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# Epidemiology and Sociocultural Aspects of Non-suicidal Self-Injury and Eating Disorders

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### Abstract

Eating disorders (ED), including anorexia nervosa, bulimia nervosa, and binge-eating disorder, and non-suicidal self-injury (NSSI) are significant public health problems among adolescents and young adults. This chapter reviews the overlap between these behaviors, focusing on epidemiological and sociocultural characteristics that may be related to the high degree of comorbidity within patients. Eating disorders and NSSI fall along the continuum of self-harm, and up to 72 % of people with an ED also engaging in NSSI and up to 54 % of people who engage in NSSI report comorbid eating pathology. The likelihood of engaging in NSSI is greater among patients with purging-type EDs than those with non-purging-type EDs, suggesting an etiological link between purging and NSSI. Those engaging in ED and NSSI are at an increased risk for suicidal behaviors and are likely to have certain comorbidities including Borderline Personality Disorder, depressive symptoms, and substance use. Further, people with comorbid ED and NSSI are at an increased risk for experiencing traumatic events and having negative attitudes toward their bodies. Clinical implications for assessment and treatment of individuals with ED and NSSI are discussed throughout the chapter.

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## 2.1 Introduction

Eating disorders (ED), including bulimia nervosa (BN), anorexia nervosa (AN), and binge-eating disorder (BED), and non-suicidal self-injurious (NSSI) behaviors, including self-cutting and burning, are significant public health problems among adolescents and young adults. Each of these behaviors falls along the continuum of self-harm. Eating disorders may be conceptualized as the less direct, although not

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less severe, form of self-harm characterized by engagement in aberrant eating patterns that may include restricting food intake and/or purging behaviors. NSSI is defined as direct and purposeful damage to body tissue intended to inflict harm but not death to oneself (Jacobson & Gould, 2007). While they seem to fall along the same behavioral continuum, there may be a “dimensional link” between certain types of direct NSSI and purging behaviors common to eating disorders (Favaro, Ferrara & Santonastaso, 2007). Neither eating disorders nor NSSI are suicidal in nature; however, people who suffer from EDs are at increased risk for premature death, both due to all-cause mortality (especially for anorexia nervosa) and suicide (Button, Chadalavada & Palmer, 2010; Crow et al., 2009; Rosling, Sparén, Norring & Knorrning, 2011), and those who engage in NSSI are at an elevated risk of suicidal behaviors, and therefore, death, as well (Asarnow et al., 2011).

Although the 12-month prevalence rate of diagnosed eating disorders among adolescents and young adults is relatively low, between 0.3 and 1.6 % for adolescents (Swanson, Crow, LeGrange, Swendsen & Merikangas, 2011) and between 0.5 and 2.15 % for adults (Preti et al., 2009), up to 22 % of adolescents report engaging in some type of disordered eating each year (Jones, Bennett, Olmsted, Lawson & Rodin, 2001). With regard to specific types of eating disorders, estimates suggest a lifetime prevalence rate of 0.5 % for anorexia nervosa, 0.5 % for bulimia nervosa, and 1.12 % for binge-eating disorder among adults (Preti et al., 2009). Among adolescents the lifetime prevalence rate for anorexia nervosa is suggested to be 0.3 %, for bulimia nervosa 0.9 %, and for binge-eating disorder 1.6 % (Swanson et al., 2011). Additionally, up to 27 % of adolescents and 7 % of young adults report engaging in some form of NSSI each year (Lloyd-Richardson, Perrine, Dierker & Kelley, 2007; Whitlock et al., 2011), with between 4 and 12 % of high school students and young adults cutting themselves annually (Gratz, Conrad & Roemer, 2002; Lloyd-Richardson et al., 2007; Whitlock et al., 2011). However, it is important to note that there is a significant amount of overlap between these two behaviors as reported in several empirical research reports. Specifically, up to 72 % of those with eating disorders also engage in NSSI (Claes, Vandereycken & Vertommen, 2001, 2004; Favaro & Santonastaso, 1998; Tobin & Griffing, 1995; see Svirko & Hawton, 2007 for review), and between 25 and 54 % of people who engage in NSSI report comorbid disordered eating (Gollust, Eisenberg & Golberstein, 2008; Herpertz, 1995; Whitlock, Eckenrode & Silverman, 2006).

