



Research Paper

Are PID-5 personality traits and self-harm attitudes related? A study on a young adult sample pre-post COVID-19 pandemic

Francesca De Salve^a, Claudio Placenti^b, Sofia Tagliabue^c, Chiara Rossi^a, Lara Malvini^c, Mauro Percudani^c, Osmano Oasi^{a,*}

^a Department of Psychology, Catholic University of Milan, Largo Agostino Gemelli, 1, 20123 Milano, Italy

^b Department of Brain and Behavioral Sciences, University of Pavia, Pavia, Italy

^c Department of Mental Health and Addiction Services, Niguarda Hospital, Milan, Piazza Ospedale Maggiore, 3, 20162 Milano, Italy



ARTICLE INFO

Keywords:

Self-harm attitude
NSSI
Suicidal ideation
PID-5
Personality traits
COVID-19

ABSTRACT

Introduction: Different studies confirm a stronger link between maladaptive personality traits and Non-suicidal Self-injury (NSSI). Additionally, the interest in the relationship between the experience of the COVID-19 pandemic and NSSI is growing. The present study aims (a) to investigate differences in personality traits between individuals with NSSI, suicidal ideation, NSSI and suicidal ideation co-occurrence and none; (b) to observe which personality traits predominantly influence the occurrence of self-harm acts; (c) to evaluate the difference in self-harm attitudes pre and post COVID-19 pandemic

Method: 270 (108 males and 162 females) participants aged between 18 and 25 were included in the study. Everyone participated in a clinical interview and completed an assessment consisting of the Personality Inventory for DSM-5 (PID-5) and the Health of the Nation Outcome Scales (HoNOS). A multivariate analysis of variance (MANOVA), a multiple hierarchical regression analysis, controlling for age and gender and a T-test for independent samples were conducted.

Results: The individuals with the highest levels of negative affectivity, detachment, antagonism, and psychoticism are those who simultaneously present suicidal ideation and NSSI. Moreover, age and detachment predicted higher scores in self-harm attitudes. Our results unexpectedly do not confirm an upward trend of NSSI and suicidal ideation during the pandemic period.

Limitations: The study is cross-sectional, and no causal links can be assumed; the groups involved were not homogeneous for numerosity.

Conclusions: The results testify that the study of maladaptive traits is fundamental to a greater understanding of NSSIs. Working clinically on those could potentially reduce

1. Introduction

Over the years, the need to distinguish between the different types of self-injurious behaviour has arisen. This necessity led to the identification of three different terminologies: suicidal ideation, Non-Suicidal Self-Injury (NSSI) and suicidal behaviour (CDC, 2015; APA, 2013; Crosby et al., 2011).

Suicidal ideation is defined as thinking about, considering or planning suicide (Klonsky et al., 2016). The distinction between NSSI and suicidal behaviour is based on three relevant attributes: intention, lethality, and repetition (Baetens et al., 2011; Muehlenkamp and Gutierrez, 2004; Guertin et al., 2001). Non-suicidal Self-injury (NSSI) is

a direct injury to one's body tissue without suicidal intent. It is characterised by receptivity and intentionality and is not socially accepted (Lloyd-Richardson et al., 2007). Whereas suicidal behaviour consists of self-directed injurious behaviour with the intent to die. Individuals with NSSI do not intend to take their own lives, unlike people with suicidal behaviour (Moselli et al., 2021b; Andover and Gibb, 2010; Favazza, 1998; Patton et al., 1997). Thinking about suicide or committing self-harming acts does not necessarily mean committing a suicide attempt (Job et al., 2020; Glenn and Nock 2014; Klonsky et al., 2013; Nock et al., 2008). In this regard, PDM-2 distinguishes between suicidal and parasuicidal intent. Although parasuicidal actions do not intend to destroy one's life, they represent a maladaptive way of expressing

* Corresponding author.

E-mail address: osmano.oasi@unicatt.it (O. Oasi).

<https://doi.org/10.1016/j.jadr.2023.100475>

Received 14 August 2022; Received in revised form 12 December 2022; Accepted 3 January 2023

Available online 4 January 2023

2666-9153/© 2023 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

distress and seeking help, and their severity should not be minimised. Parasuicidal actions can lead to death or severe self-harm, depending on factors such as personality and defence mechanisms, the presence of impulsive behaviour, the lethality of the ready means and whether or not one is aware of this lethality, and the absence of a supportive relational environment (Lingiardi and McWilliams, 2015). amongst the different elements influencing NSSI, an important role is attributed to personality traits.

Especially, the relationship between self-injurious behaviour and personality disorders has always been a topic of interest in literature, both in terms of prevention and effective treatment (Meliante et al., 2021; Colle et al., 2020; Urnes, 2009). The NSSI subgroup is notoriously associated with borderline personality disorder, as demonstrated by the presence of “self-injurious behaviour” amongst the DSM-5 diagnostic criteria (Reichl and Kaess, 2021; APA, 2013; Krynska et al., 2006).

Few studies have focused on the association between NSSI and personality traits, but results suggest that individuals with NSSI were found to have higher levels of negative affectivity, detachment, antagonism, and psychoticism (Kang et al., 2021; Somma et al., 2019; Baetens et al., 2011; Hasking et al., 2010; MacLaren and Best, 2010; Brown, 2009). In particular, experiencing high levels of negative affectivity and detachment is associated with risk behaviours (Turner et al., 2018), while antagonism is associated with high levels of conflict in interpersonal relationships. It appears that a lack of social network and experiencing others as hostile contribute to the decision to self-harm (Miskey, 2012; Brown, 2009). Finally, in previous studies, psychoticism was predictive of NSSIs (Kang et al., 2021). People with a high level of psychoticism are more likely to use maladaptive coping strategies, such as emotion-focused and task-orientated coping (Chisholm et al., 2018).

There is always more evidence of a stronger link between maladaptive personality traits, suicidal ideation, and NSSI (Turner et al., 2018).

