



# Psychological Risk and Protective Factors for Suicidal Ideation: A Study in an Adolescent Sample in an Insular Context

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**Objectives:** Adolescents are at risk of suicide. As suicide is a multifactorial process, risk and protective factors are relevant constructs for suicide prediction. This study explored the effects of risk and protective factors on suicidal ideation in adolescents on the island of São Miguel (Azores).

**Methods:** A sample of 750 adolescents (male: n=358; 47.7%; mean age=14.67 years; standard deviation=1.85 years) from the island of São Miguel (Azores) completed several measures related to suicidal ideation and associated factors. Using a cross-sectional design, this study conducted descriptive, correlational, predictive, mediation, and moderation analyses.

**Results:** Adolescents generally displayed high levels of risk and protective factors; an indicative proportion exhibited significant suicidal ideation with females presenting the greatest vulnerability. Furthermore, the results highlight that depression is the best predictor of suicidal ideation, however, the association between these variables is mediated.

**Conclusion:** The data corroborate that the suicidal reality of adolescents in the Autonomous Region of the Azores is worrisome. Having substantiated the complexity of the suicidal context in young people in the present research, the need to continue studying risk/protective factors in this area is supported.

**Keywords:** Adolescent; Suicidal ideation; Risk factor; Protective factor.

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## INTRODUCTION

Suicide is the intentional action carried out by a person who aims to end their life [1]. This multifactorial phenomenon [2] is the second leading cause of death in young people [3], placing adolescents at risk for suicide [1].

Since a key aspect of suicide prediction is the identification of risk and protective factors [4] their exploration is valuable, particularly in vulnerable populations.

### Risk and protective factors

Several etiological models have sought to explain the suicidal process and the factors involved in the process [5] underlining that psychological factors are the foundation of suicide [2].

In a study of the aforementioned factors, it was demonstrated that they together explained 39% of suicidal ideation

in adolescents, with protective factors explaining 34% of this occurrence and risk factors explaining 29% [6].

Regarding risk factors, the literature highlights several factors, such as depression [7], hopelessness [8], and negative life events (NLE) [6], suggesting that these factors are positively correlated with suicidal ideation [6]; the higher the presence of these variables, the higher the suicidal ideation in young people.

Concerning protective factors, social support [9], reasons for living [10], and help-seeking [11] are also relevant variables negatively associated with suicidal ideation [10].

### Interactions between factors

Regarding the known interactions between factors, research demonstrates that the occurrence of suicidal ideation and risk factors, namely depression [7], tends to be higher in females as opposed to males, and some protective factors, such as specific reasons for living [12], tend to be higher in males in comparison to the females. Nonetheless, some variables contradicted the aforementioned results, such as help-seeking [13]

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which tended to be higher in females compared to males.

In addition to sex, the literature has explored the associations between factors, revealing that risk factors are negatively correlated with protective factors [10] and positively correlated within themselves [14].

Since depression appears to be the best predictor of suicidal ideation in adolescents [15], understanding how different factors affect the association between these two variables has become important.

Literature indicates that the link between depression and suicidality is indirect, and hopelessness stands out as a prominent mediator, further theorizing that the relationship between depressive symptomatology and suicidal ideation is established through hopelessness [16].

Regarding moderation, some etiological models highlight that hopelessness has a moderating role, influencing the way an individual relates to their experiences, namely NLE [17,18].

### The present study

In the Autonomous Region of the Azores (ARA), data are worrisome, highlighting that young people in this region exhibit high rates of suicidal ideation and self-harm [19]. Considering multidimensionality as an attribute of suicide [1], the present study aims to explore the effect of risk and protective factors on the suicidal ideation of adolescents on the island of São Miguel (Azores), intending to specifically: 1) assess the characteristics of the adolescents in the studied variables (total sample and according to sex); 2) identify the predictive value of the risk and protective factors, regarding the levels of suicidal ideation; 3) inspect if the association between depression and suicidal ideation is direct or mediated in the current population; and 4) examine the moderating role of hopelessness in the relationship between NLE and suicidal ideation.

## METHODS

### Sample

The sample included 750 Portuguese adolescents (male:  $n=358$ ; 47.7%), with ages ranging from 12 to 19 years (mean [M] age=14.67 years; standard deviation [SD]=1.85 years), enrolled in the third cycle of basic education (74.8%) or high school (25.2%) on the island of São Miguel (Azores).

### Measures

#### *Sociodemographic questionnaire*

The sociodemographic questionnaire allows the collection of sample characterization information, covering data such as sex, clinical history, and age of the participants.