Due to the high degree of overlap between these two distinct types of behaviors that result in physical harm to oneself, it is likely that there is a common underlying etiology, and it is apparent that they share some phenomenological components linked to epidemiological and sociocultural factors (Svirko & Hawton, 2007). The current chapter will provide a comprehensive overview of the epidemiological and sociocultural aspects of the overlap between eating disorders and non-suicidal self-injurious behaviors. Specifically, we report on the demographic (including gender, age, ethnic, psychiatric profile) and sociocultural (including cultural values, family structure, and life experiences) characteristics of people with eating disorders who also engage in NSSI, and then, conversely, of people who engage in NSSI, who also engage in disordered eating, with the ultimate goal of providing an initial

understanding of the mechanisms underlying the overlap and providing implications for clinicians in terms of assessment and treatment for clients engaging in NSSI and/or disordered eating behaviors. To achieve this goal, we reviewed three types of studies: (1) large epidemiological, community-based surveys that assess the presence of both ED and NSSI and report on the overlap and predictors of the different possible combinations of the two (strongest design for purposes of this chapter), (2) general population and clinically based studies that focus on patients with eating disorders primarily and then assess presence of comorbid NSSI, and, finally, (3) general population and clinically based studies that focus primarily on NSSI and also assess comorbidity of ED. The search terms included Eating Disorder, non-suicidal self-injury, self-injurious behaviors, and self-harm behavior. For NSSI, we included only articles that differentiated between NSSI and suicidal behaviors when possible, although some of the earlier articles and/or those conducted in Europe used a definition of NSSI that did not specifically denote absence of suicidal intent within the definition.

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## 2.2 Eating Disorders and NSSI

To most accurately examine the overlap and shared demographic and cultural features of ED and NSSI, a community-based sample in which both behaviors are assessed and reported on separately AND together is needed. To our knowledge only one such study exists. Wright, Bewick, Barkham, House and Hill (2009) assessed the presence of both ED and NSSI among a large sample ( $n = 5860$ ) of university students in the UK over the course of several years using two different questionnaires. For the first questionnaire, the overall recent ("during the current semester") prevalence rate of eating problems fell around 13 %, while the overall presence of recent NSSI was 7.4 %. There were no differences based on gender for either NSSI or ED; however, females were more likely to indicate more extreme problems with eating than males. In terms of overlap, 4.5 % ( $n = 227$ ) of those who completed the first questionnaire endorsed both recent ED and NSSI. Among those who completed the second questionnaire (which included a more in-depth assessment of disordered eating behaviors), 24.7 % of females and 8 % of males had elevated ED symptoms associated with a potential ED, whereas 9.7 % of females and 7 % of males had recently engaged in NSSI. Among the 805 participants who completed the second questionnaire, 4.9 % had a likely ED and recent NSSI. Among the females, there was a significant relationship between engagement in NSSI and disordered eating; however, this was not the case for males, as only one male with an ED also reported NSSI. Interestingly, half of those with a history of NSSI also had a likely ED, whereas 20 % of those with likely ED also engaged in NSSI, suggesting the likelihood of comorbidity is higher among those who self-injure than those with ED. Further, those who had ED and NSSI had an earlier age of onset of their ED symptoms than those with only ED symptoms. This study provides important information regarding the likelihood of comorbidity of NSSI and ED within a large, community sample; however, it fails to answer questions

regarding shared or unique risks factors and correlates of engaging in one versus both behaviors.

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### 2.3 The Occurrence of NSSI Among People with Eating Disorders

**Prevalence.** Quite a large body of research exists that examines the epidemiologic and sociocultural characteristics of people with eating disorders who also engage in self-injurious behaviors. Among people with an eating disorder, the prevalence rates for co-occurring engagement in NSSI range from 12.5 to 72 % (e.g., Anderson, Carter, Mcinstosh, Joyce & Bulik, 2002; Claes, Klonsky, Muehlenkamp, Kuppens & Vandereycken, 2010; Favaro & Santonastaso, 1998; Ruuska, Kaltiala-Heino, Rantanen & Koivisto, 2005; Svirko & Hawton, 2007). There is a large amount of variability across studies that is likely due to a variety of factors including, but not limited to, differing definitions and assessments of ED and NSSI, largely different samples sizes, and use of prospective versus retrospective (i.e., chart review) designs. For example, the study that found the smallest amount of co-occurrence (12.5 %) had 152 participants and only 19 of those participants had BN (Anderson et al., 2002) and the other participants were utilized as controls, whereas the largest amount of co-occurrence (72 %) was found in the study that had over 125 participants with BN (Favaro & Santonastaso, 1998). Peebles, Wilson and Lock (2011) conducted a chart review of 1,432 10–21-year-olds being treated for an eating disorder at an outpatient clinic. NSSI was identified in 40.8 % of patients, although only 50 % of the charts had documented that NSSI was assessed; therefore, this prevalence rate may be an underestimation.