In addition to the role of personality traits, recent studies have focused on the impact of the COVID-19 pandemic on self-harming behaviour. According to the findings, the containment and restraint measures resulting from the pandemic have led to increased stress and concerns in young people, as well as an increased frequency of at-risk behaviours (Meherali et al., 2021). Studies have identified a 7% to 26% increase in self-harm episodes in adolescents (Ougrin et al., 2021; Turner et al., 2018). The pandemic appears to have led to the development of several factors that exacerbate self-injurious behaviour, including increased difficulty in accessing care due to isolation (Kwong et al., 2021). Social isolation and loneliness are counted amongst the triggers, along with disruption of regular daily routines and general concern about the impact of COVID-19. However, the presence of mental health problems of various kinds, whether born with the pandemic or already existing and worsened with the health emergency, seems to play a central role in the psychological well-being of young people worldwide (Hawton et al., 2021; Nock, 2009).

The present study aims (a) to investigate differences in personality traits between individuals with NSSI, suicidal ideation, NSSI and suicidal ideation co-occurrence and none; (b) to observe which personality traits predominantly influence the occurrence of self-harm acts; c) To evaluate the difference in self-harm attitudes pre- and post-COVID-19 pandemic. Indeed, on 8th March 2020, pandemic status was declared in Italy and to observe whether there was an increase in self-harm the sample was divided into two groups (pre-pandemic and post-pandemic). Specifically, all people who came to the Service at Niguarda Hospital in Milan, Italy before and after 8 March were included in the pre-pandemic and post-pandemic groups respectively.

2. Materials and methods

2.1. Participants

The sample consisted of young, help-seeking individuals who

approached the Youth Mental Health Service at Niguarda Hospital in Milan, Italy, during the years 2019, 2020, and 2021.

From an initial sample of 300 individuals, 270 (108 males and 172 females) were included in the study. Participants were excluded if reported one of the following conditions: a diagnosis of intellectual disability or autism, a request for a one-time consultation for diagnostic purposes, and/or an incomplete personality assessment.

2.2. Procedures

The present study was approved by the Ethical Committee of Niguarda Hospital in Milan (protocol 305–19,052,021) and complies with the Guidelines of the 1964 Declaration of Helsinki and its later amendment (World Medical Association, 2013). Informed consent was obtained during routine assessment from subjects who decided to be involved in the study.

3. Measures

Each subject participated in a clinical interview and completed an assessment consisting of the Personality Inventory for DSM-5 (PID-5) and the Health of the Nation Outcome Scales (HoNOS).

3.1. Clinical interview

Clinical interviews were conducted by clinicians (psychiatrists or psychologists) during patients' first access to the Mental Health Service. It included clinical information, particularly the tendency to NSSI and the presence of suicidal ideation.

After the clinical interview, the sample was divided into four groups: 1) only the presence of self-injury; 2) only the presence of suicidal ideation; 3) both self-injury and suicidal ideation, and 4) none of the previous conditions.

3.2. Personality inventory for DSM-5 (PID-5)

The Personality Inventory for DSM-5 (or PID-5) has been developed to assess Criteria B (Pathological Personality Traits) in section III of DSM-5. It is a self-report questionnaire consisting of 220 items on a Likert scale from 0 (very false/very false) to 3 (very true/very true). It assesses 25 personality traits and 5 major personality traits (detachment, disinhibition, negative affectivity, antagonism, and psychoticism). Cronbach's alpha values were >0.70 for all PID-5 facet scales and greater than 0.90 for all PID-5 domain scales (Fossati et al., 2013). Scores of the present study were analysed following the indications of Krueger et al. (2012).

3.3. Health of the nation outcome scales (HoNOS)

The HoNOS is an observer-rated scale that covers psychological and behavioural symptoms and organic and social problems, and it has been developed for use with general psychiatric patients. It is composed of 12 items each scored 0 ± 4 , yielding a total score in the range of 0 ± 48 (Wing et al., 1996). Higher scores indicate greater levels of impairment.

In particular, item 2 of HoNOS requires that practitioners identify the presence of self-harm attitudes. According to the study's aims, this item appeared relevant to the patient population.

3.4. Data analysis

The analyses were performed using SPSS 25.0 statistical software.

The normality of the distribution of the sample was assumed by observing skewness and kurtosis values that resulted within the acceptable range between -2 and $+2$ (Podsakoff et al., 2003).

According to the first aim, to test for differences in personality traits according to the different groups, a multivariate analysis of variance

(MANOVA) was conducted. To analyse the pattern of difference between means, Tukey Post-Hoc tests were used.

For the second aim, to measure the association between personality traits and self-harm attitude (HoNOS item 2), a multiple hierarchical regression analysis, controlling for age and gender, was performed.

Finally, a T-test for two independent samples was conducted to investigate whether there was a difference in self-harm attitudes before and after the pandemic.

4. Results

4.1. Descriptive statistics

Characteristics of the sample are reported in Table 1.

4.2. Differences in personality traits

The multivariate analysis of variance (MANOVA) was conducted considering the 4 groups (1) NSSI; 2) suicidal ideation; 3) both NSSI and suicidal ideation, and 4) none of the previous conditions. The assumption of the equality of covariance matrices was confirmed by Box's test, $p = .369 (> 0.05)$, hence the covariance matrices are roughly equal as assumed by the MANOVA. To test the homogeneity of group variances, the Levene test was conducted. Only disinhibition resulted significantly and thus it was excluded from the subsequent analyses.

In the interaction between groups (Wilks's $\Lambda = 0.821$, $\eta_{\text{partial}} = 0.64$; $p < .001$) negative affectivity ($F(3,270) = 8.291$; $\eta_{\text{partial}} = 0.086$; $p < .001$), detachment ($F(3,270) = 11.983$; $\eta_{\text{partial}} = 0.119$; $p < .001$), antagonism ($F(3,270) = 4.225$; $\eta_{\text{partial}} = 0.045$; $p = .006$), and psychoticism ($F(3,270) = 10.483$; $\eta_{\text{partial}} = 0.106$; $p < .001$) resulted significant.

Tukey's Post-hoc multiple comparisons revealed significant differences between the means amongst the groups for four domains (negative affectivity, detachment, psychoticism, and antagonism) as shown in Table 2.