#### *Positive and Negative Suicide Ideation Inventory*

The Positive and Negative Suicide Ideation Inventory (PAN-SI) is a scale comprised of 14 items that measure positive and negative thoughts regarding suicidal ideation (i.e., positive and negative ideation) on a Likert scale ranging from 1 (none of the time) to 5 (most of the time) [20]. A high negative suicidal ideation score suggests high levels of suicidal ideation [20] with a cutoff score of 1.13 in nonclinical samples. Internal consistency was revealed to be satisfactory in the original study (negative ideation: alpha [ $\alpha$ ]=0.91 and 0.93; positive ideation:  $\alpha=0.80$  and 0.82) [20] and in the present study (negative ideation:  $\alpha=0.95$ ; positive ideation:  $\alpha=0.83$ ). This inventory was translated with authorization from Peter Gutierrez, and only items belonging to the negative ideation scale were analyzed in the context of this study.

#### *Center for Epidemiologic Studies Depression Scale for Children*

The Center for Epidemiologic Studies Depression Scale for Children consists of 20 items and evaluates depressive symptomatology in children and adolescents on a 4-point scale, from 0 (not at all) to 3 (a lot) [21]. The score is obtained by summing the items (0–60), with a high score suggesting greater depressive symptomatology. The cutoff score for the original version was 15 [21]. The Portuguese version of the scale ( $\alpha=0.90$ ) includes three factors named: humor ( $\alpha=0.90$ ); interpersonal ( $\alpha=0.87$ ); and happiness ( $\alpha=0.57$ ) [22]. Adequate reliability was obtained, in the present study, for the total scale ( $\alpha=0.93$ ) and the associated factors (humor:  $\alpha=0.92$ ; interpersonal:  $\alpha=0.85$ ; and happiness:  $\alpha=0.70$ ).

#### *Negative Life Events Inventory*

The Negative Life Events Inventory comprises 25 items and assesses the frequency, impact, and severity of NLE experienced before the age of 12, using two Likert scales: the frequency scale, from 0 (never occurred) to 4 (occurred many times), and the impact scale, from 1 (no impact) to 5 (extremely negative impact) [23]. A high score on the Global NLE Index suggests a high overall experience of NLE, with a reference value of 1.46 in the original version [23]. The measure ( $\alpha=0.90$ ) is subdivided into four factors: adverse family environment ( $\alpha=0.84$ ); psychological abuse ( $\alpha=0.80$ ); separations and losses ( $\alpha=0.71$ ); and physical and sexual abuse ( $\alpha=0.67$ ) [23]. In the present study satisfactory reliability results were obtained (total scale:  $\alpha=0.91$ ; adverse family environment:  $\alpha=0.78$ ; psychological abuse:  $\alpha=0.88$ ; separations and losses:  $\alpha=0.70$ ; and physical and sexual abuse:  $\alpha=0.72$ ).

#### *Beck Hopelessness Scale*

The Beck Hopelessness Scale comprises 20 items and quantifies hopelessness on a dichotomous scale ranging from 0

(true) to 1 (false) [24]. The score is calculated as the sum of the items, with high scores suggesting an increased presence of hopelessness.

Scores ranging from 0 to 3 were considered normal, scores from 4 to 8 indicated mild hopelessness, scores from 9 to 14 indicated moderate hopelessness, and scores greater than 14 indicated severe hopelessness. Moreover, a cutoff score of  $\geq 9$  has been suggested to be indicative of relevant suicidal risk [24]. The scale revealed adequate reliability in the original study (Kuder-Richardson Formula 20 [KR-20]=0.93) [24], the Portuguese study (KR-20=0.90) [17], and the present study (KR-20=0.81).

#### *Satisfaction with Social Support Scale*

The Satisfaction with Social Support Scale assesses satisfaction with perceived social support through the sum of 15 items scored on a Likert scale ranging from A (totally agree) to E (totally disagree) [25]. Divided into four factors, the scale reveals adequate reliability in the original study (total scale:  $\alpha=0.85$ ; satisfaction with friends:  $\alpha=0.83$ ; intimacy:  $\alpha=0.74$ ; satisfaction with family:  $\alpha=0.74$ ; and social activities:  $\alpha=0.64$ ) [25]. In the present study, reliability was satisfactory (total scale:  $\alpha=0.87$ ; satisfaction with friends:  $\alpha=0.85$ ; and satisfaction with family:  $\alpha=0.88$ ), except for the factors of intimacy ( $\alpha=0.60$ ) and social activities ( $\alpha=0.57$ ).

