

MALADAPTIVE PERSONALITY FUNCTIONING AND NON-SUICIDAL SELF INJURY IN ADOLESCENCE.

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Abstract

Objective: Although a large number of studies have investigated the association between Non-suicidal Self-injury (NSSI) and personality pathology, they have adopted exclusively a categorical approach, neglecting the study of maladaptive personality functioning.

The aim of the current study is to investigate whether and which dimensions of maladaptive personality functioning are mainly associated with the presence of NSSI in a community sample of adolescents.

Method: Severity of maladaptive personality functioning and NSSI were evaluated in 247 adolescents (68.8% females, $M = 15.57$, $SD = 2.24$) recruited from middle and secondary schools in Northern Italy.

Results: Results showed that lifetime self-injurers reported more difficulties in domains of Social Concordance, Self-control, Identity Integration and Responsibility than adolescents with no lifetime NSSI. On the contrary, no significant differences were found in the Relation domain between participants with and without lifetime NSSI.

Conclusions: These findings suggest the importance of taking into account a dimensional approach that consider the level of personality functioning in order to deeper understand the association between maladaptive personality and NSSI. In particular, our results indicate that intrapersonal aspects of maladaptive personality functioning, rather than interpersonal ones, have a key role in the presence of NSSI during adolescence.

Key words: nonsuicidal self-injury, adolescence, personality functioning

Declaration of interest: none

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Introduction

Non-suicidal self-injury (NSSI) is defined as “the direct, deliberate destruction of one’s own body tissue without suicidal intent” (Nock 2009, p. 9). NSSI includes behaviors such as intentional cutting or carving, scratching and burning of the skin, as well as behaviors such as hitting oneself or ingesting toxic substances (Klonsky 2007).

Empirical literature has shown that adolescence is a crucial stage for the onset of NSSI (Meszaros et al. 2017; Muehlenkamp et al. 2012; Swannell et al. 2014). Moreover, NSSI is most common among teenagers (Brown and Plener 2017), with lifetime prevalence rates from 15% to 20% in community samples of adolescents (Whitlock et al. 2006; Swannell et al. 2014) and from 50% to 60% in clinical samples (Kaess et al. 2013). Adolescents often report using different NSSI methods (Plener et al. 2009), with significant gender differences: burning behaviors are generally more common in males while cutting and scratching behaviors are more common in females. However, the occurrence and frequency of NSSI do not differ between male and female self-injurers (Heath et al. 2008, Sarno et al. 2010).

Empirical literature on NSSI has shown that self-injurious behaviors are associated with a variety of potential health problems. In particular, NSSI is often associated with several psychiatric symptoms and disorders such as anxiety and depressive symptoms,

emotion regulation difficulties, eating disorders and substance abuse (Gratz 2003, Muehlenkamp et al. 2012, Zetterqvist et al. 2015). Moreover, NSSI seems to be a risk factor for suicide (Nock et al. 2006).

Many researchers provide evidence on the role of NSSI as an emotion regulation strategy that allows self-injurers to find relief from an emotional state perceived as intolerable (Di Pierro et al. 2014, Nielsen et al. 2017). Indeed, emotions such as anxiety and anger usually pave the way to NSSI acts, and NSSI behaviors are often followed by a sense of relief in the short-term (Klonsky 2007). However, emotion regulation is not the only function of NSSI. In this regard, Klonsky (2007, 2009) deepened the functions of NSSI identifying the possible existence of both intrapersonal and interpersonal functions. Intrapersonal functions of NSSI refer to engage in self-injurious behaviors for affect-regulation, self-punishment, avoidance of suicidal impulses, reduction of dissociation and depersonalization experiences; whilst interpersonal functions of NSSI refer to engage in NSSI for interpersonal influence, withdrawal of demands and peer bonding. Similarly, Nock and Prinstein (2004; Nock 2008) proposed a theoretical model of NSSI functions considering two dichotomous dimensions. According to their model, NSSI functions might be automatic (when motivations for NSSI concern altering inner states such as stopping feeling anxious) or social (when motivations for NSSI concern interaction with others such as getting attention from others). Moreover, NSSI might be reinforced in