As regards negative affectivity, significant differences were found between the group with the NSSI ($M = 1.55$, $SD = 0.42$) and the group with both NSSI and suicidal ideation ($M = 1.62$, $SD = 0.48$) compared to the one with none ($M = 1.31$, $SD = 0.42$).

Regarding detachment, significant differences were found in the comparison between all 4 groups (Table 2) except for the comparison between the NSSI and suicidal ideation groups and between the group Suicidal ideation compared with the group with both.

Post-Hoc analysis for the antagonism revealed that the group with none of the self-harm conditions ($M = 0.62$, $SD = 0.40$) showed lower scores than the one with both of them ($M = 0.83$, $SD = 0.47$). The same

Table 1
Characteristics of the sample.

Characteristic	Group	N (%)
Gender	Female	108 (40%)
	Male	162 (60%)
Age (years)	M (SD)	20.36 (1,99)
	Min-max	18–25
Education level	Primary school diploma	2 (0,70%)
	Middle school diploma	120 (44,40%)
	High school diploma	132 (48,90%)
	Graduated from University	16 (6%)
Work status	No worker	44 (16,3%)
	Worker	36 (13,30%)
	Student	190 (70,40%)
Alcohol abuse	No	206 (76,30%)
	Yes	64 (23,70%)
Substance abuse	No	204 (75,60%)
	Yes	66 (24,40%)
Previous contact with Neuropsychiatry	Yes	101 (62,60%)
	No	169 (37,40%)

Table 2
Descriptive statistics and Post-hoc.

PID-5 domain	Cluster	M	SD	N	P-value	Post-Hoc
Negative Affectivity	1. NSSI	1.55	0,42	28	$p = < 0.001$	(1) vs (4) $p = .03$ (1) vs (3) $p = < 0.001$
	2. Suicidal ideation	1.5	0,41	28		
	3. Both	1.62	.48	45		
	4. None	1.31	.42	169		
Detachment	Total	1.41	.45	270	$p = < 0.001$	(1) vs (4) $p = .002$ (2) vs (4) $p = < 0.001$ (3) vs (4) $p < .001$
	1. NSSI	1.51	.50	28		
	2. Suicidal ideation	1.41	.54	28		
	3. Both	1.56	.51	45		
	4. none	1.14	.49	169		
Antagonism	Total	1.28	.53	270	$p = .006$	(3) vs (4) $p = 0.022$
	1. NSSI	.82	.41	28		
	2. Suicidal ideation	.63	.43	28		
	3. Both	.83	.47	45		
	4. none	.62	.40	169		
Psychoticism	Total	.68	.42	270	$p = < 0.001$	(3) vs (4) $p < .001$
	1. NSSI	1.01	.45	28		
	2. Suicidal ideation	1.00	.58	28		
	3. Both	1.26	.61	45		
	4. None	.78	.51	169		
Total	.90	.56	270			

difference was revealed for psychoticism whereas, the group with none of the self-harm conditions ($M = 0.78$, $SD = 0.51$) reported lower scores compared to the other one ($M = 1.26$, $SD = 0.61$).

A multiple hierarchical regression analysis was used to test the association between personality PID-5 traits and self-harm attitude (HoNOS item 2). The overall effect size (magnitude of R) for the regression equation was interpreted. Accordingly, in interpreting the results, we gave the greatest emphasis to statistically significant predictors that also had medium or large effects ($\beta > 0.1$).

The model was adjusted for age (continuous) and gender (dichotomous), they were first included as control variables, and then stepwise regression analysis was used to determine how PID-5 subscales were associated with HoNOS 2 scores. The results and standardised beta (β) coefficients are summarised in Table 3.

The final model revealed a significant proportion of the variance in self-harm attitude (adjusted $R^2 = 0.161$; $F_{(3,266)} = 18.243$; $p < .001$). Age ($\beta = -0.179$) and detachment predicted ($\beta = 0.321$) higher scores in self-harm attitudes. Specifically, as age decreases, there is an increase in self-injurious tendencies, while increasing levels of detachment correspond to increasing levels of self-injurious tendencies.

Only the significant relationships with $\beta > 0.10$ were considered. Gender, negative affectivity, antagonism, disinhibition, and psychoticism were excluded from the equation as not statistically significant.

Additionally, no differences emerged in self-harm attitudes between the two groups (before and after the pandemic).

5. Discussion

Previous studies provide strong evidence that personality disorders

Table 3
Regression analysis for self-harm attitude (as dependant variable).

Adjusted $R^2 = 0.161$; $F_{(3,266)} = 18.243$; $p < .001$				
	B	β	t	P-value
Age	-0.098	-0.179	-3.189	.002
Detachment	.674	.321	5.612	.000

characterised by intense and unstable negative affect, detachment/low extroversion, aggression/hostility, and specific facets of impulsivity can be considered risk factors for suicidal behaviour. Furthermore, there is some evidence of a stronger relationship between maladaptive personality traits and suicidal than non-suicidal intentional self-harm (Somma et al., 2019; Turner et al., 2018).

The present study testifies to the impact of maladaptive personality traits in individuals with NSSI and suicidal ideation (Somma et al., 2019; Turner et al., 2018; Smets and Claes, 2017). Specifically, in the current study, the individuals with the highest levels of the maladaptive traits of the PID-5 (negative affectivity, detachment, antagonism, and psychoticism) are those who simultaneously present with suicidal ideation and NSSI.

Experiencing conspicuous negative affectivity influences suicidal ideation and the possibility of committing non-suicidal self-harm (Jimenez-Treviño et al. 2011; Bongiovi-Garcia et al., 2009). Most contemporary models of NSSI explain the behaviour as a method of coping with negative affectivity, particularly amongst individuals with chronic emotional dysregulation (Nock, 2010; Klonsky, 2007). The emotional dysregulation theory has considerable empirical support; in fact, those with difficulties regulating emotions are more likely to engage in NSSI (Hasking et al., 2020; Dawkinset al., 2019; Fraseret al., 2018; Claes et al., 2010).

