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Anita M. Sicignano
CUNY City College

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The Epidemiology of Somatic Depression and Eating Disorders:

The Relationship Between Depressive Subtypes and Symptoms of Disordered Eating

Anita M. Sicignano

The City College of New York

Abstract

Depression is known to affect females in much greater numbers than males, with about three times as many women having the disorder as men (American Psychiatric Association, 2013). A similar gender disparity can be seen in eating disorders, where up to nine in ten sufferers are female (American Psychiatric Association, 2013). Studies have shown that most of the gender difference in depression occurs as a result of women experiencing a form of depression involving a number of body-centric symptoms, including headaches, weight changes, fatigue, and insomnia, which has been termed "somatic depression" (Silverstein et al., 2013). Some of the symptoms, such as a fear of becoming fat, restricting or binging, and an abnormal focus on shape, are also characteristic of eating disorders (American Psychiatric Association, 2013). There are also overlaps in age of onset of somatic depression and eating disorders (adolescence), as well as potential societal triggers and contributing factors, such as limiting gender roles and sexual objectification (Silverstein et al., 2013; Moradi, Dirks, & Matteson, 2005). This study found a relationship between disordered eating and somatic depression, which may suggest that the disorders have similar roots in body image issues and social roles.

The Epidemiology of Somatic Depression and Eating Disorders: The Relationship Between Depressive Subtypes and Symptoms of Disordered Eating

Beginning at puberty, depression affects significantly more females than males (American Psychiatric Association, 2013). In examining the causes of this gender discrepancy, researchers have found that depressed females most often present with several accompanying somatic symptoms, including disordered eating (Silverstein, 1999). Eating disorders also have a high female prevalence, and share symptoms such as restricting, bingeing, and distorted body image with somatic depression (American Psychiatric Association, 2013). While other studies have analyzed the relationship between somatic depression and disordered eating behaviors, such as under- and overeating (Silverstein & Blumenthal, 1997; Silverstein, 1999), these behaviors can also be found in pure depression without multiple accompanying somatic symptoms (American Psychiatric Association, 2013). This study is the first to examine the distorted cognition fear of fat, which is a psychiatric symptom that is unique to eating disorders (American Psychiatric Association, 2013), and its cooccurrence with somatic depression. A significant rate of fear of fat in somatic depressed subjects would add to the evidence that somatic depression should be treated as a distinct disorder from "pure" (non-somatic) depression, and that most of the association between depression and eating disorders is due to people who exhibit somatic depression.

Although somatic depression is not recognized as a separate disorder in the DSM, research has yielded a number of significant findings that demonstrate the difference between somatic and pure depression. When examining the prevalence of somatic depression, females have been found to experience it at about twice the rate of males, while rates of pure depression are approximately equal for males and females (Silverstein et al., 2013). This disproportionate gender ratio in depression first appears in puberty, when rates of somatic depression greatly

increase for females, and is then maintained through middle adulthood, with incidence of pure depression remaining on par with males (Silverstein & Levin, 2014). The relationship between gender, puberty, and somatic depression incidence suggests that there is something unique about becoming a woman, whether biological, sociocultural, or some combination of those factors, that causes somatic depression. Besides the gender difference, somatic depression is characterized by multiple somatic symptoms that appear in fewer numbers, if at all, in pure depression. Fatigue and disturbance in sleep and appetite are among the criteria for somatic depression. Headaches, anxiety, and poor body image are sometimes included as well, depending on the sample available for the study; all three symptoms have been found to occur in higher rates in females, and are more likely to occur alongside depression (Silverstein, 1999; Silverstein et al., 2013). Viewing this constellation of symptoms as one disorder rather than disparate issues occurring alongside depression could help provide better treatment for the significant share of depression sufferers who have somatic depression.