Table 2. Personality Functioning domains: differences between self-injurers and non-self-injurers

	No NSSI group (N= 136)		NSSI group (N= 111)		F (1, 245)	η^2
	M	SD	M	SD		
Social Concordance	5.86	.06	5.67	.07	3.93*	.02
Self-control	5.33	.07	4.92	.08	15.17***	.06
Identity Integration	4.59	.05	4.33	.06	10.57**	.04
Relation	4.66	.06	4.52	.06	2.50	.01
Responsibility	4.71	.06	4.35	.07	14.99***	.06

*p < .05, **p < .01, ***p < .001

Table 3. Facets of Personality Functioning: differences between self-injurers and non-self-injurers

	No NSSI group (N= 136)		NSSI group (N= 111)		F (1, 245)	η^2
	M	SD	M	SD		
<i>Social Concordance^a</i>						
Respect	3.11	.46	3.07	.47	.62	.00
Aggression regulation	3.54	.54	3.29	.65	11.26**	.04
Cooperation	3.19	.46	3.07	.56	3.22	.01
<i>Self-control^b</i>						
Effortful control	2.80	.04	2.54	.05	14.40***	.06
Emotion regulation	3.06	.05	2.81	.05	11.79**	.05
Stable self-image	3.05	.05	2.85	.06	6.36**	.02
Self-reflexive functioning	2.93	.05	2.74	.05	7.46**	.03
<i>Identity Integration^c</i>						
Frustration tolerance	2.80	.04	2.69	.05	2.89	.01
Self-respect	3.22	.04	3.04	.05	7.74**	.03
Purposefulness	3.17	.04	2.97	.05	10.51**	.04
Enjoyment	3.20	.05	3.04	.05	4.57*	.02
<i>Relation^d</i>						
Feeling recognized	2.89	.04	2.74	.05	4.91*	.02
Intimacy	2.84	.05	2.73	.05	2.22	.01
Enduring relationships	3.21	.04	3.15	.05	.76	.00
<i>Responsibility^e</i>						
Responsible industry	2.99	.05	2.75	.05	10.92**	.04
Trustworthiness	3.18	.04	2.96	.05	13.43***	.05

^a F (3, 243) = 3.98, Wilk's Λ = .95, p < .05; ^b F (4, 242) = 4.16, Wilk's Λ = .94, p < .05; ^c F (4, 242) = 3.04, Wilk's Λ = .95, p < .05; ^d F (3, 243) = 1.84, Wilk's Λ = .98, p = .14; ^e F (2, 244) = 7.28, Wilk's Λ = .94, p < .05.

* p < .05, ** p < .01, *** p < .001.

either a positive manner (i.e., involves the addition of a favorable stimulus) or a negative manner (i.e., involves the removal of an aversive stimulus).

Overall, both the Klonsky's and the Nock and Prinstein's models suggested that individuals might engage in NSSI both for intrapersonal (i.e., automatic) and interpersonal (i.e., social) reasons.

Recently, a growing body of research has investigated the association between NSSI and personality (Di Pierro et al. 2012, Nock et al. 2006), considering both adaptive and pathological personality traits. Several studies (Brown SA et al. 2009, MacLaren and Best 2010, Mullins-Sweat et al. 2013) examined the role of personality traits on NSSI according to the Big Five Model (Costa and McCrae 1992). Overall, such studies highlighted that self-injurers had significantly higher levels of Neuroticism and Openness to experience, but significantly lower levels of Agreeableness and Conscientiousness. As for the link between NSSI and maladaptive personality, for a long time empirical studies have focused mainly on the association between NSSI and Borderline personality disorder (BPD) (e.g. Brickman et al. 2014, Turner et al.

