

# Suicidal ideation, suicidal attempts and non-suicidal self-injuries in referred adolescents

## *Ideazione suicidaria, tentativi di suicidio e condotte autolesive non suicidarie in adolescenza*

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**SUMMARY. Background.** Specific risk factors may affect persistent suicidal ideation (SI) and suicide attempts (SA) in adolescence. Non-suicidal self-injuries (NSSIs) are possible antecedent or associated factors of suicidality. **Aims.** To compare clinical features in adolescents with mood disorders referred for severe SI and for SA, and to explore differences in those with or without NSSIs. **Method.** 22 youth with severe SI (16 males [77.3%], mean age 14.86±1.86 years), and 19 with SA (16 males [84.2%], mean age 15.05±1.75 years) were assessed for familial psychiatric disorders/suicidal attempts, traumatic antecedents, diagnosis, impulsivity, hopelessness, attitude for life and death, resilience, and according to additional NSSIs. **Results.** Patients with SI presented more frequent anxiety disorders, those with SA more severe suicidal ideation with plan and intention, and more duration of suicidal ideation. Resilience was lower in SI, while all the other features did not distinguish the two groups. NSSIs were found in 70.7% of the sample, without differences between groups; only impulsivity was more frequent in NSSI group. **Discussion.** These specific features were frequently found in this high-risk sample, but only comorbid anxiety disorders, and more active, persistent and planned suicidal ideation differentiated the two groups. **Conclusions.** Patients with severe SI and SA may represent different variants of the same clinical entity. Given the high frequency of the explored features in the whole suicidal sample, this diagnostic methodology may be helpful and informative in all the high-risk adolescents with mood disorders, namely with NSSI.

**KEY WORDS:** suicidal ideation, suicidal attempts, non-suicidal self-injuries, adolescence, risk factors, assessment.

**RIASSUNTO. Introduzione.** Specifici fattori di rischio possono essere individuati per l'ideazione suicidaria (IS) e per i tentativi di suicidio (TS) in adolescenza. Le condotte autolesive non suicidarie (non-suicidal self-injuries - NSSI) possono essere possibili fattori di rischio o antecedenti di comportamenti suicidari. **Obiettivi.** Confrontare le caratteristiche cliniche di adolescenti con disturbi dell'umore, afferenti a una struttura ospedaliera per grave IS o TS, valutando possibili differenze tra quelli con o senza NSSI. **Metodo.** Ventidue adolescenti con grave IS (16 maschi [77,3%], età media 14,86±1,86 anni) e 19 con TS (16 maschi [84,2%], età media 15,05±1,75 anni) sono stati confrontati sulla base di familiarità per disturbi psichiatrici e tentativi di suicidio, esperienze traumatiche antecedenti, diagnosi psichiatrica, impulsività, perdita di speranza (*hopelessness*), attitudine nei confronti di vita e morte, resilienza, e sulla base della possibile associazione con NSSI. **Risultati.** I pazienti con IS hanno presentato più frequenti disturbi d'ansia, quelli con TS più grave IS, con pianificazione e intenzionalità, e maggiore durata della IS. La resilienza è risultata inferiore nella IS, mentre tutte le altre variabili selezionate non sono risultate diverse tra IS e TS. NSSI sono stati riportati nel 70,7% del campione, senza differenze tra gruppi; soltanto l'impulsività è risultata più frequente nei pazienti con NSSI. **Discussione.** Le caratteristiche esplorate sono risultate molto frequenti sia nei soggetti con IS sia in quelli con TS, ma soltanto i disturbi d'ansia e una IS più attiva, persistente e pianificata sono risultati significativamente diversi nei due gruppi. **Conclusioni.** I pazienti con grave IS e quelli con TS possono rappresentare diverse varianti di un'unica entità clinica. Data l'elevata frequenza delle caratteristiche esplorate nel campione complessivo con grave IS e TS, questa metodologia diagnostica potrebbe essere utile e informativa in tutti gli adolescenti con disturbo dell'umore e alto rischio suicidario, in particolare in coloro con NSSI associati.