When examining the different subtypes of eating disorders and comorbid NSSI, the ranges in prevalence across studies are also quite large. The prevalence of people who are diagnosed with anorexia and also engage in NSSI ranges from 14.7 to 63.6 % (e.g. Ahrén-Moonga, Holmgren, Von Knorring & Af Klinteberg, 2008; Favaro & Santonastaso, 1996; Ruuska et al., 2005; Wiederman & Pryor, 1995). The prevalence of people who are diagnosed with bulimia and also engage in NSSI ranges from 22.9 to 55.6 % (e.g., Ahrén-Moonga et al., 2008; Claes et al., 2001; Ruuska et al., 2005). The prevalence of people who are diagnosed with ED-NOS, including BED, and also engage in NSSI ranges from 15.8 to 35.8 % (i.e., Favaro & Santonastaso, 1996; Paul, Schroeter, Dahme & Nutzinger, 2002).

Some evidence suggests that bulimic and purging-type eating behaviors are associated with an increased risk for engaging in NSSI compared to having a history of only engaging in restrictive or binge-eating behaviors with no purging. In one of the earlier studies to assess NSSI within ED, Favaro and colleagues (1996) found that NSSI is more common within the patients who engaged in purging behaviors regardless of whether they had anorexia or bulimia. Specifically, approximately one quarter of those with anorexia purging subtype also engaged in NSSI, whereas only 7 % of those who did not purge engaged in NSSI. For those with

bulimia, approximately 33 % of those who purged also engaged in NSSI, whereas only 8.6 % of those with bulimia non-purging subtype reported NSSI. Paul et al. (2002) completed a study utilizing 378 female inpatients who were either diagnosed with Eating Disorder-Not Otherwise Specified (ED-NOS), AN, or BN. They found that there are higher rates of NSSI in those with BN and ED-NOS than in those with AN. Ruuska et al. (2005) studied 57 female outpatients who were diagnosed with either AN or BN. They found that both suicidal ideation and NSSI were more common in individuals with BN than individuals with AN. Further, among a group of 422 females being treated on an inpatient unit for ED, those with binge-purging subtypes of ED engaged in NSSI using more methods than those with the other ED types (non-purging), although eating disorder subtype was not significantly associated with frequency or duration of NSSI (Muehlenkamp, Claes, Smits, Peat & Vandereycken, 2011). Finally, in the large chart review study, risk factors for engaging in NSSI included female gender, history of bulimia nervosa, binge-eating disorder with purging, comorbid psychiatric diagnosis, and abuse (Peebles et al., 2011). The stronger link between purging-type EDs and NSSI in comparison to non-purging EDs suggests that purging and NSSI fall close to one another on the self-harm continuum as purging requires more proactive, deliberate action on one's body, similar to NSSI, in comparison to the more passive action of restricting food intake (Favaro et al., 2007). Further, these findings suggest that clinicians should routinely assess for NSSI among patients with ED, especially those who are engaging in purging behaviors.

**Age of Onset.** Engagement in each type of self-harm behavior (ED and NSSI) is associated with an age of onset in the teen years (NSSI: Jacobson & Gould, 2007; Swanson et al., 2011; ED: American Psychiatric Association, 2000; Kimura, Tonoike, Muroya, Yoshida & Ozaki, 2007; Stice, Killen, Hayward & Taylor, 1998). It is unclear whether there is a difference in age between those who engage in NSSI and those who do not among people with eating disorders; however, there is some evidence to suggest that those who eventually engage in both disordered eating and NSSI may have an earlier age of onset of symptoms than those who only engage in disordered eating (Wright et al., 2009). With regard to "which comes first," some research indicates that the disordered eating is more likely to precede the self-injury than the other way around. For example, Paul et al. (2002) studied 376 female inpatients all with a diagnosis of either AN, BN, or BED. They found that the onset of NSSI occurred after the onset of ED in 49.2 % ( $n = 64$ ) of their participants and the onset of NSSI occurred before the onset of ED in 25.4 % ( $n = 33$ ) of their participants. For the remaining participants the behaviors co-occurred. This study suggests that it is more common for the self-injuring to begin after the development of the eating disorder; however, it is also common that they develop simultaneously. This suggests that clinicians treating patients with eating disorders should not only assess for NSSI at the start of treatment but should continue to do so throughout the course of treatment.