2015), even because NSSI is enlisted as a symptom for BPD (APA 2013). After all, nowadays considering NSSI only as a criterion for BPD seems problematic. Although the strong association found between NSSI and BPD, empirical studies have shown that only a minority of people with NSSI meet criteria for BPD and, differently from BPD features, NSSI is not stable and often stops in adulthood (Glenn and Klonsky 2013, Muehlenkamp and Brausch 2016). Moreover, NSSI has shown to be also associated with pathological personality other than BPD, such as Avoidant PD (Cawood et al. 2011, Nock et al. 2006, Klonsky et al. 2003), Antisocial PD (Cawood et al. 2011), or Dependent PD (Cawood et al. 2011, Klonsky et al. 2003). Thus, many researchers have suggested considering NSSI as a separate clinical syndrome (e.g. Gratz et al. 2015, Muehlenkamp 2005, Shaffer and Jacobson 2009, Washburn et al. 2015) and the Nonsuicidal self-injury disorder (NSSID) has been included in section III of the DSM (APA 2013) as a condition that requires further studies.

Although a large number of studies have investigated the association between NSSI and personality pathology, they have focused exclusively on categorical personality

diagnoses according to DSM Personality Disorders (PD; APA 2013). As recently suggested by Wilkinson and Goodyer (2011), it would be important for studying how personality pathology is related to NSSI considering a dimensional approach. Overall, a large body of research on personality pathology has underlined the importance of allowing for a dimensional approach, rather than a categorical one (e.g. Cloninger and Svrakic 2013, De Clerq et al. 2014, Waugh et al. 2017). Indeed, categorical diagnoses of PDs have shown relevant limitations over time (Madeddu and Di Pierro 2014, Skodol 2012): arbitrary cutoff points that define the presence versus absence of disorders, resulting in the poor validity of diagnoses, as well as problems of high co-occurrence and clinical heterogeneity. Contrarily, some authors (Skodol et al. 2011a) have suggested that a dimensional approach to personality pathology, which considers the severity of pathological functioning, would be more useful in both clinical settings and empirical research. In addition, adopting a dimensional approach is even more relevant when studying personality pathology and its correlates in adolescence. Indeed, maladaptive patterns of personality traits generally start during adolescence (Lyons-Ruth et al. 2015), but controversies in diagnosing the presence of personality disorders, as conceptualized by the categorical approach, during this life stage still exist (Miller et al. 2008, Paris 2003, Westen et al. 2003).

The purpose of the current study is to examine the role of the severity of maladaptive personality functioning in adolescent NSSI. In particular, we investigate whether and which dimensions of maladaptive personality functioning are mainly associated with the presence of NSSI behaviors. More specifically, we study the association between NSSI and dimensions of maladaptive personality functioning related to impairments in identity (intrapersonal domain) and difficulties in interpersonal relationships. Indeed, dimensions related to self- and interpersonal functioning are primarily involved in the development of adolescent personality (Ammaniti et al. 2012, APA 2013, Benzi and Madeddu 2017, Kernberg P.F. 2000), and they are also core aspects in the definition of pathological personality, as reported in criterion A of the Alternative model for DSM-5 personality disorders (APA 2013).

Given the lack of previous studies on the association between NSSI and maladaptive personality functioning from a dimensional perspective in adolescents, no detailed hypotheses can be supposed. Overall, we expect to find that adolescents with lifetime NSSI would report higher severity of maladaptive personality functioning than adolescents without lifetime NSSI. Moreover,

given the predominance of intrapersonal functions, compared to interpersonal ones, reported by self-injurers in their NSSI experience (Klonsky et al. 2009, Nock and Prinstein 2005), we expect to find that lifetime NSSI would be mainly associated with dimensions of maladaptive personality that are related to self- (intrapersonal) functioning rather than interpersonal functioning.

Methods

Participants

The study involved 247 participants, including 170 females (68.8 %) and 77 males (31.2 %) with an overall mean age of 15.57 (SD = 2.24; range= 12 - 21). Participants were recruited from middle and secondary schools in Northern Italy.

