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The Oxford Handbook of Nonsuicidal Self-Injury

Elizabeth Lloyd-Richardson (ed.) et al.

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CHAPTER

NSSI in Adolescence and Emerging Adulthood

Glenn Kiekens, Penelope Hasking, Laurence Claes

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Abstract

This chapter considers why adolescence and emerging adulthood are the most sensitive life periods for nonsuicidal self-injury (NSSI) and summarizes the knowledge about the course and developmental risk and protective factors of NSSI. This includes a literature review on the associations between NSSI and early life trauma, personality and identity development, emotion regulation, cognitive vulnerabilities, mental disorders, parenting and family relationships, and peer relationships. The authors then evaluate the possible consequences of engaging in NSSI as an adolescent or emerging adult and discuss how we can intervene to address NSSI among young people. Finally, the authors formulate recommendations to further our understanding as we move into the next decade of research. One of the main suggestions is to consider developmental variation in future prospective studies as well as an increased focus on prevention and intervention.

Keywords: nonsuicidal self-injury, NSSI, adolescence, emerging adulthood, development

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Introduction

Nonsuicidal self-injury (NSSI), defined as the direct and deliberate damage of one's body tissue without suicidal intent (e.g., cutting and hitting oneself; International Society for the Study of Self-Injury, 2022), is a significant mental health concern among young people worldwide. NSSI can occur as early as childhood and persist into adulthood, but typically has its onset during adolescence (11–18 years) and emerging adulthood (18–29 years). This chapter takes a developmental perspective to advance our understanding of NSSI during adolescence and emerging adulthood. First, we describe how biopsychosocial changes in adolescence and emerging adulthood may increase susceptibility for NSSI. Next, we summarize recent findings regarding the epidemiology and normative course of NSSI, risk and protective factors, as well as potential consequences of NSSI. Because few studies take developmental variation into account, we discuss studies of adolescents and emerging adults together. Finally, we consider how to respond appropriately to NSSI among young people and conclude the chapter with several recommendations for future research.

Why Are Adolescence and Emerging Adulthood Sensitive Periods for NSSI?

Adolescence is characterized by significant biological, psychological, and social changes that start at the onset of puberty around 10–13 years. In a recent review, Cummings et al. (2021) argue that two neurodevelopmental mechanisms increase the risk of NSSI during adolescence: a socioaffective pain pathway and a reward sensitivity pathway. While the former increases sensitivity to socioemotional stressors, such as perceived social rejection and exclusion that contribute to the onset of NSSI, the latter amplifies reinforcement learning about socioaffective benefits of self-injury and contributes to its maintenance (Cummings et al., 2021). On the psychosocial level, there is a shift toward more autonomy from parents, frequent interaction with same-age peers, and exploration of romantic relationships, making adolescents more susceptible to peer influences (see Zetterqvist & Bjureberg, this volume). Adolescents also become more self-focused as they gradually explore and establish an independent sense of self. Importantly, however, the developmental tasks that characterize adolescence are, for many individuals, not resolved by age 18.

The 20th century has been characterized by a shift from manufacturing toward information-based economies that require postsecondary education for most professions in industrialized societies. As a result, many adolescents now enter college to seek higher education before entering the workforce, getting married, and having children. To capture the period between adolescence and adulthood, Arnett (2015) introduced "emerging adulthood" as a new life stage between 18 and 29 years, which describes a time of continued transition, exploration, and evaluation. While many emerging adults enjoy this life period's relative freedom and possibilities, it is like adolescence, also a time of change and heightened instability and uncertainty. From a developmental perspective, emerging adults are caught in the middle—no longer adolescents but not yet in a position to fulfill adulthood's responsibilities (Arnett, 2015). The lack of structure and stability can increase isolation and leave someone feeling ambivalent, lost and unsure of who they are and where they fit in the world. In addition, academic pressure, relationship concerns, and uncertainty about future employment can make emerging adulthood stressful and enhance vulnerability and psychosocial risk.

Evidencing that adolescence and emerging adulthood are sensitive developmental periods for mental health difficulties, a recent meta-analysis revealed that 48% and 63% of mental disorders begin before 18 and 25 years, respectively (Solmi et al., 2021). Unfortunately, professional treatment is often not sought because most adolescents and emerging adults prefer to handle problems alone and are afraid of stigmatization

(e.g., Aguirre Velasco et al., 2020). Accordingly, many young people are left behind with high levels of distress and are at risk of engaging in emotion-regulating behaviors. NSSI is perhaps one of the most puzzling of these emotion-regulation behaviors, including behaviors such as cutting, scratching, and hitting oneself.

What Is the Normative Course of NSSI in Adolescence and Emerging Adulthood?

Understanding the normative course of NSSI is a prerequisite for identifying developmental factors that may alter the progression of NSSI through adolescence and emerging adulthood. Therefore, we first review the current knowledge on the prevalence and features of NSSI, the age of onset and incidence, and persistence and cessation of NSSI.

Prevalence and Features of NSSI (Disorder)

NSSI is most prevalent during adolescence and emerging adulthood. Approximately 13% to 23% report a lifetime history of NSSI (Gillies et al., 2018; Swannell et al., 2014), with 12-month prevalence rates in the 8–19% range (Gillies et al., 2018; Kiekens et al., 2023). Females are slightly more likely to engage in NSSI than males, with a larger gender difference in clinical samples (Bresin & Schoenleber, 2015). A group of young people with higher rates of NSSI are sexual and gender minority individuals. A recent meta-analysis found that 36.5% of those identifying as lesbian, gay, bisexual, or transgender (LGBT) reported lifetime NSSI compared to 14.5% for people identifying as heterosexual or cisgender. Of note, the highest pooled estimates were observed for bisexual and transgender individuals, with lifetime rates estimated as high as 41–47% (Liu et al., 2019).