Diagnostic manuals such as DSM-5 and PDM-2 are giving increasing importance to suicidality. Preliminary work on which the alternative model presented in Section III of the DSM-5 was created (APA, 2013) suggests that the suicidal ideation and NSSI scores of young people are associated with the domains of negative affectivity and detachment (Turner et al., 2018). PDM-2, to help assess the complexity of suicide risk, provides guidelines that can be applied to any individual with any symptom picture. Clinicians are asked to carefully evaluate the following variables: presence/absence of suicidal ideation, intention, or plans (Lingiardi and McWilliams, 2015).

Furthermore, patients with traits associated with emotional detachment appear to be more likely to engage in risk-taking behaviours. In some psychiatric hospitals, the presence of this trait and other risk factors for suicidal behaviours may contribute to the patient's decision to be admitted (Links et al., 2003).

The results obtained for antagonism (Claes et al., 2010, 2014) and psychoticism are also in line with those found in previous studies (Kang et al., 2021), which show higher levels of antagonism and psychoticism in patients presenting with NSSI and suicidal ideation. Antagonism is defined as the tendency to enact behaviours in contrast to those of other people (APA, 2013) and is conceived as the opposite of agreeableness (Krueger et al., 2012). It could be hypothesised that the higher levels of antagonism found amongst individuals with a history of NSSI and suicidal ideation may facilitate greater interpersonal conflict, resulting in higher levels of distress and that the lack of social support from others may create the conditions for committing self-harming acts (Miskey, 2012; Brown, 2009).

The APA (2013) describes Psychoticism as the tendency to experience and manifest unusual and bizarre mental states (APA, 2013). This type of patient exhibits increased impulsivity, aggression, and suicidal behaviour (Tobore, 2019). Research by Kang et al. (2021) also shows that psychoticism in personality is predictive of NSSI.

Furthermore, the present study's results identified detachment and age as two predictors of the tendency to commit self-injurious acts. Detachment, which can be defined as withdrawal from social interactions (APA, 2013), is a trait particularly present in individuals with self-harm attitudes (Turner et al., 2018, 2017, 2012). Higher levels of detachment also increase suicidal ideation and suicide risk (Tsoh et al., 2005; Roy, 2003; Yen and Siegler, 2003; Duberstein et al., 1994). In addition, high levels of detachment are associated with shyness, the poor experience of positive emotions (Janowsky, 2001), and low optimism and hopelessness (Duberstein et al., 2000). These character inclinations could be indirectly responsible for poor social engagement and lower

levels of emotional support, aspects that impact the choice to commit self-harm and suicidal ideation (Turner et al., 2018).

As far as age is concerned, it is known that as age decreases, the tendency to commit acts of self-harm also increases (Gromatsky et al., 2020; Somma et al., 2019; Allroggen et al., 2014). Some studies suggest that the tendency to self-harm is a more prevalent practice in particularly young individuals aged between 15 and 16 (Hawton et al., 2021; Stallard et al., 2013; Hankin and Abela, 2011). amongst the reasons, it can be hypothesised that the younger an individual is the greater the levels of confusion, mood swings, or identity conflicts, whereby NSSI may become a way of coping with unmanageable emotional states (Hauber et al., 2019).

In conclusion, our results unexpectedly do not confirm an upward trend of NSSI and suicidal ideation during the pandemic period. It is possible that the age of the individuals involved (>18) influenced the results. Indeed, previous research that has identified a significant difference in pre-/post-pandemic self-harm attitude levels is predominantly conducted in samples of young adolescents or adults (Boldrini et al., 2021; Moselli et al., 2021a; Lai et al., 2021; Schwartz-Mette et al., Williams et al., 2021; Iob et al., 2020).

In adolescents, NSSI acquires a specific meaning. During high levels of emotional dysregulation, the body becomes the medium for expressing one's suffering (Canol et al., 2022; Hawton et al., 2022). It is possible to assume that during the pandemic, the absence of normal social interactions and related activities elicited these tendencies (Schwartz-Mette et al., 2021). Whereas studies conducted on an adult sample (>25) found an increase in suicidal ideation (Boldrini et al., 2021). The causes can be attributed to the impact of pandemics on the world economy (Pettrilli et al., 2022; Nordt et al., 2015; Stuckler et al., 2009), resulting in increased unemployment (International Labor Organization, 2020), as well as increased domestic violence and alcohol consumption (Gunnel et al., 2020). Young adults probably found different strategies to manage and express suffering. Because a strong relationship between coping strategies and well-being emerged during the pandemic (Rossi et al., 2022), future studies should better deepen the results obtain by the current research.

5.1. Strengths & limitations

To the best of our knowledge, this is the first study that focuses on the association between maladaptive traits of the III section of DSM-5 (APA, 2013), NSSI and suicidal ideation in a sample of young adults. Although the study is cross-sectional and no strong causal links can be assumed, the results testify to the greatest importance of maladaptive traits in preventing NSSI. Working clinically on those could potentially reduce the presence of suicidal attempts (Allroggen et al., 2014; Miskey, 2012).

There are two main limitations: the groups (NSSI, suicidal ideation, NSSI and suicidal ideation co-occurrence and none) were not homogeneous for numerosity. Although the HoNOS is widely used in the clinical context to test various psychological and behavioural symptoms, including self-injurious behaviour (item 2), the scale was not exclusively created to assess NSSI and suicidal ideation. Further studies focusing on specific measures to recognize NSSI and suicidal ideation are needed. Additionally, it is suggested to implement longitudinal studies including emotional regulation considered in the literature a fundamental mediator factor in self-harm attitude (Barzilay et al., 2022; Peterson et al., 2019).

6. Conclusions

The results show that the study of personality, particularly maladaptive traits, is fundamental to a greater understanding of NSSIs. Furthermore, as NSSIs and suicidal ideation are predictive (although not determinative) of suicidal attempts, implementing psychotherapeutic treatments would have a conspicuous impact on self-harm attitudes, thereby reducing suicidal ideation and suicide attempts (Links et al.,

2003).