**Gender.** Eating disorders are more prevalent among women across several studies and meta-analyses (Preti et al., 2009; Swanson et al., 2011), though not all studies find a gender difference (i.e., Wright et al., 2009). A large epidemiological study conducted in the UK did not find a difference based on gender in eating disorder status (Wright et al., 2009); however, this was a self-report study in which no formal assessment of ED was used, and this study did find that females were more likely to report a severe eating problem than males. Conversely, whether NSSI is more common in females, as many believe, is very uncertain with approximately 50 % of empirical studies finding a gender difference, including a large-scale epidemiological study of young adults that found that females were more likely to report lifetime NSSI; however, there was no difference between males and females in past year NSSI (Whitlock et al., 2011). In a recent paper, Latzman et al. (2010) concluded that findings suggest the prevalence of NSSI within the USA seems equal among males and females, whereas data point to a higher rate among females than males outside of the USA (e.g., Europe). However, again, it should be noted that NSSI was equally prevalent among males and females in the large study conducted in the UK by Wright et al. (2009).

The relationship between gender and risk for engaging in NSSI among patients with ED is unclear. One study found that males with ED were more likely than females to also engage in NSSI than females with ED (Gollust et al., 2008). Conversely, in another study being female was associated with a greater risk for engaging in NSSI in a multivariate model predicting NSSI among 1,432 patients in treatment for ED (Peebles et al., 2011).

**Ethnicity.** Data from large-scale epidemiologic studies within the USA (such as the national comorbidity adolescent replication study) suggest Hispanic adolescents are at elevated risk for bulimia nervosa and possibly BED, while Whites are at increased risk for anorexia (Swanson et al., 2011). The Wright et al. (2009) study found no difference in eating pathology based on ethnicity; however, in this study a very large majority of the participants were White. Regarding NSSI, recent research indicates that the association between ethnicity and NSSI may be quite complex (Gratz et al., 2012; Latzman et al., 2010). When evaluating a main effect of ethnicity on NSSI, some studies of high school students (e.g., Lloyd-Richardson et al., 2007) found a higher rate of NSSI reported by White children, whereas one study of middle school students (Hilt, Nock, Lloyd-Richardson & Prinstein, 2008) and another study of young adults (Wright et al., 2009) did not find a difference in NSSI based on ethnicity. One group of researchers (Gratz et al., 2012; Latzman et al., 2010) identified an interaction between ethnicity and gender in predicting NSSI with African American (AA) boys reporting higher rates of NSSI overall than AA girls, White boys, and White girls among a sample of low SES adolescents. However, it is very interesting to note that while the rate of NSSI was higher among AA boys in middle school, this flipped in high school with White youth engaging in NSSI more frequently. Further, while there was no gender difference in NSSI overall, boys were more likely than girls to engage in burning and hitting.



Very few studies have assessed whether the overlap of NSSI and ED among ED patients varies based upon ethnicity; clearly much more research is needed in this area. Dohm et al. (2002) conducted a study utilizing both Black and White women all with BED ( $n = 162$ ) or BN, purging type ( $n = 53$ ). Nearly 12 % of the White women with bulimia engaged in NSSI and 9.1 % of the Black women with bulimia engaged in NSSI. Of those with BED, 19.6 % of the White women also engaged in NSSI, whereas only 1.7 % ( $n = 1$ ) of the Black women engaged in NSSI. Although this difference in prevalence of comorbid NSSI by ethnicity in the BED group seems very large, it was not significant, likely due to the small sample size and low power.