Approximately three quarters of young people report repeated NSSI (> 1 episode), with nearly half reporting five or more episodes in their lifetime (Heath et al., 2008). Most also use more than one NSSI method (Sornberger et al., 2012), with an average of five methods endorsed among clinical samples (Victor et al., 2018). Cutting, scratching, and hitting are the most frequently used methods (Bresin & Schoenleber, 2015) and occur mostly on arms, wrists/hands, and legs (Sornberger et al., 2012). In 2013, the fifth edition of *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) included NSSI disorder as a condition requiring further study (American Psychiatric Association, 2013). To meet NSSI disorder necessitates NSSI on at least five days in the past year, significant distress due to NSSI, and several other conditions (e.g., intense urges, and expecting a favorable outcome following NSSI). While few studies have assessed all criteria, the prevalence of NSSI disorder is close to 7% among community adolescents (Buelens et al., 2020b) and ranges between 0.2% and 2% among emerging adults (Benjet et al., 2017; Kiekens, Hasking, Claes, et al., 2018; Kiekens et al., 2023). However, females are more likely to meet NSSI disorder criteria than males (Buelens et al., 2020b; Kiekens, Hasking, Claes, et al., 2018).

Age of Onset and Incidence

Gandhi and colleagues have investigated the onset pattern of NSSI among 4,379 adolescents and (emerging) adults from community and clinical samples (Gandhi et al., 2018). Their findings suggest that the onset of NSSI may have a bimodal peak, as NSSI started to emerge in late childhood and early adolescence (9–12 years), peaked in mid-adolescence (14–15 years), declined again into late adolescence (16–18 years), and then had a second lower peak of onset when transitioning into emerging adulthood (19–21 years). However, it should be mentioned that this study relied on retrospective recall, which may be prone to recall bias. Therefore, prospective studies are needed to clarify incidence rates (i.e., onset among those without lifetime NSSI in a discrete period).

In prospective studies of adolescents (Andrews et al., 2014; Huang et al., 2017; Marin et al., 2020), the one-year incidence rate of NSSI is estimated in the 3.6–4% range. Recently, Victor et al. (2019) investigated incidence rates across different age groups in a one-year prospective study among female adolescents. As expected, higher rates (although consistently lower than the other studies) were observed in younger than older age groups: one-year incidence rates were estimated around 2.1% at ages 14–15, 1.5% at age 16, and 1% at age 17. Among emerging adults, mean one-year incidence rates of NSSI have been observed in the 2.2–4.1% range (Hamza & Willoughby, 2014; Riley et al., 2015). Researchers have also investigated onset rates of sporadic (< 5 episodes) and repetitive NSSI (≥5 episodes) separately. For example, Daukantaite et al. (2021) found that 14.7% of 13–14-year-olds report sporadic NSSI (1–4 episodes) and 9.8% repetitive NSSI in a one-year follow-up assessment. Recently, scholars also examined NSSI onset among emerging adults entering college (Kiekens et al., 2019). Findings indicate that 7% start to engage in repetitive NSSI (≥5 episodes) and 8.6% in sporadic NSSI (one to four episodes), with the highest one-year incidence rate observed in the first year of college (10.3%).

Persistence and Cessation

Few studies have examined the persistence and cessation patterns of NSSI among adolescents and emerging adults. In one cross-sectional study among adolescents, researchers found that 56.5% of those with a history of NSSI reported 12-month NSSI (Halpin & Duffy, 2020). Similar rates have been observed among emerging adults, with rates of NSSI persistence in the 44–59% range (Kiekens et al., 2023; Whitlock et al., 2015). Prospective studies observed that 25–63% of adolescents with adolescent-onset NSSI report persistent NSSI in emerging adulthood (Glenn & Klonsky, 2011; Hamza & Willoughby, 2014; Kiekens et al., 2022). In the earlier mentioned study by Daukantaite et al. (2021), two-thirds of adolescents reporting engagement in any lifetime NSSI behavior reported persistent NSSI one year later. Of those reporting repetitive NSSI (≥5 episodes) in year 1, more than half (56%) indicated ongoing repetitive NSSI in year 2, whereas 21% reported sporadic NSSI, and 23% did not report recent NSSI. Repetitive NSSI also decreased from approximately 18% at ages 13–16 to 10% by age 25 (Daukantaite et al., 2021). While Turner et al. (2021) recently observed that 75% of adolescents ceased NSSI between ages 18–21, Kiekens et al. (2022) found that 56% of individuals with a history of NSSI report persistent self-injury during their college years. Although most students reported a sporadic course (27.9%) or a low-frequency repetitive pattern (12.9%), 15.6% reported a high-frequency repetitive pattern (annually ≥5 episodes). These authors observed that NSSI persistence (especially the high-frequency repetitive pattern) predicted an increased risk for 12-month mental disorders, role impairment, and suicidal thoughts and behaviors later in college. Young people who engage in NSSI more frequently, use more methods, and make more medically serious wounds, are most likely to report persistent NSSI (Andrews et al., 2013; Glenn & Klonsky, 2011; Kiekens et al., 2017; Kiekens et al., 2022). However, as most studies have relatively short follow-up periods, more work is needed to clarify the developmental course of NSSI as well as the implications of following a "normative" (i.e., onset in adolescence and offset by emerging adulthood) relative to an "atypical" course (i.e., onset and ongoing NSSI in emerging adulthood).