**PAROLE CHIAVE:** ideazione suicidaria, tentativi di suicidio, comportamenti autolesivi non suicidari, adolescenza, fattori di rischio, valutazione.

### BACKGROUND

Suicidality is a wide concept, including both suicidal ideation (SI) and suicidal attempts (SA), up to completed

suicide, with a wide range of severity. This term has long fallen out of favor with psychiatrists and psychologists, due to its imprecision. Suicidal ideation means thoughts about killing oneself, which may include a plan. Suicide attempt is defined

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as a self-injurious behavior that is intended to kill oneself, but is nonfatal, while completed suicides are fatal<sup>1</sup> Finally, non-suicidal self-injuries (NSSIs) are direct, deliberate behaviors of destruction of body tissue (i.e., skin-cutting, burning, scratching), without suicidal intent<sup>2</sup>.

The transition from ideation to behavior is a crucial passage, but the immediate risk factors are not fully understood<sup>3</sup>. Classical risk factors are often helpful in predicting suicidal ideation, while they are less consistent in predicting the transition from ideation to behavior<sup>4</sup>. Furthermore, the relationship between suicidal ideation, suicidal behavior and NSSIs, and more specifically the role of NSSIs as possible risk factor in this transition from suicidal ideation to suicidal behavior, is still unclear<sup>5</sup>. The NSSIs usually begin during adolescence, with significantly higher rates in females<sup>5</sup>, with estimates ranging up to 14-24%<sup>6,7</sup>. Compared to sporadic and erratic NSSIs, chronic and continuous NSSIs are usually associated with more severe emotional impairment and distress<sup>8</sup>, and increased risk for suicidal behaviors<sup>9</sup>. Although NSSIs differ from suicidal behavior because of the lack of a clear suicidal intent, more recent studies suggest overlapping genetic factors<sup>10</sup>, as well as possible developmental relationships<sup>5,11,12</sup>, namely during adolescence<sup>13,14</sup>.

The aim of our clinical study was to compare patients with severe SI and patients with SA, according to selected psychopathological features, and to compare, among these patients, those presenting or not presenting NSSIs. We hypothesize that different clinical and psychological features may distinguish patients with severe SI and patients with SA, as well as patients with either SI or SA with or without NSSIs. Even though the transition from ideation to behavior can be explored only with longitudinal studies, differences between SI and SA groups in a cross-sectional study may help to hypothesize possible vulnerability factors and putative targets of intervention.

### **METHODS**

#### **Sample**

This was a naturalistic study based on a clinical database of 41 consecutive adolescents, aged between 11 and 18 years, referred as inpatients to our hospital between December 2017 and July 2018. Inclusion criteria were the presence of severe SI (score 3 or above according to the Columbia-Suicide Severity Rating Scale [C-SSRS])<sup>15</sup>, or a clear suicide attempt. Exclusion criterion was the presence of an Intellectual Disability (IQ above 85). Twenty-two patients presented a severe and persistent SI (16 males [77.3%], mean age 14.86±1.86 years), while 19 presented SA (9 [47.4%] one suicidal attempt, 7 [36.8%] two attempts, and 3 [15.8%] three attempts) (16 males [84.2%], mean age 15.05±1.75 years).

#### **Measures**

All the patients received at least three individual psychiatric sessions with the examiners, and three prolonged observations of behavioral and social-emotional skills during interactions with parents and peers, by trained child psychiatrists and psychologists throughout the diagnostic phase. Categorical diagnosis was assessed using a diagnostic interview, the Kiddie Schedule for Af-

fective Disorders and Schizophrenia for School-Aged Children-Present and Lifetime Version (K-SADS-PL)<sup>16</sup>, administered to the patient and at least one parent. Clinical severity was assessed with the Clinical Global Impression Severity (CGI-S)<sup>17</sup>, and the functional impairment with the Child Global Assessment Scale (C-GAS)<sup>18</sup>. All the patients presented a significant clinical severity (CGI-S above 4) and functional impairment (C-GAS score 60 or less). A self-report measure of depressive feelings was also administered, the Children's Depression Inventory (CDI)<sup>19</sup>, including the subscales Negative Mood, Interpersonal Problems, Sense of Ineffectiveness, Anhedonia, Low Self-Esteem.

