Body Dissatisfaction: Searching for a Link between Depressive Symptoms, Body Image, and Eating Patterns

Lucy Sorrell
Bard College

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by
Lucy Sorrell

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# Table of Contents

Abstract .........................................................................................................................1

Introduction ....................................................................................................................3

Methods .......................................................................................................................28

Results .........................................................................................................................37

Discussion ....................................................................................................................44

Conclusion ....................................................................................................................56

References ....................................................................................................................59

Appendices ...................................................................................................................69
Abstract

The ideal body sizes for men and women in the United States have decreased significantly over the last 50+ years, while average body sizes increased. This discrepancy has been accompanied by elevated levels of body dissatisfaction in both women and men. In turn, body dissatisfaction can predict unhealthy eating habits and weight loss behaviors such as dieting. Body image research has found a relationship between body dissatisfaction and depressive symptoms. The present cross-sectional study aimed to test if depressive symptoms moderated the relationship between body dissatisfaction and eating patterns. The Center for Epidemiological Studies-Depression scale (CES-D; Radloff, 1977) measured depressive symptoms, the Body Dissatisfaction Scale (BDS; Mutale et al., 2016) measured body dissatisfaction, and the Starting the Conversation: Diet assessment (STC; Paxton et al., 2011) measured eating patterns. The three hypotheses were: (1) higher depressive symptom scores would have a larger impact on body dissatisfaction and eating patterns in women, (2) women would have worse body dissatisfaction scores than men, and (3) depressive symptoms would moderate the relationship between body dissatisfaction and eating patterns. I conducted an online self-report survey of 18–24-year-old adults (N = 88). The survey assessed demographics, depressive symptoms, body dissatisfaction, and eating patterns. Linear regression analyses showed that higher depressive symptom scores did not have a larger impact on body dissatisfaction or eating patterns in women. A t-test for independent means only showed significant gender differences in body dissatisfaction when I accounted for the direction of body dissatisfaction. There were no significant correlations between body dissatisfaction and eating patterns. There was a small positive correlation between CES-D score and going for periods of eight hours or more without eating anything. Overall, the results did not show a link between depressive symptoms, body dissatisfaction, and eating patterns.

Keywords: body dissatisfaction, body image, depression, depressive symptoms, eating patterns
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In light of the increasing visibility of mental health in the United States, it is important to examine symptoms of mental illnesses and the impact these symptoms have on health and psychological well-being. One prominent mental illness that has been increasing in the United States is depression (Compton, Conway, Stinson, & Grant, 2006; Twenge, 2014), which can impact body image and appetite (Beck & Alford, 2009). Research has found a high co-occurrence between depressive symptoms and eating disorders (Braun, Sunday, & Halmi, 1994; Herzog, Keller, Sacks, Yeh, & Lavori, 1992; Touchette et al., 2011; Ulfvebrand, Birgegård, Norring, Högdahl, & von Hausswolff-Juhlin, 2015). Higher levels of depression and depressive symptoms have also been found in people with eating disturbances (such as restricting food intake) that are not severe enough to qualify as an eating disorder (Touchette et al., 2011). Depression and depressive symptoms are also often associated with negative body-image or self-image problems (Koenig & Wasserman, 1995; Noles, Cash, & Winstead, 1985; Ra & Cho, 2017). Therefore, researchers should focus on the co-occurrence of depressive symptoms and body-image problems in conjunction with irregular or unhealthy eating patterns that do not qualify as clinically important.

The frequency and levels of major depression and eating disorders reported by adults and teens have increased over the past 50 years. The prevalence of having a major depressive episode in a single year for adults in the United States doubled from 3% in 1992 to 7% in 2002 (Compton et al., 2006). Adolescent, young adult, and adult Americans also reported considerably higher levels of depressive symptoms between 2000-2010 than 1980-1990 (Twenge, 2014). Comparisons between past and current rates of eating disorders also show they are becoming
more common, especially in younger U.S. cohorts (Koenig & Wasserman, 1995). There are fewer studies on the increased prevalence of eating disorders in the United States than for depression, but a large increase in research on body image (a common disturbance in eating disorders; Bruch, 1962) occurred during a similar time (Cash, 2004). The number of articles focused on body image published on PubMed and PsycINFO increased from 1,976 in the 1970s to 5,243 in the 1990s (Cash, 2004). Today, the same search terms in PubMed reveal over 50,000 results.

There have been many definitions of body image in research, with most focusing on a more comprehensive approach such as the following definition: “the cumulative set of images, fantasies, and meanings about the body and its parts and functions” (Krueger, 2002, p. 31). The definition of body image for the purpose of the current research is, “a person’s perceptions, thoughts, and feelings” about their body (Grogan, 2008, p. 3). A major focus in body image research is body dissatisfaction (a measure of negative body image). One definition of body dissatisfaction is disliking or being unhappy with some aspect of one’s body (Cash, 2002). The following definition is a better way to understand body dissatisfaction, especially in the context of this study: the discrepancy between one’s perceived body size and ideal body size (Grogan, 2008; Primus, 2014). Researchers often measure body dissatisfaction in studies focused on eating pathology because of past findings that show a correlation between body dissatisfaction and disordered eating (Brechan & Kvalem, 2015; Frank & Thomas, 2003).

There is also a correlation between body dissatisfaction and higher incidences of disordered eating habits and weight control practices that do not meet the criteria for eating disorders (Bibiloni et al., 2013; Millstein et al., 2008). Body dissatisfaction has been shown to be closely related to weight loss behaviors, especially in high school girls (Paxton et al., 1991). One
study found that lower body satisfaction predicted higher levels of dieting, weight control behaviors (e.g., exercise, fasting, diet pills, etc.), binge eating, and lower levels of physical activity in male and female adolescents (Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006). A study focused on the consumption of certain foods in adolescents from Spain found that most adolescents turned to diet restriction rather than healthy eating to lose weight (Bibiloni et al., 2013). Adolescents may use diet restriction due to the belief that it is more effective for weight loss than healthy eating. Sociocultural pressures to be thin and the subsequent deviations from the ideal body may cause increases in unhealthy weight control and eating behaviors (Stice, 2002). In light of changes in U.S. body image ideals, psychologists should examine these weight control practices in a larger non-clinical population.

The ideal body size in the United States decreased dramatically starting in the late 1950s, while average body sizes increased, which caused the ideal body to be smaller than the average body (Lamb, Jackson, Cassidy, & Priest, 1993; Spitzer, Henderson, & Zivian, 1999). During this period, body image ideals were mainly spread through popular media, where depictions of women grew slimmer (Silverstein, Perdue, Peterson, & Kelly, 1986). Past research showed a widening discrepancy in the 1990s between body image ideals and actual body size (Spitzer et al., 1999). An increase in reports of body dissatisfaction in both women and men accompanied the widening discrepancy between body ideals and actual sizes (Cash, 2002; Lamb et al., 1993; Spitzer et al., 1999).

Today, the ideal body for women is not only extremely thin, as in past decades, but also muscular (Bozsik, Wisneshunt, Hudson, Bennett, & Lundgren, 2018; Grogan, 2008). Past research on the ideal male body has found muscle to be more integral to body dissatisfaction than overall thinness (Ansari et al., 2014; Frederick et al., 2007; Koenig & Wasserman, 1995; Spitzer...
et al., 1999). In more recent years, muscularity and low levels of fat have been the focus for both men (Primus, 2014) and women (Bozsik et al., 2018), with larger muscles being emphasized in men. These ideals may be more difficult to attain because they require muscle building while restricting caloric intake, and this difficulty can lead to body dissatisfaction (Bozsik et al., 2018; Koenig & Wasserman, 1995; Silverstein et al., 1999; Stice, 2002). These findings raise concerns about the impacts of body dissatisfaction on overall health and eating patterns.

Past research showed connections between depression/depressive symptoms, body dissatisfaction, and eating patterns (Brechan & Kvalem, 2015; Koenig & Wasserman, 1995; Stice et al., 2000). Due to the increased levels of depression and body dissatisfaction in the United States, it is likely that numerous people have unhealthy eating patterns that do not reach clinically significant levels. This study aimed to examine if depressive symptoms moderated (impacted the strength of) the relationship between body dissatisfaction and eating patterns. Researchers should examine depressive symptoms in conjunction with irregular eating patterns that do not reach clinical significance because of the negative impact of depressive symptoms on body image.

**Depression**

Mood disorders are the second most prevalent type of psychological disorder after anxiety worldwide (Hooley, Butcher, Nock & Mineka, 2017) and of the two categories of mood disorders, unipolar depressive disorders occur more frequently (Substance Abuse and Mental Health Services Administration [SAMHSA], 2017). The most common unipolar mood disorder is major depressive disorder (MDD), also known as unipolar major depression (Hooley et al., 2017). Major depressive disorder is the single most commonly diagnosed mental disorder in the United States (Kessler et al., 2005). The *Diagnostic and Statistical Manual of Mental Disorders*
(5th ed.) defines MDD as experiencing five or more of the following in a two-week period: depressed mood, loss of interest or pleasure, change in weight or appetite, insomnia or hypersomnia, psychomotor agitation or retardation, loss of energy, worthlessness or guilt, impaired concentration, and thoughts of death or suicidal ideation/attempt (American Psychiatric Association [APA], 2013).

For depressive symptoms to reach clinical significance as a major depressive episode, the symptoms must cause significant distress or impairment and not be attributable to drug use, other medical conditions, or a psychotic disorder (APA, 2013). The 2016 National Survey on Drug Use and Health (NSDUH) estimated that in the United States, 6.7% (16.2 million) of adults age 18+ had at least one major depressive episode in the past year based on the DSM-IV criteria, and 10.3 million adults had a major depressive episode with severe impairment (SAMHSA, 2017).

Further, Kessler and colleagues (2005) found that the lifetime prevalence of MDD in adults older than 18 in the United States was 16.6%. Unipolar depressive disorders like MDD can occur starting in early childhood or not appear until late in life, but they most often occur between late adolescence and adulthood (Hooley et al., 2017). The NSDUH showed that of the people surveyed, the prevalence of adults with a major depressive episode was highest among people aged 18–25 (10.9%; SAMHSA, 2017).

Cognitively based theories provide a better understanding of depression and depressive symptoms. Two of the more well-known psychologists who wrote theories of depression based on cognitive and/or behavioral symptoms were Beck and Seligman. These theories were later used in a model by Mandy McCarthy (1990) to explain how societal body ideals and subsequent body dissatisfaction lead to depression in women. Aaron Beck developed a cognitive-behavioral
theory of depression in 1967 that is useful for examining the link between depressive symptoms and body dissatisfaction (Beck, 1967).

Beck’s theory suggests that the prominent symptoms of depression are not mood symptoms, as believed previously, but rather are cognitive symptoms that lead to mood symptoms (Hooley et al., 2017). Beck and Alford presented research findings in their book Depression: Causes and Treatment (2009) that showed 21 distinct categories of symptoms in depressed participants. They grouped the categories into “affective,” “motivational,” “cognitive,” and “physical and vegetative” manifestations. Beck and Alford then used these manifestations to develop the Primary Triad (Figure 1). The Primary Triad is an explanation of how the affective, motivational, cognitive, and physical aspects of depression interact (Beck & Alford, 2009). The triad is made up of the three following components: (1) negative interpretation of experiences, (2) negative view of the self, and (3) negative view of the future.