What Are Developmental Risk and Protective Factors?

Next, we provide an overview of risk and protective factors of NSSI in adolescence and emerging adulthood. We focus here on developmental factors for which empirical research has provided substantial evidence in either adolescents, emerging adults, or both. This includes childhood-adolescent trauma, personality and identity development, emotion regulation, cognitive vulnerabilities, psychopathology and mental disorders, parenting and family influences, and peer influences.

Early Life Trauma

Liu et al. (2018) conducted a comprehensive meta-analysis on the association between childhood trauma (i.e., sexual abuse, physical abuse and neglect, and emotional abuse and neglect) and NSSI. Across 71 publications, people who reported some form of maltreatment were more likely to report a history of NSSI, with the strongest effect observed for childhood emotional abuse (Liu et al., 2018). As this is also the most prevalent form of childhood maltreatment (Stoltenborgh et al., 2015), preventing emotional abuse may hold potential to decrease the incidence of NSSI (Kiekens et al., 2019). Notably, scholars have observed that the association between several childhood trauma subtypes and NSSI is stronger in the community than in clinical samples (Liu et al., 2018), which implies that assessing trauma is essential when determining risk for NSSI in the general population.

Several studies have investigated the mediational pathways through which trauma may pose a risk for NSSI, providing initial evidence that proximal factors including emotional dysregulation, dissociation, distress intolerance, identity issues, self-criticism, and psychopathology are implicated in explaining the trauma-NSSI relationship (Gu et al., 2020; Horowitz & Stermac, 2018; Kang et al., 2018; Liu et al., 2018). However, these studies are primarily cross-sectional (as was most data in the systematic review by Liu and colleagues). Thus, prospective work is warranted to clarify which aspects of early trauma (i.e., type, severity, and frequency) increase the risk of NSSI, as well as studies explaining the underlying mechanisms of such temporal associations.

Personality and Identity Development

Researchers have also investigated the relationship between personality traits and NSSI. A consistent finding is that young people who are predisposed to experience negative emotions (e.g., trait neuroticism and negative affectivity) while reporting disinhibition (e.g., low effortful control), particularly in handling negative emotion (i.e., negative urgency), show elevated rates of NSSI (Gromatsky et al., 2017; Turner et al., 2018). In addition, some studies also found a positive relationship between antagonism-related traits, such as lower trait agreeableness and higher trait aggression, and NSSI (Kiekens et al., 2015; Kleiman et al., 2015). While NSSI is included as a symptom of Borderline Personality Disorder (BPD), research shows that the relationship between NSSI and BPD is complex. For instance, while 95% of adolescents with a diagnosis of BPD report a history of NSSI and more than half meet NSSI-D criteria (as self-injury is a symptom of BPD), only 7% of those with a history of NSSI and 11% with NSSI-D meet BPD criteria (Buelens et al., 2020a; Goodman et al., 2017). There is evidence that the presence of NSSI in early adolescence may signal risk for BPD in emerging adulthood (Biskin et al., 2021). Conversely, researchers have also prospectively linked BPD to the maintenance of NSSI (Glenn & Klonsky, 2011), with recent work drawing attention to identity problems (as a core feature of BPB) to account for this relationship (Spitzen et al., 2020).

Forming a stable identity is a core developmental challenge of adolescence and emerging adulthood. Research has shown that some young people may use NSSI to tackle disturbances in identity formation through self-injury (i.e., identifying as a self-injurer; Breen et al., 2013). Adolescents who engage in NSSI

report lower levels of identity synthesis and more identity confusion (Verschueren et al., 2020). Using longitudinal data, researchers have shown that the association between identity synthesis/confusion and NSSI is likely bidirectional (Gandhi et al., 2017). Furthermore, research indicates that identity processes may operate as a proximal factor, linking dysfunctional maternal and peer attachment to the development of NSSI (Gandhi et al., 2019; Taliaferro et al., 2020). These findings show that problems in identity formation and NSSI are closely linked and imply that targeting identity issues may be a beneficial treatment strategy for young people engaging in NSSI. This is especially relevant for those identifying as a gender or sexual minority as they may experience additional distress over their identity in addition to discrimination and victimization, putting them at greater risk of NSSI (Liu et al., 2019).

Emotion Regulation

Emotion regulation, defined as managing and responding effectively to emotion, is perhaps the most examined risk factor of NSSI. Meta-analytic findings suggest that 63–78% of individuals report engaging in NSSI for its emotion-regulatory ability (Taylor et al., 2018). In addition, studies have consistently found an association between emotion dysregulation and NSSI (Wolff et al., 2019), with the strongest effects observed for impulse control difficulties and limited access to emotion-regulation strategies (Wolff et al., 2019; Zelkowitz et al., 2016). Emotion regulation is also associated prospectively with NSSI persistence (Kiekens et al., 2017). Cummings et al. (2021) suggest that emotion-regulation ability is crucial in determining whether NSSI continues past adolescence. The emotion-regulatory properties of NSSI have also been evaluated using ecological momentary assessment (EMA; also known as experience sampling methodology). In their recent review, Hepp et al. (2020) found evidence for increased negative emotion before NSSI. However, although most studies also report decreased negative emotion following NSSI, no study has examined whether the propensity of NSSI to reduce negative emotion (i.e., the decrease from pre- to post-NSSI) increases the likelihood of future self-injury. Future work using EMA schedules with sufficient temporal granularity promise to examine this and provide better insight into the contingencies of NSSI that unfold across shorter and longer time intervals.

