

**Meaning in life buffers the association between perceived burdensomeness,
thwarted belongingness, and frequency of non-suicidal self-injuries in Spanish
adolescents.**

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Abstract

Background: Adolescence is a developmental stage when there is a high risk of engaging in non-suicidal self-injury (NSSI). There is recent interest in the study of thwarted belongingness and perceived burdensome as variables associated with the frequency of NSSI in adolescents. Meaning in life (MIL) could be negatively associated with thwarted belongingness and perceived burdensome. To date, no studies have analyzed whether thwarted belongingness and perceived burdensomeness could be associated with the frequency of NSSI in adolescents. On the other hand, no studies have analyzed the buffering role of MIL in the association between thwarted belongingness and perceived burdensomeness and the frequency of NSSI. **Aims:** a) to test whether thwarted belongingness and perceived burdensomeness are associated with NSSI frequency; b) to test whether MIL moderates the association between thwarted belongingness and NSSI frequency; and c) to test whether MIL moderates the association between perceived burdensomeness and NSSI frequency. **Method:** The sample consisted of $N = 1531$ participants between 12 and 18 years old from Spain. The participants filled out the Inventory of Statements about Self-Injury, Purpose-In-Life Test-Adolescents Version, and Interpersonal Needs Questionnaire. Moderation analysis were performed. **Results:** Thwarted belongingness and perceived burdensomeness were positively associated with the frequency of NSSI in Spanish adolescents. MIL was a moderating variable between thwarted belongingness and the frequency of NSSI, and between perceived burdensomeness and the frequency of NSSI. **Conclusion:** Thwarted belongingness and perceived burdensomeness could be a risk factor for NSSI and MIL could be a protective factor against NSSI, and adding these variables to current descriptive theories of NSSI in adolescents would allow us to improve the assessment and treatment protocols for adolescents with NSSI.

Keywords: Meaning in life, Perceived burdensomeness, Thwarted belongingness, Spanish adolescents, non-suicidal self-injuries

Introduction

Adolescence is a developmental stage when there is a high risk of engaging in non-suicidal self-injury (NSSI) (Jacobson & Gould, 2007; Plener et al., 2015). In fact, this behavior seems to be highly prevalent among college students, with prevalence rates ranging from 2.9% (Larsson & Sund, 2008) to 42% (Cerutti et al., 2011), and an average of 18% across studies in different countries (Muehlenkamp et al., 2012). Longitudinal studies on NSSI in adolescence found that a history of NSSI is one of the most robust predictors of future NSSI (Asarnow et al., 2011; Hankin & Abela, 2011) and suicidal attempts (Fox et al., 2015; Victor & Klonsky, 2014), and Ammerman et al. (2018) found that the age at which an individual begins to self-harm is a potential risk factor for greater NSSI severity.

Although studies are scarce, there is recent interest in the study of thwarted belongingness and perceived burdensome as variables associated with the frequency of NSSI in adolescents. These two constructs are defined in the framework of the Interpersonal-Psychological Theory of Suicide (IPTS) (Joiner, 2005). Thwarted belongingness is defined as the perception of not belonging to a social group (Van Orden et al., 2010) and the perceived lack of meaningful interpersonal connections (Assavedo & Anestis, 2017). Perceived burdensomeness is defined as the perception of being a burden to others (Van Orden et al., 2010) and that one is worth more dead than alive (Assavedo & Anestis, 2017). The IPTS suggests that these two components are necessary in order for a patient to attempt suicide.

However, although the IPTS does not suggest that thwarted belongingness and perceived burdensomeness are associated with NSSI, several studies have found an association between thwarted belongingness and the frequency of NSSI (Assavedo & Anestis, 2017; Chu et al., 2016; Eaddy et al., 2019). Moreover, participants who engage

in NSSI may have difficulties with emotional deregulation, interpersonal relationships, or impulsivity, which may lead to feelings of burden in their families (Hoffman et al., 2003). Thus, people with NSSI may feel that they are a burden to family members. A previous study found that NSSI frequency was associated with perceived burdensomeness (Chu et al., 2016), whereas another study (Assavedo & Anestis, 2017) found a non-significant association between NSSI frequency and perceived burdensomeness. Therefore, there seem to be a certain consensus that thwarted belongingness is associated with the frequency of NSSI, but the possible association between perceived burdensomeness and the frequency of NSSI remains to be confirmed. For this reason, new studies are needed to analyze this association.