#### *Reasons for Living Inventory*

The Reasons for Living Inventory (RFL-A) comprises 32 items and measures the adaptive factors that influence suicidal behavior in adolescents on a 6-point scale, ranging from 1 (not at all important) to 6 (extremely important) [12]. The RFL-A score is obtained by averaging the items, with high scores suggesting more reasons for living [12]. Subdivided into five factors, the scale exhibits satisfactory reliability in the original study (total scale:  $\alpha=0.96$ ; family alliance:  $\alpha=0.94$ ; suicide-related concerns:  $\alpha=0.93$ ; peer acceptance and support:  $\alpha=0.89$ ; future optimism:  $\alpha=0.92$ ; and self-acceptance:  $\alpha=0.94$ ) [12], in the Portuguese study (total scale:  $\alpha=0.94$ ; family alliance:  $\alpha=0.95$ ; suicide-related concerns:  $\alpha=0.87$ ; peer acceptance and support:  $\alpha=0.89$ ; future optimism:  $\alpha=0.85$ ; and self-acceptance:  $\alpha=0.91$ ), [26] and in the present study (total scale:  $\alpha=0.97$ ; family alliance:  $\alpha=0.94$ ; suicide-related concerns:  $\alpha=0.91$ ; peer acceptance and support:  $\alpha=0.92$ ; future optimism:  $\alpha=0.93$ ; and self-acceptance:  $\alpha=0.94$ ).

#### *Inventory of Attitudes Towards Seeking Mental Health Services*

The Inventory of Attitudes Towards Seeking Mental Health Services (IASMHS) comprises 24 items that measure attitudes toward seeking mental health services using a Likert scale ranging from 0 (disagree) to 4 (agree) [13]. The IASMHS score

was obtained as the sum of the items, with high scores suggesting increased positive attitudes [13]. Divided into three factors, the scale demonstrates adequate reliability in the original study (total scale:  $\alpha=0.87$ ; psychological openness:  $\alpha=0.82$ ; help-seeking propensity:  $\alpha=0.76$ ; and indifference to stigma:  $\alpha=0.79$ ) [13] and in the Portuguese study (total scale:  $\alpha=0.83$ ; help-seeking propensity:  $\alpha=0.75$ ; and indifference to stigma:  $\alpha=0.83$ ), except in the psychological openness factor that exhibited low values in Portugal ( $\alpha=0.63$ ) [27]. In the present study, the 20-item version of the IASMHS that is validated in Portuguese adolescents [28] was used, revealing mixed reliability results: total scale:  $\alpha=0.80$ ; psychological openness:  $\alpha=0.54$ ; help-seeking propensity:  $\alpha=0.81$ ; and indifference to stigma:  $\alpha=0.82$ .

#### *General and Actual Help-Seeking Questionnaire*

The General and Actual Help-Seeking Questionnaire assesses help-seeking intentions and behaviors using a 7-point scale ranging from 1 (extremely unlikely) to 7 (extremely likely), with higher scores suggesting greater help-seeking intentions [27]. The original study presents adequate scale reliability ( $\alpha=0.70$ ) [29]. Moreover, to attest the data from the original Portuguese version is not possible as a validation study has not been published. However, Fonseca et al. [27] observed reasonable reliability ( $\alpha=0.63$ ), being in line with the present study ( $\alpha=0.75$ ).

## **Procedures**

### *Data collection*

Approval was obtained from the Regional Directorate of Education along with seven schools from São Miguel Island. Permission sheets were provided to parents/guardians before data collection. During the data collection session, the participants completed an informed consent sheet and the study measures. Questionnaire protocols were distributed in four different orders and, when completed, placed within an opaque container.

### **Ethics approval**

This project was approved by the Scientific Commission of the Psychology and Sciences Education Department, University of Algarve (Reference CCDPCE-70/11-09-2019).

### **Compliance with ethical standards**

The Azores Government (Regional Directorate of Education, Direção Regional da Educação) was contacted to provide authorization for the development of the present study. According to Regional Legislative Decree No. 13/2013/A (Decreto Legislativo Regional n.º 13/2013/A), the authorization

request was forwarded to schools on the island of São Miguel. Informed consent was obtained from all participants.