Several studies have found shared causes between depression and eating disorders. In a prospective study on adolescent girls, Stice, Presnell, and Bearman (2001) found that girls who start their periods earlier than average are at an increased risk of developing depressive and disordered eating symptoms, again pointing to a connection among puberty, depression, and disordered eating for females. Santos, Richards, and Bleckley (2007) surveyed both male and female high school students, and found that factors such as body mass index (BMI), body satisfaction, and self-esteem all contributed to depressive and disordered eating symptoms. However, these factors had a stronger impact on these symptoms for females than they did for males; for example, the correlation between BMI and body esteem was -0.426 for females, and only -0.296 for males. Thus factors like weight have a greater influence on adolescent girls'

mental health and body image, which may contribute to the higher rates of depression and eating disorders that they experience (Santos et al., 2007). Depression based in distress over weight and body image is also characteristic of somatic depression as opposed to pure depression (Silverstein & Perlick, 1995). Disordered eating and depression are not the only symptoms that cooccur during puberty for girls; in a review of evolutionary evidence for the existence of somatic depression, Silverstein (2018) points out that somatic symptoms such as headache, fatigue, and insomnia also increase for females during this time. The review goes on to mention that all these conditions have been increasing in females over time, with the greatest increase seen in female adolescent-onset depression. The rates of depressive, eating, and somatic symptoms hold steady in males over the same time period, another interaction between gender and the hypothesized condition, somatic depression (Silverstein, 2018).

The common factors that the two disorders share may account for why they are often comorbid. In a study on female eating disorder inpatients, 92% were found to have co-occurring unipolar depression. Fifty-six percent also had at least one comorbid anxiety disorder, a condition that shares a similar profile to depression and eating disorders with its female prevalence and age of onset at puberty (Blinder, Cumella, & Sanathara, 2006; Faravelli, Scarpato, Castellini, & Sauro, 2013). The cooccurrence of eating disorders and depression have been reported in many studies, observing that the lifetime prevalence of major depression in women with eating disorders (46-74%) is much higher than its prevalence among women in general (21%) (Pearlstein, 2002). A study by Fernandez-Aranda et al. (2007) examined the characteristics of the depression suffered by women with eating disorders; only 34.5% had an onset of depression before their eating disorder, and those subjects were more likely to have symptoms associated with pure depression, such as psychomotor agitation. These statistics could

point to disordered eating and body image issues leading to depression in a majority of women who suffer from depression. This could be further evidence that most of the depression in women is somatic depression, not pure depression.

As well as having shared causes and frequently being comorbid, eating disorders and depression share several symptoms and characteristics related to gender. They are most often found in females, and for females, the highest incidence of the disorders is in puberty (American Psychiatric Association, 2013; Silverstein & Levin, 2014). As stated previously, the gender discrepancy in depression is entirely due to somatic depression (Silverstein et al., 2013). Eating disorders have an even greater gender difference, with anorexia and bulimia sufferers having a gender ratio of about ten females to one male. The gender distribution for binge eating disorder is more balanced, but the disorder still has a higher female prevalence (American Psychiatric Association, 2013; Striegel-Moore et al., 2009). Disordered eating symptoms like disturbed body image, lack of appetite, and bingeing are all symptoms that can be found in somatic depression, along with other somatic symptoms. If these symptoms are present in pure depression, they do not occur alongside as many somatic symptoms as in somatic depression (Silverstein et al., 2013). Conversely, sleeping problems such as fatigue and insomnia that are found in somatic depression can also be present in anorexia, and eating disorders are often accompanied by the anxiety that is present in somatic depression (American Psychiatric Association, 2013; Silverstein & Blumenthal, 1997).

