions that utilize a HAES approach generally improve holistic health and well-being. While the HAES approach has been found to have many positive outcomes, few eating disorder prevention and treatment efforts have adopted the approach. Disordered eating

and eating disorders are incredibly complex issues, and only about 50% of people who struggle from Anorexia Nervosa recover from the disorder (Steinhausen, 2002). Additionally, according to the National Institute of Mental Health (Eating Disorders, n.d.), 2.7% of people will get an eating disorder in their lifetime. These startling numbers indicate that we need more effective prevention and treatment efforts to combat this mental health crisis, which may include an evidence-based practice to improve sexual self-esteem (SSE).

### **The Current Research**

In the United States, there is currently a \$72 billion diet industry (“The \$72 Billion Weight Loss & Diet Control Market,” 2019) even though diets have been shown to be unsuccessful and are associated with many negative outcomes such as eating disorders. Many factors have been associated with DEB including body image, self-esteem, social comparisons, sexual-objectification, well-being, and depressive symptoms. There also has been some research linking more body satisfaction and more self-esteem to less DEB (Rhea & Thatcher, 2013; Vartanian et al., 2014). However, there is very little research examining the relationship between SSE and DEB, and that could give more insight into how to reduce DEB. Given that disordered eating has been associated with less well-being and more depression, it is important to develop interventions that can help prevent eating disorders. There have been few interventions that successfully decrease DEB, and none that address the potential impacts of SSE.

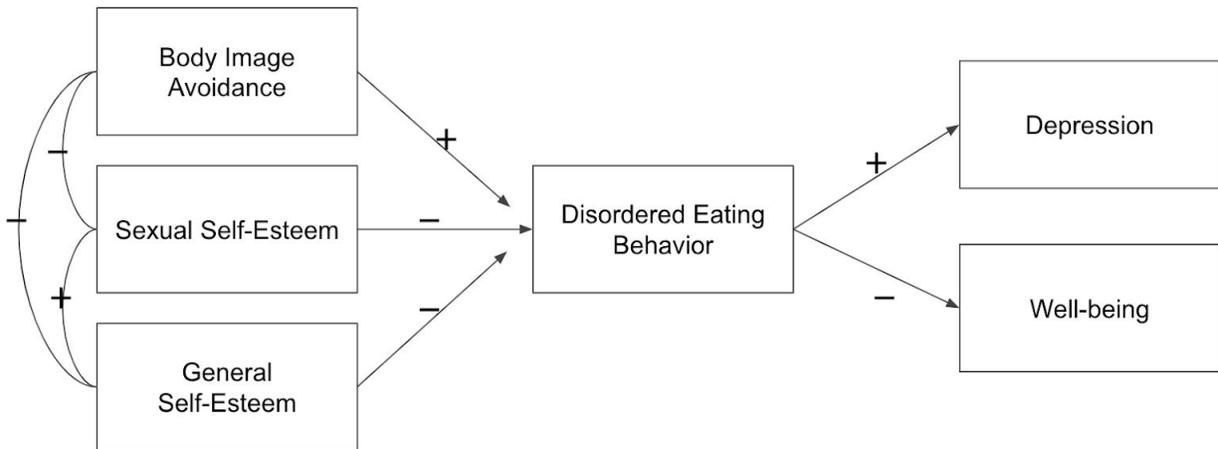
The purpose of this paper is to further explore the relationship between SSE and DEB, and to propose an intervention that builds on those that already exist by adding the component of SSE. The first study examined the indirect and direct relationships between SSE and DEB,

taking into account body satisfaction, general self-esteem, depressive symptoms, and well-being. The first study additionally looked at the effects of priming participants to recall times where they experienced negative body image or SSE to see how simulating such experiences could impact reported DEB. This manipulation helped to verify that changes in thoughts regarding SSE and body image affect one's decisions regarding eating and body related behaviors. A second study is then proposed and will involve a 6-month intervention that incorporates self-acceptance based therapy, the HAES approach to health-based behaviors, and an additional therapeutic component focusing on SSE. This study will test the effects of the intervention, compared to the self-acceptance based therapy and HAES approach and to a control group, by measuring DEB, body image avoidance (BIA), SSE, self-esteem, well-being, and depressive symptoms pre and post treatment and at several time points after the intervention has been completed. It is generally hypothesized that improving body image will lead to more positive outcomes than seen in the control groups, and that improving both body image and SSE will lead to more positive outcomes than for both the control group and the body image group.

### **STUDY 1**

The purpose of study 1 was to investigate the relationship between sexual self-esteem, disordered eating, and well-being. In the first study, participants recalled negative self-thoughts regarding their body image, SSE, or intelligence and then completed several scales about their feelings and behaviors. It was predicted that priming participants to think about negative experiences regarding their body image or SSE would increase participants' reported desire to engage in DEB. It was also predicted that male participants would exhibit less BIA and more

SSE than female participants and those with a different gender identity. Additionally, a path model is predicted such that BIA, SSE, and self-esteem are correlated with each other and are related to DEB, and DEB is related to depression and well-being, as seen in Figure 1.