Cognitive Vulnerabilities

Contemporaneous theoretical models posit the *joint* influence of emotion and cognitive vulnerabilities in explaining why some individuals engage in NSSI. According to the emotional cascade model (ECM; Selby et al., 2013), reinforcing cyclic cascades of rumination and negative emotion lead to intolerable states that require behaviors with intense physical sensations, such as NSSI, short-circuiting these cascades of high negative intensity. In support of the ECM, young people with a history of NSSI experience greater initial increases in negative affect following rumination than peers who do not self-injure (Arbuthnott, Lewis, & Bailey, 2015). Trait rumination—especially brooding and depressive rumination—is also associated with NSSI history and frequency (Coleman et al., 2021), and researchers have observed that rumination might exacerbate or mediate the relationship of other risk factors (e.g., emotional abuse; Gu et al., 2020). For example, Nicolai et al. (2016) found that trait negative affect and rumination predicted engagement and frequency of NSSI, such that emerging adults who scored high on both traits were more likely to self-injure and did so more frequently across an eight-week follow-up period than peers scoring low on either trait. Recently, Hughes et al. (2019) showed in an EMA study that the risk of NSSI thoughts and behavior was heightened when adolescents and emerging adults experienced high levels of negative emotion (i.e., feeling anxious and overwhelmed) and repetitive negative thinking.

The cognitive-emotional model of NSSI argues for an expanded role of NSSI-related cognitions (Hasking et al., 2017). This model suggests that whether someone will self-injure partially depends on NSSI-related outcome expectancies and self-efficacy expectancies. Researchers, for instance, observed that emerging

adults who self-injure—compared to peers who do not—hold more favorable outcome expectancies from NSSI (i.e., affect regulation, less pain) and have the perception of being less able to resist NSSI (Dawkins et al., 2019). These cognitions have also been shown to interact (Dawkins et al., 2021), such that belief in the ability to resist self-injury can counter expectations that self-injury will result in emotion regulation. Recent evidence from an EMA study indicates that low self-efficacy to resist NSSI was predictive of NSSI even when NSSI thoughts were taken into account (Kiekens et al., 2020). Together, these findings suggest that focusing on NSSI-related cognitions might have clinical utility in preventing NSSI among adolescents and emerging adults.

Finally, the benefits and barriers model of NSSI argues for a unique role of self-criticism in explaining NSSI (Hooley & Franklin, 2017). Negative self-beliefs are suggested to erode barriers to NSSI, making NSSI a more viable option to regulate negative emotion as it is congruent with an internal negative self-view. Research confirms that young people who engage in NSSI are more self-critical and less self-compassionate than those with no history of NSSI (Burke, Fox, Kautz, Siegel, et al., 2021; Zelkowitz & Cole, 2019). In addition, prospective work has shown that high self-criticism and body image dissatisfaction predict engagement in NSSI (Black et al., 2019; Burke, Fox, Kautz, Rodriguez-Seijas, et al., 2021; Fox et al., 2018). Furthermore, experimental work has shown that young people who are highly self-critical can endure pain longer (Glenn et al., 2014) and experience it as rewarding compared to peers lower in self-criticism (Fox et al., 2016).

Psychopathology and Mental Disorders

Internalizing, externalizing, and psychotic symptoms and disorders have all been prospectively related to the onset of NSSI (Fox et al., 2015; Hielscher et al., 2021; Kiekens et al., 2019). Eating-disordered behaviors are also frequently present together with NSSI (Cucchi et al., 2016; Kiekens & Claes, 2020) and prospectively predict NSSI (e.g., Micali et al., 2017; Turner et al., 2015). Researchers have also linked psychiatric symptoms and mental disorders to the persistence of NSSI (Kiekens, et al., 2023; Steinhoff et al., 2021). Of note, there appears to be a dose-response relationship between the number of mental disorders and the likelihood of NSSI engagement (Kiekens et al., 2023), with the incremental odds of NSSI increasing at a decreasing rate with the number of mental disorders. This suggests that the effect of a single mental disorder on the future likelihood of NSSI is strongest among those without any prior disorder but has an upper limit in predictive utility for adolescents and emerging adults with several existing disorders. One reason for this ceiling effect may be shared pathways through which disorders govern risk for NSSI (Bentley et al., 2015).

Parenting and Family Influences

The association between family and parental relationships and NSSI has been well-studied (Arbuthnott & Lewis, 2015). Jiang et al. (2017) found that low quality of current attachment with parents distinguished adolescents who engaged in NSSI from those without a history of NSSI (see James & Gibb, this volume, on the parent-child dyad and other family factors associated with youth NSSI). Longitudinal studies have also linked low family support and difficulties in parent-child relationships (e.g., poor quality of attachment and low parental warmth) with the onset and continuation of NSSI (Arbuthnott & Lewis, 2015; Tatnell et al., 2014; Victor et al., 2019). For instance, Hamza and Willoughby (2014) found that college students who experienced increased problems with parents were more likely to report a trajectory characterized by recent NSSI (i.e., onset, relapse, or persistence).