Authors contributions

Conceptualization, L.M, C.P. and O.O.; Methodology, C.R. and F.D.S.; Data Curation and Statistical Analysis, F.D.S and C.R.; Writing-Original Draft Preparation, C.P., F.D.S., C.R, S.T.; Supervision, O.O, L. M. and M.P.; Project Administration, O.O. All authors have read and agreed to the published version of the manuscript.

Data availability statement

Data are available to the corresponding author upon reasonable request.

Declaration of Competing Interest

The authors declare they do not have any conflict of interest.

Funding

This research received no external funding.

Acknowledgement

The study was conducted at the Department of Mental Health Service of Niguarda Hospital in Milan (Italy), we thank the clinicians for their support with the data collection.

References

- Allroggen, M., Kleinrahm, R., Rau, T.A.D., Weninger, L., Ludolph, A.G., Plener, P.L., 2014. Nonsuicidal self-injury and its relation to personality traits in medical students. *J. Nerv. Ment. Dis.* 202, 300–304. <https://doi.org/10.1097/NMD.0000000000000122>.
- Andover, M.S., Gibb, B.E., 2010. Non-suicidal self-injury, attempted suicide, and suicidal intent among psychiatric inpatients. *Psychiatry Res.* 178, 101–105. <https://doi.org/10.1016/j.psychres.2010.03.019>.
- Baetens, I., Claes, L., Muehlenkamp, J., Grietens, H., Onghena, P., 2011. Non-suicidal and suicidal self-injurious behaviour among Flemish adolescents: a web survey. *Arch. Suicide Res.* 15, 56–67. <https://doi.org/10.1080/13811118.2011.540467>.
- Barzilay, S., Gagnon, A., Yaseen, Z.S., Chennapragada, L., Lloveras, L., Bloch-Elkouby, S., Galynker, I., 2022. Associations between clinicians' emotion regulation, treatment recommendations, and patient suicidal ideation. *Suicide Life-Threatening Behav* 52, 329–340. <https://doi.org/10.1111/sltb.12824>.
- Bongiovi-Garcia, M.E., Merville, J., Almeida, M.G., Burke, A., Ellis, S., Stanley, B.H., Posner, K., Mann, J.J., Oquendo, M.A., 2009. Comparison of clinical and research assessments of diagnosis, suicide attempt history and suicidal ideation in major depression. *J. Affect. Disord.* 115, 183–188. <https://doi.org/10.1016/j.jad.2008.07.026>.
- Brown, S.A., 2009. Personality and non-suicidal deliberate self-harm: trait differences among a non-clinical population. *Psychiatry Res.* 169, 28–32. <https://doi.org/10.1016/j.psychres.2008.06.005>.
- Canol, T., Sapmaz, S.Y., Barut, E.A., Uzun Cakir, A.D., Bilac, O., Kandemir, H., 2022. Nonsuicidal self-injury in adolescents: role of sociodemographic and clinical factors, emotion regulation, and maladaptive personality traits. *Dusunen Adam: J. Psychiatry & Neurol. Sci.* 35 (3) <https://doi.org/10.14744/DAJPNS.2022.00188>.
- Center for Disease Control Prevention (CDC) USA, 2015. Nonfatal Hospitalized Injuries, Both Sexes, All Ages, United States, 2010. <https://wisqars.cdc.gov:8443/costI/>.
- Claes, L., Houben, A., Vandereycken, W., Bijttebier, P., Muehlenkamp, J., 2010. Brief report: the association between non-suicidal self-injury, self-concept and acquaintance with self-injurious peers in a sample of adolescents. *J. Adolesc.* 33, 775–778. <https://doi.org/10.1016/j.adolescence.2009.10.012>.
- Claes, L., Norré, J., Van Assche, L., Bijttebier, P., 2014. Non-suicidal self-injury (functions) in eating disorders: associations with reactive and regulative temperament. *Pers. Individ. Dif.* 57, 65–69. <https://doi.org/10.1016/j.paid.2013.09.022>.
- Colle, L., Hilviu, D., Rossi, R., Garbarini, F., Fossataro, C., 2020. Self-harming and sense of agency in patients with a borderline personality disorder. *Front. in Psychiat* 11, 449. <https://doi.org/10.3389/fpsy.2020.00449>.
- Chisholm, K.E., Wigman, J.T.W., Hallett, D., Woodall, T., Mahfouda, S., Reniers, R.L.E.P., Killackey, E., Yung, A.R., Wood, S.J., Lin, A., 2018. The role of coping in the association between subclinical psychotic experiences and functioning: a within study replication in two independent adolescent samples. *Schizophr. Res.* 201, 91–97. <https://doi.org/10.1016/j.schres.2018.05.022>.
- Crosby, A., Ortega, L., Melanson, C., 2011. Self-directed violence surveillance. *Centers Dis. Control Prev. Natl. Cent. Inj. Prev. Control* 91.
- Dawkins, J.C., Hasking, P.A., Boyes, M.E., Greene, D., Passchier, C., 2019. Applying a cognitive-emotional model to nonsuicidal self-injury. *Stress and Health* 35 (1), 39–48.
- Duberstein, P.R., Conwell, Y., Seidnitz, L., Denning, D.G., Cox, C., Caine, E.D., 2000. Personality traits and suicidal behavior and ideation in depressed inpatients 50 years of age and older. *J. Gerontol. Ser. B Psychol. Sci. Soc. Sci.* 55, 45–46.
- Duberstein, P.R., Conwell, Y., Caine, E.D., 1994. Age differences in the personality characteristics of suicide completers: preliminary findings from a psychological autopsy study. *Psychiatry* 57 (3), 213–224.
- Favazza, A.R., 1998. The coming of age of self-mutilation. *J. Nerv. Ment. Dis.* 186.
- Fossati, A., Krueger, R.F., Markon, K.E., Borroni, S., Maffei, C., 2013. Reliability and validity of the personality inventory for DSM-5 (PID-5): predicting DSM-IV personality disorders and psychopathy in community-dwelling Italian adults. *Assess.* 20 (6), 689–708. <https://doi.org/10.1177/1073191113504984>.