![Figure 1. Figure after “Components of Primary Triad and their effects” from Depression: Causes and Treatment by Beck & Alford (2009).](image)

Out of the four total categories of manifestations, affective and cognitive manifestations are the most relevant to the link between body dissatisfaction and depression. Affective manifestations, such as self-dislike, and cognitive manifestations, such as low-self-evaluation and distorted body image, can lead to negative views of the self and body dissatisfaction.
Negative views of the self and of the future combine to create some or all of the following affective (i.e., emotional) manifestations that can be directly attributed to one’s emotional state: dejected mood, self-dislike, loss of gratification, loss of attachments, crying spells, and loss of mirth response (Beck & Alford, 2009). The emotional manifestation most important to the current research is self-dislike (negative feelings towards the self of varying severity; Beck & Alford, 2009), which is closely related to negative body image. Sixty-four percent of mildly depressed patients showed self-dislike (e.g., felt disappointed in themselves), while eighty-six percent of severely depressed patients showed self-dislike (e.g., hated themselves; Beck & Alford, 2009). This demonstrates the high levels of self-dislike in this sample of depressed patients.

Beck and Alford (2009) described the following cognitive manifestations related to self-dislike: low self-evaluation, negative expectations, self-criticism, indecisiveness, distortion of body image, loss of motivation, and suicidal wishes. Negative expectations in depressed patients can lead to thought patterns where they believe their current situations will persist or get worse. In Beck and Alford’s (2009) examination of depressive symptoms in 966 psychiatric patients, distorted body image was only seen in 12% of the nondepressed patients, while 66% of the severely depressed patients thought they had “become unattractive,” and some severely depressed patients maintained this belief even if they were losing weight. The combination of negative expectations for future events and a distorted body image might lead some depressed individuals to feel that their body will always be the same or get worse and therefore lead to worse body image and dissatisfaction. The Primary Triad gives a visual representation of how negative views of the self and of the future can interact and cause further depressive manifestations.
Patients with depression can also have unrealistically high standards that result in self-blame when they fall short of these standards (Beck & Alford, 2009). A depressed person may, for example, have a distorted body image and view themselves as fat. The person, therefore, might criticize themselves for the way they look because they do not meet their perfectionist standards. Expectations that general circumstances will never change or will only get worse (one component of the primary cognitive triad) can exacerbate body dissatisfaction and self-criticism. This pattern of thinking leads to a positive feedback loop and might lead a person to think that they will never lose weight or be able to meet their own standards, which can lead to further self-criticism. McCarthy (1990) used this theory to explain how body dissatisfaction can result in depression in women.

A theory published by Abramson, Seligman, and Teasdale in 1978 applies Seligman’s theory of learned helplessness in animals (1972) to depression in humans. Abramson and colleagues presented a remodeled theory of depression that argues learned helplessness leads to emotional, cognitive, and motivational deficits. The revised theory argues that people who see global, stable, and internal factors as reasons for their failure are more susceptible to general and chronic depression and low self-esteem due to helplessness (Abramson et al., 1978). Essentially, the theory says that a person is more likely to develop learned helplessness and depression if they attribute their failure to their own shortcomings. McCarthy (1990) used this theory as a basis for how body dissatisfaction and failed dieting can lead to depression in women.

**Body Image**

German psychologist Paul Schilder was the first to argue that body image is an important psychological phenomenon in his 1935 book *The Image and Appearance of the Human Body* (Slade, 1994). Schilder defined body image as, “the picture of our own body which we form in
our mind” (Schilder, 1935 p. 11). In 1988, Peter Slade built on Schilder’s definition and defined body image as the mental concept one has about their size, shape, and form, as well as the feelings one has about those characteristics. This is the accepted definition often used in recent body image research (Ansari et al., 2014; Dorian & Garfinkel, 2002). Thomas F. Cash, the founding Editor-in-Chief of *Body Image: An International Journal of Research*, describes individuals’ subjective experiences of their appearance as more important to psychosocial functioning than their objective appearance (Cash, 2004). Essentially, a negative experience of one’s appearance may be psychologically detrimental despite a person possessing a healthy body that others see as objectively “good/acceptable.”

Researchers often use measures of body dissatisfaction as a metric to examine body image and its impacts on other aspects of life. Body dissatisfaction research has shown that body image issues can predict frequent dieting, dietary restraint, and bulimic symptoms, and are a risk factor for depression, stressing the importance of research into the topic (Neumark-Sztainer et al., 2006). In addition to research about how body dissatisfaction impacts behavior and psychological functioning, psychologists developed theories to understand what causes body dissatisfaction. Many psychologists argue that cultural factors such as thin ideal bodies for women (Grogan & Wainwright, 1996; McCarthy, 1990; Monteath & McCabe, 1997) and sexual objectification (Fredrickson & Roberts, 1997) influence body image and dissatisfaction in girls and women.

The most prominent model of body dissatisfaction, written by Mandy McCarthy (1990), emphasizes the role of cultural factors in body dissatisfaction. McCarthy’s (1990) model argues that societal body ideals for women and subsequent body dissatisfaction lead to higher levels of depression in women than in men. McCarthy used the two cognitive theories of depression
discussed previously to explain how body dissatisfaction leads to higher rates of depression in women. McCarthy posited that society has created a “thin ideal” for women that creates a discrepancy between women’s actual and ideal weight (p. 205, 1990). She argued that this discrepancy leads to higher levels of body dissatisfaction among women than in men. Body dissatisfaction due to negative thoughts and low self-esteem (based on Beck’s primary triad) or dieting failures that lead to worse self-esteem via feelings of helplessness (based on the learned helplessness theory of depression) can result in depression (McCarthy, 1990). McCarthy’s model hypothesizes that women base their self-worth and happiness on how attractive other people perceive them to be, which leads to higher rates of depression in women than in men.

Generational differences in ideal bodies support a culturally influenced shift towards a smaller idealized body for women and widening discrepancies between the ideal and perceived self (Lamb et al., 1993). A study that compared body figure preferences in men and women across two generations found that college women had a much thinner ideal figure than older women ($M_{age} = 47$) did (Lamb et al., 1993). This difference could stem from the change from a voluptuous ideal figure in the 1950s to a more Twiggyesque figure in the late 60s that became standard in the late 20th century (Lamb et al., 1993). The same study also found that younger men ($M_{age} = 20$) generally preferred women with a thinner figure than older men ($M_{age} = 53$). The younger men also selected a thinner figure as the heaviest acceptable figure for a woman than the older men. Overall, younger women had thinner ideal bodies, and younger men preferred thinner women than their older counterparts. These studies suggest that the impact of changing societal ideals on body dissatisfaction is especially important to consider, and could be the driving force for dissatisfaction.
Another view of how societal body ideals impact women’s body image and mental health is Objectification theory. The theory aims to place women in a sociocultural context to understand the mental health implications of sexual objectification (Fredrickson & Roberts, 1997). Objectification theory suggests that girls and women internalize cultural expectations of appearance and others’ perspectives of their own bodies. This constant outside scrutiny then causes girls and women to view themselves from an outside perspective. The theory then argues that if someone rates themselves in comparison to a sociocultural ideal and fall short they will likely experience discontent, shame, and anxiety. The discrepancy created between the perceived and ideal body causes body dissatisfaction and can put girls and women at risk for depression and eating problems. More recent research on American college students found that objectification theory can also help explain body image issues in men as well (Oehlhof, Musher-Eizenman, Neufeld, & Hauser, 2009). The study found that men who had higher self-objectification scores (placed more importance on their physical appearance) had ideal bodies that were closer to male societal body ideals than men with lower self-objectification scores.

Media is one of the main ways that sociocultural ideals are spread. Mass media is pervasive and spreads normative body ideals for both men and women (Silverstein et al., 1986). Most forms of media show tall, skinny women and many researchers argue these representations are a major contributor to body dissatisfaction and eating disorders (McCarthy, 1990; Monteath & McCabe, 1997; Tiggemann, 2002). Tiggemann (2002) uses the framework of objectification theory to argue that media has a large influence on body image development. People internalize cultural norms and see them as the basis for happiness, which causes them to evaluate their self-worth based on their perceived appearance and how close they are to the (largely unattainable) societal ideal (Tiggemann, 2002). Subsequently, this can negatively impact body image in four
main areas: perception, emotion, cognition, and behavior. For example, people can have perceptual disturbances where they view their body in a distorted way (Tiggemann, 2002). Tiggemann argues that this distorted view can lead to a negative mood and body dissatisfaction. Subsequently, attention to outside messages pertaining to appearance can then lead to negative cognitions about self-worth and appearance; and finally, a desire to conform to body image ideals often leads to weight change behaviors in women such as dieting. Tiggemann (2002) also argues that it is likely that media ideals negatively impact body image in men as well.

Past body image research has focused primarily on young girls and adult women and found high rates of dissatisfaction (Monteath & McCabe, 1997; Mori & Morey, 1991). Research largely focused on women because of the pressure placed on them by society to have a certain body type. A study on body image in Australian women (Mₑ = 24.11) found that almost all (94%) of the sample wanted their body to be smaller than their current size (Monteath & McCabe, 1997). Studies show that in addition to a higher prevalence of body dissatisfaction in women, women also have higher levels of body dissatisfaction than men (Ansari et al., 2014; Cash, 2002; Fallon & Rozin, 1985; Millstein et al., 2008). Fallon and Rozin (1985) studied differences in desirable body shape in college students based on gender and found that 68% of women rated their current figure as heavier than their ideal figure, while only 33% of men rated their current figure as heavier than their ideal figure. Another study looking at college students found that 66% of women had some level of body dissatisfaction in comparison with 21% of men (Koenig & Wasserman, 1995).

While past research shows that women have higher rates and levels of body dissatisfaction than men, men’s body dissatisfaction may be increasing due to cultural shifts in ideal male bodies. A proposed model for the increase in male body dissatisfaction argues that the
ideal male body shown in the media has increased in size over time, making the ideal male body much more muscular with less fat than in the past (Primus, 2014). The model argues this new ideal has recently led to higher levels of body dissatisfaction in men (Primus, 2014). Beginning in the 1990s, the ideal shape for men became lean and muscular with broad shoulders and a narrow waist (Tiggemann, 2002). A recent literature review showed that representations of men’s bodies in magazines grew in size and muscularity (from around the 1970s–1997) and the same pattern was also seen in toy action figures (Primus, 2014).

Recent research on body dissatisfaction in men supports the model discussed in the previous paragraph. Many men are dissatisfied with their bodies because of a lack of muscle (Frederick et al., 2007; McCreary & Sasse, 2002; Primus, 2014, Oehlhof et al., 2009). It is important to note that men may underreport body dissatisfaction levels (because people often see body dissatisfaction as feminine; Primus, 2014), but research still shows a majority of men want to be more muscular. A study of body dissatisfaction in college men found the sample wanted to have an average of 25 lbs more muscle and 8 lbs less fat, which corresponds to changes in men’s body proportions in the media (Olivardia, Pope, Borowiecki, & Cohane, 2004). A study looking at over 200 men in college in the Midwest, Southwest, and Northeast of the United States found that over 91% of participants in each region wanted to be more muscular (Frederick et al., 2007). Another study on body dissatisfaction in college students found that men who placed high importance on their physical appearance wanted to be more muscular (Oehlhof et al., 2009).

While female body dissatisfaction has primarily focused on overall thinness and male body dissatisfaction has primarily focused on musculature, recent shifts in women’s ideal bodies show a focus on muscle as well. Research published in early 2018 showed the current female body image ideal is still extremely thin, but also muscular (Bozsik et al., 2018). People may have
more difficulty attaining this ideal because it requires restricting caloric intake and gaining muscle (Bozsik et al., 2018; Koenig & Wasserman, 1995; Stice, 2002). Overall, the discrepancy between men and women’s actual and ideal bodies has widened, which is likely to increase overall levels of body dissatisfaction. A 2013 study found that body dissatisfaction in a cohort of teenagers ($N = 2,287$, $M_{	ext{age}} = 15.9$) increased over 5% in both boys and girls in 10 years (Bucchianeri et al., 2013). Young adults (around age 23) reported the highest levels of body dissatisfaction. The increases in body dissatisfaction in both men and women over time and the high overall levels of dissatisfaction highlight the importance of examining body dissatisfaction in young adulthood.