The construct of thwarted belongingness could be negatively associated with the construct of meaning in life (MIL) (Marco et al., 2016). Frankl (2006) defines MIL as the experience of freedom, responsibility, and self-determination, and he associates it with a positive view of life, the future, and oneself. Martela and Steger (2016) suggested that MIL is composed of three dimensions: a) Coherence, the cognitive component of MIL, is defined as the degree to which people feel that the world around them is structured, predictable, and explainable; b) Purpose, the motivational dimension, refers to the way people experience their life as guided by valuable life goals; and c) Significance, the affective component, refers to the sense of the inherent value of life and implies having a life worth living. Having high levels of MIL contributes to proposing and achieving vital goals that direct and give significance to one's life. People with low MIL perceive their experience as fragmented and incoherent. They have a sense of lack of life goals, nothing seems worthwhile in their future, and they perceive their existence as having little importance (George & Park, 2016). Thus, Frankl (2006) suggests that MIL is intrinsically

associated with feeling connected to others or to something (e.g., projects, goals, family, or friends).

In adolescents, MIL has been positively associated with health and stress reduction (Kiang & Fuligni, 2010; Li et al., 2019; Nielsen & Hansson, 2007) and positive affect (Hamama & Hamama-Raz, 2019), and it has been found to be a protective factor against substance use and risk behaviors (Brassai et al., 2011) and hopelessness (Garcia-Alandete et al., 2019).

Regarding the association between MIL and NSSI, several studies found that MIL was negatively associated with NSSI in participants with borderline personality disorders (Marco et al., 2015; Marco et al., 2017) and participants with eating disorders (Marco et al., 2020). However, to date, no studies have analyzed the association between MIL and NSSI in adolescent participants. Analyzing the possible association between NSSI and a factor negatively associated with it, such as MIL, would allow us to improve current programs for the prevention of self-harm in adolescents.

In sum, taking the aforementioned studies into account, on the one hand, to date, no studies have analyzed whether thwarted belongingness and perceived burdensomeness could be associated with the frequency of NSSI in adolescents. On the other hand, no studies have analyzed the buffering role of MIL in the association between thwarted belongingness and perceived burdensomeness and the frequency of NSSI. Therefore, research is needed to better understand the possible association between perceived burdensomeness and thwarted belongingness and NSSI (Eaddy et al., 2019), and it is necessary to analyze the role of hypothetical moderators (e.g., MIL) that might buffer the frequency of NSSI in adolescents (Stewart et al., 2017). Analyzing the possible associations between all these factors associated with NSSI would allow us to improve current programs for the prevention or treatment of NSSI in adolescents.

Thus, the aims of this study are: a) to test whether thwarted belongingness and perceived burdensomeness are associated with NSSI frequency; b) to test whether meaning in life moderates the association between thwarted belongingness and NSSI frequency; and c) to test whether meaning in life moderates the association between perceived burdensomeness and NSSI frequency.

Therefore, based on the studies mentioned above, we hypothesize that: a) thwarted belongingness and perceived burdensomeness will be associated with NSSI frequency; b) MIL will be a moderator between thwarted belongingness and NSSI frequency; and c) MIL will be a moderator between perceived burdensomeness and NSSI frequency in Spanish adolescents.

Method

Participants

The study sample consisted of $N = 1531$ participants between 12 and 18 years old from Spain. The mean age was 14.85 years ($SD = 1.56$). Regarding gender, $n = 736$ (48.1%) were men, and $n = 795$ (51.9 %) were women.