**Psychiatric Comorbidity/Overall Severity.** The comorbid psychiatric diagnoses of people with eating disorders and NSSI are similar and include Obsessive Compulsive Disorder (OCD), drug and alcohol abuse, Borderline Personality Disorder (BPD), and depression and anxiety (NSSI: Jacobson, Muehlenkamp, Miller & Turner, 2008; Nock, Joiner, Gordon, Lloyd-Richardson & Prinstein, 2006; ED: Halmi, Marchi, Sampungnar, Apple & Cohen, 1991; Garfinkel et al., 1995; Wildman, Lilenfeld & Marcus, 2004).

A fair amount of research has addressed whether specific comorbid diagnoses are associated with engagement in NSSI among people with eating disorders (Ahrén-Moonga et al., 2008; Claes, Vandereycken & Vertommen, 2003; Favaro et al., 2008; Lacey, 1993; Peebles et al., 2011; Welch & Fairburn, 1996; Wildman et al., 2004). Findings indicate that the likelihood of having comorbid Borderline Personality Disorder (BPD) among those with eating disorders may be greater if the patient also engaged in NSSI (Claes et al., 2003; Favaro et al., 2008). Although, it is important to note that not all studies have confirmed the association of BPD in people with ED and NSSI in comparison to ED only (i.e., Ahrén-Moonga et al., 2008). There is also some evidence to suggest that the presence of comorbid substance/alcohol abuse is increased in those with eating disorders and NSSI in comparison to those with only ED (Favaro et al., 2008; Lacey, 1993; Peebles et al., 2011). Finally, some evidence suggests rates of mood disorder, including depression and anxiety, may be elevated in people who engage in both NSSI and disordered eating in comparison to those with only ED (Claes et al., 2003; Peebles et al., 2011).

With regard to suicide attempts and completed suicide, although limited research studies have empirically assessed the relationship, it is likely that the risk for engaging in suicidal behaviors is greater among those with comorbid ED and NSSI than in people with ED with no history of self-injurious behaviors. There is a considerable amount of within-person overlap of NSSI and suicide attempts (Jacobson & Gould, 2007). Additionally, NSSI is a risk factor for future suicide attempts (e.g., Asarnow et al., 2011). One study that directly assessed this relationship supports this assumption: among a sample of 95 patients with bulimia nervosa, those who reported impulsive NSSI behaviors, such as cutting, burning, and self-hitting, were at an increased risk for also having engaged in suicide attempts than those who did not (Favaro et al., 2008).

Finally, one unique study examined the comorbidity pattern, including age of onset of different Axis I disorders, among a group of 54 women with eating disorders, half of whom had a history of NSSI and suicide attempts (this group was called the parasuicidal group in this study; Wildman et al., 2004). While we comment on the findings of this study, it is important to note the methodological limitation as suicidal behaviors and NSSI were grouped together. Results indicated that while all women experienced comorbid major depression, an anxiety diagnosis was significantly more common in the suicide/NSSI group. Substance abuse was present in about half of the participants, and the likelihood of this did not differ based on self-harm status. Interestingly, those in the suicide/NSSI group were more likely to have been diagnosed with major depression before the eating disorder than those not in the suicide/NSSI group, while there were no differences based on self-harm status in onset of anxiety or substance use. The implications of this study suggest that clinicians working with patients who are suffering from anxiety and eating disorders should closely monitor for NSSI as well.

**Cultural Factors.** Both disordered eating behavior and self-injurious behaviors involve an attack on the body that may be driven by a dislike for oneself and one's own body. Both people who engage in NSSI and those with eating disorders seem to have a negative impression of and relationship toward their own bodies that may be related to our cultural values and proclivity toward thinness (e.g., ED: Stice & Shaw, 1994; Striegel-Moore & Bulik, 2007; NSSI: Muehlenkamp, Swanson & Braush, 2005).

Several reports have identified a link between the cultural value of "thin as beautiful" and disordered eating (e.g., Stice & Shaw, 1994; Striegel-Moore & Bulik, 2007). It is hypothesized and supported empirically that internalization of the thin ideal leads to dissatisfaction with one's body which then leads to disordered eating, including bulimia and anorexia (Griffiths et al., 1999, 2000; Stice & Agras, 1998). Additionally, several investigations have noted a link between body dissatisfaction or objectification and risk for engagement in NSSI (Favaro et al., 2007; Muehlenkamp et al., 2005; Nelson & Muehlenkamp, 2012; Ross, Heath & Toste, 2009). Although not yet studied empirically, it is likely that the body dissatisfaction and objectification experienced by those who self-injure may also be linked to the cultural value of thinness. With regards to the co-occurrence of NSSI behaviors within people with eating disorders, a growing body of research suggests that body disgust and dissatisfaction are even more elevated among those with ED who also self-injure than people with ED only (Claes et al., 2003; Muehlenkamp et al., 2011; Solano, Fernandez-Aranda, Lopez & Vallejo, 2005). Thus, clinicians may want to consider assessing and treating body dissatisfaction as part of their work with clients who report both NSSI and ED.