Body image research must also examine the interactions between body dissatisfaction and other aspects of life. Body dissatisfaction is a risk factor for depression (Neumark-Sztainer et al., 2006; Stice, Hayward, Cameron, Killen, & Taylor, 2000) and can lead to dieting and changes in eating patterns (Bibiloni et al., 2013; Millstein et al., 2008; Paxton et al., 1991). Additionally, the prevalence of adults with a major depressive episode has been found to be highest among people aged 18–25 (10.9%; SAMHSA, 2017), and levels of body dissatisfaction in this age group are also higher than in adolescence (Bucchianeri et al., 2013). In the next sections of this paper, I will analyze the links between body dissatisfaction and these associated behaviors and conditions.

**Eating Patterns**

Changes in dieting and eating patterns are common in those experiencing body dissatisfaction (Bibiloni et al., 2013; Millstein et al., 2008; Neumark-Sztainer et al., 2006). Researchers have used many ways of measuring food intake to study eating patterns.
Past eating pattern research has examined the consumption of specific food groups, as well as the caloric content, timing, frequency, and size of meals or snacks (Kant, 2018; Longnecker, Harper, & Kim, 1997). The “Dietary Guidelines for Americans 2015-2020” say that a healthy eating pattern includes fruits, vegetables, protein, dairy, grains, and oils, but limits saturated and trans fats, added sugars, and sodium (U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2015). An examination of eating patterns in adults from the United States ($N = 3,182$) showed an average of 3.12 eating occasions a day (Longnecker et al., 1997). A more recent study found that American adults have an average of 4.96 eating episodes a day (around 2.8 meals a day and 2 snacks; Kant, 2018). These results suggest that it is typical to eat between three and five times a day.

Healthy eating patterns are especially important because they impact overall physical and mental well-being. According to the “Dietary Guidelines for Americans 2015-2020,” nutrition and overall health (defined as, “a state of complete physical, mental, and social well-being”) are closely related (U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2015 p. 93). Healthy eating patterns and happiness have been shown to be positively correlated (Veenhoven, 2018). An analysis of over 20 research reports on nutrition and happiness found that even when the analysis controlled for overall health, healthy eating and happiness were strongly correlated. These findings were almost universal across the world in all age groups (Veenhoven, 2018). Eating healthy foods can positively impact mental well-being, conversely, other research shows that mental well-being (specifically body image) can negatively impact eating (Bibiloni et al., 2013; Millstein et al., 2008; Neumark-Sztainer et al., 2006). This may lead to a vicious cycle where unhealthy changes in eating accompany body dissatisfaction. These
changes are likely to have a negative impact on mental well-being, which may cause further unhappiness and dissatisfaction.

**Body Image and Eating**

Several studies show associations between body dissatisfaction and eating patterns in adolescence and adulthood. People who are dissatisfied with their bodies use diet restriction more than healthy eating or exercise as a way to control weight (Bibiloni et al., 2013; Millstein et al., 2008; Neumark-Sztainer et al., 2006). A survey of normal weight, overweight, and obese teenagers from the Balearic Islands in Spain examined body image and eating patterns (Bibiloni et al., 2013). Both male and female participants that had a high proportion of fat for their weight were more likely to report less than three eating occasions per day. Teens that had a high percentage of fat for their weight and wanted a thinner body also reported lower consumption of certain food groups like pasta and rice, high-fat foods, and soft drinks. Additionally, 48% of the girls who were in an *underweight or normal weight* range wanted a thinner body (Bibiloni et al., 2013). This finding supports previous research showing that body image/body dissatisfaction are not solely determined by body mass index (BMI; Bucchianeri et al., 2013; Cash, Thériault, & Annis, 2004; Koenig & Wasserman, 1995; Neumark-Sztainer et al., 2006). The results also show that body dissatisfaction can lead to restrictive changes in eating patterns even in teens who are not overweight.

Teenagers in the United States show similar patterns of restrictive eating. A study looking at a population of U.S. high school students (*N* = 2,516) examined body dissatisfaction and weight-related health behaviors such as dieting, exercise, binge eating, smoking, and fruit and vegetable intake (Neumark-Sztainer et al., 2006). Participants who were less satisfied with their bodies had higher levels of unhealthy weight control behaviors such as restricted eating.
Additionally, the results showed an association between lower body satisfaction and lower levels of healthy weight control behaviors such as exercise and fruit and vegetable consumption. These results suggest that body dissatisfaction leads to an increase in the use of unhealthy weight control behaviors and a decrease in healthy eating and exercise.

Issues with body dissatisfaction and eating patterns impact adults as well as teenagers. In fact, levels of body dissatisfaction are usually even higher in 18–25-year-olds (Bucchianeri et al., 2013). A survey of 9,740 adults in the United States measured body satisfaction and weight control practices (physical activity or diet as a way to control weight; Millstein et al., 2008). The survey found an association between body size dissatisfaction and attempts to lose weight in both men and women. Eighteen to twenty-nine-year-old women had much higher odds of being dissatisfied with their bodies than women over 60 years old (Millstein et al., 2008). This research supports previous findings of high levels of body dissatisfaction in early adulthood and may also provide further evidence for a generational shift in body image ideals. Additionally, women who were dissatisfied with their body size were more likely to use dieting rather than physical activities to lose weight (Millstein et al., 2008). This finding supports other research, which showed associations between body dissatisfaction and dieting/changes in eating patterns of varying severity in adults (Frank & Thomas, 2003; Koenig & Wasserman, 1995; Millstein et al., 2008).

Body dissatisfaction is also highly associated with disordered eating. Hilde Bruch, a pioneer in body image disturbances in eating disorders, observed several patients with anorexia nervosa for 10 years (Bruch, 1962). Bruch found that all the patients she observed had an extremely distorted view of their own body. Recent research shows that more extreme weight loss behaviors and thoughts related to disordered-eating often accompany body dissatisfaction.
(Frank & Thomas, 2003; Paxton et al., 1991). A study of Australian adolescents found that while the most frequently used weight loss methods were dieting and exercise, a sizeable number of the participants believed that what the researchers deemed “extreme weight loss methods” (e.g., skipping meals and counting calories) helped either “some” or a “lot” with weight loss (Paxton et al., 1991 p. 373). The study reported that overall levels of body dissatisfaction were higher in girls than boys, and girls used weight loss methods more frequently than boys (Paxton et al., 1991). While this study took place in Australia, it may be informative of weight loss behaviors in the United States. The authors of the Australian study reported that samples in the United States have even higher levels of dissatisfaction. This research shows an association between body dissatisfaction and weight loss behaviors in adolescents in Australia, so it is possible that U.S. adolescents show similar weight loss patterns even more frequently.

Many people with eating disorders and/or depressive symptoms have body image disturbances, and these disturbances interact in various ways. One study found that initial body dissatisfaction, dietary restraint, and bulimic symptoms predicted the onset of depression in a sample of 1,124 teenage girls ($M_{age} = 14.7$) from California (Stice et al., 2000). The study found a significant correlation between depressive symptoms and body dissatisfaction. Additionally, body dissatisfaction, dietary restraint, and bulimic symptoms correctly predicted which adolescents would have an onset of major depression and which would not for 66% of the participants. The results showed a strong relationship between the three predictor variables and the onset of depression. Stice and colleagues (2000) provided further evidence of a link between body dissatisfaction, depressive symptoms, and dietary restraint in female adolescents. However, one area that needs further investigation is the intersection of body dissatisfaction, depressive symptoms and eating patterns that are not disordered in 18–24-year-olds.
Depression and Body Image

Past research has found a co-occurrence of high levels of body dissatisfaction and high levels of depressive symptoms in adolescents (Ra & Cho, 2017; Stice et al., 2000) and undergraduates (Koenig & Wasserman, 1995; Mori & Morey, 1991; Noles et al., 1985). It is also important to distinguish between MDD and depressive symptoms that do not qualify as a major depressive episode. People with depressive symptoms that do not meet the criteria for MDD also show higher levels of body dissatisfaction than those without depressive symptoms (Koenig & Wasserman, 1995; Noles et al., 1985; Ra & Cho, 2017). In a sample of 224 undergraduates (163 women; M_{age}= 20.4), participants with poor body image were significantly more likely to report depressive symptoms (Noles et al., 1985). The depressive symptom group reported less satisfaction with their overall physical appearance as well as individual body parts. The study also found that the depressive symptom group had negative distortions of body image while the non-depressed group had positive distortions of body image and overestimation of attractiveness (Noles et al., 1985). The relationship between depressive symptoms and negative distortions of body image supports Beck’s cognitive model of depression, which argues that depressive symptoms such as self-dislike can lead to low self-evaluation and distorted body image. The study also supports a general relationship between body dissatisfaction and depressive symptoms in young adults.

Research with female undergraduates supports the argument from Objectification theory that the internalization of others’ perspectives of one’s body leads to body dissatisfaction. A study focused on college women (N = 119) with different levels of depressive symptoms examined the impact of weight-related feedback on body image (Mori & Morey, 1991). Women estimated their current body weight and reported their ideal weight. Researchers then weighed
the participants, told them their weight, and asked them to estimate the width of their shoulders, waist, and hips. Two weeks later, the researchers weighed the participants and then told them they weighed either 3% higher or lower than their actual weight. While almost all the women (92%) in the study were dissatisfied with their weight, weight-related feedback only significantly impacted body size estimations in women with high levels of depressive symptoms.

This finding supports the concept of distorted self-image in cognitive theories of depression. When researchers gave 3% higher feedback to women with high levels of depressive symptoms the women estimated their body sizes as significantly larger than women with high levels of depressive symptoms who received 3% lower weight-feedback. Weight-related feedback had no effect on body size estimation for women with low depression (Mori & Morey, 1991). Despite this, a large percentage of the sample was dissatisfied with their bodies, with around a 13lb discrepancy between women’s actual and ideal weight (Mori & Morey, 1991). These results show that while most women have high levels of dissatisfaction, women with high levels of depressive symptoms are more likely to integrate weight-related feedback, even if it is incorrect, into their view of their body. If women with higher levels of depressive symptoms are more susceptible to negative feedback about their weight, they may have higher levels of body dissatisfaction overall because of the importance placed on weight and appearance by our society.

Another study done five years later found that both male and female college students with a negative body image reported higher levels of depressed mood than those without a negative body image (Koenig & Wasserman, 1995). The depressed students in the sample exhibited general feelings of unattractiveness and helplessness about their bodies. Individuals with a negative body image also reported more maladaptive eating patterns than those with a positive
body image (Koenig & Wasserman, 1995). Based on these findings, it is likely that a correlation exists between body dissatisfaction, depressive symptoms, and eating patterns in early adulthood as well. Depressive symptoms are among the most common comorbid symptomatology diagnosed alongside eating disorders (Braun et al., 1994; Herzog et al., 1992; Touchette et al., 2011; Ulfvebrand et al., 2015). Based on the common co-occurrence of body dissatisfaction and depressive symptoms, research should examine the combined impacts of both on eating.

