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Examining the link between nonsuicidal self-injury and suicidal behavior: A review of the literature and an integrated model

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ABSTRACT

Self-injurious behaviors (SIB) refer to behaviors that cause direct and deliberate harm to oneself, including nonsuicidal self-injury (NSSI), suicidal behaviors, and suicide. Although in recent research, NSSI and suicidal behavior have been differentiated by intention, frequency, and lethality of behavior, researchers have also shown that these two types of self-injurious behavior often co-occur. Despite the co-occurrence of NSSI and suicidal behavior, however, little attention has been given as to why these self-injurious behaviors may be linked. Several authors have suggested that NSSI is a risk factor for suicidal behavior, but no comprehensive review of the literature on NSSI and suicidal behavior has been provided. To address this gap in the literature, we conducted an extensive review of the research on NSSI and suicidal behavior among adolescents and adults. First, we summarize several studies that specifically examined the association between NSSI and suicidal behavior. Next, three theories that have been proposed to account for the link between NSSI and suicidal behavior are described, and the empirical support for each theory is critically examined. Finally, an integrated model is introduced and several recommendations for future research are provided to extend theory development.

Contents

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1. Introduction

Self-injurious behaviors (SIB) are behaviors that cause direct and deliberate harm to oneself, including nonsuicidal self-injury, suicidal behavior, and suicide (Nock, 2010; Nock, Joiner, Gordon, Lloyd-Richardson & Prinstein, 2006). Self-injurious behaviors are a serious health concern (Boxer, 2010; Jacobson, Muehlenkamp, Miller, & Turner, 2008), as estimates indicate that as many as 13 to 29% of adolescents (Baetens, Claes, Muehlenkamp, Grietens, & Onghena, 2011; Brausch & Gutierrez, 2010; Heath, Toste, & Beettam, 2007; Ross & Heath, 2002) and 4–6% of adults (Briere & Gil, 1998; Klonsky, 2011) engage in nonsuicidal self-injury (NSSI), such as self-cutting, burning, and biting without lethal intent (Gratz, Conrad, & Roemer, 2002; Heath, Toste, Nedecheva, & Charlebois, 2008; Klonsky & Olino, 2008). Moreover, as many as 4–8% of individuals report having made a prior suicide attempt (Bebbington et al., 2010; Whitlock & Knox, 2007), and estimates are even higher among inpatient samples (Claes et al., 2010; Jacobson et al., 2008). Although NSSI and suicidal behavior are both forms of self-injurious behavior, these behaviors have been differentiated on the basis of intention, frequency, and lethality (Guertin, Lloyd-Richardson, Spirito, Donaldson, & Boergers, 2001; Muehlenkamp & Gutierrez, 2007). Despite the important differences between NSSI and suicidal behavior, however, research has shown that these behaviors can also co-occur among clinical and community-based samples (Guertin et al., 2001; Nock et al., 2006; Stanley, Winchell, Molcho, Simeon, & Stanley, 1992). Yet, little attention has been paid as to why NSSI and suicidal behavior may be associated. To address this gap in the literature, we conducted an extensive review of the research on self-injurious behaviors among adolescents and adults. First, we present the results of our review by providing a summary of findings from several studies on the link between NSSI and suicidal behavior. Next, we describe three different theories that have been proposed to account for the link between NSSI and suicidal behavior, and then we provide an evaluation of the empirical support for or against each of these three theories. Finally, an integrated model to account for the link between NSSI and suicidal behavior is introduced, and several specific recommendations for future research are provided to extend theory development.

2. Nonsuicidal self-injury (NSSI)

Nonsuicidal self-injury (NSSI) is defined as self-directed, deliberate destruction or alteration of bodily tissue in the absence of suicidal intent (Nock & Favazza, 2009), and includes behaviors such as self-cutting, head banging, burning, self-hitting, scratching to the point of bleeding, and interfering with wound healing (Heath et al., 2008; Nock, 2010). Estimates of prevalence suggest that among clinical inpatient samples, as many as 21% of adults (Briere & Gil, 1998) and 30 to 40% of adolescents engage in NSSI (Darche, 1990; Jacobson et al., 2008). NSSI is not only a clinical health concern, however, as recent estimates based on community samples indicate that as many as 13 to 29% of adolescents (Baetens et al., 2011; Brausch & Gutierrez, 2010; Heath et al., 2007; Ross & Heath, 2002) and 4–6% adults engage in NSSI (Briere & Gil, 1998; Klonsky, 2011). Across both clinical and community-based samples, research has shown that NSSI tends to have its onset in adolescence, and most commonly occurs between the ages of 13 and 15 years (Glenn & Klonsky, 2009; Heath et al., 2008; Nock, 2010; Nock & Prinstein, 2004; Whitlock & Knox, 2007), which has led researchers to conclude that adolescence represents a period of increased risk for initiation and engagement in NSSI (Muehlenkamp & Gutierrez, 2007; Ross & Heath, 2002).