For a dimensional assessment of psychopathology, all patients were assessed with the Child Behavior Checklist (CBCL)<sup>20</sup>, a 118-item scale, completed by parents, about how often a certain behavior applies to their offspring, on a three-point scale (0= absent, 1= occurs sometimes, 2= occurs often), with 8 different syndrome scales (Withdrawn, Somatic complaints, Anxiety/depression, Social problems, Thought problems, Attention, Rule-breaking behaviour, Aggressive behavior), clustered in two broad-band scores, designated as Internalizing Problems and Externalizing Problems, and a Total Problem Score. In the current study, we assessed the presence of emotional dysregulation using the CBCL Dysregulation Profile (CBCL-DP), based on the sum of t-scores of the three CBCL subscales, Anxious/depression, Attention problems and Aggressive behaviors<sup>21</sup>. In the current sample, the reliability coefficients (Cronbach) of CBCL Attention Problems, Aggression, and Anxious/Depressed subscales were: .82, .81 and .82, respectively. Furthermore, all the patients completed the Youth Self Report (YSR), including 112 items in a six-month time lapse, with the same eight subscales, clustered in order to identify individual's externalizing or internalizing profiles.

Presence of familial psychiatric disorders, familial attempted or completed suicides, and familial depression was explored with a specific, unstructured questionnaire. Similarly, lifetime traumatic life experiences, parental separation/divorce, bullying, and family mourning were also assessed with an unstructured checklist.

Severity of suicidal ideation and behavior was assessed using the Columbia-Suicide Severity Rating Scale (C-SSRS)<sup>15</sup>, (score 3 or higher), recommended by the Center for Disease Control and Prevention and Food and Drug Administration for the assessment of adolescents at high suicidal risk.

NSSIs were explored using the Deliberate Self-Harm Inventory-modified version (DSHI-m)<sup>22</sup>, based on the DSHI scale<sup>23</sup>, consisting of 17 items that ask for any behavior aimed to injure him/herself without suicidal intent. In this study, DSHI was used to discriminate patients according to the frequency of self-harm (absent or occasional versus continuous), and the tolerance for physical pain, required for the capability for suicide. In our sample, Alpha was 0.71, consistent with 0.68 in an Italian normative sample<sup>24</sup>.

The Multi-Attitude Suicide Tendency Scale (MAST)<sup>25</sup> was used to assess attitude for life and death, related to the fearlessness about death, and to the capability for suicide. This measure, designed to assess suicidal tendencies in youth, is a 30-item scale exploring four types of attitudes: attraction to life, repulsion by life, attraction to death, and repulsion by death. All four factor scales showed good reliability estimates, as well as relationships with measures of suicidal behavior and ideation, social desirability, and general psychopathology<sup>26,27</sup>.

Impulsivity was assessed with the Barratt Impulsiveness Scale-11 (BIS-11)<sup>28</sup>, a widely used measure, including 30 items that are scored to yield second-order factors, Attentional, Motor, Non-planning impulsiveness.

Hopelessness, exploring the extent of the respondent's negative attitudes or pessimism about the future, was assessed using the Beck Hopelessness scale (BHS)<sup>29</sup>. The BHS, used as an indicator of suicidal risk in depressed people, is a 20-item self-report inventory designed to measure three major aspects of hopelessness: feelings about the future, loss of motivation, and expectations, with strong validity and reliability also in adolescents<sup>30</sup>.

Resilience, that is a process reflecting positive adaptation in the face of adversity, was assessed using the Resilience Scale for Adolescent (READ)<sup>31-33</sup>, a self-administered 28-item questionnaire, with a score for each item ranging from 1 (totally disagree) to 5 (totally agree), which incorporates intrapersonal and interpersonal protective factors mapping onto the three salient domains of resilience, including individual, family and external environment. Confirmatory factor analysis validated the original five-factor structure of the READ, including Personal Competence, Social Competence, Structured Style, Family Cohesion, and Social Resources. The measures showed good reliability and validity in adolescents<sup>34</sup>.