Assessment was performed after receiving authorization from both parents of underage students and from older students themselves. To ensure anonymity, students were given a unique reference code, and self-report questionnaires were completed in small groups of up to four students, with a research assistant always present to provide clarification when necessary. All materials and procedures were approved by the Ethical Committee of the University of Milano-Bicocca.

Measures

The Inventory of Statements About Self-Injury (ISAS; Klonsky and Glenn 2009) is a self-report measure that assesses the frequency and functions of nonsuicidal self-injury (NSSI). The ISAS includes two sections. The first section assesses the lifetime frequency of 12 different NSSI behaviors: biting, burning, carving, cutting, hitting/banging body parts, wound picking, sticking self with needles, pinching, hair pulling, rubbing skin against rough surfaces, severe scratching, and swallowing dangerous substances. The second section of the ISAS assesses 13 specific functions that are commonly related to NSSI (e.g., Affect Regulation, Self-Punishment, Sensation Seeking).

For the purposes of this study, and in line with the majority of studies on NSSI, we focused analyses on the lifetime presence and frequency of NSSI behaviors not considering their functions (e.g., Di Pierro et al. 2012, Thomassin et al. 2017).

Table 1. NSSI methods: endorsement rates among self-injurers and gender differences

NSSI methods	N	%	χ^2
Cutting	21	18.9	4.62*
Severe Scratching	21	18.9	2.65
Biting	50	45.0	.86
Banging	40	36.0	.00
Burning	9	8.1	1.00
Interfere with wound healing	86	77.5	.00
Carving	14	12.6	5.80*
Rubbing skin	37	33.3	.00
Pinching	46	41.4	2.76
Sticking self with needles	16	14.4	.00
Pulling hair	34	30.6	.00
Swallowing dangerous substances	7	6.3	.00

N= 111; df χ^2 = 1; * p < .05.

Severity Indices of Personality Problems – 118 (Verheul et al. 2008, SIPP-118) is a measure of the severity of maladaptive personality functioning. In particular, the SIPP-118 measures 5 domains of personality functioning. The Social Concordance domain ($\alpha = .85$) refers to the ability to value someone's identity, withhold aggressive impulses towards others and to work together with others, and it includes facets like aggression regulation, respect, and cooperation. The Self-control domain ($\alpha = .91$) refers to the capacity to tolerate, use, and control emotions and impulses. Such domain includes facets like emotion regulation, effortful control, stable self-image and self-reflexive function. The Identity Integration domain ($\alpha = .88$) refers to coherence of identity and the capacity to see oneself and one's own life as stable, integrated, and purposive. Such domain includes facets like frustration tolerance, self-respect, purposefulness, and enjoyment. The Relational capacities domain ($\alpha = .83$) refers to the capacity to genuinely care about others as well as feeling cared about them, to be able to communicate personal experiences, and to hear and engage with the experiences of others often but not necessarily in the context of a long-term, intimate relationship. The Relational capacities domain includes facets measuring feeling of recognition, capacity for intimacy, and presence of enduring relationships. Finally, the Responsibility domain ($\alpha = .84$) refers to the ability to set realistic goals and to achieve these goals in line with the expectations you have generated in others. Such domain includes facets of responsible industry and trustworthiness. High scores in the personality domains indicate better adaptive functioning, whereas lower scores represent more maladaptive personality functioning.

Statistical analyses

All analyses were performed using SPSS 21.0 (IBM 2012). Descriptive statistics were conducted to describe the sociodemographic characteristics of participants. Chi-Square test models were conducted in order to investigate gender differences in the lifetime presence and methods of NSSI.

A series of one-way ANOVA analyses were run for each of the five domains of the SIPP-118 to test whether and which domains significantly differed between lifetime self-injurers and non-self-injurers. Then, we conducted Multivariate Analysis of Variance (MANOVA) models to test which facets of each SIPP-118 domain differed between lifetime self-injurers and non-self-injurers. MANOVA models were chosen in order to control for increased Type I error because of multiple tests of correlated dependent variables (Tabachnick and Fidell 2007).