Several recent studies have investigated how family relationships may govern risk for NSSI—finding preliminary evidence for alexithymia and communication difficulties (Cerutti et al., 2018; Claes et al., 2016), identity issues (Gandhi et al., 2019), behavioral problems (Cassels et al., 2019), and emotional reactivity and emotional dysregulation as mediational pathways (Hasking, Dawkins, et al., 2020). Conversely, there is

evidence that positive connections to parents and supportive familial relationships can safeguard against NSSI (Claes et al., 2015; Taliaferro et al., 2020). Research, for instance, suggests that being able to make use of family support is protective of NSSI onset and facilitates NSSI cessation (Tatnell et al., 2014; Whitlock et al., 2015). Interestingly, social motivations are endorsed more frequently for initiating NSSI than repeating the behavior, and family support has been found to differentiate college students who reported a single episode of self-injury from those peers who engaged in repeated NSSI (Muehlenkamp et al., 2013). This shows that boosting family support remains important after NSSI is initiated. For example, a recent study found that female adolescents who experienced more stress and lower levels of family support in the early months of the COVID-19 pandemic were more likely to report persistent NSSI (Carosella et al., 2021).

Peer Influences

Adolescents and emerging adults with negative attitudes or connections toward peers are more likely to report engaging in NSSI. Of all peer experiences, bully victimization has consistently been associated with a history of NSSI (van Geel et al., 2015; Serafini et al., 2021). Victor et al. (2019) recently observed that peer victimization predicted NSSI onset among adolescent girls during the following year. Similarly, Kiekens et al. (2019) found that bully victimization before the age of 17 predicted the onset of both sporadic (< 5 episodes) and repetitive NSSI (≥5 episodes) during the first two years of college (when controlling for other adversities). There is evidence for a dose-response relationship, such that adolescents who experienced repetitive bullying are more likely to report recent NSSI than peers who experienced occasional bullying (Jantzer et al., 2015). Bully perpetration appears equally associated with NSSI (Serafini et al., 2021), and research suggests that depressive symptoms may partially explain the link between bully victimization/perpetration and NSSI (Baiden et al., 2017).

Knowing a friend who engages in NSSI has also been associated with the likelihood of NSSI (Syed et al., 2020), particularly among young people experiencing high levels of distress (Hasking et al., 2013). For example, Schwartz-Mette and Lawrence (2019) observed that the frequency of NSSI of friends was associated with the number of times adolescents self-injured over a six-month follow-up period (see Jarvi Steele et al., this volume, on social contagion of NSSI). This effect was strongest among young people reporting emotion-regulation difficulties, highlighting the interplay between interpersonal and intrapersonal factors underlying NSSI. Similar to family relationships, findings underscore the importance of drawing upon the protective effects of peer relationships in preventing NSSI among adolescents and emerging adults. For example, in a prospective study by Giletta et al. (2015), support from friends was associated with a reduced likelihood of experiencing a chronic NSSI trajectory. Similarly, Wu et al. (2019) observed that peer acceptance is related to reduced NSSI one year later through enhanced self-compassion and reduced depressive symptoms. Finally, among a large statewide US sample (n = 73,648), it was recently found that adolescents who experienced family adversity were less likely to report past-year NSSI when they experienced social support from peers (Forster et al., 2020).

What Are the Potential Consequences of Engaging in NSSI as an Adolescent/Emerging Adult?

While the previous section illustrates that we have acquired substantial knowledge about developmental factors that may increase or buffer risk of NSSI, several researchers have also investigated possible consequences of engaging in NSSI. Therefore, in what follows, we provide an update on the literature concerning the risk of suicidal thoughts and behaviors and psychosocial outcomes more broadly following NSSI.

NSSI as a Risk Factor for Suicidal Thoughts and Behaviors

NSSI is engaged without the desire to end one's life and should be differentiated from a suicide attempt. However, both forms of self-injury frequently co-occur (Grandclerc et al., 2016), and research suggests that young people who engage in NSSI are at increased risk for a future suicide attempt (Griep & MacKinnon, 2020; Ribeiro et al., 2016). According to the gateway theory, NSSI directly increases the risk for a suicide attempt among people experiencing high levels of intrapersonal distress (Hamza et al, 2012). Yet, NSSI has also been associated with an increased risk of a future suicide attempt independently from mental disorders (Kiekens, Hasking, Claes, et al., 2018). Alternatively, the interpersonal theory of suicide (IPTS) posits that a young person will only attempt suicide if there is the desire to attempt suicide—originating from thwarted belongingness and perceived burdensomeness—*and* the capability to attempt suicide (Joiner, 2005; Van Orden et al., 2010). According to this theory, NSSI may pose a risk to suicide because repeated tissue damage would prepare an individual to make a suicide attempt by building up a capability for suicide. Willoughby et al. (2015) tested this theory among college students and found that more frequent NSSI predicted an increase in the capability for suicide one year later. However, recent studies suggests that acquired capability for suicide alone may not fully explain the NSSI-suicide attempt relationship (Brackman et al., 2016; Matney et al., 2018). Therefore, future studies are needed, especially those assessing acquired capability for suicide and incorporating belongingness and burdensomeness in investigating the relationship between NSSI and suicide attempts (Mbroh et al., 2018).

