

## Review Article

# Psychosocial Predictors of Non-suicidal Self-injury (NSSI) in Adolescents: Literature Review

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### ABSTRACT

**Background:** Non-suicidal self-injury (NSSI) in adolescents is a significant global public health concern. Previous studies indicate that such self-harm behaviors without suicidal intent such as repetitious cutting, burning, and hitting oneself are increasing among adolescents. There is also evidence that this problem is prevalent across cultural settings.

**Objective:** To determine psychosocial variables associated with NSSI among adolescents. A better understanding of this phenomenon may facilitate the identification of potentially effective interventions for adolescents.

**Method:** Relevant empirical studies and reviews from the mental health, cross-cultural and social psychology as well as cognitive psychology literature were synthesized into two broad topics: social/interpersonal and individual variables.

**Results:** Variables related to the occurrence of NSSI are discussed including social support, peer modeling, abuse, personality traits, sense of belongingness, self-compassion, and others. Based on these findings, specific clinical recommendations were identified that need to be further evaluated empirically.

**Conclusions:** Interpersonal and school-related factors along with individual characteristics and experience can predict NSSI in adolescents. NSSI prevention programs should take into account research about risk and protective factors of NSSI that involve not only adolescents, but also parents, peers, teachers, and the school environment in general. The systemic interventions recommended in this review may further promote research in circumventing this social and clinical problem.

**Keywords:** Non-suicidal self-injury, Risk factors, Protective factors.

### List of abbreviations

DBT = Dialectical behavior therapy,

DSM = Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition,

ERGT = Emotion regulation group therapy,

NSSI = Non-suicidal self-injury.

### Introduction

NSSI is defined as the premeditated, self-directed, deliberate, and socially unacceptable actions that lead to purposeful destruction of bodily tissue without suicidal intent [1,2]. Approximately 20% of adolescents engage in NSSI in certain periods of life [3] and repetitive NSSI leads to a high subsequent risk of suicide [4]. In the current paper, we consider basic features and some correlates of NSSI. We then turn to social factors (such as social support, peer victimization, presence of NSSI in peers), and finally, to individual predictors (e.g., individual traits, gender differences, and cognitive variables).

Lifetime prevalence rates of NSSI in adolescents vary considerably between 5.5% and 30.7% depending on age, country and assessment method used [5]. On average, NSSI onset occurs in the early-to-mid teen years. Furthermore, studies in clinical samples show that nearly 70% of adolescents have engaged in NSSI [6]. NSSI was traditionally considered as a symptom of borderline personality disorder in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) [7]; however, it is also associated with numerous psychological disorders and problems including developmental disabilities and eating disorders [8], social phobia, anxiety, depression, and suicidality [9] (e.g., depression severity is associated with NSSI, [6]). Finally, NSSI has been postulated as a distinct albeit unofficial diagnostic category for research purposes in DSM-5 Section III (Conditions for Further Study) [10]. This is because NSSI has been shown to be highly comorbid with various psychological disorders and purportedly may occur independently from other syndromes. For instance, a study has revealed that 80% of adolescents with self-injuries did not have BPD [9].

There are different types of self-injury; they may present in isolation or as a complex constellation of behaviors. NSSI includes behaviors such as cutting, hitting, burning, and scraping one's skin, biting oneself and other types of behavior that may bring on physical pain [11]. Even sex could be a kind of self-injury among adolescents, as shown in a study of adolescents in Sweden [12]. However, body piercing or tattoos with no intention of getting hurt are not related to NSSI [13].