- ... & Fraser, G., Wilson, M.S., Garisch, J.A., Robinson, K., Brocklesby, M., Kingi, T., Russell, L., 2018. Non-suicidal self-injury, sexuality concerns, and emotion regulation among sexually diverse adolescents: a multiple mediation analysis. *Arch. Suic. Resear.* 22 (3), 432–452.
- Glenn, C.R., Nock, M.K., 2014. Improving the Short-Term Prediction of Suicidal Behavior. *Am. J. Prev. Med.* 47, S176–S180. <https://doi.org/10.1016/j.amepre.2014.06.004>.
- Gromatsky, M.A., He, S., Perlman, G., Klein, D.N., Kotov, R., Waszczuk, M.A., 2020. Prospective prediction of first onset of nonsuicidal self-injury in adolescent girls. *J. Am. Acad. Child Adolesc. Psychiatry* 59, 1049–1057. <https://doi.org/10.1016/j.jaac.2019.08.006>.
- Guertin, T., Lloyd-Richardson, E., Spirito, A., Donaldson, D., Boergers, J., 2001. Self-mutilative behavior in adolescents who attempt suicide by overdose. *J. Am. Acad. Child Adolesc. Psychiatry* 40, 1062–1069. <https://doi.org/10.1097/00004583-200109000-00015>.
- ... & Gunnell, D., Appleby, L., Arensman, E., Hawton, K., John, A., Kapur, N., Yip, P.S., 2020. Suicide risk and prevention during the COVID-19 pandemic. *The Lancet Psychiat* 7 (6), 468–471.
- Hankin, B.L., Abela, J.R.Z., 2011. Nonsuicidal self-injury in adolescence: prospective rates and risk factors in a 2½ year longitudinal study. *Psychiatry Res.* 186, 65–70. <https://doi.org/10.1016/j.psychres.2010.07.056>.
- Hasking, P.A., Coric, S.J., Swannell, S., Martin, G., Thompson, H.K., Frost, A.D.J., 2010. Brief report: emotion regulation and coping as moderators in the relationship between personality and self-injury. *J. Adolesc.* 33, 767–773. <https://doi.org/10.1016/j.adolescence.2009.12.006>.
- Hasking, P., Dawkins, J., Gray, N., Wijeratne, P., Boyes, M., 2020. Indirect effects of family functioning on non-suicidal self-injury and risky drinking: the roles of emotion reactivity and emotion regulation. *J. Chil. Fam. Stud.* 29 (7), 2070–2079.
- Hauber, K., Boon, A., Vermeiren, R., 2019. Non-suicidal self-injury in clinical practice. *Front. Psychol.* 10, 1–8. <https://doi.org/10.3389/fpsyg.2019.00502>.
- Hawton, K., Casey, D., Bale, E., Brand, F., Ness, J., Waters, K., Kelly, S., Geulayov, G., 2021. Self-harm during the early period of the COVID-19 pandemic in England: comparative trend analysis of hospital presentations. *J. Affect. Disord.* 282, 991–995. <https://doi.org/10.1016/j.jad.2021.01.015>.
- Hawton, K., Lascelles, K., Pitman, A., Gilbert, S., Silverman, M., 2022. Assessment of suicide risk in mental health practice: shifting from prediction to therapeutic assessment, formulation, and risk management. *The Lancet Psychiat.*
- Iob, E., Steptoe, A., Fancourt, D., 2020. Abuse, self-harm and suicidal ideation in the UK during the COVID-19 pandemic. *Br. J. Psychiatry* 217, 543–546. <https://doi.org/10.1192/bjp.2020.130>.
- Janowsky, D.S., 2001. Introversion and extroversion: implications for depression and suicidality. *Curr. Psychiatry Rep.* 3, 444–450. <https://doi.org/10.1007/s11920-001-0037-7>.
- Jimenez-Treviño, L., Blasco-Fontecilla, H., Braquehais, M.D., Ceverino-Dominguez, A., Baca-Garcia, E., 2011. Endophenotypes and suicide behaviour. *Actas Esp. Psiquiatr.* 39, 61–69.
- Bongiovi-Garcia, M.E., Merville, J., Almeida, M.G., Burke, A., Ellis, S., Stanley, B.H., Posner, K., Mann, J.J., Oquendo, M.A., 2009. Comparison of clinical and research assessments of diagnosis, suicide attempt history and suicidal ideation in major depression. *J. Affect. Disord.* 115, 183–188. <https://doi.org/10.1016/j.jad.2008.07.026>.
- Kang, L., Li, R., Liu, H., Ma, S., Sun, S., Zhang, N., Yao, L., Wang, Y., Zong, X., Ai, C., Zou, Z., Yang, B.X., Bai, H., Liu, Z., 2021. Nonsuicidal self-injury in undergraduate students with major depressive disorder: the role of psychosocial factors. *J. Affect. Disord.* 290, 102–108. <https://doi.org/10.1016/j.jad.2021.04.083>.
- Klonsky, E.D., 2007. The functions of deliberate self-injury: a review of the evidence. *Clin. Psychol. Rev.* 27, 226–239. <https://doi.org/10.1016/j.cpr.2006.08.002>.
- Klonsky, E.D., May, A.M., Glenn, C.R., 2013. The relationship between nonsuicidal self-injury and attempted suicide: converging evidence from four samples. *J. Abn. Psych.* 122 (1), 231.
- Klonsky, E.D., May, A.M., Saffer, B.Y., 2016. Suicide, Suicide Attempts, and Suicidal Ideation. *Annu. Rev. Clin. Psychol.* 12, 307–330. <https://doi.org/10.1146/annurev-clinpsy-021815-093204>.
- Krueger, R.F., Derringer, J., Markon, K.E., Watson, D., Skodol, A.E., 2012. Initial construction of a maladaptive personality trait model and inventory for DSM-5. *Psychol. Med.* 42, 1879–1890. <https://doi.org/10.1017/S0033291711002674>.
- Kryszka, K., Heller, T.S., De Leo, D., 2006. Suicide and deliberate self-harm in personality disorders. *Curr. Opin. in Psychiat.* 19 (1), 95–101. <https://doi.org/10.1097/01.yco.0000191498.69281.5e>.
- Kwong, A.S.F., Pearson, R.M., Adams, M.J., Northstone, K., Tilling, K., Smith, D., Fawns-Ritchie, C., Bould, H., Warne, N., Zammit, S., Gunnell, D.J., Moran, P.A., Micali, N., Reichenberg, A., Hickman, M., Rai, D., Haworth, S., Campbell, A., Altschul, D., Flaig, R., McIntosh, A.M., Lawlor, D.A., Porteous, D., Timpson, N.J., 2021. Mental