Somatic depression and eating disorders share: affected gender, typical age of onset, and symptomology (American Psychiatric Association, 2013; Silverstein et al., 1995). However, they differ in that only eating disorders have a demonstrable genetic component (American Psychiatric Association, 2013. Eating disorders have been found to be highly heritable, with

twin studies showing that about 60% of the phenotypic variance of anorexia and bulimia is due to genetics, rather than environmental factors (Yilmaz, Hardaway, & Bulik, 2015). In contrast, women reporting somatic depression were not more likely to have mothers with depression; in fact, this was only found to be true for women with pure depression, showing another clear distinction between pure and somatic depression (Silverstein & Blumenthal, 1997). Eating disorders and somatic depression are also similar in their poor response to treatment with antidepressants (Silverstein & Patel, 2011), which may account for the low efficacy of antidepressants that is found in samples of depressed patients that do not distinguish between somatic and pure depression (Kirsch et al., 2008). There is mixed evidence of the efficacy of medication for the treatment of eating disorders, with antidepressants having some success in treating bulimia and binge eating disorder, but proving mostly ineffective in treating anorexia (Aigner et al., 2011)[1]. While not conclusive, it can be hypothesized that anorexia and somatic depression also share more symptoms relating to objectification (appetite disturbances, distorted body image, preoccupation with shape, compensatory restrictive eating behaviors), which may suggest that both disorders are mostly socially imposed (or perhaps have an epigenetic component, in the case of anorexia).

The present study seeks to find whether somatic depression differs from pure depression in the degree of fear of fat and bingeing. Gender will also be included in the analyses, as gender differences are known to exist regarding both depression and disordered eating (American Psychiatric Association, 2013; Silverstein et al., 2013). It is hypothesized that the greatest correlation will exist between fear of fat, the behavior most closely related to anorexia, and

[1] In this study, as well as other studies testing antidepressants as a treatment for anorexia, the subjects are in inpatient hospital settings, and are observed taking the medication every day. There is no risk of the medication not being effective due to skipped doses as a result of restricting or purging,

somatic depression, due to the overlap seen in the two disorders regarding symptoms, age of onset, gender, and response to medication. If a greater relationship is shown, the separation of somatic depression from the general category of Major Depressive Disorder would be further supported.

Method

Subjects

Subjects were respondents to the National Comorbidity Survey: Adolescent Supplement (NCS-A), with data collected from 2001 to 2004. The NCS-A was done in order to estimate incidence and prevalence of DSM disorders among a representative sample of American adolescents, as well as risk and protective factors. A total of 10,148 adolescents aged 13 through 18 responded to the survey. 9,244 participants were from the households of participants of the National Comorbidity Survey Replication (NCS-R), and 904 participants were from a representative sample of schools from the communities that the NCS-R households were in. The school sample was taken to reach a minimum of 10,000 participants (Kessler, 2001-2004). The NCS-R was conducted in order to be representative of the adult population of the contiguous United States; in order to do this, the researchers used census data to choose regions to sample based on population density, and then randomly chose households within those regions to give the survey to (Kessler et al., 2004). Therefore, the NCS-A is representative of adolescents of the contiguous United States as the NCS-R is of adults.

Procedure

Two criteria for somatic depression were devised. The first used somatic symptoms included in the criteria for major depression found in the DSM, as well as a diagnosis of Major Depressive Disorder with hierarchy within the past 12 months. The designation of hierarchy

means that the participant did not experience mania or hypomania while the major depressive episode was occurring (Kessler, 2001-2004). The somatic symptoms occurred during the "periods of time that lasted several days or longer when you [the subjects] felt sad, empty, or depressed most of the day." All three of the somatic criteria of major depression had to be fulfilled: an appetite/weight disturbance ("Did you eat much more than usual almost every day?" or "Did you gain weight without trying to during that time?" or "Did you eat much less than usual almost every day during that time?" or "Did you lose weight without trying to?"); a sleep disturbance ("Did you have a lot more trouble than usual either falling asleep or staying asleep most nights or waking too early most mornings?" or "Did you sleep a lot more than usual?"); and fatigue "On most days, did you feel that you didn't have much energy?") (Kessler, 2001-2004). These criteria were used to define 12-month somatic depression. Having a diagnosis of Major Depressive Disorder with hierarchy within the past 12 months without the presence of all three somatic criteria was given a designation of 12-month pure depression.