NSSI is often erroneously considered as a suicide attempt; however, it is distinguishable from suicidality, because NSSI does not involve suicidal intent (although serious self-injuries could lead to accidental suicide). Instead, commonly investigated motives for NSSI behavior are connected with stress relief, regulation of negative emotions, as well as coping with anger and depression, emotional release [14,15]. Resolving interpersonal difficulties, affirming interpersonal boundaries, looking to make an impression, and influencing others are also common reasons [1,15,16]. There are cases when persons engage in NSSI in order to gain attention from others [17], which is more typical of teenagers [1]. This behavior may be connected to the psychological distress of adolescents [18], emotion regulation [19], cognitive processes [20] and other reasons. A number of studies provide evidence that school environments may influence repetitive NSSI in adolescents [16], for example, through communication with a peer who self-injures [21]. Below we discuss some common psychosocial predictors of NSSI in more detail.

There are underlying risk factors that predispose individuals to engage in NSSI. In the current paper, we focus on individual and interpersonal factors that may affect adolescent propensity towards NSSI. We included, but did not limit, articles to school-aged youth, because this group is the most susceptible to environmental influences [21]. School environments include many external factors that could influence adolescents' mental states and interact with internal predispositions. Moreover, school staff often does not know what interventions to implement to prevent or reduce NSSI among school-aged adolescents [22]. Below we discuss some of the social as well as individual-level predictors of NSSI. Although the social and psychological distinction is somewhat arbitrary given that individuals are embedded and constantly interacting with their social contexts [23], we found that this distinction assisted in the organization of this literature review.

## **Social factors in adolescents with NSSI**

### **Social Support**

Social support is a key factor in the prevention and treatment response to NSSI [24]. Social support can provide adolescents a feeling of care, appreciation, and self-worth. In general, the presence of social support protects against NSSI [24]. Moreover, social support was found to be a moderator between traumatic life-events and NSSI in young adulthood [25-77]. Parental support and familial relationships, in general, play

an important role in the onset and maintenance of NSSI. Low level of maternal warmth and support may be triggers of NSSI [78-81]. In turn, parents' mental health problems may also be a risk factors of NSSI in adolescents [82]. Low levels of parents' well-being, parental satisfaction, and social support may be predictors of NSSI in adolescents [83]. There are also relations between teacher support, peer climate, and NSSI [16]. Absence of support from teachers and a negative peer climate could foster adolescents' engagement in NSSI, especially in those who have a predisposition for such behavior. Adolescents who engage in self-injury behaviors may have poor relationships with their peers and report an absence of support from them [26,27,28].

In general, perceived levels of support are significantly lower in individuals currently engaging in NSSI [29]. Interpersonal support has different forms, and a study from the United States has revealed that levels of support from family, friends and significant others (i.e., an important person who may have an impact on one's behavior such as a person's partner in an intimate relationship) may be significant predictors of NSSI in adolescents [29]. Moreover, the levels of support from significant others are lower among those adolescents who currently engage in NSSI, compared with individuals who were engaged in NSSI in the past. Thus, support from significant others may need to be further investigated in comparison to other forms of interpersonal support (maybe, direction).

Support from parents in treatments also play important role for NSSI youth [79]. If parents are supportive in these aspects, adolescents may be more likely to accept professional help. Parents may help to create a caring environment that can facilitate the treatment of NSSI. They may influence the adolescent's decision and perception of the need for psychological and medical treatment. However, not always parents are aware of youth NSSI [80]. Moreover, youth with a history of NSSI tend to believe that parents could not help them [81].

### **Belongingness and meaning in life**

Thwarted sense of belongingness increases the likelihood of being involved in NSSI [84-92]. A study with school-aged adolescents shows that ethnic belongingness is negatively associated with engagement in NSSI. It was revealed that people who never engaged in NSSI had a higher level of ethnic belongingness than those who engaged in NSSI in the past or engage in the current time [29]. Ethnic belongingness is a specific sense of belonging to a particular ethnic group (and defines the boundaries between "us" and "them", [30]); in turn, belongingness, in general, could be negatively associated with the presence of NSSI and facilitate the treatment from this harmful behavior. Previous studies showed that belongingness is positively associated with a sense of meaning in life [31]; this finding suggests a potential mechanism since the presence of a greater sense of meaning or purpose in life is also negatively connected with NSSI [32].