- health before and during the COVID-19 pandemic in two longitudinal UK population cohorts. *Br. J. Psychiatry* 218, 334–343. <https://doi.org/10.1192/bjp.2020.242>.
- International Labor Organization, 2020. Almost 25 Million Jobs Could be Lost Worldwide as a Result of COVID-19, Says ILO.
- Lai, S., Su, C., Song, S., Yan, M., Tang, C., Zhang, Q., Yin, F., Liu, Q., 2021. Depression and Deliberate Self-Harm Among Rural Adolescents of Sichuan Province in Western China: a 2-Year Longitudinal Study. *Front. Psychiatry* 12. <https://doi.org/10.3389/fpsy.2021.605785>.
- Lingiardi, V., McWilliams, N., 2015. The psychodynamic diagnostic manual. *PDM-2 World Psychiatry* 14 (2), 237–239. <https://doi.org/10.1002/wps.20233>.
- Links, P.S., Gould, B., Ratnayake, R., 2003. Assessing suicidal youth with antisocial, borderline, or narcissistic personality disorder. *Can. J. Psychiatry* 48, 301–310. <https://doi.org/10.1177/070674370304800505>.
- Lloyd-Richardson, E.E., Perrine, N., Dierker, L., Kelley, M.L., 2007. Characteristics and functions of non-suicidal self-injury in a community sample of adolescents. *Psychol. Med.* 37, 1183–1192. <https://doi.org/10.1017/S003329170700027X>.
- MacLaren, V.V., Best, L.A., 2010. Nonsuicidal self-injury, potentially addictive behaviors, and the Five Factor Model in undergraduates. *Pers. Individ. Dif.* 49, 521–525. <https://doi.org/10.1016/j.paid.2010.05.019>.
- Meherali, S., Punjani, N., Louie-Poon, S., Abdul Rahim, K., Das, J.K., Salam, R.A., Lassi, Z.S., 2021. Mental Health of Children and Adolescents Amidst COVID-19 and Past Pandemics: a Rapid Systematic Review. *Int. J. Environ. Res. Public Health* 18. <https://doi.org/10.3390/ijerph18073432>.
- Meliane, M., Rossi, C., Malvini, L., Niccoli, C., Oasi, O., Barbera, S., Percudani, M., 2021. The Relationship between PID-5 Personality Traits and Mental States. A Study on a Group of Young Adults at Risk of Psychotic Onset. *Medicina (B Aires)* 57 (1), 33. <https://doi.org/10.3390/medicina57010033>.
- Miskey, H.M., 2012. Big Five Traits and Perfectionism are Risk Factors for Nonsuicidal Cutting. *Psychol. Behav. Sci.* 1 (1) <https://doi.org/10.11648/j.pbs.20120101.11>.
- Moselli, M., Casini, M.P., Frattini, C., Williams, R., 2021a. Suicidality and personality pathology in adolescence: a systematic review. *Ch. Psychiat. and Hum. Develop.* <https://doi.org/10.1007/s10578-021-01239-x>.
- Moselli, M., Frattini, C., Williams, R., Ronningstam, E., 2021b. The study of motivation in the suicidal process: the motivational interview for suicidality. *Front. in Psychiat* 11. <https://doi.org/10.3389/fpsy.2020.598866>.
- Muehlenkamp, J.J., Gutierrez, P.M., 2004. An investigation of differences between self-injurious behavior and suicide attempts in a sample of adolescents. *Suicide Life-Threatening Behav* 34, 12–23. <https://doi.org/10.1521/suli.34.1.12.27769>.
- Nock, M.K., Borges, G., Bromet, E.J., Cha, C.B., Kessler, R.C., Lee, S., 2008. Suicide and Suicidal Behavior. *Epidemiol. Rev.* 30, 133–154. <https://doi.org/10.1093/epirev/mxn002>.
- Nock, M.K., 2009. Why do people hurt themselves?: new insights into the nature and functions of self-injury. *Curr. Dir. Psychol. Sci.* 18, 78–83. <https://doi.org/10.1111/j.1467-8721.2009.01613.x>.
- Nock, M.K., 2010. Self-Injury. *Annu. Rev. Clin. Psychol.* 6, 339–363. <https://doi.org/10.1146/annurev.clinpsy.121208.131258.F>.
- Nordt, C., Warnke, I., Seifritz, E., Kawohl, W., 2015. Modelling suicide and unemployment: a longitudinal analysis covering 63 countries, 2000–11. *Lancet Psychiat* 239–245. [https://doi.org/10.1016/S2215-0366\(14\)00118-7](https://doi.org/10.1016/S2215-0366(14)00118-7).
- Ougrin, D., Wong, B.H., Vaezinejad, M., Plener, P.L., Mehdi, T., Romaniuk, L., Barrett, E., Hussain, H., Lloyd, A., Tolmac, J., Rao, M., Chakrabarti, S., Carucci, S., Moghraby, O. S., Elvins, R., Rozali, F., Skouta, E., McNicholas, F., Kuruppuaracchi, N., Stevanovic, D., Nagy, P., Davico, C., Mirza, H., Tufan, E., Youssef, F., Meadowcroft, B., Landau, S., 2021. Pandemic-related emergency psychiatric presentations for self-harm of children and adolescents in 10 countries (PREP-kids): a retrospective international cohort study. *Eur. Child Adolesc. Psychiatry*. <https://doi.org/10.1007/s00787-021-01741-6>.
- Patton, G.C., Harris, R., Carlin, J.B., Hibbert, M.E., Coffey, C., Schwartz, M., Bowes, G., 1997. Adolescent suicidal behaviours: a population-based study of risk. *Psychol. Med.* 27. <https://doi.org/10.1017/S003329179600462X>. S003329179600462X.
- Peterson, A.L., Chen, J.I., Karver, M.S., Labouliere, C.D., 2019. Frustration with feeling: latent classes of non-suicidal self-injury and emotion regulation difficulties. *Psychiatry Res* 275, 61–70. <https://doi.org/10.1016/j.psychres.2019.03.014>.