*Figure 1.* A path model depicting hypothesized relationships between BIA, SSE, self-esteem, DEB, depression, and well-being

## Method

**Participants.** The participants in this study were emerging adults in the United States, aged 18 to 28. There were a total of 278 participants who passed the manipulation check and were included in analyses. The smallest effects in this study were approximately  $r=0.2$ , requiring at least 255 participants for a power of 0.9 (Friedman, 1982), thus this study has a power greater than 0.9 for all analyses. The ethnic breakdown of the participants is 67% ( $n=184$ ) White, 12% ( $n=32$ ) Hispanic, 10% ( $n=28$ ) Black, 8% ( $n=22$ ) Asian, 1% ( $n=3$ ) American Indian, and 2% ( $n=7$ ) with a different identity. The gender breakdown of participants is 60% ( $n=165$ ) cisgender women, 36% ( $n=99$ ) cisgender men, and 4% ( $n=12$ ) have a different gender identity. The

breakdown of sexuality is 71.5% (n=197) heterosexual, 14.5% (n=40) bisexual, 8% (n=23) homosexual, and 6% (n=16) have a different identity. Additionally, approximately 8% (23) of participants report having been diagnosed with an eating disorder at some point in their life. Participants were recruited via Amazon's Mechanical Turk, an online crowdsourcing platform where people can complete various tasks and surveys, and were compensated with \$2 for their participation.

**Materials.** This study was distributed via an anonymous link to an online Qualtrics survey that includes the following components.

**Priming Task.** Participants were given a prompt asking them to recall a time when they experienced negative thoughts about their body, sexual-esteem, or their intellect. Then participants were asked to write about how they felt during that time. The prompt read:

“Recall a time when you had negative thoughts about your *body*. Please write about what happened and how you felt at that time. Do not include any identifying information such as your name, address, or phone number. It will be 5 minutes before you can move on to the next part of the study.”

For the other two conditions, “body” was substituted for “intelligence” or “ability to relate to others sexually.”

**Manipulation Check.** Participants responded to an open-ended question that asked what they were instructed to write about. Responses were content coded and compared to the priming condition to which participants were assigned.

**General Self-Esteem.** Participants' self-esteem was measured using The Rosenberg Self-Esteem Scale (Rosenberg, 1965). The Rosenberg Self-Esteem Scale is a self-report measure of global self-esteem. Participants rated how much they agree or disagree with each of 10 statements, such as “On the whole, I am satisfied with myself.” Each item is rated on a 4 point

scale from 1 (*strongly disagree*) to 4 (*strongly agree*). Some items were reverse coded and then the point values for each item were added to create a composite score. Higher scores on this measure reflect higher self-esteem. This scale has been shown to be reliable ( $\alpha = .88$ ) and has also been shown to have a positive relationship with scales of self-worth and confidence (Gray-Little, Williams, & Hancock, 1997). In this sample, the scale was found to be reliable ( $\alpha = .72$ ).

***Sexual Self-Esteem.*** The sexual-esteem subsection of the Sexuality Scale (Snell & Papini, 1989) was used to measure participants' SSE. The scale includes 10 items about how people feel about their sexual abilities, such as "I am confident about myself as a sexual partner." Participants were asked to rate how strongly they agree or disagree with each statement on a 5 point Likert scale from 1 to 5. To get a total score, each item was added together, and a higher score indicates higher sexual self-esteem. This scale is highly reliable (Cronbach's  $\alpha = .92$ ; Snell & Papini, 1989). In this sample, the scale was found to be reliable ( $\alpha = .93$ ). Given the content of the scale, there is also face validity.

***Body Image Avoidance.*** The Body Image Avoidance Questionnaire (BIAQ; Rosen, Srebnik, Saltzberg, & Wendt, 1991) was used to measure participants' body image. This scale specifically measures participants' level of comfort with certain clothing styles, physical behaviors, and social activities that relate to one's body. Participants responded to how often they avoid the situation in 19 statements, such as "I wear baggy clothes," using a 6-point Likert scale from 0 (*never*) to 5 (*always*). The responses will be summed to create a total score, and higher scores will indicate lower body satisfaction. This measure was found to have high internal consistency and test-retest reliability (Rosen et al., 1991). Additionally, Lydecker (2015) found

strong associations between the BIAQ and the Body Checking Questionnaire, the Eating Disorder Inventory – Body Dissatisfaction subscale, and the Eating Attitudes Test-36, suggesting convergent validity. This scale also was able to successfully discriminate between patients with bulimia and healthy controls, demonstrating its criterion validity (Rosen et al., 1991). In this sample, the scale was found to be reliable ( $\alpha = .85$ ).

***Disordered Eating Behaviors (DEB).*** A modified version of the Disordered Eating Attitude Scale (DEAS; dos Santos Alvarenga, Scagliusi, & Philippi, 2010) was used to measure participants' reported engagement in DEB. The first part of the scale is made up of 10 yes-no questions asking about the participants' behaviors around food, such as "Do you count the calories of everything you eat?". Then, participants were given a list of 13 statements, such as "I worry all the time about what I am going to eat, how much to eat, how to prepare food and whether I should eat or not," followed by the options: *always, usually, often, sometimes, and rarely/never*. There were designated point values assigned to each response, and the more total points, the more DEB the person exhibits. This test has been shown to have known-group validity, significantly differentiating between people with eating disorders and typical university students (dos Santos Alvarenga, Scagliusi, & Philippi, 2010). Additionally, the researchers found that the DEAS was highly correlated with the Restraint Scale and the Eating Attitudes Test-26, other accepted measures of DEB. In this sample, the scale was found to be reliable ( $\alpha = .83$ ).