### Statistical analyses

Descriptive analyses were used to describe demographic and clinical characteristics of the whole sample. Chi-square analyses were performed on categorical variables, and a t-test or one-way ANOVA on continuous variables. Considering the large number of comparisons and the number of subjects in each group, our results are prone to both type I and type II errors. However, given the exploratory nature of our study, p values were based on two-tailed tests with a =.05, without using a post hoc Bonferroni correction.

## RESULTS

The two groups, SI and SA, did not differ according to mean age (14.86±1.86 years vs 15.05±1.75 years,  $t=.33$  (39),  $p=.740$ ) and gender ratio (M/F 6/16 vs 3/16,  $\chi^2=.31$  (1),  $p=.438$ ).

Presence or absence of familial psychiatric disorders (19 [86.4%] in the SI, and 17 [89.5%] in the SA,  $\chi^2=.09$  (1),  $p=.572$ ), familial attempted or completed suicides (7 [31.8%] in the SI [one unknown in an adopted child], and 4 [21.1%] in the SA,  $\chi^2=1.64$  (1),  $p=.440$ ), and familial depression (16 [72.7%] in the SI, and 12 [63.2%] in the SA,  $\chi^2=.43$  (1),  $p=.374$ ), did not differentiate the two groups.

Similarly, history of traumatic experiences (11 [50.0%] in the SI, and 7 [36.8%] in the SA,  $\chi^2=.72$  (1),  $p=.298$ ), parental separation/divorce (14 [63.6%] in the SI, and 10 [52.6%] in the SA,  $\chi^2=.51$  (1),  $p=.346$ ), bullying (10 [45.5%] in the SI, and 11 [57.9%] in the SA,  $\chi^2=.63$  (1),  $p=.316$ ), and family mourning (6 [27.3%] in the SI, and 4 [21.1%] in the SA,  $\chi^2=.21$  (1),  $p=.463$ ) were all frequently reported, but not significantly different in the two groups.

Regarding psychiatric diagnoses, Bipolar Disorder was over-represented in our sample (18 [81.8%] in SI versus 16 [84.2%] in the SA,  $\chi^2=.46$  (1),  $p=.413$ ), compared to Unipolar Depression (4 [18.2%] in SI versus 3 [15.8%] in the SA,  $\chi^2=.46$  (1),  $p=.413$ ), without differences between groups. Also the subscales of the CDI, Negative Mood ( $F=.90$  (1),  $p=.350$ ), Interpersonal Problems ( $F=1.22$  (1),  $p=.277$ ), Sense

of Ineffectiveness ( $F=.30$  (1),  $p=.585$ ), Anhedonia ( $F=3.10$  (1),  $p=.087$ ), and Low Self-Esteem ( $F=1.55$  (1),  $p=.221$ ) were similar in the two groups.

On the contrary, Anxiety Disorders were significantly more frequent in the SI group (19 [86.4%], compared to the SA group (10 [52.6%]) ( $\chi^2=6.04$  (1),  $p=.021$ ). All the other categorical diagnoses, including attention deficit hyperactivity disorder ( $\chi^2=1.24$  (1),  $p=.252$ ), Oppositional Defiant Disorder ( $\chi^2=.19$  (1),  $p=.474$ ), Conduct Disorder ( $\chi^2=.87$  (1),  $p=.541$ ), Obsessive Compulsive Disorder ( $\chi^2=.44$  (1),  $p=.404$ ), Psychotic Symptoms ( $\chi^2=.69$  (1),  $p=.367$ ), Personality Disorders ( $\chi^2=3.78$  (1),  $p=.053$ ), Substance Use Disorder ( $\chi^2=.07$  (1),  $p=.553$ ), Autism Spectrum Disorder ( $\chi^2=2.26$  (1),  $p=.140$ ), Sleep Disorders ( $\chi^2=1.97$  (1),  $p=.146$ ), Eating Disorders ( $\chi^2=.76$  (1),  $p=.315$ ), and Learning Disabilities ( $\chi^2=.29$  (1),  $p=.447$ ) did not differ between groups.