Results

Descriptive characteristics of NSSI

The 44.9% of participants (N= 111) engaged in NSSI lifetime, with no gender differences (females = 76, males = 35, $\chi^2(1) = .01$, $p < .05$). The 25.2% of self-injurers engaged in just one NSSI method (N= 28), while the majority of self-injurers used more NSSI methods (N= 83; 74.8%). No gender differences were found on number of NSSI methods ($F(1,109) = 3.40$, $p = .07$). As reported in **table 1**, the most frequently endorsed methods were wound interference and pinching, and no gender differences were found with regard to NSSI

methods except for cutting and curving behaviors. As showed, both cutting behaviors (females = 19, males = 2, $\chi^2(1) = 4.62$, $p < .05$) and curving behaviors (females = 14, males = 0, $\chi^2(1) = 5.80$, $p < .05$) were more common in females than in males.

Personality functioning and the lifetime presence of NSSI

ANOVA's results were reported in **table 2**.

Results showed that all the SIPP's domains significantly differed between the NSSI group and the no NSSI group, except for the Relation domain. Lifetime self-injurers reported lower scores in Social Concordance, Self-control, Identity Integration and Responsibility than participants with no lifetime NSSI. On the contrary, no significant differences were found in the Relation domain between participants with and without lifetime NSSI.

More specific differentiation can be found at the facet level. **Table 3** provides the mean scores on the SIPP facets for the NSSI group and the no NSSI group as well as the results of the MANOVA analyses. Results showed that lifetime self-injurers reported fewer capabilities in regulating aggression (Social Concordance domain) than non-self-injurers. Moreover, lifetime self-injurers reported significantly lower scores in all four facets of the Self-control domain. Again, lifetime self-injurers had significantly lower levels of self-respect, purposefulness and enjoyment (Identity Integration domain), responsible industry and trustworthiness (Responsibility domain) than non-self-injurers. Finally, results showed that lifetime self-injurers reported lower levels in feeling recognized by others (Relation domain) than people without a history of NSSI.

Discussion

Adolescence is a critical developmental period for understanding the relationship between NSSI and maladaptive personality functioning.

In line with previous studies (Klonsky and Muehlenkamp 2007, Nock et al. 2006), we found no gender differences in the presence and frequency of NSSI, while gender differences were found in some NSSI methods such as cutting behaviors which are more common in females than in males (Klonsky and Muehlenkamp 2007). Moreover, prevalence rates of lifetime NSSI in our sample is in line with previous literature, showing high rates of NSSI during adolescence (Muehlenkamp et al. 2009).

The role of the severity of maladaptive personality functioning in the presence of NSSI arises up in recent studies among young adults (Muehlenkamp et al. 2011, Mullins-Sweatt et al. 2013). In line with such studies, our findings suggest that maladaptive personality functioning is strongly associated with the presence of NSSI among adolescents.

One possible explanation of our results might come from empirical literature on functions of NSSI. Many authors (Muehlenkamp et al. 2013, Nock and Prinstein 2004, Tatnell 2014, Turner 2012) have underlined the importance of considering functions of NSSI in order to deeply understand the phenomenon. The majority of studies showed that self-injurers reported intrapersonal functions of NSSI as more relevant in their experience than interpersonal ones (Klonsky et al. 2009, Nock and Prinstein 2005). Moreover, the DSM-5 AMPD (APA 2013) suggests that personality pathology features can

be grouped in intrapersonal (e.g., Self) and interpersonal functioning dimensions.

Aspects of maladaptive personality functioning such as impairments in identity integration, self-control, responsibility and aggression regulation are core characteristics of the intrapersonal dimension; whilst aspects reflecting the capacity for empathy and for mature, mutually rewarding intimacy with others refer to the interpersonal functioning dimension. In this sense, our findings suggest that dimensions of maladaptive personality functioning mainly involved in the lifetime presence of NSSI among adolescents are intrapersonal in nature. On the contrary, dimensions of maladaptive personality functioning which are interpersonal in nature, such as those related to difficulties in relational capabilities and social concordance, show to be less strongly linked to the lifetime presence of NSSI during adolescence.