***Well-being.*** The Satisfaction with Life Scale (SWL; Diener, Emmons, Larsen & Griffin, 1985) was used to measure subjective well-being in this study. The SWL is made up of 5 items that help to understand one's level of satisfaction with their current circumstances. Participants responded to how strongly they agree with the statements on a scale from 1 (*strongly disagree*)

to 7 (*strongly agree*), and then the scores are summed together. Higher scores indicate more subjective well-being. This scale has been found to have a high internal consistency between items and high test-retest reliability (Pavot & Diener, 2008). The scale also has face-validity because the items clearly ask participants how satisfied they are with their life. In this sample, the scale was found to be reliable ( $\alpha = .93$ ).

***Depressive Symptoms.*** Participants' depressive symptoms were measured using the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock & Erbaugh, 1961). The scale included 20 items. Each item had 4 answer choices and participants chose which of the 4 options they most closely identified with. Each set of statements has a rating scale of 0 to 3 points, and then the scores from each item were summed to create a total score. The higher the score, the more depressive symptoms and attitudes are present. The BDI demonstrates high internal consistency, with  $\alpha = .86$  and  $.81$  for psychiatric and non-psychiatric populations respectively (Beck, Steer, & Garbin, 1988). In this sample, the scale was found to be reliable ( $\alpha = .95$ ).

***Self-Affirmation Task.*** Participants completed a task to reaffirm their positive values. Participants ranked personal values and described why their most highly ranked personal value is important to them. This task has been found to successfully reduce biased evaluations and has been used in previous self-affirmation research (de Buissonjé, Ritter, de Bruin, ter Horst, & Meeldijk, 2017).

***Demographics.*** Participants were asked to provide their gender (*male, female, or different identity*), ethnicity (*White/Caucasian, African American/Black, American Indian, Latino/Hispanic, Asian/Pacific Islander, Middle Eastern, or different identity*), sexual orientation (*gay/lesbian, bisexual, heterosexual, and different identity*), and whether or not they have been

previously diagnosed with an eating disorder. The last demographic question that was asked is age, in an open-ended format.

**Procedure.** After entering the online survey and providing informed consent, participants were randomly assigned to one of three priming tasks. They were then asked to recall and write about a moment where they had negative thoughts about their body image, themselves as sexual beings, or their intelligence. After finishing this task, participants completed scales for self-esteem, BIA, SSE, DEB, well-being, and depressive symptoms in a randomized and counterbalanced order. After completing the scales, participants completed manipulation checks, demographic questions, and a self-affirmation task in that order. Then participants were debriefed and thanked for their participation.

**Ethics.** This study has the potential to better inform our understanding of the factors that influence disordered eating. In addition, examining the relationships between SSE, BIA, and DEB is important to help illuminate the complex systems that lead to a negative sense of self. This study may provide the groundwork for the development of prevention and intervention programs that can help to eliminate eating disorders.

Given the sensitive nature of these topics, it is important to consider the potential risk to participants resulting from discomfort. The study included scales to measure several topics that some people may consider personal, including SSE and attitudes toward DEB. Thus, this survey could be upsetting to people who have a history of eating disorders or negative self-worth. There will also be a question about sexual orientation asked as a part of the demographics section. But it is important to measure these variables in order to better understand eating behaviors. Information about the content of the survey was included in recruitment materials and the

consent form, to notify potential participants of the nature of the questions. All of these questions are within the parameters of what a person could encounter in daily life, so this study had minimal risk to participants. Additionally, participants were informed that they could skip any of the questions if they felt uncomfortable. To further reduce the risk to participants, all survey responses were collected anonymously. The survey was distributed through an anonymous link to an online Qualtrics survey through Amazon's Mechanical Turk (MTurk), and IP addresses were not collected. MTurk Worker ID numbers are automatically collected, but this information cannot and will not be linked to survey responses.

Further reducing any risk to participants, participation in this study was completely voluntary, and participants could stop at any time if they felt distressed. This study did not look at a protected population nor did it contain any deception. Also, the contact information for the National Eating Disorders Association Helpline and the APA locator for therapists were included in the debriefing form. While the sensitive nature of this study required careful consideration of the well-being of participants, the potential benefits to society outweigh the minimal risk involved.

## **Results**

First, a content analysis was conducted to check that participants correctly perceived the manipulation to which they were assigned. In this manipulation check, participants were asked to describe what they were instructed to write about at the beginning of the study. Those who indicated all or part of the prompt, including information about a negative experience with their

intelligence, body image, or sexual intimacy, passed. Participants who failed the manipulation check ( $n=16$ ) were excluded, and 278 participants passed and remained in the analyses.

Next, a Factorial Analysis of Covariance (ANCOVA) was conducted to examine the effects of the priming task and participant gender on DEB, controlling for participants' ethnicity, sexuality, and if they have been diagnosed with an eating disorder. These variables were selected because previous research has shown that ethnicity (Rhea & Thatcher, 2013) and sexuality (Salafia & Benson, 2013) can have an impact on DEB. It was hypothesized that priming participants to think about their body image or SSE would increase participants' reported engagement in DEB compared to the control group. It was thus predicted that there would be a main effect of the priming task on DEB. There was a significant difference between conditions on reported DEB,  $F(2, 266) = 5.30$ ,  $MSe = 1718.79$ ,  $p = .006$ ,  $\eta^2 = .04$ . Comparisons across conditions were examined using Fisher's Least Significant Difference (LSD) post-hoc test. As hypothesized, reported DEB were higher for those who were primed to think about body image (Estimated Marginal Mean = 58.097,  $SE = 2.830$ ) than the control group (Estimated Marginal Mean = 45.274,  $SE = 4.492$ ). Contrary to the hypothesis, people who were primed to think about SSE were not significantly different in reported DEB from the control group. There were also no significant main effects of gender on DEB.