### Data analysis

Initially, the missing values for each item and the presence of outliers were assessed to reduce potential data bias. Subsequently, the main statistics were performed using descriptive statistics (M and SD), Pearson's correlation coefficient was carried out to evaluate associations between variables, Student's t-test for unpaired data to explore mean differences, Cohen's d to measure the effect size, linear regression to investigate the predictive role of the variables, and mediation and moderation analyses to assess the role of the variables in the existing associations.

Regarding the descriptive statistics analysis the interpretation of scores as "low" or "high" was carried out based on two distinct methods: 1) when a clear and applicable cutoff score was identified in the literature, that value was used to pinpoint whether a score was "low" or "high" on a determined scale and 2) when assessing the existence of a clear cutoff score was not possible, or not applicable, the marking of the scores was carried out taking into account the scales' midrange (considering the minimum and maximum possible scores on each specific scale).

Both mediation and moderation analyses were implemented according to Baron and Kenny's [30] guidelines. As such, for a variable to be considered a mediator, three norms must be in place: the independent variable must influence the mediator, the mediator must influence the dependent variable, and when controlling for the mediation, the effect of the independent variable on the dependent variable loses significance. Mediation was considered complete when the effect of the independent variable on the dependent variable ceased [30].

Concerning moderation, three causal paths were established in each analysis: from the predictor variable to the dependent variable (path a), from the moderator to the dependent variable (path b), and from the product of the predictor

and moderator ( $a \times b$ ) to the dependent variable (path c). Moderation was considered present when path c ( $a \times b$ ) was significant [30].

## RESULTS

### Descriptive statistics

Descriptive statistics of the variables are displayed (Table 1). Regarding suicidal ideation, approximately 38.3% of adolescents were above the cutoff score suggested by Osman et al. [31] (cutoff=1.13) and 1.5% displayed maximum suicidal ideation ( $M \approx 5$ ). Regarding sex differences, females had higher mean scores for suicidal ideation compared to males.

Concerning protective factors, the results indicated that global scores were positive but not extreme for social support, help-seeking attitudes, and reasons for living, with help-seeking intentions being the only variable for which global scores were effectively low. Regarding sex, mean differences were discovered in the total scores of social support and help-seeking intentions, indicating that males had higher scores than females for both factors.

Regarding risk factors, high values for depression ( $M = 18.32$ ;  $SD = 13.29$ ) (cutoff=15) and mild values for hopelessness ( $M = 4.39$ ;  $SD = 3.67$ ) were obtained. For NLEs, for the overall sample, the value obtained (1.28) was lower than the reference value (1.46); however, in females, this value was higher (1.59) in comparison to males.

Sex differences were identified for all risk factor mean scores, suggesting that females had greater depression, hopelessness, and NLE than males.

### Associations between variables

Associations between all variables were explored (Table 2), verifying that protective factors were positively correlated with each other and negatively correlated with risk factors, with the same occurrence also happening for risk factors. Additionally, protective factors were negatively correlated

**Table 1.** Descriptive statistics and mean differences

	Total sample (n=750)	Male (n=358)	Female (n=392)	d	t	p
PANSI-N	1.38±0.78	1.22±0.56	1.53±0.91	0.41	-5.73	<0.001
SSSS	57.37±11.90	59.97±10.91	54.99±12.28	0.43	5.87	<0.001
IASMHS	54.69±12.19	54.18±12.09	55.16±12.29	0.08	-1.11	0.270
GHSQ	3.68±1.02	3.82±1.01	3.54±1.01	0.28	3.75	<0.001
RFL-A	4.73±1.16	4.81±1.16	4.66±1.16	0.13	1.78	0.075
CES-DC	18.32±13.29	13.77±10.52	22.48±14.18	0.70	-9.60	<0.001
BHS	4.39±3.67	3.96±3.30	4.78±3.94	0.23	-3.08	0.002
NLEI	1.28±1.91	0.94±1.39	1.59±2.25	0.35	-4.82	<0.001

Values are presented as mean ± standard deviation. BHS, hopelessness; CES-DC, depression; d, Cohen's d; GHSQ, help-seeking intentions; IASMHS, attitudes toward seeking mental health services; NLEI, negative life events; PANSI-N, suicidal ideation; RFL-A, reasons for living; SSSS, satisfaction with social support; t, Student's t-test for unpaired data