The second criteria were used to define lifetime somatic depression. The same somatic criteria as 12-month somatic depression, as well as a diagnosis of lifetime Major Depressive Disorder with hierarchy, were used (Kessler, 2001-2004). A diagnosis of lifetime Major Depressive Disorder with hierarchy without the presence of all three somatic criteria was given a designation of lifetime pure depression.

Two questions from the DSM criteria for eating disorders were used to assess disordered eating symptoms: fear of fat ("Was there ever a time in your life when you worried a great deal or strongly feared being too fat or overweight?") and bingeing ("did you ever have a time in your life when you went on eating binges at least twice a week for several months or longer?"). These two questions were used because they acted as the screener questions for the eating disorders

category; all respondents of the survey were asked those questions, and participants were only asked further questions about disordered eating if they reported experiencing at least one of the symptoms. By using fear of fat and bingeing in the analysis, the largest possible sample size was allowed (Kessler, 2001-2004). Previous studies on somatic depression with smaller sample sizes asked questions more specific to body image and disordered eating (Silverstein, Perdue, Wolf, & Pizzolo, 1988; Silverstein & Patel, 2011); however, the two questions on fear of fat and bingeing were the ones most related to the hypothesis that were available in the NCS-A.

By comparing subjects with pure and somatic depression, a variable of depression type was created. This was done for both 12-month and lifetime depression. Depression type was then compared to rates of fear of fat and bingeing behaviors.

Separate analyses for males and females were also made for 12-month depression (pure and somatic) and lifetime depression (pure and somatic). This was done in order to determine if males and females experienced disordered eating symptoms at different rates concurrent with somatic depression, as has been reported in the literature (Silverstein, 1999).

In earlier studies of somatic depression, more specific, detailed criteria were included, such as gender limitations and ideas about gender roles (for example, feeling that they were not respected in their job, or that the man should be the head of the household (Silverstein & Lynch, 1998). However, in order to conduct this study using a large epidemiological database like the NCS-A, criteria had to be limited to the symptoms of major depression and eating disorders that were reported in the survey.

Results

Measures of both 12-month and lifetime depression were included in the analyses because the prevalence of lifetime depression is much higher, and therefore allows for more

powerful analyses. Approximately twice as many females (14.5%) as males (7.5%) reported having lifetime depression. This proportion remained about the same for 12-month depression, with 4.7% of males and 10.4% of females reporting.

A strong relationship exists in this sample between depression and symptoms of disordered eating. When comparing subjects with any type of lifetime depression (pure or somatic) and non-depressed subjects, and whether they reported a fear of fat, a chi-square test of independence found that the relationship between lifetime depression and fear of fat was significant for both male (X^2 (1, N = 4959) = 42.406, $p < .001$) and female (X^2 (1, N = 5179) = 115.619, $p < .001$) participants (Table 1). Almost half (47.8%) of subjects with lifetime depression reported a fear of fat, as opposed to only about a quarter (25.4%) of non-depressed subjects. This pattern also held true for the relationship between fear of fat and 12-month depression. A chi-square test of independence found that the relationship between 12-month depression and fear of fat was significant for both male (X^2 (1, N = 4959) = 25.466, $p < .001$) and female (X^2 (1, N = 5179) = 82.683, $p < .001$) participants.

A similar relationship was found between binging behavior and subjects reporting lifetime depression, compared to non-depressed subjects. A chi-square test of independence found that the relationship between bingeing and lifetime depression was significant for both male (X^2 (1, N = 4954) = 25.559, $p < .001$) and female (X^2 (1, N = 5178) = 65.660, $p < .001$) participants (Table 2). 12.7% of subjects with lifetime depression reported bingeing behavior, while only 5.2% of non-depressed subjects did. There was also a significant association between bingeing and depression for 12-month depression for both male (X^2 (1, N = 4954) = 19.012, $p < .001$) and female (X^2 (1, N = 5178) = 62.832, $p < .001$) participants.