There is some evidence that NSSI is more prevalent among females than males in adolescence (Baetens et al., 2011; Muehlenkamp & Gutierrez, 2007; Plener, Libal, Keller, Fegert, & Muehlenkamp, 2009; Prinstein et al., 2008; Ross & Heath, 2002; Yates, Tracy, & Luthar, 2008), although other researchers have found no sex differences in the prevalence of NSSI (Andover, Primack, Gibb, & Pepper, 2010; Asarnow et al., 2011; Jacobson et al., 2008; Muehlenkamp & Gutierrez, 2004; Nock & Prinstein, 2004; Nock et al., 2006). It is interesting to note, however, that researchers assessing NSSI among early and late adults do not find gender differences in the prevalence of NSSI in clinical or community-based samples (Bureau et al., 2010; Claes et al., 2010; Darke, Torok, Kaye, & Ross, 2010; Gratz et al., 2002; Heath et al., 2008), suggesting that gender differences may be more pronounced in early adolescence. In one study on gender differences in NSSI, it was found that female adolescents reported a significantly earlier age of NSSI onset than boys, which may help to account for why some researchers find that females engage in more NSSI than boys during the adolescent period (Andover et al., 2010; see Nixon, Cloutier, & Aggarwal, 2002 for a similar finding). Consistently, researchers have found that females are more likely to engage in self-cutting behaviors, whereas boys are more likely to engage in self-hitting and burning behaviors (Andover et al., 2010; Whitlock, Muehlenkamp, & Eckenrode, 2008).

Researchers have also shown that NSSI occurs in various parts of the world, including the United States (Andover & Gibb, 2010; Brausch & Gutierrez, 2010; Dougherty et al., 2009; Muehlenkamp & Gutierrez, 2004), Canada (Bureau et al., 2010; Heath et al., 2008), Australia (Darke et al., 2010; Maddock, Carter, Murrell, Lewin & Conrad, 2011), China (Tang et al., 2011), Germany (Plener et al., 2009) Scotland (Young, Sweeting, & West, 2006), Turkey (Zoroglu et al., 2003), Belgium (Claes et al., 2010) and Britain (Bebbington et al., 2010). There is some evidence to suggest that Caucasians may be at increased risk for NSSI as compared to other ethnicities (Muehlenkamp & Gutierrez, 2004, 2007; see Jacobson & Gould, 2007 for a review); however, other researchers have reported no differences in NSSI prevalence among varying ethnicities (Brausch & Gutierrez, 2010; Jacobson et al., 2008; Plener et al., 2009). Given that much of the research on ethnic differences has relied on primarily Caucasian samples, and that NSSI has yet to be included in large-scale epidemiological surveys, more research using large and diverse samples is needed to specifically examine NSSI prevalence across ethnicities.

3. Suicidal thoughts and behaviors

Suicidal behaviors refer to directly self-injurious behaviors (e.g., suicide attempt, suicide) that are engaged in *with the intent* to end one's life such as hanging/strangulation, severe cutting, and jumping from heights (Andover & Gibb, 2010; Nock, 2010), whereas suicidal thoughts refer to thinking about or planning to engage in behaviors to end one's life (i.e., suicidal ideation or plan) (Nock, 2010; Nock et al., 2008). Among community-based samples, as many as 4–8% of adolescents and adults report having made at least one suicide attempt (Muehlenkamp & Gutierrez, 2007; Nock et al., 2008; Whitlock & Knox, 2007). Estimates are higher among clinical-based samples, with as many as 24–33% of adolescents (Asarnow et al., 2011; Jacobson et al., 2008) and 35–40% of adults reporting a history of suicidal attempts (Claes et al., 2010). According to a recent report from the World Health Organization, the global mortality rate for death by suicide is 14.5/100,000, making suicide the fourth leading cause of death among individuals aged 15–44 years (Krug, Dahlberg, Mercy, Zwi, & Lozono, 2002). Suicidal behavior tends to have its onset in late adolescence (Darke et al., 2010; Nock et al., 2008) and statistics indicate that adolescents report higher levels of suicidal ideation than any other age group (Krug et al., 2002; Nock et al., 2008). The greatest number of deaths by suicide, however, occurs in middle adulthood (Krug et al., 2002; Nock et al., 2008; Stats Canada, 2008), suggesting that although suicidal behavior may have its onset in adolescence, middle adulthood represents the period of greatest risk for death by suicide.

Consistently, researchers find that females are more likely to attempt suicide than males (Baetens et al., 2011; Darke et al., 2010; Plener et al., 2009; Prinstein et al., 2008; Tang et al., 2011; Whitlock & Knox, 2007), but males are more likely to die by suicide than females across the lifespan (Krug et al., 2002; Nock et al., 2008). In fact, for every one female death by suicide, it is estimated that three males die