Procedure

The sample consisted of college and university students from various cities in Spain who were recruited through classroom advertisements and consent letters sent home. Participants completed the questionnaires on a school day in the classroom. Participation was voluntary and anonymous, and no compensation was given for participating in this study. The inclusion criteria were that participants had to be male or female adolescents between 12 and 18 years old, and the adolescents and/or their parents had to give their informed consent. We followed the World Health Organization (WHO, 2003) definition of adolescents as people from 10 to 18 years old. The exclusion criterion

was that the adolescents or their parents did not agree to participate in the study. Participants were given appropriate instructions to complete the assessment protocol. The study procedure was approved by the ethical committees of the Catholic University of Valencia Saint Vincent Martyr.

Assessment

Inventory of Statements about Self-Injury (ISAS) (Klonsky & Glenn, 2009). The presence of NSSI was evaluated using this reliable and valid measure of NSSI frequency and functions. The first part of the inventory (ISAS-I) asks about the lifetime frequency of 12 different NSSI behaviors performed intentionally and without suicidal intent: banging/hitting self, biting, burning, carving, cutting, wound picking, needle-sticking, pinching, hair pulling, rubbing skin against rough surfaces, severe scratching, and swallowing chemicals. Adolescents were asked to indicate how many times they had injured themselves.

Purpose-In-Life Test-Adolescents Version (PIL-A) (García-Alandete et al., 2019). This scale is a 9-item version of the original Crumbaugh and Maholic (1969) PIL for assessing meaning in life in adolescents. The items on the PIL-A are answered on a Likert scale ranging from 1 to 7, with a specific anchor for each item, and they assess two factors: Satisfaction and Meaning in Life, and Purposes and Goals in Life. The total score ranges between 10 and 63. In the present study, the PIL-A showed high internal consistency ($\alpha = .89$).

Interpersonal Needs Questionnaire (INQ) (Van Orden et al., 2012). The INQ is a self-report measure composed of 15 items that evaluate the main constructs of interpersonal suicide theory (Joiner, 2005), which predicts the desire to commit suicide through two factors: Thwarted Belongingness and Perceived Burdensomeness. The items are answered on a Likert scale (from nothing true = 1 to totally true = 7). The subscales

showed good internal consistency for Thwarted Belongingness ($\alpha = .83$) and Perceived Burdensomeness ($\alpha = .88$) in our sample.

Statistical procedure

First, means, standard deviations, and correlations between continuous variables were calculated. Next, we tested the moderation role of meaning in life (PIL) in the association between thwarted belongingness (PIL) and NSSI frequency. Finally, we tested the moderation role of meaning in life (PIL) in the association between perceived burdensomeness (INQ) and NSSI frequency. Moderation analyses were conducted using the PROCESS macro for SPSS32 (Hayes, 2012). To avoid multicollinearity, all the variables were mean-centered prior to analysis. Potential multicollinearity between variables was rejected because the Tolerance values were between 0.62 to 0.98 and Variance Inflation Factors were between 1.61 to 1.05, which meet good statistical criteria (O'Brien, 2007).

Results

Table 1 shows the means, standard deviations, and zero-order correlations for the variables. The results indicate that thwarted belongingness was highly and positively associated with perceived burdensomeness ($r = .62, p < .01$), and it had a low association with NSSI frequency ($r = .29, p < .01$). Perceived burdensomeness had a positive and low association with NSSI frequency ($r = .26, p < .01$). Finally, MIL was highly and negatively correlated with thwarted belongingness ($r = -.61, p < .01$) and perceived burdensomeness ($r = -.54, p < .01$), and it had a low and negative association with NSSI frequency ($r = -.28, p < .01$).

As Table 2 shows, thwarted belongingness ($t = 4.53; p < .001; R^2 = .09$) and perceived burdensomeness ($t = 4.63; p < .001; R^2 = .07$) predicted the frequency of NSSI

in adolescents. Moreover, MIL moderated the association between thwarted belongingness and NSSI frequency ($F_{(5, 1525)} = 39.90, p < .001, R^2 = .12$). After entering thwarted belongingness, MIL predicted NSSI frequency, both in addition to thwarted belongingness and when interacting with thwarted belongingness, thus supporting a moderating impact of MIL on the association between thwarted belongingness and NSSI frequency ($\Delta R^2 = .01; F_{(1,1525)} = 9.39, p < .001$). Figure 1 shows that, in adolescents with higher levels of MIL, increases in thwarted belongingness corresponded to smaller increases in NSSI frequency than in adolescents with low MIL.