After determining that a significant association existed between depression and disordered eating symptoms, we next sought to test if this relationship was stronger for somatic depression, as compared to pure depression. A chi-square test of independence found a significantly greater relationship between fear of fat and lifetime somatic depression compared to pure depression among respondents of both genders (Table 3). Male subjects with somatic depression were significantly more likely to have a fear of being too fat than male subjects with pure depression, X^2 (1, N = 361) = 4.120, p = .04. For males with pure depression, less than one quarter (23.1%) endorsed fear of fat; for somatic depression, this number increased to almost a third of the subjects (32.8%). Female subjects with somatic depression were also significantly more likely to have a fear of being too fat than female subjects with pure depression, X^2 (1, N = 723) = 4.482, p = .03. For the female subjects in the pure depression group, slightly less than half (49.5%) reported a fear of fat; this increased to almost three fifths (58.1%) of females in the somatic depression group. A significant relationship was also found among all respondents between 12-month somatic depression and fear of fat, X^2 (1, N = 744) = 7.759, p = .005. However, no significant relationships were found when the sample was broken down by gender; this may have been due to the smaller sample size for 12-month depression compared to lifetime depression (N = 744 vs. N = 1084).

Rates of bingeing behavior were also compared in subjects with lifetime pure depression and lifetime somatic depression. A chi-square test of independence did not find a significant relationship between lifetime depression type and bingeing, X^2 (1, N = 1084) = 0.192, $p > .05$ (Table 4). Rates of bingeing behavior reported by the two depression groups remained roughly static (11.6% for pure depression, 13.3% for somatic depression). A chi-square test of

independence also did not find a significant relationship between 12-month depression type and bingeing, X^2 (1, N = 744) = 0.707, $p > .05$.

The significant relationship between fear of fat and somatic depression compared to pure depression suggests that somatic depression is the variable connecting disordered eating and depression. However, a comparison of disordered eating symptoms in non-depressed subjects and those with pure depression shows that depression relates to fear of fat even in the absence of somatic depression. A chi-square test of independence found a significantly greater relationship between fear of fat and lifetime pure depression compared to subjects with no depression (Table 5). Male subjects with pure depression were significantly more likely to have a fear of fat than males with no depression, X^2 (1, N = 4747) = 6.817, $p = .009$. Almost a quarter (23.1%) of males with pure depression also had a fear of fat, while only 15.5% of males wi3th no depression did. This relationship was also significant for females, X^2 (1, N = 4641) = 16.675, $p < .001$. Nearly half (49.5%) of females with pure depression reported fear of fat, as opposed to only 35.7% of female subjects with no depression. A significant relationship was also found between 12-month pure depression and no depression for both male (X^2 (1, N = 4827) = 7.454, $p = .006$) and female (X^2 (1, N = 4779) = 10.934, $p = .001$) subjects. Due to a lack of significance being found between bingeing and any depression type, analyses were not run comparing pure depression vs. no depression and bingeing.

Discussion

This study found evidence that somatic depression is associated with a fear of being too fat, a behavior that is part of the diagnostic criteria for the eating disorder anorexia nervosa (American Psychiatric Association, 2013). Fear of fat is also commonly referred to in the literature as “drive for thinness” (Wiederman & Pryor, 2000). Concerns about weight and shape

are part of the criteria for somatic depression (Silverstein et al., 2013) but are not included in the criteria for major depressive disorder (American Psychiatric Association, 2013), so they were not available to be measured and included in the somatic depression criteria used for this study. Subjects with somatic depression were significantly more likely to experience fear of fat than depressed subjects without somatic features, giving evidence for the relationship between somatic depression and anorexia.