**Body Image, Depression, and Eating**

Past research has examined depression, body image/dissatisfaction, and eating in various combinations, but they are not frequently all studied together. Only a few studies have looked at the three factors together. The following two studies (Koenig & Wasserman, 1995; Brechan & Kvalem, 2015) look at interactions between depression, body dissatisfaction, and eating, but they focus specifically on disordered eating patterns and behaviors. Previous research shows that body dissatisfaction can impact eating patterns in a way that does not reach clinical significance (Bibiloni et al., 2013; Millstein et al., 2008; Paxton et al., 1991), and thus research should examine the interaction of depression, body dissatisfaction, and eating patterns that do not reach clinical significance as well.

In 1995, a study investigated if depression mediated the relationship between body satisfaction and disordered eating thoughts and behaviors in college students in the United States (Koenig & Wassermann). In the sample, men and women with a negative body image reported significantly higher levels of depressed mood than those with a positive body image. This was true regardless of how important one’s body image was to their self-worth (Koenig & Wasserman, 1995). Additionally, depressive symptoms accounted for 24–39% of the variation seen in eating patterns (such as avoiding fattening foods, attempting to maintain self-control
while eating, and attempting to vomit food after binge eating) in women. The findings support the idea that depression may influence the onset, maintenance, or worsening of disordered eating problems in women, but not in men.

A more recent study examined body dissatisfaction, self-esteem, depression, and eating disorder symptoms in university students in Norway (Brechan & Kvalem, 2015). The results showed that the effect of body dissatisfaction on disordered eating was completely mediated by depression in men and women, i.e., there was no significant direct effect of body dissatisfaction on disordered eating when the analyses accounted for depression. The study found that depression had a direct effect on both binge eating and restrained eating. Depression significantly increased binge eating in women but did not significantly affect binge eating in men (Brechan & Kvalem, 2015). In contrast, depression significantly decreased restrained eating in men but did not significantly affect restrained eating in women (Brechan & Kvalem, 2015). These findings show that depression can directly impact disordered eating patterns and these impacts may be different in men and women.

Present Study

Despite links between depression, body dissatisfaction, and eating patterns (Brechan & Kvalem, 2015; Neumark-Sztainer et al., 2006; Stice et al., 2000) none of the studies found for this literature review analyzed depressive symptoms as a variable that moderates the relationship between body dissatisfaction and non-disordered eating patterns. This study focused on depressive symptoms, body dissatisfaction, and eating patterns (such as meal frequency and food type) that clinical criteria do not classify as eating disorder related behaviors. More specifically, the main focus of the study was to explore if depressive symptoms moderated the previously documented relationship between body dissatisfaction and eating patterns in 18–24-year-olds.
Even when these variables do not reach clinical significance, they can still have a significant impact on body image and mental health. The present research explored these interactions and attempted to address the generalizability and methodology limitations of Koenig and Wasserman (1995) and Brechan and Kvalem (2015).

Both of the previously mentioned studies explored depression, body dissatisfaction, and eating, but used scales that specifically measured disordered eating behaviors such as restrained eating and dieting, binge eating, and compensatory behaviors (purging, excessive exercise, etc.). The current study looked at depressive symptoms and non-disordered eating patterns rather than diagnosable depression and eating disorder behaviors. Most surveys measuring the frequency of depression in the United States only include people who have depressive symptoms that meet the threshold for MDD, so they do not reflect larger patterns of depressive symptoms. I chose to measure depressive symptoms that do not reach clinical significance because they may still impact the way people eat (but not necessarily lead to eating disorder behaviors).

Additionally, these past studies do not generalize to current 18–24-year-olds in the United States. The results from Koenig & Wasserman (1995) may not reflect current levels of body dissatisfaction and depressive symptoms in 18–24-year-olds in the United States due to changes in the ideal body and higher levels of depression over the last 20 years. The results of Brechan & Kvalem (2015) may not be representative of patterns in the United States because the study took place in Norway. To control for cultural influence, the study only examined people who have lived in the United States for at least 10 years.

The two previous studies looked at depression as a mediating variable between body dissatisfaction and eating. A mediating variable (e.g., depression) explains the relationship that exists between two other variables (e.g., body dissatisfaction and eating). This means that there
would not be a direct relationship between body dissatisfaction and eating. Rather, body dissatisfaction would influence eating indirectly through the impact of depressive symptoms. However, Koenig and Wassermann (1995) found that depression did not completely mediate the relationship between body dissatisfaction and disordered eating behaviors. Additionally, previous studies have shown direct correlations between body dissatisfaction and eating (Bibiloni et al., 2014; Frank & Thomas, 2003; Millstein et al., 2008; Paxton et al., 1990), so it is likely that depression is not the only reason for this relationship. The present research instead examined depressive symptoms as a moderating variable. A moderator affects the strength of an existing relationship between two variables (here, body dissatisfaction and eating patterns), rather than explaining why there is a relationship at all.

One other major problem with the generalizability of both previous studies is that they only collected data on people that identified as men or women. Considering that the number of individuals identifying as a gender other than their gender assigned at birth has doubled over the last decade (Flores, Herman, Gates & Brown, 2016), the present research examined body dissatisfaction levels across a wider gender spectrum. Ideal bodies and general levels of dissatisfaction for people that are transgender, non-binary (genders that exist outside of the gender binary; Roxie, 2013), and/or gender non-conforming (“gender identity and/or expression [that] does not conform to the cultural or social expectations of gender,” such as agender, bigender, and genderfluid; Clemons et al., 2017) may differ from those of men and women. Specifically, transgender people that identify within the gender binary (male/female) may have higher levels of dissatisfaction if their body does not match the typical male or female body. Additionally, there is not a widespread ideal body for people that are non-binary or gender non-conforming. Based on this, non-binary and gender non-conforming people may have less body
dissatisfaction because there is not a rigid societal ideal, or they may have more body
dissatisfaction because they do not have a representation of what they think they should look
like.

**Hypothesis 1.** I hypothesized that higher depressive symptom scores would have a larger
impact on body dissatisfaction and eating patterns scores than lower depressive symptom scores
in women. Specifically, I hypothesized that women with higher depressive symptom scores
would have higher (worse) body dissatisfaction and higher (unhealthy) eating pattern scores,
while women with lower depressive symptom scores would have lower (better) body
dissatisfaction and lower (healthier) eating pattern scores.

**Hypothesis 2.** I hypothesized that women would have higher body dissatisfaction scores
than men.

**Hypothesis 3.** I hypothesized that depressive symptoms would moderate the relationship
between body dissatisfaction and eating patterns. This means that higher levels of depression
would be associated with a stronger relationship between body dissatisfaction and eating patterns
(see Figure 2).

![Diagram of link between depression, body image, and eating patterns]

*Figure 2. Hypothesis 3. Depressive symptoms would moderate the relationship between body
dissatisfaction and eating patterns.*
Methods

The Bard College Institutional Review Board reviewed and approved all methods used in this study (see Appendix A). Funding for materials came from the Bard College Psychology Department.

Participants

Participants ($N = 88$) ranged from 18–24 years of age ($M = 19.79$, $SD = 1.55$). The sample was primarily female and White (one participant did not report their race). A majority of the participants were Bard College students and all participants had lived in the United States for at least 10 years. See Table 1 for full demographic information.

I recruited all participants online. To do this, I distributed a flyer (see Appendix B) to Bard College students through email and a Bard College student Facebook group. I also posted a link to the survey on the Psychological Research on the Net website run by Hanover College professor John H. Krantz, Ph. D. The flyer detailed the main aspects of the study, supplied a link to the survey, and offered the chance to enter

| Age, $n$ (%) |
|---|---|
| 18 | 22 (25.0%) |
| 19 | 19 (21.6%) |
| 20 | 21 (23.9%) |
| 21 | 12 (13.6%) |
| 22 | 8 (9.1%) |
| 23 | 3 (3.4%) |
| 24 | 2 (2.3%) |
| No response | 1 (1.1%) |

| Gender, $n$ (%) |
|---|---|
| Female | 63 (71.6%) |
| Male | 15 (17.1%) |
| Nonbinary | 9 (10.2%) |
| Trans female | 1 (1.1%) |
| Trans male | 0 (0.0%) |
| Other | 0 (0.0%) |

| Race, $n$ (%) |
|---|---|
| White | 66 (75.0%) |
| Black/ African American | 5 (5.7%) |
| Asian | 5 (5.7%) |
| Hispanic/Latino | 7 (8.0%) |
| Native American | 0 (0.0%) |
| Pacific Islander | 0 (0.0%) |
| Other | 4 (4.5%) |
| No response | 1 (1.1%) |

| Bard College Student, $n$ (%) |
|---|---|
| Yes | 49 (55.7%) |
| No | 39 (44.3%) |
a gift card drawing for one of two $50 Amazon.com gift cards. Once the survey closed, two randomly chosen individuals received an electronic gift card.

**Measures**

The survey (Appendix C) consisted of six self-report measures: (1) a demographic questionnaire, (2) the Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977), (3) the Body Dissatisfaction Scale (BDS; Mutale, Dunn, Stiller, & Larkin, 2016), (4) two questions about weight from the 2019 Youth Risk Behavior Survey (YRBS; Centers for Disease Control and Prevention [CDC], 2018), (5) the Starting the Conversation: Diet Instrument (STC; Paxton, Strycker, Toobert, Ammerman, & Glasgow, 2011), and (6) two questions about eating patterns from the Eating Disorder Examination 16.0D (EDE; Fairburn et al., 2008).

**Demographic questionnaire.** The demographic questionnaire was a 4-question measure that I developed, which asked the person’s age, gender, race, and if they were a Bard College student.

**Center for Epidemiological Studies-Depression Scale (CES-D).** The 20-question CES-D scale developed by Radloff (1977) measures depressive symptoms. The CES-D is a self-report measure designed to gauge levels of depressive symptoms, rather than to diagnose depression, in the general population. Research has validated it as a reliable measure of depressive symptomatology in adults who speak English as their first language (Knight, Williams, McGee, & Olaman, 1997). It also has high internal consistency, construct validity, and is a robust measure of depression in both a general and clinical adult population (Radloff, 1977). The CES-D consists of statements about mood such as, “I felt lonely,” “I felt hopeful about the future,” and “I could not get ‘going’,” measured on a 4-point frequency scale:

- 0 = “Rarely or none of the time (less than 1 day)”;}
• 1 = “Some of the time (1–2 days)”;
• 2 = “A moderate amount of the time (3–4 days)”;
• 3 = “Most or all of the time (5–7 days)”;

Total scores (ranging 0–60) are a sum of the respondent's scores on all questions. Positively phrased statements are reverse coded so that “Most or all of the time” equals a score of 0 rather than 3. A higher score indicates more depressive symptomatology. Radloff (1977) did not intend for researchers to use the CES-D as a diagnostic measure or to divide depressive symptoms into different levels (e.g., low, medium, high), therefore, I used the CES-D as a continuous measure.

**Body dissatisfaction.** The Body Dissatisfaction Scale (BDS; Mutale et al., 2016) and two questions from the 2019 Youth Risk Behavior Survey (YRBS; CDC, 2018) assessed body dissatisfaction. The two question Body Dissatisfaction Scale (BDS) measures levels of body dissatisfaction based on the difference between one’s perceived and ideal body (Mutale et al., 2016). I also used two questions from the 2019 Youth Risk Behavior Survey (YRBS) to ask participants how they described their current weight and what they were trying to do about their weight (CDC, 2018).