Also using ANCOVA, a main effect of gender on BIA and SSE was also expected, such that male participants were predicted to exhibit lower BIA and higher SSE than female participants and people of other gender identities. This would be consistent with previous research (Ålgars, Santtila, & Sandnabba, 2010) that has shown that typically men have higher body-esteem than people of other genders. Contrary to hypotheses, there were no significant

main effects of gender on BIA nor SSE. It was also predicted that there would be an interaction between priming tasks and gender such that women who were primed to think about SSE or body image would report significantly more DEB than men and people of other genders in the same group and than those in the other two conditions. However, there was not a significant interaction,  $F(4, 266) = 1.802$ ,  $MSe = 584.192$ ,  $p = .129$ ,  $\eta^2 = .026$ .

Lastly, a path model using regression techniques was used to assess the relationships between the variables of interest. It was predicted that BIA would be negatively correlated with SSE and self-esteem, and that SSE and self-esteem would be positively correlated. It was predicted that they would all have significant direct effects on DEB, such that higher scores on self-esteem and SSE and lower scores on BIA would predict a reported reduction in DEB. It is hypothesized that there will also be direct effects of BIA, SSE and self-esteem on depression and well-being, such that as BIA decreases and SSE and self-esteem increase, depression will decrease and well-being will increase. A direct effect of DEB on well-being and depression is also predicted, such that lower scores on DEB will predict higher scores on well-being and lower scores on depression. It is further hypothesized that there will be indirect effects of BIA, SSE, and self-esteem on depression and well-being that are mediated by DEB such that lower scores of BIA and higher scores of SSE and self-esteem will decrease DEB which, in turn, increases well-being (see Figure 1).

A series of regression analyses were conducted using a combination of simple regressions and hierarchical regressions to examine the relationships between BIA, self-esteem, SSE, DEB, well-being, and depression (see Figure 2). First, to test the direct effect of BIA, self-esteem, and SSE on DEB, a simple linear regression was used where all three variables were entered

simultaneously to predict DEB. Then, two hierarchical regressions were conducted to test the direct effects of BIA, self-esteem, and SSE on depression and on well-being. This also tested the direct effect of DEB on depression and well-being using step 2 of the same analysis. Correlations between all the variables in the regression analyses can be seen in Table 1.

Table 1. Means, Standard Deviations, and Correlations Between the Variables in the Model

	<i>M</i>	<i>SD</i>	BIA	Self-esteem	SSE	DEB	Well-being	Depression
BIA	31.86	14.61	1					
Self-esteem	15.03	1.98	-0.21	1				
SSE	30.28	7.53	-0.39	0.21	1			
DEB	51.25	19.52	0.67	-0.20	-0.27	1		
Well-being	20.23	8.20	-0.28	0.25	0.25	-0.29	1	
Depression	14.53	12.43	0.54	-0.32	-0.29	0.52	-0.56	1

*Note.* All *p* values < 0.001

Consistent with hypotheses, BIA was negatively correlated to self-esteem and SSE, and self-esteem was positively correlated with SSE (see Table 1). Also as hypothesized, BIA, self-esteem, and SSE significantly predicted DEB,  $F(3, 259) = 70.504$ ,  $MSe = 14634.658$ ,  $p < .001$ . Together, they accounted for 45% of the variance in DEB. Contrary to hypothesis, only body image was a significant predictor of DEB,  $B = .868$ ,  $SE = .067$ ,  $beta = .656$ ,  $t[261] = 13.041$ ,  $p < .001$ . For every one unit increase in BIA we would expect a .656 increase in DEB. Self-esteem ( $B = -.519$ ,  $SE = .458$ ,  $beta = -.054$ ,  $t[261] = -1.132$ ,  $p = .259$ ) and SSE ( $B = -.014$ ,

$SE = .130$ ,  $beta = -.005$ ,  $t[261] = -.105$ ,  $p = .916$ ) did not have significant predictive utility in the model.

Hierarchical linear regression was used to test whether BIA, self-esteem and SSE would significantly predict depression, and whether adding DEB would significantly increase the predictive utility of the model. BIA, self-esteem and SSE were entered into the model on Step 1, and DEB was entered into the model on Step 2. Consistent with the hypothesis the model at Step 1 was significant,  $F(3,258) = 37.444$ ,  $MSe = 3963.475$ ,  $p < .001$ . The variables in the model accounted for 30.3% of the variance in depression. Body image was a significant predictor ( $B = .373$ ,  $SE = .048$ ,  $\beta = .444$ ,  $t[260] = 7.826$ ,  $p < .001$ ), such that we would expect a .444 increase in depression for every one point increase in BIA. Self-esteem was also a significant predictor ( $B = -1.265$ ,  $SE = .327$ ,  $\beta = -.206$ ,  $t[260] = -3.862$ ,  $p < .001$ ), such we would expect a .206 decrease in depression for every one point increase in self-esteem. Inconsistent with hypothesis, SSE was not a significant predictor of depression in the model. Consistent with hypotheses, the predictive utility of the model was significantly increased when DEB was added to the model,  $F\text{-change}(1,257) = 18.974$ ,  $p < .001$ . The full model was significant,  $F(4,257) = 34.783$ ,  $MSe = 3442.006$ ,  $p < .001$  and accounted for 35.1% of the variance in depression. DEB ( $B = .187$ ,  $SE = .043$ ,  $\beta = .294$ ,  $t[260] = 4.356$ ,  $p < .001$ ) was a significant predictor of depression. After controlling for the effects of DEB, BIA ( $B = .211$ ,  $SE = .059$ ,  $\beta = .251$ ,  $t[260] = 3.573$ ,  $p < .001$ ) and self-esteem ( $B = -1.167$ ,  $SE = .317$ ,  $\beta = -.190$ ,  $t[260] = -3.677$ ,  $p < .001$ ) were still significant predictors of depression, and SSE was not.