**Family Environment.** Research indicates that people who engage in disordered eating behaviors or NSSI report increased interpersonal difficulties and poor interpersonal relationships compared to healthy controls (e.g., NSSI: Hankin & Abela,



2011; Hilt et al., 2008; ED: Hartmann, Zeeck & Barrett, 2010; McIntosh, Bulik, McKenzie & Jordan, 2000). The interpersonal difficulties experienced may be associated with familial relationships. There are few studies that speak of the effects of family environment in relation to engaging in NSSI among people with eating disorders. Claes et al. (2004) studied 131 female ED patients diagnosed with anorexia restrictive subtype (AN-R), anorexia purging subtype (AN-P), bulimia nervosa purging subtype (BN-P), or bulimia nervosa non-purging subtype (BN-NP), 47.3 % of whom also engaged in NSSI. The patients who self-injured described their family environment as "less cohesive, expressive, and more conflictual (p. 496)" than patients who did not self-injure. These results are quite interesting in light of the fact that there is a growing body of evidence showing that people who engage in NSSI tend to be less emotionally expressive than their non-self-injuring peers (e.g., Gratz, 2006). Living in a family environment where expression of emotions is not encouraged or modeled may lead individuals to internalize the value that expressing oneself to others is not appropriate. Furthermore, in another study completed by Claes, Soenens, Vansteenkiste & Vandereycken (2012), which included 95 women with various eating disorders, 38.9 % of whom engaged in NSSI, those with comorbid NSSI and EDs scored higher on scales of evaluative concerns perfectionism and perceived parental criticism. It was found that evaluative concerns perfectionism partially mediates the relationship between perceived parental concern and NSSI. The authors conclude that women with ED who perceive their parents as critical may internalize that view and become more critical of themselves leaving them at an increased risk for NSSI. This conclusion is consistent with previous research among adolescent self-injurers that found that internalized criticism indeed mediated the relationship between abuse and NSSI (Glassman, Weirich, Hooley, Deliberto & Nock, 2007). As self-criticism appears to play an important role with regard to both ED and NSSI, treatment strategies should target negative cognitions about oneself and aim to increase positive self-talk and feelings of self-worth.

**Trauma and Abuse.** Difficult experiences during childhood are integral to the development of both eating disorders and NSSI. For example, a history of trauma, specifically, physical and sexual abuse, is associated with increased risk for developing an ED (e.g., Schmidt, Humfress & Treasure, 1997; Steiger et al., 2010; Wonderlich, Brewerton, Jolic, Dansky & Abbott, 1997) and engagement in NSSI (e.g., Klonsky & Moyer, 2008; Lipschitz et al., 1999; Muehlenkamp, Kerr, Bradley & Adams-Larson, 2010; Zoroglu et al., 2003).

There is a growing body of research that has identified a link between experiencing abuse as a child and engagement in NSSI among people with ED. Various studies conducted in both the USA and Europe indicate that abuse of various types (emotional, sexual, and physical) predicts engagement in NSSI among people with ED (Claes et al., 2003; Claes & Vandereycken, 2007; Dohm et al., 2002; Favaro & Santonastaso, 1998; Paul et al., 2002; Tobin & Griffing, 1995). In one study that examined the link between abuse and NSSI within 70 women with severe eating disorders, results indicated that the strength of the

relationship between abuse and NSSI varied as a function of specific type of abuse (Claes et al., 2003). Emotional abuse was the least strongly associated with NSSI (although this link was significant and relatively robust) and sexual intimidation was the most strongly associated with NSSI. Additionally, the women who engaged in two or more forms of NSSI reported experiencing more traumatic experiences compared to those who engaged in only one form of NSSI. Finally, there is some evidence to suggest that the association between abuse and NSSI may be indirect in that childhood trauma has an indirect link to NSSI that is expressed via body dissatisfaction, low self-esteem, psychopathology, and dissociation (Muehlenkamp et al., 2011). The apparent link between abuse and NSSI and ED highlights the need for clinicians working with people with ED and NSSI to assess for history of abuse and, if present, assess for PTSD and provide relevant treatment when needed.