Finally, MIL moderated the association between perceived burdensomeness and NSSI frequency ($F_{(5, 1525)} = 36.28, p < .001, R^2 = .10$). After entering perceived burdensomeness, MIL predicted NSSI frequency, both in addition to perceived burdensomeness and when interacting with perceived burdensomeness, thus supporting a moderating impact of MIL on the association between with perceived burdensomeness and NSSI frequency ($\Delta R^2 = .01; F_{(1,1525)} = 3.88, p < .001$). Figure 2 shows that, in adolescents with higher levels of MIL, increases in perceived burdensomeness corresponded to smaller increases in NSSI frequency than in adolescents with low MIL.

Discussion

The aims of the present study were: a) to test whether thwarted belongingness and perceived burdensomeness were associated with the frequency of NSSI; b) to test whether MIL moderated the association between thwarted belongingness and the frequency of NSSI; and c) to test whether MIL moderated the association between perceived burdensomeness and the frequency of NSSI in Spanish adolescents.

Regarding the first aim, our results suggest that thwarted belongingness and perceived burdensomeness were associated with the frequency of NSSI in Spanish adolescents, and that the variance explained by both was similar (9% for thwarted belongingness and 7% for perceived burdensomeness). Thus, our hypothesis was confirmed. Our results are similar to those found in other studies with adolescents, showing that the relationship between thwarted belongingness and perceived burdensomeness was associated with NSSI frequency (e.g. Eaddy et al., 2019) and shedding light on the relationship between these variables in Spanish adolescents.

Regarding the second and the third aims, our results suggest that MIL was a moderating variable between thwarted belongingness and the frequency of NSSI, and between perceived burdensomeness and the frequency of NSSI, confirming our hypotheses. Our results might be explained by the fact that adolescents with low MIL could develop a greater number of interpersonal and behavioral problems in the family, such as substance use, eating disorders, and risk behaviors (Brassai et al., 2011; Marco et al., 2021), thus increasing feelings of perceived burdensomeness, thwarted belongingness, and hopelessness (Garcia-Alandete et al., 2019), which, in turn, could lead to the use of maladaptive coping strategies with emotional deregulation, such as NSSI (Anestis, Kleiman, Lavender, Tull & Gratz, 2014). However, if adolescents with low MIL could discover and achieve long-term goals related to the main sources of MIL, such as good family relationships (Lambert, Stillman, Baumeister, Fincham, Hicks, & Graham, 2010), good interpersonal relationships, health, personal growth (Grounden & Jose, 2014), loving someone, or participating in activities with the possibility of building something unique and creative (Frankl, 2006), their perceived burdensomeness, thwarted belongingness, and NSSI behaviors might decrease (Marco, Cañabate, Llorca, & Perez, 2019; Marco et al., 2021).

Moreover, our results are consistent with studies showing that connectedness was inversely associated with NSSI (Busby et al., 2021). Klonsky and May (2015) define connectedness as a personal connection to other people, other interests, roles, projects, or any sense of purpose or meaning that keeps one invested in living (Klonsky, May, & Saffer, 2016). However, although connectedness is a similar construct to MIL, this construct only refers to two of the three dimensions of meaning in life (Martela & Steger 2016). Connectedness refers to purpose and significance, but it does not include the dimension of coherence. Recent studies with participants with borderline personality disorders suggest that it is necessary to consider all three dimensions of MIL in the association between MIL and borderline personality disorders such as NSSI (Lorca et al., 2019).

Our study has some limitations that should be taken into account when interpreting the results. First, this is a retrospective and cross-sectional study, which limits the conclusions that can be drawn about causality and directionality between the variables. The second limitation is that we only used self-report measures to evaluate the variables, and self-reports may not reflect the real constructs. Third, recruitment for the study was nonrandom, and selection and self-selection bias may have affected the findings and, thus, the ability to extrapolate the findings to the population of interest (i.e., Spanish adolescents). Finally, although meaning in life was a moderator variable, the amount of variance explained by the models was not high.