**Table 2.** Pearson's correlation coefficients (r) between all variables (n=750)

	PANSI-N	SSSS	IASMHS	GHSQ	RFL-A	CES-DC	BHS
SSSS	-0.50***	-					
IASMHS	-0.30***	0.45***	-				
GHSQ	-0.19***	0.34***	0.33***	-			
RFL-A	-0.43***	0.48***	0.46***	0.35***	-		
CES-DC	0.67***	-0.63***	-0.38***	-0.33***	-0.48***	-	
BHS	0.55***	-0.44***	-0.42***	-0.25***	-0.55***	0.58***	-
NLEI	0.54***	-0.44***	-0.27***	-0.20***	-0.39***	0.55***	0.41***

\*\*\*p<0.001. BHS, hopelessness; CES-DC, depression; GHSQ, help-seeking intentions; IASMHS, attitudes toward seeking mental health services; NLEI, negative life events; PANSI-N, suicidal ideation; RFL-A, reasons for living; SSSS, satisfaction with social support

**Table 3.** Factors' contributions to the explanation of suicidal ideation

Suicidal ideation (PANSI-N)		
Risk factors		R <sup>2</sup> =0.524***
CES-DC	β=0.42***	
BHS	β=0.22***	
NLEI	β=0.22***	
Protective factors		R <sup>2</sup> =0.303***
SSSS	β=-0.39***	
IASMHS	β=-0.02	
GHSQ	β=0.04	
RFL-A	β=-0.25***	
Risk and protective factors		R <sup>2</sup> =0.533***
CES-DC	β=0.40***	
BHS	β=0.21***	
NLEI	β=0.21***	
SSSS	β=-0.09*	
IASMHS	β=0.03	
GHSQ	β=0.07**	
RFL-A	β=-0.05	

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001. BHS, hopelessness; CES-DC, depression; GHSQ, help-seeking intentions; IASMHS, attitudes toward seeking mental health services; NLEI, negative life events; PANSI-N, suicidal ideation; R<sup>2</sup>, coefficient of determination; RFL-A, reasons for living; SSSS, satisfaction with social support; β, standardized beta coefficient

with suicidal ideation, and, inversely, risk factors were positively correlated with suicidal ideation.

**Analysis of the factor's predictive role**

Additionally, a regression analysis was performed to assess the predictive role of the aforementioned factors in suicidal ideation (Table 3).

Risk factors explained 52.4% of the levels of suicidal ideation and depression and presented the most significant contribution (β=0.42). Protective factors explained 30.3% of suicidal ideation, highlighting that help-seeking attitudes (p=0.504) and intentions (p=0.196) did not contribute to the model and social support displayed the most substantial con-

tribution (β=-0.39). All together, the factors explained 53.3% of suicidal ideation, adding that help-seeking attitudes (p=0.298) and reasons for living (p=0.160) had no contributions and depression revealed the most noteworthy contribution (β=0.40).

**Mediation analysis**

As depression was the best predictor of suicidal ideation, further assessments were performed to determine whether the association between these variables was mediated by psychological factors (Table 4).

Mediation analysis suggested that social support, reasons for living, and hopelessness had a partial mediating effect, with hopelessness being the most meaningful mediator, explaining 20.90% of the variance.

**Moderation analysis**

To complement these results, we examined the moderating role of hopelessness (Fig. 1).

The analysis demonstrated that hopelessness moderated (ΔR<sup>2</sup>=0.007, p=0.003) the association between NLE and suicidal ideation, this relationship was positive and more prominent in individuals with high hopelessness.

**DISCUSSION**

Since adolescents are considered an at-risk group for suicide [1] and considering the usefulness of identifying risk and protective factors [4], the present study aimed to investigate the current state of suicidal ideation and associated factors in adolescents on the island of São Miguel (Azores).

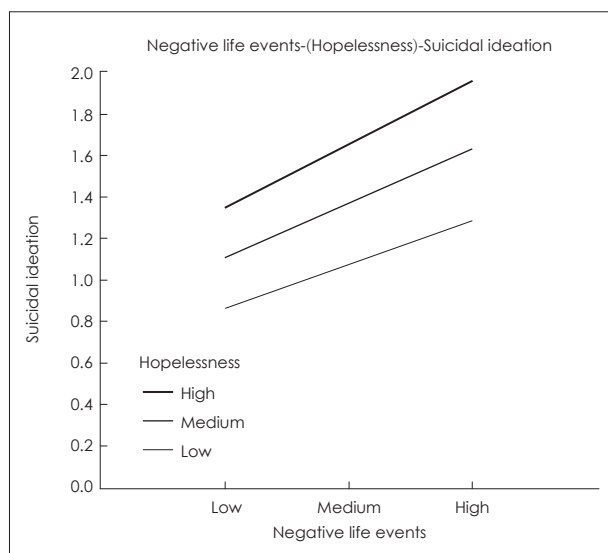
Initially, it was identified that the cutoff score of the PAN-SI-Negative [30] was surpassed by 38.3% of the adolescents, and a portion of the participants revealed substantial suicidal ideation. These findings corroborate several studies conducted in the ARA [19] that suggested high rates of suicidal ideation in young people. The results indicate that the sampled adolescents displayed some degree of suicide risk that



