Article

Suicidal Behavior in Adolescents: An Ecological-Relational Study

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ABSTRACT

Background: The present study analyzes factors of adolescents' ecological-relational contexts in relation to suicidal behavior. In particular, it examined the role of peer bullying and cyberbullying, classroom climate, violence and partner victimization, parental socialization styles, and child-to-parent violence. **Method:** The participants are 2,977 Spanish adolescents attending seven secondary schools. They were aged 11-17 ($M = 14.0$, $SD = 1.40$; 51.5% girls). Multivariate logistic regression analyses and a two-step cluster analysis were applied to analyze the data. **Results:** Findings showed a prevalence of suicidal thoughts in 43.3% of the sample, with 7.7% reporting suicide attempts. Adolescents experiencing high/low victimization (ORa = 3.10, $p < .001$) and high cybervictimization (ORa = 1.67, $p < .001$) were at risk. However, high cyberbullying involvement (ORa = 0.55, $p < .001$) and not having a partner (ORa = 0.61, $p < .001$) emerged as protective factors. Sex-specific analyses underscored distinct interaction effects, with suicidal behavior in girls being significantly related to maternal negative socialization (ORa = 1.57, $p = .05$). **Conclusions:** An ecological-relational and sex approach is needed to understand and prevent suicidal behavior in adolescents.

Conducta Suicida en Adolescentes: un Estudio Ecológico-Relacional

RESUMEN

Antecedentes: Este estudio analiza factores del contexto ecológico-relacional de adolescentes en la conducta suicida. Particularmente, el acoso y ciberacoso entre iguales, el clima del aula, la violencia y victimización en la pareja, los estilos de socialización parental y la violencia filio-parental. **Método:** Participaron 2,977 adolescentes españoles de siete centros de Educación Secundaria Obligatoria de 11-17 años ($M = 14.0$; $DT = 1.40$; 51,5% chicas). Se realizaron análisis de regresión logística multivariada y un análisis de conglomerados de dos pasos. **Resultados:** Se observó prevalencia de pensamientos suicidas en el 43,3% de la muestra, y el 7,7% informó intentos de suicidio. Los adolescentes con victimización alta/baja (ORa = 3.10, $p < .001$) y alta cibervictimización (ORa = 1.67, $p < .001$) estaban en mayor riesgo. Sin embargo, una alta implicación en ciberbullying (ORa = 1.67, $p < .001$) y no tener pareja (ORa = 0.61, $p < .001$) se mostraron factores protectores. Análisis específicos de género subrayaron distintos efectos de interacción, y el estilo de socialización negativo en la madre fue importante en la conducta suicida en chicas (ORa = 1.57, $p = .05$). **Conclusiones:** Es necesario un enfoque ecológico-relacional y de género para comprender y prevenir la conducta suicida en adolescentes.

Suicide is a global public health problem and is currently the fourth leading cause of death among young people between the ages of 15 and 29 worldwide (World Health Organization [WHO], 2021) and the leading cause in Spain (Instituto Nacional de Estadística [National Institute of Statistics], 2022). Specifically, 2020 became the year with the most suicides recorded in the history of Spain, a maximum that was exceeded in 2021 (INE, 2021, 2022). It is estimated that for every suicide that occurs, there have been twenty or more attempts (WHO, 2021), while suicidal ideation is much more frequent and varies from country to country and between age and sex groups. Specifically, in a population-based study of 82 countries (Biswas et al., 2020), the global prevalence of suicidal ideation ("Did you ever seriously consider attempting suicide during the past 12 months?") was 14%, with the highest pooled prevalence observed in Africa (21.0%) and the lowest in Asia (8.0%). Roughly one third of adolescents with suicide ideation will go on to attempt suicide within one year (Nock et al., 2013). The differences between the sexes are paradoxical: women have rates of suicidal ideation and suicide attempts that are twice as high as men, but men have more completed suicides (Beautrais, 2002; Canetto & Sakinofsky, 1998; Turecki & Brent, 2016). In adolescents and young adults, these differences are replicated in meta-analyses (Miranda-Mendizabal et al., 2019). Some specialists have linked the increase in adolescent suicidal behavior to a worsening of young people's mental health, especially in the pandemic and post-pandemic periods. In studies carried out in Spain, it was observed that the symptoms of anxiety, depression, and stress became more severe with social isolation and problematic use of the internet (Ozamiz-Etxebarria et al., 2020; Villanueva-Silvestre et al., 2022). Specifically, among adolescents, the risk of anxiety, depression, sleep problems, stress, and risk of suicide increased between 2019 and 2022 (Windarwati et al., 2022), primarily affecting girls between the ages of 13 and 18 (Aarah-Bapuah et al., 2022).