Based on our results, thwarted belongingness and perceived burdensomeness could be a risk factor for NSSI and MIL could be a protective factor against NSSI, we suggest that adding these variables to current descriptive theories of NSSI in adolescents would allow us to improve the assessment protocols for adolescents with NSSI. Moreover, our results suggest the need to develop psychotherapeutic

interventions for adolescents with NSSI that focus on orienting their lives towards goals that allow them to discover a meaningful life worth living.

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Table 1

Zero order correlations between variables.

	<i>M (SD)</i>	2	3	4
1. Meaning in life	46.13 (9.15)	-.61**	-.54**	-.28**
2. Thwarted Belongingness	16.33 (8.46)	-	.62**	.29**
3. Perceived Burdensomeness	17.76 (6.12)		-	.26**
4. Frequency of NSSI	0.73 (1.03)			-

Note. NSSI = Non-Suicidal Self-Injuries.* $p < .05$; ** $p < .01$

Table 2

Moderation effect of MIL in the association between Thwarted Belongingness, Perceived Burdensomeness, and NSSI frequency.

Step	Variable entered	B	Standard error	t	Total R2	ΔR2
Variable Dependent: NSSI frequency						
1	Gender	-0.16	0.06	-2.55		
	Age	-0.03	0.02	-1.50		
2	TB	0.02	0.01	4.53**	.09**	.09**
3	MIL	-0.21	0.01	-4.63**	.11**	.02**
4	TB x MIL	-0.01	0.01	-3.06**	.12**	.01**
Variable Dependent: NSSI frequency						
1	Gender	-0.14	0.06	-2.24		
	Age	-0.04	0.02	-2.32		
2	PB	0.03	0.01	4.63**	.07**	.07**
3	MIL	-0.02	0.01	-6.22**	.09**	.02**
4	PB x MIL	-0.01	0.01	-1.97**	.10**	.01**

Note. MIL = Meaning in life; TB = Thwarted Belongingness; PB = Perceived Burdensomeness; NSSI = Non-Suicidal Self-Injuries