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## **2.4 Eating Disorders Within People Who Engage in NSSI**

As described above, there is a relatively large body of research that hones in on the presence of NSSI within samples of people with ED. In comparison, there is a small amount of research that has assessed the predictors or correlates of engaging in disordered eating among samples of people who self-injure. This section will review this literature base that dates back to Favazza and Conterio's (1989) early report. Of the studies mentioned in the following section, three include a sample in which the entire sample engaged in NSSI (i.e., Favazza & Conterio, 1989; Herpertz, 1995; Murray, MacDonald & Fox, 2008) and five assessed community samples with a focus on NSSI and examined whether NSSI was a risk for eating pathology (Favaro et al., 2007; Gollust et al., 2008; Hilt et al., 2008; Ross et al., 2009; Whitlock et al., 2006).

The prevalence of eating pathology among those who engage in NSSI ranges from 24 to 61 % (Favazza & Conterio, 1989; Favaro et al., 2007; Gollust et al., 2008; Herpertz, 1995; Whitlock et al., 2006). The large degree of variability across studies is due partially to differences in participant groups, with clinical samples of adults (i.e., Herpertz, 1995) reporting greater comorbidity than samples of university students (e.g., Gollust et al., 2008; Whitlock et al., 2006) or women in the community (Favaro et al., 2007). The type of eating pathology associated with people who engage in NSSI seems to range fairly consistently across anorexia, bulimia, binge eating, and even obesity (Favazza & Conterio, 1989; Hilt et al., 2008; Ross et al., 2009); however, only a few studies have noted formal psychiatric diagnoses of specific eating disorders and most used self-report methods. The one study that assessed NSSI and eating pathology among junior high students confirmed an association between NSSI and aberrant body perception and eating behavior (Hilt et al., 2008). Specifically, among a sample of 508 junior high students, engagement in NSSI was associated with an increased risk for fasting, bingeing, and perception of being overweight, even though those who engaged in NSSI and those who did not were equivalent with regard to actual height and weight. The same is true for a sample of high school students, in which reporting

a history of NSSI was associated with an increased risk for bulimia, body dissatisfaction, and desire for thinness (Ross et al., 2009). Interestingly, in that study, frequency of NSSI behaviors was not associated with severity of ED symptoms.

**Age of Onset.** As noted above, the typical age of onset of NSSI and ED falls in the teen years. Using retrospective methods, Favazza and Conterio (1989) concluded that among the women who engaged in both NSSI and ED, the average age of onset of the ED was 16 years whereas the age of onset for NSSI was 14 years indicating the NSSI preceded the eating pathology in this group.

**Gender.** Whether gender is associated with likelihood of engaging in eating pathology among those who self-injure is unclear as little research has addressed this question. Interestingly, as referenced above, in one large study of young adults that focused on risk factors for engaging in NSSI, having an eating disorder increased the likelihood of engaging in NSSI for male participants but not female participants (Gollust et al., 2008).

**Ethnicity.** We are unaware of any studies that have specifically assessed whether people of certain ethnic backgrounds are at increased risk for eating pathology compared to others among people who engage in NSSI. This is another area in need of further research.

**Psychiatric Comorbidity/Overall Severity Pathology.** Very little research has addressed whether people who self-injure and engage in disordered eating are at elevated risk for certain psychiatric diagnoses and/or suicidal behaviors compared to those who self-injure but do not have co-occurring eating pathology. Herpertz's early investigation of 54 women with severe self-injury concluded that risk for engaging in disordered eating behavior was higher among the women with NSSI and Borderline Personality Disorder than women with NSSI only (Herpertz, 1995). This finding is consistent with the research reviewed in the previous section that found a greater risk for NSSI among women with BPD and eating disorder compared to those with only an eating disorder.