Fear of fat was found to be significantly more common among respondents with lifetime somatic depression than those with lifetime pure depression, but the significant relationship did not hold true for the 12-month measure of depression. This could be due to the lifetime group having more subjects, making it easier to obtain significant results. A distinction was seen in the levels of fear of fat in both males and females in the lifetime group, with subjects with somatic depression having significantly higher levels of fear of fat than those with pure depression.

Fear of fat was also found to have a stronger association with pure depression than no depression, which shows that the disordered eating symptoms that have been found to be related to major depressive disorder are not solely due to the presence of somatic depression. Other factors connecting depression and disordered eating could not be assessed by this study, but the results do point to their presence, and suggest that further research is needed. The design of the study itself may also have led to this result. A subject was categorized as having pure depression if they did not have all three somatic symptoms, meaning that someone could still have two somatic symptoms and have pure depression. A future study could examine if these somatic symptoms were impacting the association between pure depression and fear of fat by defining pure depression as only having one somatic symptom, or zero.

The present study also looked for associations between bingeing behavior and somatic depression, but no significant relationship was found with either 12 month or lifetime depression type. Like fear of fat, bingeing is another disordered eating behavior that occurs in both eating disorders and somatic depression (American Psychiatric Association, 2013; Silverstein et al., 2013). However, the lack of association in this sample may be due to the age range of the participants of the NCS-A, which was limited to participants aged 13-18 (Kessler, 2001-2004). Unlike anorexia and bulimia, binge eating disorder has a later onset, from late adolescence to early adulthood (American Psychiatric Association, 2013). Past research on somatic depression that found binging behavior associated with the disorder was mostly conducted on an older, college-aged sample, which is more in line with the population that experiences binge eating disorder (Silverstein et al., 1988). Potentially because of this age effect, there were also fewer participants in the bingeing groups for both lifetime and 12-month depression compared to the fear of fat groups (143 vs. 529 for lifetime depression, 107 vs. 372 for 12-month depression). This could have contributed to more significant results being found in association with fear of fat compared to bingeing.

One of the main limitations of this study was the design of the NCS-A survey, which prevented the inclusion of other disordered eating symptoms in the analysis, such as purging and restricting. Many of the questions were designed to eliminate participants as soon as they responded “no”; this creates less work for the researchers giving the survey, as the majority of participants are not likely to have conditions like eating disorders, but it also prevents the opportunity for analysis of participants who fulfil some criteria for a disorder and not others. For example, if a participant responded “no” to the question asking if fear of fat occurred during a period of being underweight, they were not able to answer any further questions on restrictive

eating or weight loss (Kessler, 2001-2004). This eliminates many people who may have been experiencing disordered eating without being underweight, which is not a requirement for a diagnosis of an eating disorder (American Psychiatric Association, 2013). Similarly, responding "no" to the question about binging prevented participants from answering questions about laxative or diuretic abuse, or purging (Kessler, 2001-2004). Binging is not a prerequisite for these behaviors, and having the survey designed in such a way has the potential to exclude many people with disordered eating (American Psychiatric Association, 2013).

The age of the NCS-A sample itself is also a limitation; the data were collected from 2001 to 2004, and therefore represents the mental health of United States teenagers roughly fifteen years ago. This may especially come into play considering changing attitudes regarding body shape among adolescent girls, and the corresponding effect that could have on their mental health. Social media has helped proliferate ideas of body positivity, giving more girls the idea that their self-worth is not equated with thinness (Retallack, Ringrose, & Lawrence, 2016). The fat activism movement is also gaining increasing attention due to social media; it declares that a person should feel happy and comfortable in their body and live a life free from stigma, no matter their size (Lupton, 2018). This attitude lies in stark contrast with the fear of fat that underlies somatic depression and disordered eating (Silverstein, Cohen, & Kasen, 2006). As the subjects of the NCS-A were not entangled with social media as teenagers of today are, it is impossible to know the effects of such movements on adolescent girls' rates of somatic depression and disordered eating. A future study on somatic depression should account for this by including measures of the participants' social media use; whether they spend their time consuming body positive accounts or "thinspo" materials could have a significant effect on their

body image, and other factors that contribute to somatic depression and disordered eating (Park, Sun, & McLaughlin, 2017).