Child Behavior Checklist (parent report) and Youth Self Report did not present significant differences in any of the syndrome scales, including the Dysregulation Profile (DP).

When clinical severity (CGI-S) and functional impairment (C-GAS) were compared, patients in the SA group presented a significantly higher clinical severity (CGI-S score 6.53±0.51 vs. 6.09±0.53,  $F=7.14$  (1),  $p=.011$ ) and heavier functional impairment (C-GAS score 29.16±6.66 vs 36.18±3.70,  $F=18.1$  (1),  $p<.001$ ).

Regarding the 5 types of SI according to the C-SSRS ("Wish to be dead", "Non-Specific Active Suicidal Thoughts", "Active Suicidal Ideation with Any Methods (Not Plan) without Intent to Act", "Active Suicidal Ideation with Some Intent to Act, without Specific Plan", "Active Suicidal Ideation with Specific Plan and Intent"), the two groups significantly differed ( $\chi^2=13.07$  (5),  $p=.023$ ). In the SI group, 7 patients (31.8%) reported active suicidal ideation without intention to act and without a plan (score 3), 8 (36.4%) active suicidal ideation with some intention to act but without a plan (score 4), and 7 (31.8%) active suicidal ideation with a plan and an intention (score 5). In the SA only 4 patients (21.1%) presented not specific active suicidal ideation, while other 4 (21.1%) presented active suicidal ideation with some intention to act but without a plan (score 4), and up to 11 (57.9%) an active suicidal ideation with a plan and an intention (score 5). Similarly, a significant difference was found in the duration of suicidal ideation between groups ( $\chi^2=12.44$  (5),  $p=.029$ ) with 4/22 (18.2%) of the SI, versus 9/19 (47.4%) in the SA scoring 4 or 5 (4 to 8 hours, or more than 8 hours/day for most of the days). Regarding the other dimensions of the C-SSRS, namely frequency of ideation ( $\chi^2=4.28$  (5),  $p=.51$ ), control over ideation ( $\chi^2=4.42$  (5),  $p=.620$ ), deterrent from suicide behavior ( $\chi^2=8.08$  (5),  $p=.232$ ), and reasons for ideation ( $\chi^2=8.76$  (5),  $p=.187$ ), there were no differences between groups.

The Prevalent Attitude (repulsion or attraction) for life and death, related to the fearless about death and to the capability for suicide, assessed with the MAST, indicated that in all the scales of this measure (Attraction to Life, Repulsion by Life, Attraction to Death, and Repulsion by Death) differences between groups did not reach statistical significance (Table 1).

Another possible risk factor, Impulsivity, both in total score and in the three main dimensions (Attentional, Motor, and Non-Planned), assessed with the Barratt Impulsiveness Scale-11 (BIS-11), did not differ in the two groups

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Table 1. Scores in the Total Sample, and Comparison between patients with suicidal ideation and with suicide attempts (statistical significance, \* = sig.<0,05).