Suicidal behavior is considered as a multidimensional construct that manifests in different ways: from ideation about suicide as a way to end suffering, until suicide attempts and consummation through suicide communication and planning (Díez-Gómez et al., 2020; O'Connor & Nock, 2014). Evidence indicates that suicidal ideation is one of the main risk factors for suicide deaths after a previous suicide attempt (Cash & Bridge, 2009; Franklin et al., 2017; Goñi-Sarriés et al., 2018). Both suicidal ideation and specific suicide behaviors have a moderate association with suicide; therefore, their study is very important for their prevention (Large et al., 2021). Traditionally, research on suicide has almost exclusively focused on internal psychological risk factors such as psychopathology, mood, and depressive disorders, anxiety disorders, conduct disorder, substance abuse, biological vulnerabilities, sexual orientation, hopelessness, low self-esteem, poor problem-solving skills, impulsivity, or negative life events such as physical and sexual abuse (e.g., Cash & Bridge, 2009; King & Merchant, 2008; Rodríguez et al., 2017; Soto-Sanz et al., 2019). But this individual approach to suicide may not be enough to understand the increasing incidence of suicidal behavior peaks in adolescents. Adolescence is a period specially oriented to relational outcomes; that is, adolescent development and psychological adjustment is strongly rooted in social goals integrated in significative relational contexts such as integrating in a network of equals, being connected with classmates in the classroom, having a partner, or achieving an autonomous, and simultaneously supportive, relationship with parents. Consequently, it is useful to adopt the ecological model of human development (Bronfenbrenner & Morris, 2006) as a guide for research on adolescent suicide. In this line, recent studies of state of the art encourage works on adolescent suicide with an ecological-relational approach (Gallagher & Miller, 2018) and examining combined effect of multiple risk factors (Fonseca-Pedrero et al., 2022; Franklin et al., 2017).

The reviews of Gallagher and Miller (2018) and Querdasi and Bacio (2021) indicate that ecological resources such as the quality of the parent-child relationships, family functioning, intimate partner relationships, peer acceptance/victimization, school climate, academic achievement, and engagement in meaningful activities and interests are relevant factors to consider in a model of risk/resilience. However, most of the studies reviewed by these authors analyze relational factors isolatedly. For example, some studies have found school factors, such as academic difficulties (Gulbas et al., 2015), low school attachment (Haynie et al., 2006), or the absence of perceived teacher support (Cava & Musitu, 2003; De Luca et al., 2012), to be related to suicidality. Many more studies have found that suicidal behavior is among the most severe consequences of being a victim of bullying and cyberbullying at school (for a review, see Kim & Leventhal, 2008; Moore et al., 2017). Specifically, studies indicate that the risk for suicidal behavior is greater in those involved in bullying or cyberbullying, as victims, aggressors, or victim-aggressors, in comparison to those who do not participate in situations of bullying (for a review, see John et al., 2018; Katsaras et al., 2018). Moreover, in these cases, the risk of a suicide attempt is higher for girls than boys (Shireen et al., 2014). In addition, in recent years, the risk of suicide has also been related to the frequency of use of social networks (for a review, see Macrynikola et al., 2021). In this line, the impact of violent dating relationships has also been analyzed. Results of several studies have shown that being a victim of intimate partner violence (emotional abuse, controlling behavior, surveillance, social isolation, and coercive sexting), both face-to-face or through social networks, is a major risk factor for suicidality (Barter & Stanley, 2016; Macrynikola et al., 2021), especially for girls (Lippman & Campbell, 2014; Silverman et al., 2001). Finally, at a family level, studies point to poor parent-child attachment, low parental support, low family cohesion, parental physical/sexual/emotional abuse, neglect, or intense and persistent parent-child conflicts (Eslava et al., 2023; Fortune et al., 2016; King & Merchant, 2008; Miller et al., 2013). Specifically, it has been found that although all forms of parental abuse and neglect are related to suicidal behavior, sexual and emotional abuse are the most predictive. It terms of adolescent child-parent conflict, few studies have focused on a particular form of family violence that is awakening increasing interest, that is, child-to-parent violence. In this area, the evidence, although very scant, points to suicidal behavior as relevant clinical features of juvenile offenders who were violent toward their parents compared with those who had no history of violence against their parents (Kennedy et al., 2010; Martínez-Ferrer et al., 2020; Suárez-Relinque et al., 2023).