Several future avenues of research can be based on the current study. The NCS-A did not collect data on subjects' sexual orientation, which made analysis based on this impossible. Study has found that eating disorders differ drastically in how they affect sexual minority men vs heterosexual men (Feldman & Meyer, 2007). This is largely thought to be due to objectification, as well as cultural aspects of the gay community that emphasize thinness and muscularity (Feldman & Meyer, 2007; Wiseman & Moradi, 2010). The pattern of disordered eating in gay and bisexual men largely mirrors the effects of culture and objectification on women's eating behaviors and body image, the same pattern of behaviors seen in somatic depression (Moradi et al., 2005; Silverstein & Blumenthal, 1997; Silverstein et al., 1995). With these connections in mind, it would be interesting to see if the relationship between sexual orientation and disordered eating in men holds true for somatic depression.

The NCS-A sample also did not have data on when subjects experienced puberty, which is known to have an effect on girls' mental health (Mendle, Turkheimer, & Emery, 2007). It has been noted that women are most vulnerable to depression during times of hormonal change, such as menopause, before their menstrual cycles, and after giving birth; with the rapid fluctuation of estrogen levels seen in puberty, girls can be prone to depressive symptoms (Shors & Leuner, 2003). A future study could also explore the sexualization and objectification of girls that occur during puberty, and how it can contribute to disordered eating behaviors and depressive symptoms. Once girls go through puberty, they begin to be sexualized by society and their peers, even though mentally and emotionally they are still children. Being objectified in this way can lead to self-objectification, in which girls see their bodies as objects to be evaluated and

used (Lindberg, Grabe, & Hyde, 2007). Levels of body shame are increased by self-objectification, and body shame has been found to be a mediator between self-objectification and disordered eating and depression in both adolescent girls and adult women (Noll & Fredrickson, 1998; Grabe, Hyde, & Lindberg, 2007; Tiggemann & Kuring, 2004).

Another direction for further study could explore whether the social and societal roles that women are put in can have a deleterious effect on their mental health. Evidence was found in several studies that women who had fathers who were viewed by their daughters as having a preference for males and mothers that they perceived as being limited by their gender had higher rates of somatic depression than women who did not evaluate their families in this way. The treatment by their fathers and the modelling of their mothers may have left these women feeling that they had little chance to rise above the way they were raised to be successful and independent. This sense of defeat, which may have been in response to developing the type of body that defined an adult woman, was turned inward towards their bodies, manifesting as somatic symptoms, disordered eating, and depressed mood (Silverstein, Caceres, Perdue, & Cimarolli, 1995; Silverstein & Lynch, 1998).

Somatic depression and eating disorders both have serious consequences for their sufferers, from a decreased quality of life due to numerous physical and emotional symptoms for somatic depression to a heightened mortality rate for eating disorders (Silverstein, 1999; American Psychiatric Association, 2013). Neither disorder responds well to treatment with antidepressants, making the disorders more difficult to treat (Silverstein & Patel, 2011; Aigner et al., 2011). Increasing understanding of how the two disorders intersect should be the first step in determining whether disordered eating accompanying depression should be classified as a

separate condition from Major Depressive Disorder, and if treatment would be more effective if they were managed as somatic depression, a single unifying disorder.

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Table 1
Fear of fat in depressed vs non-depressed male and female respondents to the NCS-A, using lifetime criteria for depression.