	Total sample (N=41)		Suicidal ideation (N=22)		Suicidal attempt (N=19)		One-way Anova	
	Mean	SD	Mean	SD	Mean	SD	(F; df)	Sig.
<b>MAST-TOT</b>	10.89	1.36	10.73	1.50	11.08	1.17	(.57;1)	.397
<b>MAST-AL</b>	2.72	1.00	2.45	.99	3.06	.95	(3.46;1)	.072
<b>MAST-RL</b>	3.18	.87	3.34	.88	2.99	.86	(1.46;1)	.235
<b>MAST-AD</b>	2.98	.84	3.11	.83	2.81	.84	(1.13;1)	.296
<b>MAST-RD</b>	2.01	.87	1.83	.92	2.22	.79	(1.82;1)	.187
<b>MAST- RL+AD</b>	6.06	1.6	6.26	1.65	5.80	1.57	(.74;1)	.116
<b>BIS- tot</b>	72.97	7.86	73.47	7.31	72.38	8.66	(.166;1)	.687
<b>BIS-AI</b>	18.57	3.57	18.58	2.91	18.56	4.32	(.000;1)	.989
<b>BIS-MI</b>	23.00	4.45	23.05	3.90	22.94	5.15	(.006;1)	.941
<b>BIS-NPI</b>	31.46	4.20	31.95	4.22	30.88	4.24	(.558;1)	.460
<b>BHS</b>	12.19	6.51	13.32	6.64	10.94	6.31	(1,20;1)	.281
<b>READ-tot</b>	13.87	3.24	12.81	2.96	15.11	3.21	(4.87;1)	*.034
<b>READ-PC</b>	2.42	.83	2.20	.73	2.69	.87	(3.37;1)	.075
<b>READ-SC</b>	2.85	.78	2.68	.67	3.04	.87	(1.84;1)	.185
<b>READ-SS</b>	2.64	.72	2.50	.62	2.81	.81	(1.67;1)	.205
<b>READ-SR</b>	3.25	.97	3.02	1.09	3.52	.75	(2.45;1)	.127
<b>READ-FC</b>	2.73	.89	2.47	.80	3.05	.91	(4,10;1)	.051

*Legenda:* MAST= Multi-Attitude Suicide Tendency Scale; MAST-AL= Attraction to Life; MAST-RL= Repulsion by Life; MAST-AD= Attraction to Death; MAST-RD= Repulsion by Death; BIS= Barratt Impulsiveness Scale; AI= Attentional Impulsivity; MI= Motor Impulsivity; NP= Non-Planning Impulsivity; BHS= (Beck Hopelessness Scale); READ= Resilience scale for Adolescent (READ); READ-PC=Personal Competence; SC= Social Competence; SS= Structured Style, SR= Social Resources; FC= Family Cohesion.

(Table 1). Similarly, Hopelessness, assessed with the Beck Hopelessness Scale (BHS), did not distinguish the two groups (Table 1).

Finally, in the Resilience test (READ), patients in the SI group presented lower scores in the Total score (p=.034), even though none of the five dimensions of the scale (Personal Competence, Social Competence, Structured Style, Family Cohesion, and Social Resources) reached the statistical significance (only Family Cohesion approached statistical significance, p=.051, with lower scores in the SI group) (Table 1).

Chronic and persistent NSSIs were reported in 15/22 (71.4%) of the patients with SI and in 14/19 (82.4%) of those with SA, without significant difference between groups ( $\chi^2=.29$  (1), p=.447). Regarding the presence of specific differences in the patients with SI/SA with or without NSSIs, the Prevalent Attitude (repulsion or attraction) for life and death, assessed with the MAST, did not show significant differences between groups in the total score (F=.43 (1), p=.515), and in any of the dimensions, Attraction to Life

(F=.81 (1), p=.376), Repulsion by Life (F=2.1 (1), p=.131), Attraction to Death (F=.35 (1), p=.560), and Repulsion by Death (F=.03 (1), p=.861). Similarly, Resilience, assessed with the READ, did not differentiate the two groups in any of the dimensions, Personal Competence (F=1.19 (1), p=.284), Social Competence (F=.60 (1), p=.809), Structured Style (F=.00 (1), p=.989), Family Cohesion (F=.18 (1), p=.679), and Social Resources (F=.05 (1), p=.827).

The Beck Hopelessness Scale (BHS) only approached statistical significance, with higher scores in the NSSIs compared to no-NSSIs (12.88±5.92 vs 7.88±7.34, F=3.86 (1), p=.058). Finally, Impulsivity, assessed with the Barratt Impulsiveness Scale-11 (BIS-11), was higher in the NSSIs group (74.67 ± 7.32 vs 67.13 ± 8.49, F=5.89 (1), p=.021). Among the three different dimensions of Impulsivity, only Attentive Impulsivity (19.29 ± 3.64 vs 16.25±3.20, F=4.42 (1), p=.044), but not Motor Impulsivity (F=1.02 (1), p=.320) and Non Planning Impulsivity (F=2.06 (1), p=.162) significantly differentiated the two groups.