The BDS is a computer-generated visual scale made up of two separate sets (one male-bodied and one female-bodied) of 9 bodies that range from very underweight (#1), to obese (#9), with body #5 being “average” (Mutale et al., 2016). A calculation of BMI based on the proportions of each body shows bodies 1–3 are underweight, bodies 4–6 are healthy, and bodies 7–9 are overweight/obese (see Figure 3).
Figure 3. Underweight, healthy, and overweight categorizations. The figures on the scale divided into underweight, healthy, and overweight by BMI based on a figure from Mutale et al. (2016).

The BDS is superior to other visual scales such as the hand-drawn Stunkard Scale and photo-based scales for several reasons. The BDS is a computer-generated scale, which makes the increments between the bodies easier to calculate; the scale also has measurements of BMI and weight for each body. Hand drawn scales can be more unrealistic, while photo-based scales have more inconsistent increases and ratios between individual body part sizes that cannot be easily controlled. The BDS keeps an even ratio between body parts for each body, so they stay proportional. The scale also uses a gray skin tone to avoid association with any specific race. The scale showed strong construct validity and test-retest reliability for both the male and female scales over a five-week period (Mutale et al., 2016).

Participants saw either the male, female, or male and female versions of the scale depending on the gender they selected (e.g., a participant who selected their gender as nonbinary would see both the male-bodied and female-bodied set of images). Underneath the scale, there were two questions. Participants answered the question, “Choose the body you would most like
to look like” (ideal body) and then, “Choose the body that is closest to your perceived shape” (perceived body) from the 9 numbered bodies (Mutale et al., 2016). Although the original scale did not include this wording, participants were also instructed to choose body #9 if their perceived body was larger than any of the bodies shown. I included this wording because, even though the largest body in the scale is obese based on BMI, the average American BMI (around 28 in 2015; Fryar, Kruszon-Moran, Gu, & Odgen, 2018) is larger than the median BMI of the scale (approximately 20).

The BDS represents the discrepancy between one’s perceived ideal and actual bodies rather than the direction of dissatisfaction (Mutale et al., 2016). The scale calculates body dissatisfaction by taking the absolute value of the difference between one’s perceived body and ideal body scores, e.g., | 6 (perceived body) - 4 (ideal body) | = 2. Body dissatisfaction scores range 0–8, with 8 being a high level of body dissatisfaction. Due to the differences in ideal bodies for men and women (Ansari et al., 2014; McCreary & Sasse, 2000; Oehlhof et al., 2009), the current study also used BDS scores without an absolute value for exploratory analyses. This exploratory measure of body dissatisfaction, referred to as body dissatisfaction 2 (BD2), shows the direction of dissatisfaction.

The addition of two questions from the YRBS (CDC, 2018) assessed body dissatisfaction more directly. These questions tested for a correlation between body dissatisfaction and how participants felt about their current weight. The first question was, “How do you describe your weight?” I scored it using the following scale:

- 0 = “Very underweight”;
- 1 = “Slightly underweight”;
- 2 = “About the right weight”;
• 3 = “Slightly overweight”;
• 4 = “Very Overweight”;

The second question was, “Which of the following are you trying to do about your weight?” (CDC, 2018). I scored this question in two ways. The first was a two-point scale (used for correlations):

• 1 = “Lose weight”/“Gain weight”;
• 2 = “Stay the same weight”/“I am not trying to do anything about my weight”;

The second method of scoring was a four-point scale:

• 0 = “Lose weight”;
• 1 = “Stay the same weight”;
• 2 = “Gain weight”;
• 3 = “I am not trying to do anything about my weight”;

The two questions from the YRBS measured the internal validity of the BDS in the current study. Scores from the YRBS described weight question and the BDS perceived body size had a significant positive correlation, $r = .73$, $p < .01$. This indicates that there was a strong correlation between participants’ perceived body size and the weight category they believed best described their weight. The second question, “Which of the following are you trying to do about your weight?” was significantly correlated with body dissatisfaction, $r = -.43$, $p < .01$ (see Figure 4).
Figure 4. Correlation between body dissatisfaction and what people are trying to do about their weight in the full sample. Individual scores are spread out to more easily see the data.

This moderate negative correlation indicates participants who had higher body dissatisfaction wanted to change their weight (lose or gain weight), while participants with lower body dissatisfaction wanted to stay the same weight or were not trying to do anything about their weight. This supports the link between body dissatisfaction and the desire for weight change. The correlation differed by gender and was stronger for men ($r = -.56, p < .05$) than it was for women ($r = -.38, p < .05$). The correlation was not significant for participants who selected their gender as nonbinary.

**Eating patterns.** The eight-question Starting the Conversation: Diet (STC) assessment (Paxton et al., 2011) and two questions from the Eating Disorder Evaluation 16.0D (EDE; Fairburn et al., 2008) assessed eating patterns. The STC was the primary measure of eating
patterns and the two EDE questions were exploratory measures that gauged meal frequency. The STC is an eight-item food frequency instrument that measures how healthy one’s diet has been over the past few months, based on the amount of consumption of certain foods or drinks. Paxton and colleagues (2011) developed the scale for non-dietitians to assess dietary patterns. The scale consists of questions like, “How many times a week did you eat fast food meals or snacks?” and “How many servings of fruit did you eat a day,” with response options based on the specific item, such as: “less than one,” “one to three,” and “four or more” (Paxton et al., 2011). The STC scores questions on a 3-point scale with the total score ranging 0–16, where 0 is very healthy and 16 is quite unhealthy. The researchers found that the STC can identify healthy and unhealthy dietary behaviors and is applicable in both public health and primary care settings. The STC was also found to yield similar results to longer questionnaires such as Rate Your Plate (Paxton et al., 2011).

The following two questions from the EDE gauged meal frequency: “Over the past 4 weeks which of these meals or snacks have you eaten on a regular basis?” (Fairburn et al., 2008). The first question asked about seven meals or snacks; breakfast, mid-morning snack, lunch (mid-day meal), mid-afternoon snack, evening meal, evening snack, and nocturnal eating (waking up and eating in the night). I scored this question using the 7-point scale from the EDE:

- 0 = “Not eaten”;
- 1 = “Eaten on 1–5 days”;
- 2 = “Eaten on less than half the days (6–12)”;
- 3 = “Eaten on half the days (13–15)”;
- 4 = “Eaten on more than half the days (16–22)”;
- 5 = “Eaten almost every day (23–27)”;
• 6 = “Eaten every day”

I added up individuals’ scores for the seven meals/snacks for a total score (meal total) where a score of 6 means a participant ate that meal every day for the past four weeks. The total possible meal score is 42 (eaten seven meals every day for the past month). The second question was “Over the past 4 weeks have you gone for periods of eight or more waking hours without eating anything?” I scored this question using the same day ranges from the previous 7-point scale (e.g., 0 = “No days,” 3 = “13-15 days,” and 6 = “Every day”).

Procedure

The current study was pre-registered on the Open Science Framework, https://osf.io/ft275/ (Sorrell, 2018). The link provided on the recruitment poster and the Psychological Research on the Net website sent participants to a consent page (see Appendix D) on SurveyGizmo. The consent page informed the participants about the purpose of the research, what they would need to do, the time commitment required, the risks, the gift card drawing, and participant confidentiality. The consent form also informed participants that participation was voluntary, and provided participants with the researcher’s contact information and instructions about how to contact the Bard College Institutional Review Board with concerns about the research. Participants then had to agree that they understood the nature of the research and their participation and that they were at least 18 years old. The next survey page contained two qualifying questions. The qualifying questions were: (1) Are you between 18 and 24 years old? and (2) Have you lived in the United States for at least 10 years? If participants answered no to either question the survey automatically closed and showed the message “Sorry, you do not qualify to take this survey.”
After qualifying participants completed the survey, the survey redirected participants to the debriefing form (see Appendix E). A link at the bottom of the debriefing form gave participants a generated confirmation number and a link to an outside web page to enter the gift card drawing using an email address. A generated confirmation number ensured that participants did not enter the gift card drawing more than once or send the link to other people who did not complete the survey. The data set did not include confirmation numbers so there was not an association between participants’ gift card confirmation codes and their responses. I chose the gift card winners by assigning numbers to the email addresses submitted and using Google’s random number generator.

**Results**

**Data Filtering**

A total of 163 people visited the survey page, read the consent form, and agreed to participate. Thirty-three of these participants did not qualify for the study because they did not answer yes to both of the previously mentioned qualifying questions. Of the 130 participants who qualified, 109 (83.8%) continued the survey after the demographic questions. A total of 107 people (82.3% of people who qualified) reached the end of the survey. I excluded participants’ scores if they did not answer every question contained in the depression, body image, and eating sections. Two people did not answer some demographic questions but still qualified because they completed the depressive symptom, body dissatisfaction, and eating patterns sections. Of the 107 people who reached the end of the survey, I included the people who met the qualification criteria ($N = 88$, 82.2%) in the analysis.
Main Analyses

The final sample included 88 participants. There was only one trans female participant in
the sample, so I excluded that participant’s scores for tests based on gender. All statistical tests
were two-tailed with a 95% confidence interval.

Summary Statistics. The results revealed that there were no significant correlations
between CES-D, BDS, or STC total scores; however, there was a weak correlation between meal
total score and the EDE question “Over the past 4 weeks have you gone for periods of eight or
more waking hours without eating anything?”, \( r = -.25, p < .05 \). The data showed a correlation
between a higher number of total meals and fewer periods of going for eight or more waking
hours without eating anything. There was also a weak correlation between the same EDE
question and CES-D score, \( r = .25, p < .05 \); a higher CES-D score was correlated with a larger
number of periods of going for eight or more waking hours without eating anything.

Depressive symptoms. The mean score for the CES-D fell almost exactly in the middle
of the scale (\( N= 88, M= 27.83, SD = 10.52 \)). Scores ranged 2–48 out of 60. A one-way analysis
of variance (ANOVA) showed that CES-D scores did not significantly differ across gender, \( F(3, 84) = 2.15, p = .1 \).

Body dissatisfaction. The mean BDS score for the whole sample was 2.07 (\( SD = 1.492 \)),
and 85.2% of participants had a body dissatisfaction score of three or below. Only 12.5% (\( n =
11 \)) of the sample had a body dissatisfaction score of 0. Results from the two questions from the
YRBS showed that a majority (52.3%, \( n = 46 \)) of the participants were trying to lose weight, but
only 38.6% (\( n = 34 \)) of the participants described themselves as “slightly overweight” or “very
overweight.” A paired sample t-test compared perceived (\( M = 5.35, SD = 1.98 \)) and ideal body
sizes (\( M = 3.78, SD = 1.29 \)) for the whole sample and found that participants’ perceived bodies
were significantly larger than their ideal bodies, $t(87) = 7.30, p < .05$. See Table 2 for mean BDS, ideal body, perceived body, and body dissatisfaction 2 (BD2) scores broken down by gender.