**Table 4.** Mediation analysis: depression–mediator–suicidal ideation (PANSI-N)

Association	Suicidal ideation (PANSI-N)			Observations
	Total effect	Direct effect	Indirect effect	
Depression – SI (SSSS)	$\beta=0.67^{***}$	$\beta=0.59^{***}$	$\beta=0.08^{***}$	Partial mediation (11.94%)
Depression – SI (RFL-A)	$\beta=0.67^{***}$	$\beta=0.60^{***}$	$\beta=0.07^{***}$	Partial mediation (10.45%)
Depression – SI (BHS)	$\beta=0.67^{***}$	$\beta=0.53^{***}$	$\beta=0.14^{***}$	Partial mediation (20.90%)

\*\*\* $p < 0.001$ . BHS, hopelessness; PANSI-N, suicidal ideation; RFL-A, reasons for living; SI, suicidal ideation; SSSS, satisfaction with social support



**Fig. 1.** Graph of the moderation effect of hopelessness on the relationship between negative life events and suicidal ideation.

must be considered, validating the severity of the issue in the studied sample.

Through descriptive statistics, high levels of both protective factors and risk factors were identified. Elevated levels of depressive symptoms and mild hopelessness may explain why more than one-third of these adolescents experienced suicidal ideation above the cutoff point. However, the transition from suicidal ideation to suicidal behavior may be attenuated by the presence of protective factors.

Regarding the sex differences observed in the sample, the female population had consistently higher levels of risk factors and lower levels of protective factors, consequently having higher suicidal ideation than the male population, which corroborates the findings of other authors [7]. Considering that this phenomenon was detected in all risk factors and most protective factors, it could be postulated that a high level of suicidal ideation, when considering both sexes, may be partially influenced by the female population's significantly higher suicidal vulnerability compared to the male population.

This data led us to question the cause of the disparity observed between the male and female populations. Brás et al. [6] proposed that females may have increased psychological

vulnerability, namely being exposed more frequently to adverse situations and/or perceiving them more negatively compared to males. Moreover, in Portuguese society, female gender roles are conservative. Consequently, females can be more pressured than males to maintain socially accepted conduct and effective performance in their functions [26], which may also contribute to the existence of dissimilarities.

Specifically, regarding the Azores, highlighting that adolescents in this territory face mental health risk factors, such as low access to mental health services and geographical asymmetries is relevant [32]. Although Azorean culture has evolved towards a more equal society, gender inequality is still present in some areas [33]. Regarding the difficulties that not only youth but particularly female youths, face in the Azores, sociocultural factors should be explored as potential explanations for high mental health and suicidal vulnerability.

The correlational analysis discovered that an increase in protective factors decreased the risk factors and vice versa, corroborating the literature that also validates the existence of consistent correlations between the studied factors [10].

Additionally, as the levels of social support, help-seeking attitudes, intentions, and reasons for living increased, suicidal ideation decreased. Conversely, as the levels of depression, hopelessness, and NLE increased, suicidal ideation also increased. Several authors have supported the existence of correlations between the explored variables and suicidal ideation, suggesting that protective factors are negatively correlated with suicidal ideation [9], and risk factors are positively correlated with suicidal ideation [7], which is in line with the present study.

Consolidating the predictive role of the studied factors, an observation was made that all variables together explained 53.3% of the suicidal ideation. These results are in line with a study by Brás et al. [6], which explored variables analogous to the present study and concluded that in adolescents, risk and protective factors allow for a satisfactory prediction of suicidal ideation.

The abovementioned percentage results were high, as more than half of the variation in suicidal ideation was explained by the studied factors. However, this result suggests the existence of other risk/protective factors that predict suicidal ideation.

ation that were not considered in the analyses. This was expected because the literature highlights several variables that have not yet been explored, indicating that the integration of factors such as self-esteem, locus of control, and problem-solving skills [5] would likely enhance the predictive model.

Furthermore, depression had the greatest predictive value among the risk factors, and in the array of all factors. This result is corroborated by literature demonstrating that depression is a variable that stands out for its predictive potential [15].