## DISCUSSION

The relationship between SI and SA is one of the core elements for understanding the suicidal risk in adolescence. One disorder may represent a predisposing factor, or an alternative expression of the other, or the two disorders may be part of the same shared diathesis, supporting the notion that multiple risk factors may be shared by both the two conditions. Elements involved in this relationship may represent potential targets for a preventative intervention. Although the best way to explore this issue is a longitudinally follow-up of patients with SI who committed a SA, we tried to explore this relationship by comparing, according to possible risk factors for suicidal behavior, a consecutive sample of referred adolescents with SI and with SA.

Gender and age did not differ in both SI and SA. Of note, 60% of the patients in our SA group committed more than one suicide attempt, and 17.6% committed three attempts, supporting the notion that one of the heaviest risk factors for suicide attempt is a previous attempt<sup>35</sup>.

Although familial psychiatric disorders, depressive disorders, and previous suicidal events were frequent in both the groups (more than 85% in both the groups presented familial psychiatric disorders, more than 2/3 presented familial depression, and about ¼ presented familial suicide attempts), differences between groups did not reach statistical significance. Traumatic experiences were reported in 43% of the sample, parental separation or divorce in 58.5%, bullying in 50%, and mourning in ¼ of the sample.

These findings support the important role of adverse life events in the history of patients with both severe suicidal ideation and suicide attempts.

It is difficult to analyze previous negative life experience as a group, as they have varying intensities, and there are also important differences between gender and intra-familial vs extra-familial abuse. In our study the lack of significant difference between the two groups may be explained by the small sample size, and the lack of a systematic assessment of traumatic experiences, but also by the psychopathological continuum between ideation and behavior. However, a recent study supports the role traumatic experiences, namely emotional abuse occurring during childhood, in lifetime suicide attempts<sup>36-39</sup>.

A recent meta-analysis, which showed that in both cross-sectional and cohort studies, early life sexual abuse is consistently associated with increased suicide attempts<sup>40</sup>. These rates support the close relationship between genetic vulnerability and triggering traumatic experiences. It can be hypothesized that when these two conditions are co-occurring, adolescents should be closely monitored and actively treated. The most frequent categorical diagnosis was Bipolar Disorder in both the groups (significantly more than Unipolar Depression), while only Anxiety Disorders were differently represented in the two groups, being more frequent in the SI, compared to SA. This finding may suggest that anxiety decrease the risk of transition from ideation to behavior, as a sort of brake against impulsivity. However, the cross-sectional design of the study does not consent a conclusion about this possible protective effect, which should be supported only by a longitudinal study.

The role of anxiety in suicidal ideation and behavior has been discussed in many studies, exploring whether a preex-

isting anxiety disorder can be an independent risk factor for subsequent onset of suicidal ideation and attempts<sup>41</sup>. However, results in adolescents are not consistent, as many studies demonstrated that the comorbidity of mood and anxiety disorders is an important risk factor for suicidal ideation and attempts<sup>42</sup>, while other studies suggest that comorbid anxiety is not risk factors for suicide attempts<sup>43</sup>. Further research is warranted to determine the role of anxiety disorders as risk factors for suicide attempts, and to explore the possible preventative effect of a timely treatment of anxiety.

As expected, 57.9% of patients with SA, compared to 31.8% of those with SI, presented active suicidal ideation with a plan and an intention. Similarly, almost half of the patients with SA presented a more persistent suicidal ideation. Of note, other dimensions of suicidality, including the control over ideation, possible deterrent from suicide behavior, and the reasons for ideation were similar in the two groups. These findings support the role of plan, as well as the duration of suicidal ideation, as a possible markers of increased risk of SA, which should be actively explored and considered, namely in at risk populations (with previous traumatic life events and genetic load for mood disorders and suicidal events). However, the role of stability and duration of SI for a SA supports the notion of a psychopathological continuum between ideation and behavior.