### Table 2

<table>
<thead>
<tr>
<th>Gender</th>
<th>Body Dissatisfaction</th>
<th>Perceived Body</th>
<th>Ideal Body</th>
<th>Body Dissatisfaction 2</th>
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<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
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<td>1.53</td>
<td>5.63</td>
<td>1.83</td>
</tr>
<tr>
<td>Men</td>
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<td>1.41</td>
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<td>1.32</td>
<td>4.67</td>
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<tr>
<td>Total</td>
<td>2.07</td>
<td>1.49</td>
<td>5.35</td>
<td>1.98</td>
</tr>
</tbody>
</table>

**Body dissatisfaction and gender.** There were gender differences in both the BDS and YRBS measures of body dissatisfaction. Women in the sample had perceived bodies that were much larger ($M = 5.63, SD = 1.83$) than their ideal bodies ($M = 3.68, SD = 1.37$), $t(62) = 8.74, p < .05$ (see Figure 5). The male and nonbinary participants, however, did not show a significant difference between their average perceived and ideal bodies. Additionally, most women (58.7%, $n = 37$) were trying to lose weight, while only 6.3% ($n = 4$) were trying to gain weight. While 40.0% ($n = 6$) of men wanted to lose weight, 26.7% ($n = 4$) wanted to gain weight.
Figure 5. Perceived vs. ideal body size in women. The direction of the lines shows the difference between participants’ perceived and ideal bodies, with perceived body size on the left and ideal size on the right. A line with a negative slope represents an ideal body smaller than one’s perceived body, while a line with a positive slope represents an ideal body larger than one’s perceived body.
I hypothesized that women would have higher scores on the BDS than men. The data did not fully support this hypothesis. An independent $t$-test compared BDS scores in women and men. There was not a significant difference in women’s BDS scores ($M = 2.14, SD = 1.53$) and men’s BDS scores ($M = 1.87, SD = 1.41$), $t(76) = .64, p = .53$. A one-way ANOVA tested if the inclusion of nonbinary participants revealed gender differences in body dissatisfaction scores. Nonbinary participants’ BDS scores did not significantly differ from other participants, $F(3, 84) = .92, p = .44$.

However, significant gender differences were apparent in an exploratory analysis of body dissatisfaction. I calculated body dissatisfaction 2 (BD2) to examine if the direction of body dissatisfaction differed across gender. A one-way ANOVA showed a significant difference across gender, $F(2,84) = 5.93, p < .05$, as illustrated by the significant difference in BD2 scores between men ($M = .13, SD = 2.39$) and women ($M = 1.95, SD = 1.77$), $t(76) = 3.33, p < .05$. Women had significantly higher BD2 scores than men (see Figure 6) due to the high percentage of women (82.5%, $n = 52$) with positive BD2 scores (a perceived body larger than their ideal body). Men had significantly lower BD2 scores because 60% ($n = 9$) of men had a BD2 score that was equal to or less than zero (a perceived body equal to or smaller than their ideal body).
Figure 6. Body dissatisfaction 2. Body dissatisfaction scores calculated without absolute value for women and men.

Eating Patterns. The average STC score was 7.35 ($SD = 2.52$). Scores ranged from 3 (very healthy) to 15 (very unhealthy). A one-way ANOVA showed that STC scores did not differ across gender, $F(3,84) = 1.90, p = .14$.

The two questions from the EDE showed the sample’s eating patterns were in line with previous research about average eating patterns (Kant, 2018; Longnecker et al., 1997). The average meal total for the first question (“Over the past 4 weeks which of these meals or snacks have you eaten on a regular basis?”) was 18.90 ($SD = 6.15$). This means the average meal total for the sample was slightly over three meals or snacks a day. A majority of the participants (77.3%) ate between two and four meals or snacks every day for the past month. Only 7.9% of participants ate an average of fewer than two meals or snacks every day for the past month and only 6.1% of participants ate an average of more than 4 meals or snacks every day for the past
month. The average score for “Over the past 4 weeks have you gone for periods of eight or more waking hours without eating anything?” was 1.37 ($SD = 1.25$). The majority of the sample did not go for periods of eight or more waking hours without eating anything on more than 12 days in the past month. A majority of the participants (65.9%) only went eight hours without eating anything five or fewer days in the past month.

**Body dissatisfaction, depressive symptoms, and eating patterns.** I hypothesized that a higher score on the CES-D would have a larger impact on body dissatisfaction and eating patterns in women. The data did not support this hypothesis. I conducted two simple linear regressions to see how CES-D scores affected BDS and STC scores in women. A linear regression with the CES-D score serving as the continuous independent variable and the BDS score as the continuous dependent variable showed that CES-D scores did not significantly impact BDS scores, $F(1,61) = .27, p = .61$. A linear regression with the CES-D score as the continuous independent variable and STC score as the continuous dependent variable showed that CES-D score did not significantly impact STC scores, $F(1,61) = 1.13, p = .29$.

The final hypothesis was that higher levels of depressive symptoms (CES-D) would be associated with a stronger relationship between body dissatisfaction (BDS) and eating patterns (STC). I hypothesized that depressive symptoms would moderate the relationship between body dissatisfaction and eating patterns. Measures of body dissatisfaction (BDS and YRBS) and eating patterns (STC and EDE) were not significantly correlated and all had $r$ values between -.13 and .14, $p > .05$. There was not a significant correlation between body dissatisfaction and eating patterns so I did not run the moderation analysis.

**Exploratory analyses.** For exploratory purposes, I examined differences in body dissatisfaction, depressive symptoms, and eating patterns across race. A one-way ANOVA
showed that BDS scores significantly differed across race, $F(4,82) = 4.04, p < .05$. Described weight was also significantly different across race, $F(4,82) = 3.62, p < .05$ (see Figure 7 for the results of these two ANOVAs).

![Body Dissatisfaction and Described Weight by Race](image)

**Figure 7.** Mean Body Dissatisfaction and Described Weight by Race. A healthy sample should have a body dissatisfaction score close to zero and a described weight of “about the right weight.”

**Discussion**

The present study examined the relationship between depressive symptoms, body dissatisfaction, and eating patterns in 18–24-year-olds who have lived in the United States for at least 10 years. Of three hypotheses, one was partially supported. The data only partially supported the hypothesis that women would have higher body dissatisfaction scores than men. Body dissatisfaction did not significantly differ between different genders in the sample as
measured by the previously-used BDS scoring method (Mutale et al., 2016). An exploratory analysis revealed that women did have significantly higher body dissatisfaction scores than men (a 1.82 point difference in mean dissatisfaction score $M_{women} = 1.95$, $M_{men} = 0.13$) when the direction of body dissatisfaction was accounted for (i.e., when absolute values of scores were not used). While the majority of women had a body dissatisfaction score larger than zero, a majority of men had a body dissatisfaction score of zero or below. However, these results may not reflect larger patterns in the population due to sample size limitations.

The majority of women chose an ideal body that was smaller than their perceived body, while the majority of men chose an ideal body that was equal to or larger than their perceived body. The data from the current study show that the direction of body dissatisfaction is different in men and women, but overall levels of dissatisfaction are not. Most body dissatisfaction research focuses on women because people generally assume that primarily women are dissatisfied with their bodies (Grogan & Wainwright, 1996; McCarthy 1990; Primus, 2014; Stice et al., 2000). The current results suggest that body dissatisfaction is prevalent in people regardless of gender, so future body image research should have more inclusive gender options in the demographics section to examine if this trend is apparent in a larger sample with more transgender and/or nonbinary participants.

Contrary to the hypothesis, higher depressive symptom scores did not have a larger impact on body dissatisfaction or eating patterns in women than lower depressive symptom scores. There were no correlations between the main measures of depressive symptom (CES-D), body dissatisfaction (BDS), and eating pattern (STC) scores, but there was a weak correlation between depressive symptom scores and the EDE question “Over the past 4 weeks have you gone for periods of eight or more waking hours without eating anything?”. This suggests that
depressive symptom scores might have stronger correlations with erratic eating than with the health of the food consumed. Unlike previous findings (Ra & Cho, 2017; Stice et al., 2000), there was not a significant correlation between body dissatisfaction and depressive symptoms. This may be because of the small sample size in the current study, as previous studies on body dissatisfaction typically have sample sizes ranging from 200 to more than 2,500 participants (Bibiloni et al., 2013; Bucchianeri et al., 2013; Koenig & Wasserman, 1995; Neumark-Sztainer et al., 2006; Stice et al., 2000).

The final hypothesis was that depressive symptoms would moderate the relationship between body dissatisfaction and eating patterns. The data did not support this hypothesis. The data did not show the assumed relationship between body dissatisfaction and eating patterns, and without that relationship, I could not test depressive symptoms as a moderator. This lack of relationship could be due to the previously mentioned sample size limitations.

Previous research supports the hypotheses of the present study (Ansari et al., 2014; Koenig & Wasserman, 1995; Paxton et al., 1991; Stice et al., 2000), but the data from the current sample failed to show significant correlations. Research findings show that body dissatisfaction and depressive symptoms often co-occur in adolescents (Ra & Cho, 2017; Stice et al., 2000) and undergraduates (Koenig & Wasserman, 1995; Mori & Morey, 1991; Noles et al., 1985). Negative body image and depressive symptoms are also related in both male and female undergraduates (Koenig & Wasserman, 1995; Noles et al., 1985). Other studies found a relationship between body dissatisfaction and changes in eating patterns (Bibiloni et al., 2013; Millstein et al., 2008; Neumark-Sztainer et al., 2006). These previous findings suggest that relationships between body dissatisfaction, depressive symptoms, and eating patterns do exist in
18–24-year-olds. The results from the current study may not match previous findings due to the sample size or the participants themselves.

The sample did not match expected scores on the CES-D and may not be representative of a larger population of 18–24-year-olds because of the sample’s high depressive symptom scores. Radloff (1977) described the distribution of general population CES-D scores as skewed with a larger number of low scores; however, visual inspection of a histogram of scores in the current sample demonstrated a normal distribution. A Shapiro-Wilk test of normality did not show a significant difference from the null hypothesis (i.e., the data are normally distributed), $W = 0.98, p = .35$. Given that the general population of adults tend not to experience elevated levels of depressive symptoms, the current sample does not represent a typical population. The current sample seems to instead represent a group with elevated (higher than normal) scores.

While the CES-D is not a diagnostic measure, it can still differentiate between general and clinical populations (Radloff, 1977). The original study that validated the measure found that 70% of psychiatric patients scored over 16 on the CES-D, but only 21% of non-clinical participants had a score greater than 16 (Radloff, 1977). More recent results show slightly higher but similar results for non-clinical populations. Twenge (2014) found that 25% of adults ($M_{age} = 47$) scored over 16 on the CES-D. Another study on female college students ($N = 101$) found that 48% scored over 15, but only 24% scored over 24 (Regestein et al., 2010). In the current sample, over 86% of participants scored above 16, and 69% scored over 24. Therefore, participants in the current study experienced higher levels of depressive symptoms than seen in other populations, and are not a representative sample.

Overall, the sample was overwhelmingly dissatisfied with their bodies. Only 12.5% ($n = 11$) of the participants had a body dissatisfaction score of 0. The small proportion of participants
who had a body dissatisfaction score of zero is consistent with previous findings showing high levels of body dissatisfaction in early adulthood (Bucchianeri et al., 2013; Fallon & Rozin, 1985; Monteath & McCabe, 1997). The average body dissatisfaction score was 2.07 out of a possible 8 points. This score is a relatively low number on the scale but still represents large dissatisfaction; the average body dissatisfaction score in college students from the study that developed and validated the BDS was 1.5 (Mutale et al., 2016).

While participants chose ideal and perceived bodies based on an image without knowing specific weights, the weight change between two bodies on the scale is a good reference to understand body dissatisfaction scores. The difference in weight between bodies three and five (a BDS score of 2, close to the average of the sample) for the male and female scales averages to a difference in weight of approximately 23lbs. The average body dissatisfaction score of the sample represents a significant discrepancy between the way that one perceives their own body and their ideal body. Additionally, 42.8% of women (n = 37) chose an ideal body that the scale categorizes as underweight, showing that for most women, their ideal body is smaller than healthy based on BMI. There was also a significant correlation between body dissatisfaction and what participants wanted to do about their weight, such that higher body dissatisfaction scores were correlated with wanting to lose or gain weight.