Our findings seem to support an exploratory qualitative study by Breen and colleagues (2013) showing that Self and Identity processes can particularly contribute to a vulnerability to NSSI. More specifically, NSSI can provide a source of self-identification to favor self-identity development and to find a community of other people to identify with (Muehlenkamp et al. 2013; Nock et al. 2004, 2005, 2008, 2014; Tatnell et al. 2014). Moreover, NSSI shows to be useful in order to handle negative emotions, and to provide a basic sense of self-coherence that persists in time (Lear and Pepper 2016, Nielsen et al. 2017, Zetterqvist et al. 2015).

In addition, our explanatory hypothesis seems to be supported by results at a facet level. In line with previous studies (e.g., Lear and Pepper 2016, McLean et al. 2010, Turner et al. 2012), our results show that facets related to intrapersonal functioning are mainly impaired in self-injurers. More specifically, facets of Self-control, such as Emotion regulation and Effortful control, as the capacity to tolerate, use, and control emotions and impulses, as well as Aggression Regulation (which pertains to the Social Concordance dimension), allow us to discriminate between lifetime self-injurers and non-self-injurers. Moreover, lifetime self-injurers showed significant impairments in all the facets of the Identity Integration such as Self-respect, Purposefulness and Enjoyment.

Also, facets of Responsibility such as Responsible industry and Trustworthiness seem to be crucial in distinguishing between self-injurers and nonself-injurers, as they have proven to be aspects of the wider construct of Identity (Lenzenweger and Clarkin 2005, Kernberg O.F. 2006, Preti et al. 2015). In line with previous observations on the importance of intrapersonal functions of NSSI, the only facet of the relational capacity domain characterizing adolescent self-injurers is not feeling recognized. After all, such result is not surprising. Indeed, it is plausible to hypothesize that adolescents who usually do not feel to be recognized by others might experience loneliness and exclusion, and in turn they might engage in NSSI in order to regulate such negative emotions.

The results of the current study can be better understood in the context of the study's limitations.

Our sample size does not allow for testing the influence of age on the relationship between maladaptive personality functioning and NSSI. In fact, it could be that the relationship between NSSI and maladaptive personality functioning changes at different age ranges. In a sense, it is plausible to hypothesize that the strength of associations between maladaptive personality functioning and NSSI would be higher in late adolescence than in early adolescence.

Although maladaptive personality dimensions can arise up during early adolescence, they usually become stable patterns of pathological personality functioning during late adolescence (Klimstra et al. 2009). Finally, only self-report measures are used in the present study. It would be interesting to investigate dimensions of maladaptive personality functioning both using explicit and indirect methods of assessment in order to deepen the relationship between lifetime NSSI and personality functioning. Indeed, self-report measures can be highly influenced by social desirability bias, as participants can answer in a way to portray themselves in a good light, minimizing his intrapersonal and interpersonal difficulties.

In conclusion, results of the present study highlight the importance of taking into account a dimensional approach that considers the severity of personality functioning in order to deeper understand the association between maladaptive personality and NSSI. In particular, our findings suggest that intrapersonal aspects of maladaptive personality functioning, rather than interpersonal ones, have a key role in the presence of NSSI during adolescence. Indeed, self-injurers in our sample do not seem to be socially deficient, but they show fragility of the self which is reflected in difficulties in regulating their internal emotional states (and aggression towards others), in having a clear and coherent self-image, as well as difficulties in self-directedness.

In this sense, our results might have relevant clinical implications. Indeed, the study suggests that clinical interventions with adolescent self-injurers should be focused on treating personality features linked to self-fragility, rather than be focused on modifying directly the behavior (e.g., skills to control the behavior). Helping adolescents to develop a more stable self-view, as well as to find more adaptive ways to tolerate and modulate inner states and impulses such as aggression and negative emotions, might decrease their need to engage in NSSI.

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