- Petrilli, S., Galuppo, L., Ripamonti, S.C., 2022. Digital onboarding: facilitators and barriers to improve worker experience. *Sustainability* 14 (9), 5684. <https://doi.org/10.3390/su14095684>.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.-Y., Podsakoff, N.P., 2003. Common method biases in behavioral research: a critical review of the literature and recommended remedies. *J. App. Psychol.* 88 (5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>.
- Roy, A., 2003. African American and caucasian attempters compared for suicide risk factors: a preliminary study. *Suicide Life-Threatening Behav.* 33, 443–447. <https://doi.org/10.1521/suli.33.4.443.25228>.
- Reichl, C., Kaess, M., 2021. Self-harm in the context of borderline personality disorder. *Curr. Opin. in psychol.* 37, 139–144. <https://doi.org/10.1016/j.copsyc.2020.12.007>.
- Rossi, C., De Salve, F., Agliati, M., & Oasi, O., 2022. Coping strategies and mental health: a web-based survey among the Italian population dealing with COVID-19. *Res. in Psych.: psychopath., Process and Outcome*. <https://doi.org/10.4081/rippoo.2022.609>.
- Schwartz-Mette, R.A., Lawrence, H.R., Shankman, J., Fearey, E., Harrington, R., 2021. Intrapersonal emotion regulation difficulties and maladaptive interpersonal behavior in adolescence. *Res. Child Adolesc. Psychopathol.* 49, 749–761. <https://doi.org/10.1007/s10802-020-00739-z>.
- Smets, L., & Claes, L., 2017. Non-suicidal self-injury in a Flemish population: associations with personality dimensions according to DSM-5.
- Somma, A., Fossati, A., Ferrara, M., Fantini, F., Galosi, S., Krueger, R.F., Markon, K.E., Terroni, A., 2019. DSM-5 personality domains as correlates of non-suicidal self-injury severity in an Italian sample of adolescent inpatients with self-destructive behaviour. *Personal. Ment. Health* 13, 205–214. <https://doi.org/10.1002/pmh.1462>.
- Stallard, P., Spears, M., Montgomery, A.A., Phillips, R., Sayal, K., 2013. Self-harm in young adolescents (12–16 years): onset and short-term continuation in a community sample. *BMC Psychiatry* 13, 328. <https://doi.org/10.1186/1471-244X-13-328>.
- Stuckler, D., Basu, S., Suhrcke, M., Coutts, A., McKee, M., 2009. The public health effect of economic crises and alternative policy responses in Europe: an empirical analysis. *The Lancet* 374 (9686), 315–323. [https://doi.org/10.1016/S0140-6736\(09\)61124-7](https://doi.org/10.1016/S0140-6736(09)61124-7).
- Tobore, T.O., 2019. On the neurobiological role of oxidative stress in alcohol-induced impulsive, aggressive and suicidal behavior. *Subst. Use Misuse* 54, 2290–2303. <https://doi.org/10.1080/10826084.2019.1645179>.
- Tsoh, J., Chiu, H.F., Duberstein, P.R., Chan, S.S., Chi, I., Yip, P.S., Conwell, Y., 2005. Attempted suicide in elderly Chinese persons: a multi-group, controlled study. *Am J Geriatr. Psychiatry*. [10.1176/appi.ajgp.13.7.562](https://doi.org/10.1176/appi.ajgp.13.7.562).
- Turner, B.J., Chapman, A.L., Layden, B.K., 2012. Intrapersonal and interpersonal functions of non suicidal self-injury: associations with emotional and social functioning. *Suicide Life-Threatening Behav* 42, 36–55. <https://doi.org/10.1111/j.1943-278X.2011.00069.x>.
- Turner, B.J., Wakefield, M.A., Gratz, K.L., Chapman, A.L., 2017. Characterizing interpersonal difficulties among young adults who engage in nonsuicidal self-injury using a daily diary. *Behav. Ther.* 48, 366–379. <https://doi.org/10.1016/j.beth.2016.07.001>.
- Turner, B.J., Jin, H.M., Anestis, M.D., Dixon-Gordon, K.L., Gratz, K.L., 2018. Personality pathology and intentional self-harm: cross-cutting insights from categorical and dimensional models. *Curr. Opin. Psychol.* 21, 55–59. <https://doi.org/10.1016/j.copsyc.2017.09.009>.
- Urnes, O., 2009. Self-harm and personality disorders. *Tidsskrift for den Norske Laegeforening. Tidsskrift for Praktisk Medicin, ny Raekke* 129 (9), 872–876. <https://doi.org/10.4045/tidsskr.08.0140>.
- Williams, R., Casini, M.P., Moselli, M., Frattini, C., Ronningstam, E., 2021. The road from pathological narcissism to suicidality in adolescence: an empirical study. *Int. J. Environ. Res. Public Health* 18 (18). <https://doi.org/10.3390/ijerph18189761>.
- Wing, Curtis, Beevor, 1996. Health of the Nation Outcome Scales (HoNOS). A Compend. *Tests, Scales Quest.* 635–642. <https://doi.org/10.4324/9781003076391-177>.
- World Medical Association, 2013. World medical association declaration of helsinki: ethical principles for medical research involving human subjects. *JAMA* 20, 2191–2194. <https://doi.org/10.1001/jama.2013.281053>.
- Yen, S., Siegler, I.C., 2003. Self-blame, social introversion, and male suicides: prospective data from a longitudinal study. *Arch. Suicide Res.* 7, 17–27. <https://doi.org/10.1080/13811110301569>.