Hierarchical linear regression was also used to test whether BIA, self-esteem and SSE would significantly predict well-being, and whether adding DEB would significantly increase the

predictive utility of the model. Similarly to the linear regressions examining depression, BIA, self-esteem and SSE were entered into the model on Step 1, and DEB was entered into the model on Step 2. Consistent with the hypothesis the model at Step 1 was significant,  $F(3,256) = 12.321$ ,  $MSe = 732.889$ ,  $p < .001$ . The variables in the model accounted for 12.6% of the variance in well-being. Body image was a significant predictor ( $B = -.104$ ,  $SE = .036$ ,  $\beta = -.185$ ,  $t[258] = -2.903$ ,  $p = .004$ ), such we would expect a .185 decrease in well-being for every one point increase in body image avoidance. Self-esteem was also a significant predictor ( $B = .797$ ,  $SE = .245$ ,  $\beta = .195$ ,  $t[258] = 3.245$ ,  $p = .001$ ), such we would expect a .195 increase in well-being for every one point increase in self-esteem. SSE was a marginally significant predictor of well-being ( $B = .134$ ,  $SE = .070$ ,  $\beta = .121$ ,  $t[258] = 1.915$ ,  $p = .057$ ). Consistent with hypotheses, the predictive utility of the model was significantly increased when DEB was added to the model,  $F\text{-change}(1,255) = 7.425$ ,  $p = .007$ . The full model was significant,  $F(4,255) = 11.329$ ,  $MSe = 657.388$ ,  $p < .001$  and accounts for 15.1% of the variance in well-being. DEB was a significant predictor of well-being,  $B = -.090$ ,  $SE = .033$ ,  $\beta = -.212$ ,  $t[258] = -2.725$ ,  $p = .007$ . After controlling for the effects of DEB, BIA was no longer significant ( $B = -.026$ ,  $SE = .045$ ,  $\beta = -.047$ ,  $t[258] = -.579$ ,  $p = .563$ ). However, self-esteem ( $B = .750$ ,  $SE = .243$ ,  $\beta = .183$ ,  $t[258] = 3.086$ ,  $p = .002$ ) and SSE ( $B = .132$ ,  $SE = .069$ ,  $\beta = .119$ ,  $t[258] = 1.909$ ,  $p = .057$ ) were still predictors of well-being.

Table 2. Direct and Indirect Effects on Depression

	Summary of Results (N=277)		
	Direct	Indirect	Total
BIA	0.44*	0.197	0.637
Self-esteem	-0.21*	-0.057	-0.267
SSE	-0.06	-0.079	-0.139
DEB	0.29*		

Note. \* $p < 0.05$

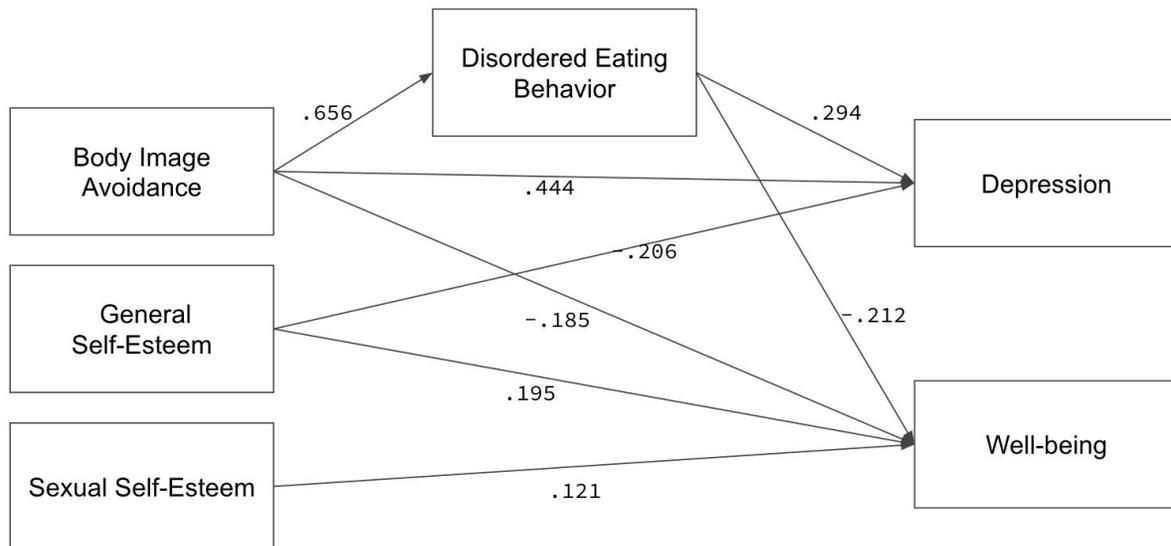
Table 3. Direct and Indirect Effects on Well-Being