In sum, suicidal behavior differs between sexes, age groups, geographic regions, and sociopolitical settings and are associated variably with different risk factors, suggesting an etiological heterogeneity (Turecki & Brent, 2016). However, although there is no effective algorithm to predict adolescent suicide in clinical practice, improved recognition and understanding of ecological-relational factors might help to detect high-risk adolescents in school settings. The aim of this study was, therefore, to simultaneously consider factors of the adolescents' significant relational contexts (e.g., peers, teachers, partner, and family) to predict suicidal behavior. Specifically, we analyze peer bullying/victimization and cyberbullying/ cybervictimization, dating violence/victimization, perception of the classroom climate (in terms of affiliation with peers and teacher support), parental socialization styles, and child-to-parent violence as predictive factors for suicidal behavior in a sample of Spanish adolescents who are studying Secondary Education. We will pay special attention to potential interaction effects between the relational factors under study. Moreover, although consistent differences have been found between boys and girls in the prevalence rates of suicidal behavior, there are very few studies that have explicitly analyzed sex differences in risk factors (Gallagher & Miller, 2018). A contribution of this study is to examine sex differences and potential interactions of sex with all other relational variables included.

Method

Participants

Data were collected from a sample of Spanish Secondary School students through random cluster sampling in seven schools located in the Valencian Community, Aragon, and Andalusia. The primary sampling units were the urban and rural areas of these three communities, with public secondary schools as the secondary units. All students from first to fourth grade in the selected schools were included, leading to data collection in 160 classrooms. The study achieved a 73% response rate, with institutional support from the schools and in-class guidance for completing the questionnaire. The total sample comprised 2,977 adolescents (48.5% boys), aged 11 to 17 years ($M = 14.0$, $SD = 1.40$), evenly distributed by academic level: 24.5% in first grade, 26.6% in second, 24.4% in third, and 24.5% in fourth of Compulsory Secondary Education.

Regarding family living arrangements, 65,3% of the adolescents lived with both their father and mother; 6.9% lived with their father, mother, and other relatives; 10.3% alternated living with each parent; 15.6% lived only with one parent, usually with their mother or with their mother and other relatives; and 1.9% indicated other living situations. Students had an average of 1.21 siblings. A total of 90.1% of students were Spanish, with the remainder predominantly from Latin American countries.

Among the parents, the majority had secondary education (24.3% of fathers, 21.8% of mothers) or university degrees (18.2% of fathers, 23.8% of mothers). However, approximately 20% of students were unaware of their parents' education level. Employment rates were 76.9% for fathers and 66.5% for mothers.

Instruments

Suicidal behavior was measured with the *Paykel Suicide Scale* (Paykel et al., 1974) in its Spanish version by Fonseca-Pedrero et al. (2018). This scale includes five items that are increasingly associated with suicidality, from Item 1, which expresses a general thought of discomfort with life, to Item 5, which asks whether there has been a suicide attempt in the last year. The response system for each of the 5 items is dichotomous (Yes/No). Cronbach's alpha of the global scale in the present sample was .83.