Importantly, emerging evidence suggests that NSSI may increase not only the capability to end one's own life but also the desire to die (Hamza & Willoughby, 2016) and the probability to transition from suicide ideation or a plan to a first suicide attempt (Kiekens, Hasking, Claes, et al., 2018). These findings highlight the importance of screening and treatment efforts in preventing suicidal thoughts and behaviors among adolescents and emerging adults who engage in NSSI. Hence, to better enable clinicians to gauge risk, several scholars have investigated NSSI characteristics that may explain which young people with a history of NSSI are more vulnerable to developing suicidal thoughts and behaviors. Findings from this line of work suggest that an earlier onset, greater frequency, use of multiple methods, medical treatment for self-injury, reporting self-cutting, NSSI scars, and self-injuring to avoid thoughts of suicide are all associated with higher odds of suicidal thoughts and behaviors (Burke et al., 2018; Kiekens, Hasking, Claes, et al., 2018; Muehlenkamp et al., 2019; Victor et al., 2015). Prospective studies are needed to evaluate the clinical utility of NSSI characteristics together with psychosocial factors (e.g., depression, hopelessness, and social relationships) in gauging suicide risk. Worth mentioning in this context, Whitlock et al. (2013) identified meaning in life and support from parents as prospective factors that—above and beyond NSSI frequency—decreased the likelihood to move from NSSI to suicidal thoughts and behaviors, which implies that reducing hopelessness and boosting social relationships are essential treatment targets.

NSSI as a Risk Factor for Adverse Psychosocial Outcomes

Taking a broader lifespan perspective, there is increased understanding that NSSI is associated with a variety of adverse psychosocial outcomes during adolescence and emerging adulthood, including reduced academic functioning (Kiekens et al., 2016), difficulties in identity formation (Gandhi et al., 2017), increased risk for mental disorders (Kiekens, Hasking, et al., 2018; Wilkinson et al., 2018), and stigmatization (Burke et al., 2019; Staniland et al., 2020). For instance, among 1,762 university students, staff, and student-staff, a recent study revealed that university stakeholders reported greater stigma toward NSSI than mental illness in general (Hamza et al., 2021). In addition, recent studies have linked NSSI to increased interpersonal stressors and conflict (Burke et al., 2015; Turner et al., 2017), and adverse trajectories in emotional and cognitive functioning (Buelens et al., 2019). For example, Robinson et al. (2019) examined the temporal relationship between NSSI and emotion regulation over three years throughout adolescence, finding evidence for a reciprocal risk relationship. Poor emotion regulation was confirmed as a risk factor for NSSI; however, NSSI also predicted reduced emotion-regulation competencies one year later (Robinson et al., 2019). The authors suggest that NSSI may increase emotion sensitivity, install negative self-beliefs about one's ability to regulate emotion, and provide less opportunity to learn emotion-regulation skills. In support of these findings, scholars found that young people who engaged in repetitive NSSI during adolescence had more emotion-regulation difficulties and increased impulsivity in emerging adulthood (Daukantaite et al., 2021).

Turner et al. (2021) recently investigated how the course of NSSI is related to changes in psychosocial outcomes across adolescence and emerging adulthood. While many of the developmental factors considered in the section "What Are Developmental Risk and Protective Factors?" (e.g., anxiety, depression, self-concept, and peer and family victimization) were associated with the onset, persistence, and cessation of NSSI, it was found that at least four to eight years of sustained NSSI cessation is required to abate psychosocial deteriorations that accumulated during NSSI (Turner et al., 2021). Cessation of NSSI was also associated with temporal increases in heavy drinking and other substance use behaviors. However, individuals with persistent NSSI were most vulnerable to experience adverse long-term psychosocial functioning in emerging adulthood, such as decreased subjective well-being, working fewer hours, and delaying medical treatment for financial reasons. These findings imply that the need for care and interventions does not stop following the cessation of NSSI and clarify that much could be learned from future investigations adopting a broader transactional framework in which psychosocial and NSSI outcomes might influence each other reciprocally throughout adolescence and emerging adulthood. Better clarification of developmental cascades and providing insight into the mechanisms that account for such relationships would aid scientific understanding and offer useful information for prevention and intervention efforts.

How Can We Intervene to Prevent NSSI?

Considering the potential adverse consequences of NSSI, one of the most valuable questions to address is how to prevent young individuals from engaging in self-injury. In what follows, we discuss the central role of schools and postsecondary institutions and the importance of evidence-based assessment and intervention in addressing NSSI among young people.

Schools and Postsecondary Institutions

Schools and colleges/universities are well-placed and critical stakeholders in preventing NSSI as they constitute a primary access point of care for young people. The prevention of NSSI in educational settings necessitates a holistic multilayered approach that promotes mental health literacy (Hasking et al., 2016; Lewis et al., 2019). Schools and colleges must be made aware of the extent of NSSI in their institution and the probability of poor outcomes if NSSI is not appropriately addressed. There should be guidelines for identifying students at risk for NSSI, a protocol for responding to NSSI, and procedures for making appropriate referrals (Hasking et al., 2016; Lewis et al., 2019). A clear protocol outlines the various roles of all staff and students (including academics, professional staff, mental health professionals, and students; Hasking et al., 2016; Lewis et al., 2019). Given that NSSI is often kept secret, there should also be guidelines for involving parents (Hasking et al., 2016). Similarly, resources should be provided to peer networks, romantic partners, and residence hall staff in higher education settings (Lewis et al., 2019), who are most likely to be the confidants of students who self-injure (Simone & Hamza, 2020). Peers can learn to adopt a "respectful curiosity" when talking to students who self-injure, avoiding stigmatizing or hurtful language, and offering to help seek support from counseling services.