	Summary of Results (N=277)		
	Direct	Indirect	Total
BIA	-0.19*	-0.141	-0.331
Self-esteem	0.20*	0.04	0.24
SSE	0.12*	0.057	0.177
DEB	-0.21*		

Note. \* $p < 0.05$

All of the direct and indirect effects on depression can be found in Table 2, and all the direct and indirect effects on well-being can be seen in Table 3. As can be seen in Table 2, the majority of effects on depression are direct. The effect of self-esteem on depression is mostly direct, with only a small indirect effect value relative to the direct effect. BIA has a slightly more indirect effect on depression, but the effect is still mostly direct. SSE does not have a significant direct effect on depression, and the indirect effect value also appears to be insignificant. In the well-being model, BIA becoming non-significant after adding DEB can be better understood by

comparing the direct and indirect values for that variable. The indirect effect there is about half the total, which indicates mediation through DEB. Self-esteem and SSE appear to mostly have a direct effect on well-being with comparably small indirect effect values.



*Figure 2.* The path model described above, depicting the significant paths from BIA, SSE, and self-esteem to DEB, depression, and well-being, all  $p$ 's < 0.05

## Conclusions

The results of this study confirmed previous findings that there are both direct and indirect effects of body image on depression and well-being, and that those effects are mediated by DEB. There were also direct effects of self-esteem on depression and both of self-esteem and SSE on well-being. The finding that SSE is a predictor of well-being indicates that we need more research on the topic, potentially on what factors, other than DEB, might be involved in that relationship. It was also found that priming participants to think about negative body image

predicts DEB, as expected. There were no effects of participant gender in this study, which could be in part due to the lack of participants who have a gender identity other than the binary.

In summary, this study helped to investigate the relationships between gender, BIA, self-esteem, SSE, DEB, well-being, and depressive symptoms using self-report measures. Additionally, the priming task helped to examine how thinking about negative body image affects reported DEB. Although this study has important implications for what factors should be considered in possible eating disorder prevention and treatment programs, it also has many limitations. One statistical limitation of this study is that there are no significance tests for the indirect effects of predictor variables (BIA, self-esteem, and SSE) on the outcome variables (depression and well-being). This study also does not examine how changes in BIA or SSE affect DEB or other outcome variables over time. Instead, this study looks at the relationships between constructs, using a between-participants design. Because this survey is only taken at one point in time, it does not have the ability to measure changes in feelings, attitudes, or behaviors. Also, the priming task that was used in this study had participants think about negative experiences regarding body image and SSE, and does not measure positive aspects of body image or SSE manipulations. In order to examine the positive effects of improving one's self-worth over time, Study 2 will examine several intervention programs aimed at improving BIA, self-esteem, SSE, depression, and well-being over time.

## **STUDY 2**

The second proposed study will test the effectiveness of three intervention programs that bring together the existing research and interventions as well as the findings from Study 1.

Participants will fill out a questionnaire before and at multiple points after the completion of the intervention that they are randomly assigned to for 6 months to test whether the changes are sustained long-term. The first intervention group will use acceptance and commitment therapy, the second will utilize the acceptance and commitment therapy and a HAES education, and the third will incorporate the previous two components with an additional focus on SSE. It is hypothesized that all of the intervention groups will show improvements in DEB, BIA, SSE, self-esteem, well-being, and depressive symptoms at all measurements post-intervention compared to pre-intervention. Additionally, it is hypothesized that the group with the additional component of SSE will have significantly greater improvements on all of the outcome variables compared to the HAES group, and that both of those groups will have significantly greater improvements than the control group.

## **Method**

**Participants.** The participants in this study will be emerging adults in the United States. Previous research on Acceptance and Commitment Therapy (ACT) and Health at Every Size (HAES) interventions (Berman, Morton & Hegel, 2016) has found a large effect size. Because there has not been previous research on the additional effects of SSE, these studies provide a conservative estimate of the effect size for this study. Assuming  $\alpha = 0.05$ , desired power=0.80, and a large effect size, a power analysis indicated that at least 10 participants will be needed in each cell (Cohen, 1992) of the 3 (intervention: none, body satisfaction, sexual self-esteem) x 3 (gender: woman, man, non-conforming) design, for a total of at least 90 participants. The demographics of the participants are expected to generally match the average demographics of

the United States. Thus, the sample will likely be 72% White, 16.3% Hispanic, 13% Black, 5% Asian, and 0.9% American Indian (United States Population 2019, n.d.). To recruit participants, flyers will be posted on college campuses around the U.S. and there will be advertisements on local therapist locator websites. Participants will be compensated \$20 at the first testing date, \$40 at the second testing date, and \$80 at the last two testing dates to incentivise participants to continue to participate.

**Materials.** The same scales, including any modifications made to them in Study 1, will be used for Study 2. Rosenberg's Self-Esteem Scale will be used to measure self-esteem, the Body Image Avoidance Questionnaire will be used to measure BIA, the sexual-esteem subscale of the Sexuality Scale will be used to measure SSE, the Disordered Eating Attitude Scale will be used to measure DEB, the Satisfaction with Life Scale will be used to measure well-being, and the Beck Depression Inventory will be used to measure depressive symptoms. The demographics will also be the same as Study 1.