Eating pattern results (YRBS) showed that a majority of the sample was trying to lose weight, while less than half of the sample described themselves as slightly overweight or very overweight. This difference suggests that some participants want to lose weight even if they do not think they are overweight, which may be due to thin societal ideals. Participants’ perceived body scores were significantly correlated with how they described their weight, suggesting that they were aware of which category their body falls into (underweight, healthy, etc.). Despite this,
the majority of women and a few of the men still wanted to lose weight. Wanting to lose weight or have a smaller body despite being in a healthy range is most likely tied to societal body ideals and norms. There was a stronger correlation between body dissatisfaction and desire to change weight in men than in women. This is surprising, as previous research showed female high school students were more likely to diet and use extreme weight loss methods than boys (Paxton et al., 1991), which might lead one to assume women in general experience higher levels of body dissatisfaction and more desire to change their weight. The stronger correlation between body dissatisfaction and a desire to change one’s weight in men may be because of the small sample size. Furthermore, within this already small sample size, men’s scores for what they wanted to do about their weight were not normally distributed. The small number of men do represent what would most likely be found in a random sample.

The overall eating patterns of the sample were relatively healthy. The average STC score was relatively low (below the scale median). A lower STC score represents healthier eating habits such as consuming more fruits and vegetables and less fast food, desserts, and sugary drinks. The sample had a wide range of STC scores which reflects expected scores in a diverse sample. The wide range suggests that eating patterns are individual but the average STC score in the sample shows that eating patterns tended to be moderately healthy.

The average total number of meals consumed was equivalent to slightly more than three meals a day for the past month; a large proportion of the sample ate between two and four meals every day. Meal consumption in the sample was almost identical to previous findings of average eating patterns in adults from the United States (Kant, 2018; Longnecker et al., 1997). The total number of meals eaten does not allow for a detailed interpretation of overall health, but it does show that most participants were not severely restricting food intake. Additionally, a majority of
participants did not go more than eight waking hours without eating for most of the past month. Overall, the sample consumed relatively healthy foods and ate what is generally assumed to be a normal number of meals every day for the past month (Kant, 2018; Longnecker et al., 1997).

Although the present study accomplished its main goal to show significant differences in body dissatisfaction across gender, it also had notable limitations. The main significant finding used an exploratory measure of body dissatisfaction that looked at the direction of dissatisfaction. The original pre-registration (Sorrell, 2018) focused on hypotheses based on absolute value body dissatisfaction scores. Therefore, this finding could not be entirely supported because of the difference in measurement.

Two primary limitations of the outcome of the study were the overall sample size and the gender breakdown of the sample. Many previous studies investigating body dissatisfaction have studied much larger samples, which can reveal more robust results (Bucchianeri et al., 2013 [n = 1,902]; Neumark-Sztainer et al., 2006 [n = 2,516]; Stice et al., 2000 [n = 1,124]). The study focused on body dissatisfaction in a sample that had lived in the United States for at least 10 years, in an attempt to try to control for different societal norms that cause dissatisfaction. A large number of participants who did not qualify because of this factor as well as the small age range limited the sample size. Additionally, women made up a substantial majority of the participants in the current study, which leads to poor statistical power for making gender comparisons. While there were statistically significant differences in body dissatisfaction between men (n = 15) and women (n = 63), these results must be interpreted carefully. Additionally, this study specifically included participants whose gender differed from the one they were assigned at birth because past research has only focused on men and women. There were only nine nonbinary participants and only one trans-female participant (whom I did not
include in gender-based analyses). The results from this small number of nonbinary participants cannot represent a larger population.

Although research may show the same pattern of difference in body dissatisfaction between men and women in a larger sample with equal numbers of men and women, the results could also be specific to the men recruited for this study. It is possible that higher levels of dissatisfaction led specific men to participate in the survey, while men with lower dissatisfaction did not want to participate, which could bias the sample. Previous research has also noted that body dissatisfaction is generally viewed as a women’s issue (Primus, 2014), which may deter men from participating. Therefore, the men that chose to participate may have had different presentations of depressive symptoms, body dissatisfaction, and eating patterns compared with the general male population.

This difference in reasons for participating is also a potential limitation of using an online sample. It is likely that a larger number of women would feel comfortable participating in the study regardless of their level of body dissatisfaction, while men may not think of body dissatisfaction as something that pertains to them. Online samples can have a high participant drop-out rate and poor data quality. A total of 130 participants qualified for the current survey but only 107 reached the last page and only 88 qualified to be in the analysis. It was easy for participants to end participation by simply closing the window and the incentive to continue participating was small. The number of participants that dropped out or skipped whole sections of the survey limited data collection leading to a smaller sample than desired. Online samples can also lead to bad data. Online research is, by definition, a convenience sample (it only includes people who come across it and decide to participate), which may not reflect a larger population. Research shows that online samples fail validity checks significantly more often
(likely due to distractions and stressors) than samples using pencil and paper responses (Al-Salom & Miller, 2017). A small convenience sample and possibly bad data quality limit generalizability.

Other limitations of the study include issues with the body dissatisfaction measures. While the BDS accurately measures body dissatisfaction, it has a relatively small number of bodies and the median BMI of the scale (approximately 20) is much lower than the average American BMI (28; Fryar et al., 2018). The visual scale is consistent with underweight, healthy, overweight, and obese BMI measurements, but it does not go high enough for body types that are relatively common in the general American population. While the average perceived body ($M = 5.35$) in the current study fell in the middle of the nine-body scale, this average is not consistent with the average body size in the United States. This measure of body dissatisfaction may not be usable for other samples with a larger range of body sizes.

Both the BDS and one of the questions from the YRBS focused on overall body size rather than differentiating between changes in fat or muscle. Previous findings show that men who are dissatisfied with their bodies typically want to gain muscle specifically (Frederick et al., 2007; McCrery & Sasse, 2002; Primus, 2014, Oehlhof et al., 2009). This may cause men to report lower ideal bodies because the overall size of the body increases, rather than just the muscle to fat ratio. A visual scale that focuses on muscle increase rather than overall body weight may show a larger discrepancy between men’s ideal and perceived bodies than seen in the sample. Additionally, the question from the YRBS that asked what participants were trying to do about their weight did not differentiate between wanting to lose or gain fat/muscle. Participants who answered “gain weight” may have understood the question as either gaining fat or muscle, while participants who wanted to lose weight most likely wanted to lose fat. It is
difficult to interpret the results from this question because it is impossible to know how participants understood “gain weight.”

One final limitation is that the demographic measures did not include height and weight, so I could not calculate BMI in order to compare actual body size to perceived body size. While body image distortion is not integral to the hypotheses of the study, it is a component of depression and can contribute to body dissatisfaction (Beck & Alford, 2009).

It is important to consider the potential generalizability of these findings when considering the limitations of the study. The sample consisted of 18–24-year-olds who have lived in the United States for at least 10 years, which limits generalizability beyond that population. The sample also consisted of primarily of women. Almost half of the participants were Bard College students and participants were likely Western, Educated, Industrialized, Rich, and Democratic (WEIRD), which can negatively impact generalizability (Henrich, Heine, & Norenzayan, 2010). While these are limitations to the generalizability of the study, the measures used in the study are appropriate for adults of any age and the same study could be easily implemented in a much larger age range and across other English-speaking demographics.

Despite these limitations, the present study had important strengths. The study was pre-registered on the Open Science Framework prior to data collection, which aided in drawing accurate conclusions based on null hypothesis significance testing by reducing the likelihood of incorrectly rejecting the null hypothesis (Type 1 error; Simmons, Nelson, & Simonsohn, 2011). Additionally, alternate measures of body image and dissatisfaction showed the BDS had strong internal consistency. Another strength of the current study is that the survey took place online and did not require a large time commitment.
The study specifically measured depressive symptoms rather than major depression. Around 17% of adults at one point receive a diagnosis of MDD (Kessler et al., 2005), but many more adults experience subclinical levels of depressive symptoms. These symptoms can have repercussions on general well-being, so research should not focus exclusively on the impact of diagnosable depression on well-being. Past research showed an association between body dissatisfaction and depressive symptoms (Beck & Alford, 2009; Mori & Morey, 1991; Touchette et al., 2011). The high levels of body dissatisfaction seen in the current sample as well as in the general population may suggest high levels of depressive symptoms are also present in individuals who are dissatisfied with their bodies.

The present study focused on non-disordered eating patterns in the context of body dissatisfaction and depressive symptoms, rather than eating disorder thoughts and behaviors (Brechan & Kvalem, 2015; McCarthy, 1990; Stice et al., 2000). While research on people with diagnosable depression and eating disorders may show more robust correlations, future research should examine the impact of depressive symptoms on non-disordered eating patterns because these symptoms pertain to a much larger population. Body dissatisfaction can potentially impact general eating habits in a variety of people, not just in clinical populations. Although changes in eating patterns might be smaller and not directly detrimental to health, it is crucial to see how prevalent widespread body dissatisfaction is and how it impacts lives. For this reason, I measured eating patterns by meal frequency as well as the general health of one’s diet. Research shows a link between body dissatisfaction and disordered eating behaviors such as bingeing, purging, fasting, etc. (Grogan, 2006; Koenig & Wasserman, 1995; Paxton et al., 1991), but it is likely that it also impacts the individual food groups that people are eating and when they eat their meals.
To examine if the results found in the study are found in other samples, future research should replicate the study in a much larger sample. Further, changes to the current measures could provide more information. A measure of height and weight may be useful to look at the impacts of body image distortion (i.e., BMI based on height and weight measurements that researchers can compare to the BMI of the perceived body chosen). This shows if participants’ view of their body is accurate on eating patterns rather than solely the level of self-reported dissatisfaction. A participant whose perceived body is larger or smaller than the BMI calculated from their height and weight might be more likely to have shifted their eating patterns or to show more depressive symptoms. Other changes to the current measures could include a more in-depth measure of eating patterns such as the 23 question Rate Your Plate scale (Gans, Hixson, Eaton, & Lasater, 2000), questions about eating-related cognitions (e.g., “does your satisfaction with your body influence what you eat?” or “do you eat foods that you enjoy?”), and a body dissatisfaction scale with an expanded range of bodies.

Future directions for body dissatisfaction research could include a wide variety of measures to examine predictors for body dissatisfaction. These might include measures of past experiences with receiving criticism about weight and shape from others, or measures of the importance that individuals place on body image. Past experiences and beliefs about body image importance may influence the way that body dissatisfaction, depressive symptoms, and eating patterns interact. Other important measures pertaining to body dissatisfaction include surveys of media influence on body image and dissatisfaction, as well as measures of the ideal body for the self as well as general society. People may have an individual ideal body that is different from the general societal norms. Some people may be aware of societal ideal bodies but have an ideal body that does not conform to this ideal.
Conclusion

The current study examined depressive symptoms, body dissatisfaction, and eating patterns in 18–24-year-olds in the United States. As predicted, women had higher body dissatisfaction scores than men, but only when the analyses used directional body dissatisfaction scores. Women’s ideal bodies were significantly smaller than their perceived bodies, which is consistent with the thin ideal bodies that society promotes for women (Grogan, 2008; McCarthy, 1990; Silverstein et al., 1986). Sixty percent of men in the sample had an ideal body that was equal to or larger than their perceived body. It is possible that these men desired a body similar to the muscular societal ideal (Frederick et al., 2007; Primus, 2014; Spitzer et al., 1999), but the body dissatisfaction measures in the current study do not provide enough information to draw a definitive conclusion. Importantly, there was not a significant difference in body dissatisfaction scores across gender when the direction of dissatisfaction was ignored, which is contrary to previous findings showing higher levels of dissatisfaction in women (Ansari et al., 2014; Cash, 2002; Fallon & Rozin, 1985; Millstein et al., 2008). These results show that people have similar amounts of body dissatisfaction regardless of their gender but the type of dissatisfaction can differ.