**Cultural Factors.** As noted in the previous section, dissatisfaction with one's body is associated with engagement in NSSI and disordered eating (e.g., Griffiths et al., 2000; Muehlenkamp et al., 2005). To our knowledge no research has assessed whether body dissatisfaction is elevated among those who self-injure if they also engage in disordered eating; however, it is the case that among those with eating disorders, those who also self-injure have elevated dislike toward their bodies than those who do not self-injure (Claes et al., 2003; Muehlenkamp et al., 2011).

**Family Environment.** Similarities and/or differences in the family environment among people who engage in NSSI and disordered eating compared to those who only self-injure has not been formally assessed to our knowledge. This is yet another area that is in need of empirical investigation.

**Trauma and Abuse.** Very little research has specifically focused on whether child abuse or trauma leaves some people who engage in NSSI at risk for engagement in eating disorders as well. Among a sample of 113 young adults with a history of NSSI, having a history of sexual abuse indicated higher eating pathology than no history of sexual abuse (Murray et al., 2008).

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## 2.5 Summary and Concluding Remarks

Both non-suicidal self-injury and disordered eating, in the form of bingeing, purging, and/or restricting, involve harm to one's own body, whether passive or active. Thus, it is not surprising that these two behaviors overlap within people and share many similarities. Among people with eating disorders, up to 72 % may also engage in NSSI (Favaro & Santonastaso, 1998), whereas among people with NSSI, approximately 50 % have been reported to also engage in disordered eating (Herpertz, 1995; Wright et al., 2009). However, as noted throughout the chapter, the prevalence rates of each behavior within the other range greatly due to methodological differences. Further, a fair amount of evidence suggests that among people with eating disorders, those who engage in purging behaviors in general are at an increased likelihood of comorbid NSSI than those who do not (i.e., Favaro & Santonastaso, 1996; Peebles et al., 2011), and this may be because purging and self-injury fall closer to one another on the self-harm continuum compared to restricting and self-injury. Additionally, impulsive NSSI, such as cutting, may be more likely to be comorbid with eating pathology than compulsive NSSI, such as hair pulling (Favaro et al., 2007). The high degree of comorbidity of these two self-harm behaviors has clear clinical implications for mental health practitioners. Clinicians are advised to routinely assess for engagement in NSSI behaviors throughout the course of treatment among their ED patients. Conversely, clinicians working with patients who engage in NSSI should assess for comorbid eating pathology.

While it is unclear whether men or women or people of certain ethnicities are more likely to engage in both NSSI and eating disorders, it does seem that there are certain psychiatric diagnoses that are associated with engagement in both forms of these self-harm behaviors, including Borderline Personality Disorder; mood disorders, including depression; and Substance Use Disorder (Claes et al., 2003; Favaro et al., 2008; Peebles et al., 2011). Further, while both NSSI and having a diagnosis of an eating disorder each uniquely leave one at risk for suicide attempts, engaging in NSSI may leave people with ED at an even greater risk than those with ED in the absence of comorbid self-injury (Favaro et al., 2008). Therefore, presence of suicidal ideation and suicidal behaviors should be frequently assessed among patients with comorbid ED and NSSI.

Finally, there are specific cultural values and traumatic experiences that seem to be involved in the development of NSSI and ED individually, in addition to leaving one at risk for both. Internalization of the thin ideal is associated with elevated body dissatisfaction which is associated with increased risk for NSSI among people with eating disorders (Claes et al., 2003; Muehlenkamp et al., 2011). The findings suggest that treatments for patients with comorbid NSSI and ED who express negative

attitudes toward their bodies should target the patient's relationship with his/her body and perhaps include cognitive restructuring for negative body distortions. With regard to traumatic experiences, childhood abuse, especially sexual abuse, is associated with increased risk for comorbid NSSI and ED (Claes et al., 2003; Murray et al., 2008). Clinicians should assess for a history of abuse, as well as the psychological sequelae of abuse, within their ED and NSSI patients. Treatments for people who are affected by trauma, ED, and NSSI should be multifaceted and not only target the self-harm behaviors but the symptoms related to the trauma as well.

Both NSSI and eating pathology are detrimental to functioning and associated with increased risk for morbidity and death and represent a significant public health concern, especially among our youth and young adults. Engagement in these two behaviors together is even more concerning. Understanding the demographic, health, and sociocultural factors that are associated with the overlap of these two behaviors is paramount to our efforts to continue to improve understanding, diagnosis, and treatment efforts.

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