**Interventions.** Three different interventions will be tested in this study. All participants in the 3 (control, body image, SSE) intervention groups will meet with a clinician weekly for 1-hour therapy sessions for 6 months. The first group will be assigned to an ACT intervention (Zettle, 2005), the second group will be assigned to an ACT and HAES intervention (Bacon et al., 2002), and the third group will be assigned to ACT, HAES, and a sex-positive and mindfulness intervention (Kimmes, Mallory, Cameron & Köse, 2015). ACT will be used in this study because of its roots in behavioral and cognitive psychology, and how it is an action-oriented approach that also uses mindfulness and acceptance to increase psychological flexibility (Zettle, 2005). Cognitive improvements such as increased acceptance and

psychological flexibility have also been shown to decrease DEB and increase well-being (Baer, Fischer & Huss, 2005). ACT has been used to effectively treat both depression and eating-related concerns (Berman, Morton & Hegel, 2016). The HAES approach will be used because of its success at disentangling participants' self-worth from their weight (Bacon et al., 2002). The HAES program has several steps and helps participants to live a full life, listen to hunger, appetite, and satiety cues, find joyful ways to become active, and learn strategies to assert themselves and effect change (Bacon et al., 2002). Lastly, emphasizing mindfulness and sex-positivity in therapy has been shown to decrease sex-related anxiety and increase sexual function and confidence (Kimmes et al., 2015). Following the procedure used by Kimmes et al. (2015), this study will incorporate body scan meditations and self-focused sexual practices into the therapeutic intervention to improve SSE.

**Procedure.** After providing informed consent, participants will complete a baseline questionnaire including the scales for general self-esteem, BIA, SSE, DEB, well-being, and depressive symptoms in a randomized and counterbalanced order. Participants will then be randomly assigned to one of three treatment conditions. The participants will then take part in the assigned intervention for 6 months. Participants will complete the same questionnaire again upon completion of the intervention, 1 year, and 5 years later. All participants will be compensated, partially debriefed, and thanked for their participation at each testing date. After completing the final measure 5 years after the intervention, participants will be fully debriefed.

**Ethics.** This study has the potential to find more impactful and lasting interventions to decrease DEB and increase well-being in the population. Examining the effects of various types of therapeutic interventions on self-esteem, SSE, BIA, DEB, well-being, and depressive

symptoms is important to help illuminate the complex systems that lead to a negative sense of self. This study may provide information that can be applied to interventions that help to prevent and eliminate eating disorders. Additionally, there is minimal risk to participants and the interventions should benefit participants in the short and long term. This is likely because the interventions that will be examined in this study are all based on previously successful therapeutic strategies for the treatment of DEB and depressive symptoms. To further reduce risk, this study does not examine a protected population and there will be no deception of participants.

This study takes into account the same ethical considerations and precautions relating to the sensitive nature of the assessments as Study 1. In addition, because this study has multiple test dates, all survey responses will be kept confidential as opposed to anonymous. As soon as all data have been collected, all information that could be used to identify participants, such as names and emails to link data and provide compensation, will be deleted, further reducing the risk to participants. Participation in this study is voluntary and participants can stop participating at any time and will still receive full compensation. Participants will be compensated and partially debriefed at each testing date. At the final testing date, participants will be fully debriefed and thanked. Given the possible positive impact of the interventions, this study has the potential for more benefit than risk to participants and society.

### **Predicted Results**

A mixed-model ANOVA will be conducted to look at the effects of the interventions and participant gender on DEB, BIA, self-esteem, SSE, well-being, and depressive symptoms over time. It is predicted that there will be a main effect of time on the variables of self-esteem, SSE,

BIA, DEB, well-being, and depressive symptoms. The simple linear effect will show that over time self-esteem, SSE, and well-being will increase while DEB, BIA, and depressive symptoms will decrease. Based on the previous HAES research (Bacon et al., 2002), it is predicted that participants will improve on all measures post-intervention and that those improvements will be sustained through the 1 year and 5 year testing dates. It is also predicted that there will be a main effect of intervention groups such that after the intervention, the group with the addition of HAES will report less DEB and depressive symptoms and less BIA, more self-esteem, more SSE, and greater well-being than the group with just ACT. Further, it is predicted that using the group with the additional focus on SSE will report less DEB, BIA, and depressive symptoms, and more self-esteem, SSE, and well-being than both the control group and the HAES group. Additionally, it is predicted that there will not be a main effect of gender because the components of the intervention groups have not been seen to affect people of various genders differently.

It is hypothesized that there will be a significant interaction between gender and intervention type such that the effects of intervention type will be weaker for males than for females and people with different gender identities. Also, it is predicted that there will be a significant interaction between gender and time such that the effects of time will be weaker for males than for females and people with different gender identities. These interactions are predicted based on previous research (Parent & Bradstreet, 2017) that shows that there may be other complex factors that contribute to men engaging in DEB that are not accounted for in these interventions, such as gender conformity. It is further hypothesized that there will be an interaction effect between intervention type and time on DEB, BIA, self-esteem, SSE,

well-being, and depressive symptoms, such that the group that receives ACT, HAES, and SSE will improve on all measures significantly more than the group with ACT and HAES and the control group, and the group with ACT and HAES will improve significantly more than the group with just ACT post intervention when compared to pre-intervention. Lastly, it is hypothesized that there will be a significant three-way interaction between gender, intervention type, and time on self-esteem, SSE, BIA, DEB, depressive symptoms, and well-being such that the improvements in the interaction between intervention type and time will be stronger for females and people of different gender identities than for males.