A positive commitment must be made to addressing NSSI in the school context, potentially as part of a more comprehensive mental health agenda (Hasking et al., 2016; Lewis et al., 2019), and professional training should be offered to school staff (Hasking, Bloom, et al., 2020). For example, gatekeeper interventions have been used effectively to train staff and students to respond to students in distress and make appropriate referrals (Rallis et al., 2018). Provision of information specific to NSSI can be incorporated into existing programs (e.g., Baetens et al., 2020) but should include a basic understanding of NSSI, how to talk with people who self-injure, knowledge of appropriate referral options, and the importance of self-care. Generally, experts recommend that rather than discussing details of NSSI, including methods, that the conversation focuses on coping strategies in general or on the issues underlying NSSI. In this way, the focus remains positive, and students are less likely to be triggered by graphic details of NSSI.

Evidence-Based Assessment and Intervention

Addressing NSSI among young people who self-injure necessitates identifying the appropriate level of services and care that is needed. Prior to providing interventions, a thorough clinical assessment of NSSI should occur, including NSSI history and severity, functions of NSSI, antecedents and consequences, risk factors, and comorbidities (Lengel & Styer, 2019). Westers et al. (2016) developed the SOARS model to help clinicians screen for self-injury among young individuals by inventorying suicidal ideation; onset, frequency, and methods of NSSI; aftercare; reasons for self-injury; and stage of change. This assessment (and potential wound care) must occur in a nonjudgmental way using a respectful curiosity and dispassionate tone. Scholars have argued that brief routine screening for NSSI (and suicidality) should occur in primary and emergency care settings (Westers & Plener, 2020). Screening in primary care has the advantage of picking up people who might otherwise be missed and minimizing the burden on emergency services. On the other hand, when someone presents to emergency services because of injuries, a full assessment (including suicide) should always be conducted (Franzen et al., 2019). Some countries developed treatment guidelines for NSSI and suicidal behaviors. The German guidelines, for instance, outline the importance of building commitment for treatment, psychoeducation, identifying risk factors that trigger NSSI, attention for comorbidities, and providing alternative skills and problem-solving strategies (Plener et al., 2016). Importantly, as NSSI recovery will typically involve NSSI (re)lapses (Steinhoff et al., 2021), realistic expectations regarding cessation of NSSI should be set.

In recent years, there has been an increase in randomized control trials (RCTs) that assess evidence-based interventions for NSSI. A preliminary meta-analysis (containing six studies) found that Dialectical Behavior

Therapy (DBT) had a large positive effect on the frequency of NSSI among adolescents (Cook & Gorraiz, 2016). However, given substantial heterogeneity in NSSI severity and a growing lack of mental health care resources, there have been calls for a stepped-care approach in responding to NSSI, such that specialized resource-intensive treatments are available for those who need them most (Westers & Plener, 2020). In response to this, several brief low-intensity interventions have recently been developed showing promising results. The cutting down program (CDP) is a low-intensity psychotherapeutic intervention of 8–12 sessions based on DBT, with RCTs showing that this program effectively reduced NSSI and achieved faster recovery compared with an intensive treatment as usual among adolescents (Kaess et al., 2020). In a similar vein, a low-intensity emotion-regulation individual therapy showed promising results in reducing NSSI with effects maintained or even further improved at six-month follow-up in two pilot studies with adolescents (Bjureberg et al., 2017) and emerging adults (Sahlin et al., 2017). Recently, Bjureberg et al. (2018) developed an online version that also reduced the frequency and methods of NSSI. Another behavioral intervention, the treatment for self-injurious behaviors (T-SIB) consists of nine sessions designed to assess the function of NSSI and develop alternative strategies that serve a similar function (Andover et al., 2017). Initial findings supported feasibility and acceptability of this intervention, with medium effects in decreasing NSSI frequency. Finally, a daily diary intervention (Hooley et al., 2018) involving autobiographical self-enhancement training to help emerging adults focus on positive personal attributes has shown a comparable decline in NSSI frequency relative to active control conditions. However, these general effects were not maintained at 4- and 12-week follow-up assessments.

Recommendations for Future Research

The work presented in this chapter advances our understanding of NSSI among adolescents and emerging adults but also leaves many important questions unanswered. Therefore, we formulate four critical directions for future research.

Broaden the Focus Epidemiologically

An important direction for future research is the differentiation of meaningful epidemiological outcomes (i.e., prevalence of NSSI, onset, persistence, and remission). Even though research on NSSI among adolescents and emerging adults has increased dramatically, there is a lack of detailed information on patterns of risk associated with NSSI incidence and persistence, changes over time, and the course of NSSI in different cultures. Some initial studies found NSSI may be equally prevalent in developing and developed countries but found preliminary evidence that the features, phenomenology, and explanations of NSSI may be culturally influenced (Gandhi et al., 2020). Importantly, studies suggest that the prevalence of NSSI among adolescents and emerging adults has increased during the past decade (Duffy et al., 2019) as well as more recently during COVID-19 (Zetterqvist et al., 2021). However, an important caveat is that it is currently unclear to what extent these apparent differences are accurate or potentially due to methodological artifacts, such as decreasing response rates or different assessment procedures resulting in higher prevalence estimates (Robinson & Wilson, 2020). Addressing these questions in future studies will be pivotal in shaping a more nuanced picture of the epidemiology of NSSI in adolescence and emerging adulthood.