Regarding the importance of depression on suicidal ideation, a mediation analysis demonstrated that the association between these variables was partially mediated by social support, reasons for living, and hopelessness, the latter being foregrounded as the best mediator.

The mediating role of hopelessness has also been reported in the literature, and an inference is made that the association between depression and suicidal ideation is indirect, establishing itself through several variables, especially hopelessness [16].

Finally, through moderation analysis, the association between NLE and suicidal ideation was identified to be moderated by hopelessness, validating the suggestion of Cruz [17,18], and underlining hopelessness as a particularly relevant factor to consider in suicide prevention and intervention efforts.

Regarding the present study, two limitations arise: data collection was performed in a school context, which might have influenced the perceptions of confidentiality in some participants, and the length of the protocol might have affected adolescents' motivation.

Nonetheless, several strengths should also be underlined because the study comprised multiple variables of interest for the field of research, contributed to the body of literature about the suicidal context of young people in São Miguel (Azores), encompassed help-seeking, explored the way attitudes and intentions related to suicide, investigated the predictive, mediating, and moderating roles of relevant factors, and incorporated a considerable nonclinical adolescent sample.

In conclusion, considering the scientific data from the ARA [19] and the results of the present study, continuing to develop research in this age group and geographic region is important. Given that suicide is multidimensional [1], it is suggested that the studied factors continue to be investigated and that new factors should be explored to enhance the understanding of what variables effectively contribute to suicide. Moreover, a suggestion is also made that the research on these risk and protective factors should be expanded to include clinical adolescent samples for comparative analyses.

### Availability of Data and Material

The datasets generated or analyzed during the study are available from the corresponding author on reasonable request.

### Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

### Author Contributions

Conceptualization: all authors. Data curation: Ana Margarida Cunha, Marta Brás. Formal analysis: Ana Margarida Cunha, Marta Brás. Funding acquisition: Cláudia Carmo, Marta Brás. Investigation: Ana Margarida Cunha. Methodology: all authors. Project administration: Cláudia Carmo, Marta Brás. Resources: Ana Margarida Cunha, Marta Brás. Software: Ana Margarida Cunha, Marta Brás. Supervision: Marta Brás. Validation: all authors. Visualization: all authors. Writing—original draft: Ana Margarida Cunha, Marta Brás. Writing—review & editing: all authors.

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## REFERENCES

- 1) **da Saúde D.** [National plan for suicide prevention – 2013-2017]. Geneva: World Health Organization;2013. Portuguese
- 2) **Shneidman E.** Suicide as psychache: a clinical approach to self-destructive behavior. Lanham, MD: Jason Aronson;1993.
- 3) **World Health Organization.** Mental health action plan 2013 - 2020. Geneva: World Health Organization;2013.
- 4) **Cáceda R.** Suicidal behavior: risk and protective factors. *Rev Neuropsiquiatr* 2014;77:3-18.
- 5) **Yang B, Clum GA.** Effects of early negative life experiences on cognitive functioning and risk for suicide: a review. *Clin Psychol Rev* 1996;16:177-195.
- 6) **Brás M, Jesus S, Carmo C.** [Risk and protective psychological factors associated with suicidal ideation in adolescents]. *Psicol Saúde Doenças* 2016;17:132-149. Portuguese
- 7) **Azevedo A, Matos AP.** [Suicidal ideation and depressive symptomatology in adolescents]. *Psicol Saúde Doenças* 2014;15:180-191. Portuguese
- 8) **Carvajal G, Caro CV.** [Suicidal ideation in adolescence: an explanation from three of its associated variables in Bogotá]. *Colomb Med* 2011;42(suppl 1):45-56. Portuguese
- 9) **Rubio A, Oyanel JC, Cancino F, Benavente L, Céspedes C, Zisis C, et al.** Social support and substance use as moderators of the relationship between depressive symptoms and suicidal ideation in adolescents. *Front Psychol* 2020;11:539165.
- 10) **Lee SY.** Reasons for living and their moderating effects on Korean adolescents' suicidal ideation. *Death Stud* 2011;35:711-728.