* $p < .01$ ** $p < .001$

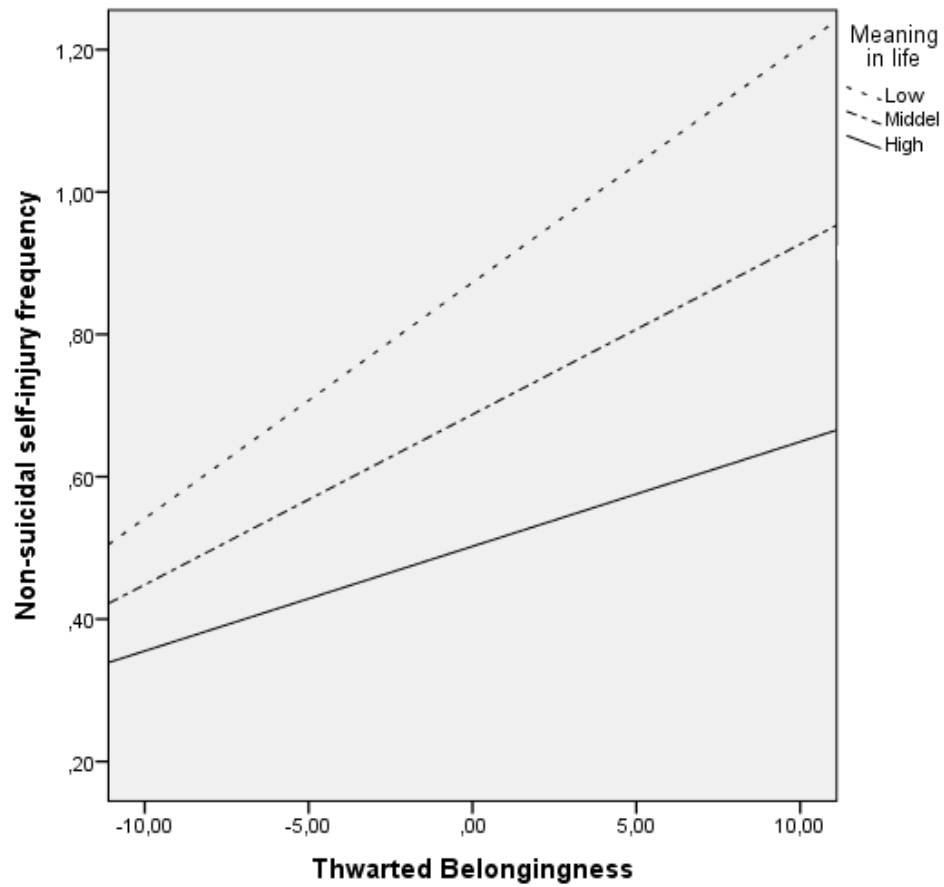


Figure 1. Meaning in life moderates the association between thwarted belongingness and frequency of non-suicidal self-injury.

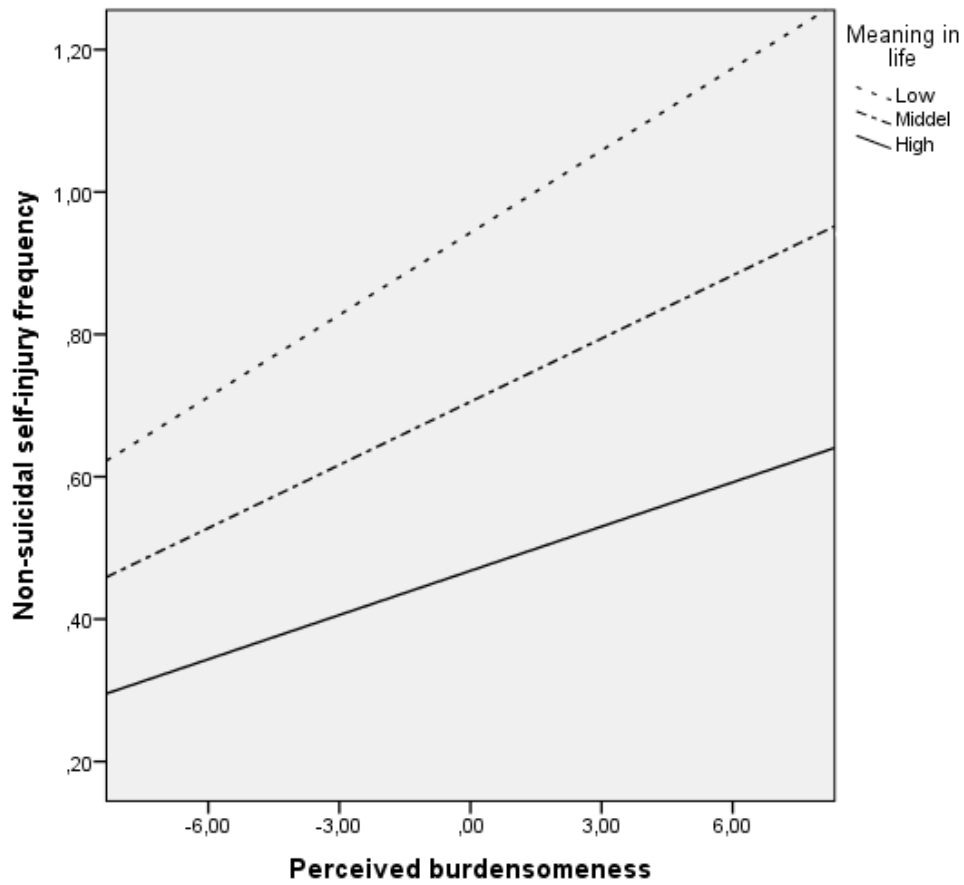


Figure 2. Meaning in life moderates the association between perceived burdensomeness and frequency of non-suicidal self-injury.

Disclosure of interest:

All co-authors (José H. Marco, Blanca Gallego- Hernandez de Tejada, Verónica Guillen, Rosa Baños, & Sandra Pérez) have revised and agree with the contents of the manuscript and there is no financial interest to report. We certify that the submission is an original work and is not under review at any other publication. In this study the authors complied with APA ethical standards in the treatment of their participants and the work was approved by the University Ethics Committee.

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