## **Conclusions**

Overall, this study will investigate the effectiveness of pre-existing therapy practices on DEB, along with newly developed intervention strategies focusing on body image and SSE. The additional component of SSE has the potential to help participants and the general population above and beyond current common practices when treating problematic eating behaviors. Research on sexual objectification (Moradi, Dirks & Matteson, 2005) demonstrates that how people talk to themselves and feel about their ability to relate to others intimately can negatively impact DEB and well-being. Thus, creating an intervention that improves SSE in addition to body image, health, and well-being may help to account for more of the reasons why people engage in negative behaviors such as DEB. In conclusion, the results of this study may help to develop more effective practices for preventing and treating DEB in the future.

### General Discussion

Disordered eating is extremely prevalent in the United States, and this is a problem because of the mental and physical health risks it poses. Previous research has been able to identify many factors that could contribute to disordered eating, but there remains a great need to integrate that research into prevention programs. Improving BIA and self-esteem have been found to reduce DEB, which is a step in the right direction. More research is needed to clarify the relationships between different types of self-esteem and DEB to help further reduce the onset of eating disorders. So, the purpose of this research was to investigate how SSE can affect disordered eating, depression, and well-being.

Study 1 examined the relationships between self-esteem, BIA, SSE, DEB, well-being, and depressive symptoms. By priming participants to think about negative self-thoughts, Study 1 also was able to evaluate how negative body image affected participants' self-concept and well-being. Further, the path model in this paper helps illustrate all the direct and indirect relationships between self-esteem, BIA, and SSE to well-being and depressive symptoms through DEB (see Figure 2). Consistent with previous research (Vartanian et al., 2014), there were direct effects between BIA and DEB and DEB and depression and well-being. DEB was only found to be a mediator for the relationships between BIA and depression and BIA and well-being, but not for self-esteem or SSE. Direct effects of self-esteem on depression and well-being and direct effects of SSE on well-being were also found.

To build on what was found in Study 1, Study 2 will examine how three different intervention groups affect change in participants' self-worth, eating behaviors, depressive symptoms, and well-being over time. Study 2 builds on the findings of Study 1 by testing

whether a positive intervention with the additional component of SSE has the potential to improve participant outcomes over time. Consistent with the research on ACT and HAES (Bacon et al., 2002; Berman, Morton, & Hegel, 2016), it is expected that there will be positive changes in participants over time in all groups, but that the groups with additional components of HAES and SSE will improve more than the group with only ACT. It is essential to develop new and more effective intervention programs that do not rely on diets to improve self-worth. A dieting approach has been shown to be unsuccessful time and time again (Grodstein et al., 1996), but people feel that it is one of the few available options.

Approximately every hour at least one person dies as a direct result from an eating disorder (Eating disorder statistics, n.d.). This research could help find new ways to prevent and reduce the health implications of these life threatening illnesses. There are currently very few effective eating disorder prevention efforts, so more research is essential. This research gives way to the development of newer, more effective prevention and intervention programs by providing the foundational knowledge of how different parts of one's self-worth are connected with disordered eating and well-being. The finding that there is a relationship between SSE and well-being has implications for people beyond the scope of the advancement of psychological knowledge. Mindfulness about SSE may help to improve people's satisfaction with life in addition to possible prevention and treatment programs.

This research examines the relationships between self-worth and DEB, but there are some limitations. For example, the first study was an online survey. Responses to an anonymous online survey may be different from real attitudes and behaviors regarding participants' self-worth, relationship to food, and well-being because of social desirability. But, this was a

good first step to understanding the relationships between variables and may help future research focus on body image avoidance as a predictor of DEB. Additionally, the ability to generalize results from this study are limited due to participants who are primarily female, White, young adults who live in the United States, despite DEB existing globally. Another limitation of this research is that while everyone experiences some level of DEB, examining a non-clinical population does not tell the entire story. People with full-blown eating disorders might have differing needs than the general population, so examining a non-clinical population has limited implications for treatment programs.

Future research is needed to better understand the array of variables that can affect disordered eating. More research is needed on people of different gender identities and how SSE affects them. Socialization and gender are likely to contribute to SSE, so there may be differences between trans, non-binary, and cis-gender people that this study did not have the power to test. Future studies could look at the relationships between SSE, self-esteem, BIA, and DEB on people with eating disorders of various levels of severity to help establish the need for more holistic treatment options. More research is needed on how to effectively improve SSE, since very few interventions currently exist. Additionally, future studies could take into account the variables of age, race, physical ability, class, or employment status. All of these variables could greatly impact people's eating behaviors and could change how to approach possible eating disorder intervention and prevention efforts.

In conclusion, this research helps to fill a gap in the literature on bodies, self-esteem, and disordered eating by including and exploring the new component of SSE and its relationships to DEB and well-being. To further reduce the problem of disordered eating in society, a new

intervention that includes mindful and sex-positive components is proposed. The information gained in this research could help inform future interventions and therapeutic practices. Due to the severity and prevalence of disordered eating today, these studies are essential and have the potential to save many lives.

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