- 11) Rickwood D, Deane FP, Wilson CJ, Ciarrochi J. Young people's help-seeking for mental health problems. *AeJAMH* 2005;4:218-251.
- 12) Osman A, Downs WR, Kopper BA, Barrios FX, Baker MT, Osman JR, et al. The reasons for living inventory for adolescents (RFL-A): development and psychometric properties. *J Clin Psychol* 1998;54:1063-1078.
- 13) Mackenzie CS, Knox VJ, Gekoski WL, Macaulay HL. An adaptation and extension of the attitudes toward seeking professional psychological help scale. *J Appl Soc Psychol* 2004;34:2410-2433.
- 14) Ahookhosh P, Bahmani B, Asgari A, Moghaddam HH. Family relationships and suicide ideation: the mediating roles of anxiety, hopelessness, and depression in adolescents. *Int J High Risk Behav Addict* 2017;6:e31573.
- 15) Morales-Vives F, Dueñas JM. Predicting suicidal ideation in adolescent boys and girls: the role of psychological maturity, personality traits, depression and life satisfaction. *Span J Psychol* 2018;21: E10.
- 16) Inostroza CR, Cova FS, Bustos CN, Quijada YI. Hopelessness and task-oriented coping mediate the association between depressive symptomatology and non-lethal suicidal behavior in mental health patients. *Rev Chil Neuro Psiquiatr* 2015;53:231-240.
- 17) Cruz JP. [Cognitive therapy of suicide attempts: changing death stories for life stories] [dissertation]. Seville: University of Seville;2000. Spanish
- 18) Cruz JP. [Traumatic memories, self-narratives and suicidal conduct: a therapeutic trial]. In: Costa PJ, Pires CML, Veloso J, Pires, CTL, editors. *Stresse pós-traumático: modelos, abordagens & práticas*. Leiria: Editorial Diferença;2006. p.47-70. Portuguese
- 19) Barreto Carvalho C, da Motta C, Sousa M, Cabral J. Biting myself so I don't bite the dust: prevalence and predictors of deliberate self-harm and suicide ideation in Azorean youths. *Braz J Psychiatry* 2017;39:252-262.
- 20) Osman A, Gutierrez PM, Kopper BA, Barrios FX, Chiros CE. The positive and negative suicide ideation inventory: development and validation. *Psychol Rep* 1998;82(3 Pt 1):783-793.
- 21) Weissman MM, Orvaschel H, Padian N. Children's symptom and social functioning self-report scales comparison of mothers' and children's reports. *J Nerv Ment Dis* 1980;168:736-740.
- 22) Carvalho C, Cunha M, Cherpe S, Galhardo A, Couto M. Validation of a Portuguese version of the center for epidemiologic studies depression scale for children (CES-DC). *Portuguese J Behav Soc Res* 2015;1:46-57.
- 23) Brás M, Cruz J. [Negative life events inventory (NLEI): construction and validation in an adults population]. In: Noronha A, Machado C, Almeida L, Gonçalves M, Martins S, Ramalho V, editors. *Avaliação psicológica: formas e contextos*. Braga: Psiquilíbrios; 2008. Portuguese
- 24) Beck AT, Weissman A, Lester D, Trexler L. The measurement of pessimism: the hopelessness scale. *J Consult Clin Psychol* 1974;42: 861-865.
- 25) Ribeiro JLP. [Satisfaction with Social Support Scale (SSSS)]. *Análise Psicológica* 1999;3:547-558. Portuguese
- 26) Brás M, Carmo C, Jesus SN. Reasons for living inventory for adolescents: psychometric properties among Portuguese adolescents. *OMEGA J Death Dying* 2021;82:527-547.
- 27) Fonseca A, Silva S, Canavarro MC. Psychometric characteristics of the inventory of attitudes toward seeking mental health services: a study of women during the perinatal period. *Psychologica* 2017;60: 65-81.
- 28) Brás M, Cunha AM, Carmo C, Nunes C. Inventory of attitudes toward seeking mental health services: psychometric properties among adolescents. *Soc Sci* 2022;11:284.
- 29) Wilson CJ, Deane FP, Ciarrochi JV, Rickwood D. Measuring help seeking intentions: properties of the general help seeking questionnaire. *Can J Couns* 2005;39:15-28.
- 30) Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *J Pers Soc Psychol* 1986;51:1173-1182.
- 31) Osman A, Gutierrez PM, Jiandani J, Kopper BA, Barrios FX, Linden SC, et al. A preliminary validation of the positive and negative suicide ideation (PANSI) inventory with normal adolescent samples. *J Clin Psychol* 2003;59:493-512.
- 32) Neves MFBV, Santos JC. Mental health and suicidal behaviors in adolescents from a Portuguese island. *Revista de Enfermagem Referência* 2016;4:77-84.
- 33) Regional Fund of Science and Technology. Gender Equality Plan. Autonomous Region of the Azores: Regional Government of the Azores;2022.