Spirituality/religiosity may be also a protective factor against NSSI [84,85]. The relationship of NSSI with religiosity is

ambiguous: religiosity may serve as a form of coping; however, the negative form of religious coping may lead to increase in NSSI, and on the other hand, NSSI may itself be a form of coping with some aspects of religiosity. For example, such aspects of spirituality/religiosity as questioning and doubt may lead to the use of NSSI as a form of coping [86]. Such a negative form of religious coping as spiritual discontent religious coping may also be associated with NSSI. Moreover, the functions served by NSSI may depend on religious self-identity (“higher religiousness was associated with greater use of NSSI to communicate with or gain attention from others, whereas lower religiousness was associated with greater use of NSSI to relieve unwanted emotions” [87], that may require different treatment.

### **Relationships with peers and coping with victimization**

Relationships with peers are crucial for adolescents and are predictors of many important outcomes (e.g., self-esteem [33], academic achievement [34], health [35]). There are numerous studies suggesting that poor peer relationships are significant predictors of NSSI in adolescents (e.g. [2,36,37]). Impulsive friendship group contexts (e.g., hyperactive, impulsive or aggressive behavior) are also associated with NSSI. Peer group impulsivity that includes negative urgency (i.e. an individual’s tendency to act impulsive in the presence of negative affect), lack of perseverance (i.e. a tendency to abandon one’s intentions in the face of boredom, weariness, or disappointment) and lack of premeditation (i.e. acting without thinking about the consequences of one’s actions) predict adolescents’ engagement in NSSI [2].

Peer victimization is also a predictor of self-injury among adolescents in the school context [2,38,39]. Trying to cope with negative emotions and in an attempt to regain a sense of control after peer victimization, teenagers may resort to NSSI [2]. The probability of such a reaction to peer victimization increases in adolescents with low levels of self-compassion [2]. It has been shown that self-criticism could be associated with the engagement in maladaptive behaviors as coping strategies [40], whereas high self-compassion is connected with adaptive strategies and productive behaviors as psychological responsiveness to negative feelings and circumstances [41]. Moreover, self-compassion shows a buffering effect in the relationship between peer victimization and NSSI and thus could show utility as a prevention or intervention strategy for this behavioral problem [42].

### **Modeling/ peer influence**

There are some studies that show that decisions to engage in NSSI are dependent at least partly on peer behavior [43]. For instance, individuals whose friends engage in NSSI have a greater likelihood to be involved in such self-harm behavior themselves (58%) compared to those who do not have such friends (25%) [44]. This evidence suggests that the role of peer influence is crucial for adolescents’ self-harm behavior.

### **Abuse and Neglect**

Along with poor attachment relationships, a history of physical and sexual abuse or assault by a member of the family or others also could be an important risk factor for NSSI [36]. The effects of child abuse could be mediated by low self-esteem and negative perception of others, failures to regulate emotions and disturbing relationships with the primary attachment figure [36]. Thus, abuse at home and at school could also greatly affect the occurrence of NSSI in adolescents. This traumatic event may increase risk taking behavior in adolescence when the maturation of cognitive, emotional, and behavioural response systems occurs. Furthermore, this relationship becomes stronger for adolescents who reported recent experiences of sexual abuse or assault [36]. Tatnell and colleagues revealed that participants who reported experience of sexual abuse within the previous twelve months were almost seven times more likely to be involved in self-harm behavior (NSSI). It makes them a high-risk group and emphasizes the need to develop effective emotion regulation skills as a part of treatment.