When other risk elements for the transition were explored, the Prevalent Attitude (repulsion or attraction) for life and death, related to the fearless about death and to the capability for suicide, including Attraction to Life, Repulsion by Life, Attraction to Death, and Repulsion by Death, did not differ between groups. Similarly, both Hopelessness and Impulsivity did not differentiate the groups. These findings are rather counter-intuitive, considering that Repulsion to Life, Hopelessness and Impulsivity are commonly considered immediate risk factors for committing a suicide attempt. Our findings suggest that such elements are not specific features of suicidal behavior, as they are very frequent both in severe SI and in SA. Even though our data are not longitudinal, it may be hypothesized that they may be less crucial in affecting the transition towards a behavioral attempt.

Another counter-intuitive finding is that Resilient score was lower in the SI compared to the SA. We may expect that patients who have committed a suicide attempt may be less resilient, compared to those with only ideation. A possible explanation is that after a suicide attempt the patients may experiment a sort of powerful feeling of victory against death, which may account for the higher resilience score<sup>44</sup>.

A significant finding is the very high rate (70%) of NSSIs in both the groups of SI and SA. We may hypothesize that the patients with associated NSSIs may present peculiar features. However, only Impulsivity, but not Attitude for Life and Death, Hopelessness and any of the five dimensions of the Resilience, differentiated patient with NSSIs, supporting the notion that Impulsivity directly influences the proneness to self-injuries. Impulsivity is more crucial in self-harm, compared to SA, suggesting a difference between a dysfunctional conduct and an anticonservative ideation. It should be underlined that our patients presented chronic and severe NSSIs, and thus may be a not representative group of NSSIs patient.

In summary, the clinical and temperamental features explored in our study were frequently found in this high-risk sam-

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ple, but most of them failed to differentiate SI and SA patients, as well as patients with suicidality with or without NSSIs. The most convincing explanation of the lack of significant differences may be that SI and SA represent different variants of the same clinical entity. The finding that SA were significantly related to the stability and duration of SI further supports the psychopathological continuum between SI and SA.

Only less comorbid anxiety disorders, and more active, planned and persistent suicidal ideation were associated with a SA. Similarly, NSSIs were frequently associated to suicidality, but without significant differences between SI and SA (except for Impulsivity). We may hypothesize that our diagnostic methodology is helpful in characterizing referred adolescents at high suicidality risk (both severe SI and SA), and it should be extended to all these youth, namely when NSSI are co-occurring. However, it may be less useful in distinguishing suicidal ideation and suicidal behavior.

A strength is that this study is based on a consecutive, unselected sample of referred adolescent, assessed with selected structured measures, with few exclusion criteria (except for intellectual disability). However, our naturalistic study presents several methodological limitations, namely the small sample size and the lack of a control group. Furthermore, the cross-sectional design of the study does not allow for firm conclusions about possible mechanisms affecting the transition from severe SI towards SA. Only a longitudinal, perspective design may consent an exploration of risk factors in the transition from ideation to behavior. Another limitation is the lack of information about substance use disorder in our sample. Substance abuse is frequently co-occurring in suicidal adolescents<sup>45,46</sup>. Some risk factors are shared by both suicidality and substance use, such as mood disorders, impulse control, stressful life events, and these causal mechanisms can interact to further increase risk for suicidal behaviors and substance use. Specific developmental trajectories may be explored for suicidal and substance use behaviors, as well as specific risk and protective mechanisms<sup>47</sup>.

### CONCLUSIONS

Although SI and SA may represent different variants of the same clinical entity within the same psychopathological domain, the nature of the reciprocal relationships is still unclear. Our findings indicate that both adolescents with severe SI and adolescents with SA present high scores in the selected measures. Even though they may be less able in detecting the patients with higher risk for transition from suicidal ideation to behavior, they may represent a reliable methodology for assessing high risk referred adolescents, namely those presenting with NSSIs<sup>48</sup>.

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