		No Fear of Fat	Fear of Fat
Male	Depression	266 (71.5%)	106 (28.5%)
	No Depression	3877 (84.5%)	710 (15.5%)
		No Fear of Fat	Fear of Fat
Female	Depression	327 (43.6%)	423 (56.4%)
	No Depression	2847 (64.3%)	1582 (35.7%)
		No Fear of Fat	Fear of Fat
Total	Depression	593 (52.9%)	529 (47.1%)
	No Depression	6724 (74.6%)	2292 (25.4%)

**Percentages are for rows*
Male: X^2 (1, N = 4959) = 42.406, $p < .001$
Female: X^2 (1, N = 5179) = 115.619, $p < .001$
Total: X^2 (1, N = 10138) = 234.532, $p < .001$

Table 2
Bingeing in depressed vs non-depressed male and female respondents to the NCS-A, using lifetime criteria for depression.

		No Bingeing	Bingeing
Male	Depression	331 (89.0%)	41 (11.0%)
	No Depression	4358 (95.1%)	224 (4.9%)
		No Bingeing	Bingeing
Female	Depression	648 (86.4%)	102 (13.6%)
	No Depression	4181 (94.4%)	247 (5.6%)
		No Bingeing	Bingeing
Total	Depression	979 (87.3%)	143 (12.7%)
	No Depression	8539 (94.8%)	471 (5.2%)

**Percentages are for rows*
Male: X^2 (1, N = 4954) = 25.559, $p < .001$
Female: X^2 (1, N = 5178) = 65.660, $p < .001$
Total: X^2 (1, N = 10132) = 99.050, $p < .001$

Table 3
Fear of fat in pure depressed vs somatic depressed male and female respondents to the NCS-A, using lifetime criteria for depression.

		No Fear of Fat	Fear of Fat
Male	Pure Depression	123 (76.9%)	37 (23.1%)
	Somatic Depression	135 (67.2%)	66 (32.8%)
		No Fear of Fat	Fear of Fat
Female	Pure Depression	107 (50.5%)	105 (49.5%)
	Somatic Depression	214 (41.9%)	297 (58.1%)
		No Fear of Fat	Fear of Fat
Total	Pure Depression	230 (61.8%)	142 (38.2%)
	Somatic Depression	349 (49.0%)	363 (51.0%)

**Percentages are for rows*
Male: X^2 (1, N = 361) = 4.120, p = .04
Female: X^2 (1, N = 723) = 4.482, p = .03
Total: X^2 (1, N = 1084) = 16.116, p < .001

Table 4
Bingeing in pure depressed vs somatic depressed male and female respondents to the NCS-A, using lifetime criteria for depression.

		No Bingeing	Bingeing
Male	Pure Depression	144 (90.0%)	16 (10.0%)
	Somatic Depression	178 (88.6%)	23 (11.4%)
		No Bingeing	Bingeing
Female	Pure Depression	185 (87.3%)	27 (12.7%)
	Somatic Depression	439 (85.9%)	72 (14.1%)
		No Bingeing	Bingeing
Total	Pure Depression	329 (88.4%)	43 (11.6%)
	Somatic Depression	617 (86.7%)	95 (13.3%)

**Percentages are for rows*
Male: X^2 (1, N = 361) = 0.192, p = > .05
Female: X^2 (1, N = 723) = 0.232, p > .05
Total: X^2 (1, N = 1084) = 0.192, p > .05

Table 5
Fear of fat in non-depressed vs pure depressed male and female respondents to the NCS-A, using lifetime criteria for depression.

		No Fear of Fat	Fear of Fat
Male	No Depression	3877 (84.5%)	710 (15.5%)
	Pure Depression	123 (76.9%)	37 (23.1%)
		No Fear of Fat	Fear of Fat
Female	No Depression	2847 (64.3%)	1582 (35.7%)
	Pure Depression	107 (50.5%)	105 (49.5%)
		No Fear of Fat	Fear of Fat
Total	No Depression	6724 (74.6%)	2292 (25.4%)
	Pure Depression	230 (61.8%)	142 (38.2%)

**Percentages are for rows*
Male: X^2 (1, N = 4747) = 6.817, p = .009
Female: X^2 (1, N = 4641) = 16.675, p < .001
Total: X^2 (1, N = 9388) = 30.244, p < .001