### **Cultural differences**

Several parameters of NSSI have been found to vary across cultural groups. One study observed differences between Western and non-Western samples for characteristics and functions of NSSI [45]. It was revealed that there are differences in the relations between emotion dysregulation and lifetime NSSI: while such a relation has been found in Western populations, no relations were found between emotion dysregulation and history of lifetime NSSI after accounting for psychological symptoms in a sample of male university students in Iran [46]. Other studies revealed that there are differences in the prevalence of methods of NSSI across cultures: self-hitting is prevalent among other types of self-harm behaviors in India [47], head banging in Turkey [48], carving in Greece and in the US [49]. There are also differences in rates of NSSI across cultural settings: for example, in the comparative study of Kokaliari and colleagues, Greeks reported a significantly greater rate of NSSI than Americans (27% and 17% respectively). This data suggests that there is a need for more international research devoted to NSSI, as the majority of conducted studies were aimed at investigating NSSI in the US, Canada and Northern Europe [5,49]. Moreover, in Europe and Australia deliberate self-harm (DSH), a broader construct, is more commonly studied [5]. Rates of NSSI appear to be lower in some East-Central European countries and higher in some Western countries [5]. Cultural variables may shape how NSSI manifests and responds to treatment.

### **Individual-level factors**

#### **Individual differences**

Along with school-related factors for NSSI, individual factors need to be considered for self-harm assessment. There is a relationship between the Big 5 personality traits and NSSI among adolescents [50]. High levels of Openness

and Neuroticism were found to be connected with episodic and repetitive NSSI in adolescents [51]. You and colleagues in their study in Taiwan also revealed that neuroticism may be a predisposing factor for NSSI, while extraversion and agreeableness may be protective factors [51]. Moreover, a high level of neuroticism is related to interpersonal difficulties - such as social anxiety, few contacts with family and friends, less perceived support following interactions with friends, while interpersonal difficulties and presence of anxiety are related to NSSI [7,26].

Furthermore, such personality characteristics as novelty seeking, harm avoidance, self-transcendence, antisocial behavior, lower levels of persistence and self-directedness were shown to be related to repetitive NSSI in an adolescent school sample [52]. High levels of antisocial behavior and low levels of self-directedness also significantly predicted repetitive NSSI [52].

### **Self-efficacy, self-esteem and poor body image**

Self-esteem is important for adolescents and plays a protective role in mental health [53]. Social self-efficacy or belief in one's own ability to handle different stressful social situations was shown to be a preventive factor for high-risk adolescents [54]. Low self-esteem may be associated with repetitive self-injurers in youth [51]). Finally, poor body image (which is strongly associated with low self-esteem [55]) was shown to be a risk factor for adolescents with NSSI: body image may be a mediator between negative affect and NSSI [56].

### **Cognitive processes and mindfulness**

While the social factors do not necessarily lead to NSSI, specific cognitive processes may predispose those at-risk by interacting with or mediating maladaptive responses to external stimuli [57]. Capacity to regulate emotions and certain cognitive processes may distinguish people who self-injure and those who do not. A negative cognitive attribution style (characterized by maladaptive cognitive schemas and negative cognitive biases) and negative self-talk could be a mediator of the relationship between aggression (self- and other-directed) and greater frequency of NSSI [57]. Such cognitive errors could lead to self-criticism that may also promote engagement in self-harm behavior [40]. People who engage in NSSI focus attention on negative stimuli, and concurrently have difficulty processing positive stimuli [58]. For example, aggressive youth that has experience of negative social feedback are prone to perceive the support from their family and friends as insufficient [57]. In general, negative social cues foster the development of negative cognitive biases in aggressive adolescents that in turn increases the probability of NSSI [59]. The study of Heath and colleagues revealed that people who engage in NSSI tend to report less mindfulness [60]. Thus, mindfulness may act as a buffer against NSSI under high stress situations.

Although NSSI could lead to accidental suicide, a recent study with college students showed that an absence of suicidal

ideation was related to NSSI (in combination with other variables such as reported anxiety and stress) [49]. This finding supports the definition and clinical significance of NSSI as a separate construct (from suicide). On the other hand, due to a lack of suicidal intentions, NSSI may be prone to be underestimated.

### **Gender differences and sexual orientation**

There is evidence of gender differences in frequencies and specific methods of NSSI that may also have implications for intervention and prevention programs. While women may prefer cutting, scratching, bruising, and nail biting more often than men, men more likely reported burning behaviors [55,56] and the most preferable method for men is self-hitting [56]. Moreover, some studies have found that men reported more episodes of NSSI per day than women [55], although others revealed that women reported an earlier age of onset [56].