The level of body dissatisfaction in the sample was very high, which is in line with previous research (Frederick et al., 2007; Monteath & McCabe, 1997; Mori & Morey 1991). Only 12.5% of participants had a body dissatisfaction score of 0; with the average dissatisfaction score for the sample corresponding to an approximately 23lb discrepancy between their perceived and ideal bodies. Importantly, there was a close match between the participants’ perceived body on the visual scale and a word-based description of their weight, which shows that both measures accurately assessed body dissatisfaction. The high levels of dissatisfaction
seen on both measures in this sample are consistent with previous findings in larger populations in the United States. These findings point to a widespread problem of societal body ideals that are uncommon and/or unattainable.

The data did not support the other hypotheses of the study. Higher levels of depressive symptoms did not have a larger impact on body dissatisfaction or eating patterns than lower depressive symptom scores in women, even though the sample had elevated depressive symptom scores that were not representative of a larger population. There also was not a relationship between body dissatisfaction and eating patterns; thus, the data did not support the hypothesis that depressive symptoms would moderate that relationship. Past studies that found correlations between these variables have had larger samples that are more representative of the general population, which may account for why correlations between depressive symptoms, body dissatisfaction, and eating patterns were not present in the current study.

The small sample size and large discrepancy between the number of female \( n = 63 \), male \( n = 15 \), nonbinary \( n = 9 \), and trans female \( n = 1 \) participants in the study limit the interpretation of the results. Future research should focus on a larger, more gender-balanced, sample and use measures that account for changes in muscularity as well as fat composition. Based on gender differences in ideal body types, researchers should use body dissatisfaction scales that reflect an individual’s ideal body (e.g., use a scale that increases muscle tone but not fat for someone whose ideal body is lean with large muscles).

Past research shows body dissatisfaction and depressive symptoms can impact general well-being and eating patterns (McCarthy, 1990; Millstein et al., 2008; Neumark-Sztainer et al., 2006; Veenhoven, 2018). While the current study did not show significant interactions between the three variables, the sample had high levels of body dissatisfaction and depressive symptoms.
Surprisingly, the sample showed normal eating patterns similar to previous findings of the average number of meals and/or snacks per day in the United States (around 3–5, Kant, 2018; Longnecker et al., 1997). While the sample showed healthy eating patterns, the high levels of depressive symptoms and body dissatisfaction are cause for concern. These findings may reflect larger patterns in 18–24-year-olds that research should explore further.
References


Appendix A

IRB Approval Letter

Bard College
Institutional Review Board

Date: November 21, 2018

To: Lucy Sorrell (ls8277@bard.edu)
Cc: Justin Dainer-Best (jdainerbest@bard.edu)
From: Sanjay DeSilva, IRB Chair

Re: Body Dissatisfaction: Searching for a link between depression, body image, and eating patterns

DECISION: APPROVED

Dear Lucy,

The Bard Institutional Review Board reviewed and approved your proposal through November 21, 2019. Your case number is 2018NOV21-SOR.

We recommend that you use a diagram that includes a wider range of body type options unless the diagram you have included uses a standard scale for such research.

Please notify the IRB if your methodology changes or unexpected events arise.

We wish you the best of luck with your research.

Sanjay DeSilva
desilva@bard.edu
IRB Chair
Appendix B

Recruitment Poster

Are you 18-24 years old?
Take this 5-7 minute body image, eating pattern, and depression survey!

Chance to win one of two $50 Amazon gift cards

https://www.surveygizmo.com/s3/4677168/dep

For more information email ls8277@bard.edu
Appendix C

Questionnaire

The following questions regard your demographic information. Please answer as accurately as you can. You may skip questions or leave the questionnaire at any point.

1.) How old are you?
   18
   19
   20
   21
   22
   23
   24

2.) What is your gender?
   Male
   Female
   Trans male
   Trans female
   Nonbinary
   Other

3.) What racial category do you most closely identify with?
   White
   Black or African American
   Asian
   Native American
   Pacific Islander
   Hispanic/ Latino
   Other

4.) Are you a Bard College student?
   Yes
   No
The following survey is about your mood in the past week. Please answer as accurately as you can. You may skip questions or leave the questionnaire at any point.

Below is a list of the ways you might have felt or behaved. Please indicate how often you have felt this way DURING THE PAST WEEK by entering the appropriate number.

Rarely or none of the time (less than 1 day)
Some of the time (1-2 days)
A moderate amount of the time (3-4 days)
Most or all of the time (5-7 days)

1. I was bothered by things that usually don’t bother me. _____
2. I did not feel like eating; my appetite was poor. _____
3. I felt I could not shake off the blues even with help from my family or friends. _____
4. I felt that I was just as good as other people. _____
5. I had trouble keeping my mind on what I was doing. _____
6. I felt depressed. _____
7. I felt that everything I did was an effort. _____
8. I felt hopeful about the future. _____
9. I thought my life had been a failure. _____
10. I felt fearful. _____
11. My sleep was restless. _____
12. I was happy. _____
13. I talked less than usual. _____
14. I felt lonely. _____
15. People were unfriendly. _____
16. I enjoyed life. _____
17. I had crying spells. _____
18. I felt sad. _____
19. I felt that people disliked me. _____
20. I could not get “going.” _____
The following survey is about the way you view your body. Please answer as accurately as possible. You may skip questions or leave the questionnaire at any point.

1.) Please choose the body that you would most like to look like.

1
2
3
4
5
6
7
8
9
2.) Please choose the body that is closest to your perceived body shape from the above image. If your perceived body shape is larger than the bodies shown, please choose Body 9.

1  
2  
3  
4  
5  
6  
7  
8  
9  

3.) How do you describe your weight?
   Very underweight
   Slightly underweight
   About the right weight
   Slightly overweight
   Very overweight

4.) Which of the following are you trying to do about your weight?
   Lose weight
   Gain weight
   Stay the same weight
   I am not trying to do anything about my weight
The following survey is about your eating patterns in the past 4 weeks. Please answer as accurately as possible. You may skip questions or leave the questionnaire at any time.

1.) Over the past 4 weeks which of these meals or snacks have you eaten on a regular basis

- Breakfast
- mid-morning snack
- lunch (mid-day meal)
- mid-afternoon snack
- evening meal
- evening snack
- nocturnal eating (waking up and eating in the night)

Not eaten
Eaten on 1-5 days
Eaten on less than half the days (6-12)
Eaten on half the days (13-15)
Eaten on more than half the days (16-22)
Eaten almost every day (23-27)
Eaten every day

2.) Over the past 4 weeks have you gone for periods of eight or more waking hours without eating anything?

- No days
- 1-5 days
- 6-12 days
- 13-15 days
- 16-22 days
- 23-27 days
- every day

Over the past 4 weeks:

3.) How many times a week did you eat fast food meals or snacks

- Less than 1
- 1-3
- 4 or more

4.) How many servings of fruit did you eat each day?

- 5 or more
- 3-4
- 2 or less

5.) How many servings of vegetables did you eat each day?
5 or more
3-4
2 or less

6.) How many regular sodas or glasses of sweet tea/other sugar sweetened beverages did you drink each day?
   Less than 1
   1-3
   4 or more

7.) How many times a week did you eat beans, chicken, or fish?
   3 or more times
   1-2 times
   Less than 1 time

8.) How many times a week did you eat regular snack chips or crackers (not low-fat)?
   1 time or less
   2-3 times
   4 or more

9.) How many times a week did you eat desserts and other sweets (not the low-fat kind)?
   1 time or less
   2-3 times
   4 or more times

10.) How much margarine, butter, or meat fat did you use to season vegetables or put on potatoes, bread, or corn?
    Very little
    Some
    A lot
Appendix D

Consent Form

Consent to participate in this survey

Purpose of the research: To see if there is a relationship between depressive symptoms, body image, and eating patterns.

What you will do in this research: You will be asked 40 questions about demographics, mood, body image, and eating habits.

Time required: The survey should take 5-7 minutes to complete.

Risks: Some of the questions may cause you to think about behaviors, or feelings about yourself that may make you uncomfortable.

Benefits: At the end of the study you can enter your email for the chance to win a $50 Amazon gift card.

Confidentiality: You will not be asked your name or specific identifying information, so I will have no way of matching responses to any single individual. Any information that could be used to link you to a specific location (such as zip code or IP address) will be removed before data are posted. Deidentified data from this study may be posted online at the Open Science Foundation and Bard College’s Digital Commons.

Participation and withdrawal: Your participation is voluntary. To leave the study, simply close the survey window.

Contact: If you have questions about this research, please contact Lucy Sorrell, Bard College Student at ls8277@bard.edu, or Justin Dainer-Best, Assistant Professor of Psychology, Bard College, at jdainerbest@bard.edu.

If you have questions, concerns, suggestions, or complaints that are not being addressed by the researcher, or research-related harm, please contact the Bard Institutional Review Board at irb@bard.edu

The nature and purpose of this research have been sufficiently explained and I agree to participate in this study. I understand that I am free to withdraw at any time without incurring any penalty. I certify that I am at least 18 years old.

[Click agree]

[CONTINUE BUTTON]
Appendix E

Debriefing Form

Thank you so much for your participation!
Please read the below information about the survey, my research, mental health resources, and how to enter the gift card drawing.

The survey you filled out was a compilation of several different measures that assess demographics, depression, body dissatisfaction, and eating patterns. I am interested to see if depression moderates the relationship between body image and eating patterns. Many people show alterations in their eating behavior based on their body image and it is possible that depression can impact this.

The survey IS NOT a diagnostic measure. We are not able to provide results to individual participants.

Depressive symptoms were measured using the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) and body dissatisfaction was measured using the Body Dissatisfaction Scale (BDS; Mutale et al., 2016) and two questions from the 2019 CDC Youth Risk Behavior Survey (YRBS). Eating patterns were measured using Starting the Conversation: Diet Instrument (STC; Paxton et al., 2011) and two questions from the Eating Disorder Examination (EDE; Fairburn et al., 2011). You may read the original papers describing them here:

CES-D: http://doi.org/10.1177/014662167700100306
YRBS: www.cdc.gov/yrbs
STC: https://doi.org/10.1016/j.amepre.2010.10.009
EDE: https://doi.org/10.1037/t03975-000

For any questions or comments about my research, or if you would like to be informed about the outcome of my study, feel free to reach me at ls8277@bard.edu or my advisor, Assistant Professor of Psychology, Justin Dainer-Best, at jdainerbest@bard.edu.

Resources:
General Resources
1.) Crisis Text Line- Free 24/7 crisis counseling. Text CONNECT to 741741
   https://www.crisistextline.org/depression

2.) National Suicide Prevention Lifeline- Free 24/7 call 1-800-273-8255
   https://suicidepreventionlifeline.org/

Bard College Students
1.) Bard Counseling- Call 845 758 7433 for appointments 9 am – 5pm.
a. Walk in hours: Monday 3-4pm Kappa House, Wednesday 12-1pm Library Room 402, and Fridays 12-1pm Bito Conservatory Room 206
b. For emergencies between 5pm and 9 am or on weekends call 845 758 7777 and ask for the counselor on duty. Find more information at http://www.bard.edu/counseling/

2.) Brave- Anonymous and confidential crisis intervention and support counseling
   Call 845 758 7777 Ask for Brave counselor on call

If you would like to enter your email for a chance to win one of two $50 Amazon gift cards click the link below. The link will take you to a separate webpage that is not associated with your responses.