Broaden the Focus Developmentally

To date, few studies span both adolescence and emerging adulthood or even include samples of adolescents and emerging adults together. As such, there is a need to conduct studies that account for developmental variation in explaining risk. Although there is some evidence that the salience of primary psychological symptoms (e.g., depression) for NSSI may not change (Victor et al., 2019), developmental tasks vary as a young person transitions from adolescence to emerging adulthood. Furthermore, research has shown substantial variation in intra- and interpersonal processes, such as body image, self-esteem, emotion regulation, rumination, and social support seeking, with generally improved outcomes for emerging adults (e.g., Nelson et al., 2018; Zimmermann & Iwanski, 2014). Emerging adulthood also represents an accelerated period of independence from parents and a further increased interest in social relationships (especially romantic relationships; Arnett, 2015). However, future studies are required to address this lack of specificity in current knowledge by moving toward a developmentally informed model of NSSI. In doing so, it will be valuable to take a holistic approach in which developmental factors discussed in this chapter are considered simultaneously for explaining the course of NSSI in adolescence and emerging adulthood.

Increase the Focus on Prevention, Barriers to Care, and Novel Treatment Modalities

There is a need for more research on the prevention and treatment of NSSI among adolescents and emerging adults. Although some existing studies demonstrate the feasibility of prevention programs in school settings, there is limited research in this area (Kruzan & Whitlock, 2019). Muehlenkamp et al. (2010) developed the signs of self-injury program (SOSI), providing education about NSSI and its warning signs to school staff and offering adolescents skills to respond to NSSI disclosures from peers. Results indicated that SOSI was well received, increased knowledge of NSSI and openness to help-seeking attitudes, and decreased discomfort and avoidance of discussing NSSI with friends. Recently, Baetens et al. (2020) added a psychoeducation module about NSSI to an existing prevention program that aims to enhance general mental well-being and resilience among adolescents, providing evidence that incorporating NSSI-specific modules is feasible and does not lead to iatrogenic effects. To date, however, no NSSI prevention program has shown efficacy in reducing rates of NSSI. An important question to address in future work is whether a universal (i.e., everyone receives the intervention), targeted (i.e., at-risk individuals receive the intervention), or a stepped program (combination of universal and indicated interventions) has the most potential in preventing NSSI. Scholars are encouraged to consider developing programs that adopt a multilevel approach that involves societal, community, relational, and individual levels (Kruzan & Whitlock, 2019). For instance, as not everyone attends tertiary education, including services outside a school context, such as workplaces and general practitioners, will be required to avoid leaving groups of young people without resources.

At the same time, it is equally important to understand better the barriers to help-seeking and effective treatment modalities for NSSI. Help-seeking for NSSI is often low, and many young people do not find their way to (or need) conventional therapy (Steinhoff et al., 2021; Whitlock et al., 2011). Emerging work suggests that there is also a delay of 1.5–2 years before adolescents who have NSSI thoughts and behavior access care, with longer delay durations observed for those with more severe psychopathology (Lustig et al., 2021). Given the ubiquity of technology use (especially among young people; Statista, 2020), making better use of mobile technologies' growing capacities will be pivotal in the prevention and intervention of NSSI. There are currently a variety of mobile apps for NSSI (Vieira & Lewis, 2018), yet most have not been theoretically grounded or evaluated empirically (for exceptions see Franklin et al., 2016; Kruzan et al., 2021). However, more future work is needed to investigate the clinical potential and the effectiveness of these novel

treatment modalities. Research co-design and qualitative studies to capture young people's expectations and preferences offer promise here (Hetrick et al., 2018).

Increase the Focus on the Individual

Finally, a last important direction for future research is to adopt a person-centered approach in NSSI research and treatment (Lewis & Hasking, 2021). Such an approach recognizes young individuals as experts in their own lived experience. Therefore, scientist-practioners are encouraged to adopt an idiographic approach in their research in which within-person knowledge is generated with individuals serving as their own control (Piccirillo & Rodebaugh, 2019). To date, researchers have taken mainly a nomothetic approach in which respondents report on their history of NSSI and are then divided into groups that are compared against each other—typically lifetime or 12-month NSSI versus no NSSI history. Although this helps clarify profiles of individuals who are on average at greater risk, such between-group knowledge does not translate to the here and now at the individual level. Retrospectively aggregating data over months to years (e.g., "Have you self-injured since last year?") also lacks temporal precision to gauge acute risk of NSSI. However, this is precisely what clinicians working with young people must consider. For them, what matters is the story of each client and their risk of both self-injury within the next hours, days, and weeks. EMA and real-time monitoring offers potential here, as it could help people take an active role in treatment and offers highly specific information on NSSI-related cognitions, urges, and behaviors as well as the factors and situations that trigger or prevent against NSSI cognitions and behaviors in daily life (for a review of the opportunities and challenges of real-time monitoring, see Kiekens, Robinson, et al., 2021). This could ultimately provide valuable information to better tailor treatment according to young people's dynamic therapy needs and client-defined outcomes.

Conclusion

In this chapter, we described adolescence and emerging adulthood as critical periods for NSSI and provided an update on the course, risk and protective factors, and possible consequences of NSSI during these life phases. This revealed that NSSI is a behavior that warrants research and clinical attention as many young people engage in NSSI at some point, with considerable proportions reporting NSSI for some years. A range of developmental factors was reviewed to consider when working with young individuals at risk for NSSI. We have learned that NSSI should always be taken seriously, as those who self-injure are at risk for various adverse psychosocial outcomes. To effectively address NSSI, the role of schools and colleges was discussed as well as evidence-based assessments and interventions. Finally, we provided some directions for future work to increase our understanding of NSSI among adolescents and emerging adults. We are hopeful that the next generation of research will build constructively on the strengths and limitations of the existing studies to translate these findings into developmentally appropriate prevention and intervention strategies.

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