Some studies show that sexual orientation and identity may also play a role. While earlier studies showed that LGBTQ (lesbian, gay, bisexual, transgender, queer) populations could be at greater risk of NSSI [63,64], a recent study in Greece revealed that the probability to be involved in NSSI is higher among heterosexual respondents [49]. These differences could be also explained by different cultural environments: thus, it is possible that the determinants and triggers of NSSI differ across cultural groups and deserve more attention in future cultural-clinical research (see above).

### **Limitations and future directions**

First of all, the division between suicidal and non-suicidal intent is questionable [11]. Labeling a young person is also controversial because it may lead to the adolescent's stigmatization [11]. According to the position of the DSM-5 committee, inadequate evidence exists to date to support the existence of NSSI as a separate construct (i.e., it is currently not considered as an "official mental disorder" in DSM-5, [10], p.783). The reliability and validity of this diagnosis need to be assessed and it is necessary to clarify further the criteria of NSSI for easier and more accurate clinical assessment [11]. NSSI rates vary drastically between samples, countries and assessment tools [5], suggesting that more research needs to be done in standardizing assessment methods. As with other conditions such as personality disorders [65], research may show that NSSI may be better captured as a dimensional rather than categorical construct. Perhaps NSSI, which has predominantly been studied in Canada and the US, is simply an aspect of deliberate self-harm, a more inclusive construct which also consists of suicidal and non-suicidal intent and is more frequently studied in Europe [5].

There are some other limitations in existing studies that need to be addressed in future research. Although there is a relationship between peer victimization and NSSI among adolescents [2], the measurement of peer victimization did not distinguish different aspects of this variable. Thus, the research

on different types of peer victimization is needed, because they could lead to different effects on the occurrence of NSSI. It may also be worth examining peer influence effects in diverse peer contexts because peer links include different types of relations (e.g., with best friends, with classmates in general, or other acquaintances). Additionally, only several friendship group characteristics (e.g., impulsivity) were studied, the possibility of investigating other friendship group features could also be important (e.g., competitiveness, constant conviction (disapproval), envy in the group). Future research can examine the differences between fathers' and mothers' behavior in relation to youth NSSI [18]. The number of children in the family may be also explored in future studies. Other parents' factors such as psychological well-being, mental health, belongingness may also be considered to help find the most appropriate ways to support parents of adolescence who self-injure [88]. There is a need in equipping parents with necessary skills "to model adaptive emotional acceptance, regulation and expression", because parental responses towards adolescents' emotions can also help to reduce risk for NSSI [18]. Parent education programs may improve their ability to cope with their youth's NSSI and to develop more supportive behavior [88].

Further investigations of the specific role and mechanisms that make ethnic belongingness a protective factor of NSSI are also needed [29]. Similarly, further research should be devoted to the relation between meaning in life and NSSI in the school context (cf. for a study of patients with BPD [32], with NSSI and/or suicidal attempts in a clinical sample [66]). It is also crucial to investigate the role of hopelessness (especially affective hopelessness) in the development of NSSI and its transition to suicide. While numerous individual and school-related factors are relevant for understanding NSSI, more research is needed to investigate other mechanisms, including

cognitive and neuropsychological ones, such as state-sensitive neurobehavioral and neurocognitive indices of impulsivity [67,68]. It is necessary to take into consideration the result of recent studies internationally (especially those on high-risk groups and promoters) to better understand NSSI, work on and improve prevention and intervention strategies to decrease NSSI rates among adolescents.

### Practice implications

NSSI is a complex problem that may be caused by an interplay of numerous psychological, social, cultural factors. Clinicians' efforts should be focused on reducing risk factors and augmenting protective factors. In emerging fields, recommended intervention strategies may be linked to research evidence and observations found in the general (often non-clinical) literature [69]. Thus, Table 1 highlights some recommendations for school-psychologists, psychiatrists, and other clinicians working with adolescents based on emerging evidence. However, these recommendations are in need of further independent clinical evaluation research.

Clinicians may need to be cautious in accurately assessing for NSSI since it may be overlooked if they focus solely on suicidal ideation and assume that hospitalization or therapy is not necessary because there are no visible reasons (such as scars or injuries) or suicidal attempts [75].

### Conclusions

To conclude, the occurrence of NSSI is associated with a number of individual characteristics such as personality traits, sense of belongingness, meaning in life, self-compassion and other variables. Social factors such as the absence of interpersonal support and teacher support, being bullied, poor social relations, and peer climate, as well as abuse at home

**Table 1:** Preliminary recommendations for the prevention or treatment of Non-suicidal self-injury.

Observations and research findings in the literature	Implications for intervention and prevention
Self-harm occurs at multiple psychosocial levels	System-level strategies that involve clinician-, parent-, teacher-, and client-level interventions (different types of psychotherapy such as DBT, and ERGT have been found to be effective [70, 71])
Emotional regulation difficulties	Focus on decreasing impulsiveness, improving self-regulation, decision-making, and coping with negative emotions
Poor self-esteem and perception of one's body	To consider targeting body-related pathology along with emotion regulation [56]
Potential for misdiagnosis/under-recognition	To foster accurate identification, differentiate NSSI from those who do exhibit obvious intentions to die [72]
Differences in NSSI across cultural settings	Adapt assessment and interventions to the cultural values and patterns that shape the manifestation of NSSI
Previous abuse experience	Assess for a history of abuse and neglect. If necessary, child protection services may need to be involved
Aggression	Assess self- and other-directed aggression and try to reduce it through anger-management and other strategies
Relationships and perceived social support	Focus on building positive relationships with family, peers and significant others
Existential concerns and self-worth	Enhance perceived meaning in life, self-compassion and self-esteem through cognitive-behavioral, acceptance, and meaning-based interventions [66]
Belongingness, including ethnic belongingness	Foster ethnic belongingness in community interventions
Cognitive processes	Foster constructive cognitive processes, reappraisals and ways of coping [e.g. 20], develop adaptive problem-solving strategies;
Individual characteristics and personality traits	Long-term work may focus on individual traits such as lower levels of persistence, self-transcendence, and self-directedness (although personality traits are a very stable construct, they can be changed during one's lifetime [73]; moreover, many young people want to change them [74])

Note: NSSI = Non-suicidal self-injury, DBT = Dialectical behavior therapy, ERGT = Emotion regulation group therapy.

and at school, all point to the necessity to further study NSSI in home and school contexts [76]. School is recognized as the most suitable place for NSSI prevention programs [77]. The mechanisms of action for effective treatment interventions in ameliorating adolescent self-harm need to be explored [89]. The application of knowledge about triggers and risk, as well as protective factors, may help circumvent an individual adolescent's self-injurious behavior. Given their expertise, suitably trained school psychologists, psychiatrists, and other mental health professionals could be included in collaborative relationships with stakeholders in the development of targeted intervention and prevention programs in the school context [16]. A system-wide approach that will involve the informed and coordinated involvement of clinicians, parents, peers, and teachers may decrease rates of NSSI among young people.

Besides the factors mentioned in this article there are numerous other predictors such as drug addiction, alcohol consumption, eating and other disorders [90,91]. We did not review them, as the scope of this review was on more basic individual and sociocultural predictors, although comorbid conditions should be examined in future research, as NSSI may share common and differential risk factors with such behaviours (e.g., propensity towards impulsiveness). Although it is debatable whether NSSI deserves to be a diagnostic category in its own right, NSSI is a concern that pertains not only to adolescents, but for society as a whole, given the systemic implications of these self-destructive behavior patterns.

### Conflict of interest

No potential conflict of interest was reported by the authors.

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