Victimization, Bullying, Cybervictimization, and Cyberbullying were assessed with the *Screening de Acoso entre Iguales* ([Peer Bullying Screening], Garaigordobil, 2013). This instrument has two different parts. The first part corresponds to the Bullying subscale with 9 items which measure 4 modalities: physical, verbal, social, and psychological. Participants answer the questions, "Have you been attacked or molested in this way in the past year?" and, in parallel, "Have you attacked or molested others in this way in the past year?". The scale provides information that detects the level of participant's involvement in the roles of victim and aggressor through Likert-type responses with options ranging from *never* (0) to *always* (3). The internal consistency of Part 1 of the instrument was adequate in our sample, with values of Cronbach's alpha of .81 for the full scale and values of .83 and .80 for the subdimensions of victimization and bullying, respectively. The second part provides a measure of Cyberbullying. This second section evaluates cyberbullying behaviors using items with the same Likert response scale ranging from *never* to *always* (e.g., "Have you been blackmailed or threatened through calls or messages?", "Have you disseminated private or compromising photos or videos of someone via mobile phone or the Internet?"). This section contains 30 items: 15 referring to the role of victim (the question is: "Have you been bullied in this way for the past year?") and another 15 in parallel referring to the role of aggressor ("Have you attacked someone like this continuously during the past year?"). Cronbach's alpha for the total scale of Part 2 was .91, and .89 for cybervictimization and .90 for cyberbullying dimensions.

Negative Parenting Styles were measured with the *Child-Parental Acceptance-Rejection Questionnaire* (PARQ; Rohner, 2005) in its Spanish adaptation by Del Barrio et al. (2014). This scale consists of 29 items that measure four dimensions related to the behavior of both parents—separately—towards their children. The four dimensions are: Fondness/affection, composed of 8 items (e.g., "Says good things about me"), Hostility/aggression with 6 items (e.g., "Hits me, even when I don't deserve it"), Indifference/ neglect composed of 6 items (e.g., "Doesn't pay attention to me"), and Rejection with 4 items (e.g., "When I misbehave, it makes me feel like I'm not loved"). Responses are rated on a Likert-type scale ranging from 1 (*almost never true*) to 4 (*almost always true*). For the analysis purposes of the present study, the dimension of "affection" was reversed, so it really refers to "non-affection" to delimit a global construct of "negative parenting style" (Del Barrio et al., 2014). Cronbach's alpha for the full scale in the case of the father was .95, and by dimensions: Affection .92, Hostility .82, Indifference .83, and Rejection .83. Cronbach's alpha for the full scale of the mother was .95, and for each dimension: Affection .92, Hostility .84, Indifference .81, and Rejection .84.

Classroom Climate was assessed with the Relationship dimension of the *Classroom Environment Scale* (CES; Moos & Trickett, 1973) in the Spanish version by Fernández-Ballesteros and Sierra (1989). This version comprises 20 items, which evaluate two subscales of classroom environment from the student's point of view: Affiliation, or the degree of friendship and support among students (e.g., "Students in this class get to know each other really well''); and Teacher support, or the amount of help, trust, and confidence the homeroom teacher provides to students (e.g., ''The teacher takes a personal interest in the students"). The answers are expressed on a 7-point Likert scale ranging from 1 (*never*) to 7 (*always*). In the present study, internal consistency of the global scale measured through Cronbach's alpha was .82; and for the subscales, .74 for Affiliation and .81 for Teacher support.

Child-to-Parent Violence (CPV hereafter) was assessed with the *Adolescent Child-to-Parent Aggression Questionnaire* (CPAQ; Calvete et al., 2013). This instrument consists of two subscales of 10 items each, which are completed for the father and the mother separately, providing measures of children's psychological violence and physical violence towards their parents (e.g., "You've yelled at your parents when you were angry," "You pushed or hit your parents in a fight," "You hit your parents with something that could hurt," "You insulted or sweared at your parents"). The Likert response scale ranges from 0 (*never*) to 3 (*frequently*). The internal consistency of the global scale measured through Cronbach's alpha was .75; by dimensions, it was .75 and .77 for psychological and physical violence towards the father; and .72 and .70 for psychological and physical violence towards the mother, respectively.

To analyze dating violence, we used the Conflict in Adolescent Dating Relationships Inventory (CADRI; Wolfe et al., 2001) in its Spanish adaptation by Fernández-Fuertes et al. (2006). This scale consists of 34 items divided into two subscales of 17 items each that adolescents answer only if they have been involved in a relationship during the last year. The first subscale evaluates violent behaviors perpetrated against the partner, from which we used the two dimensions of Verbal Violence (e.g., "I insulted my partner with contemptuous phrases ") and Physical Violence (e.g., "I kicked, smacked, or punched my partner"). The second subscale describes these same behaviors, but in this case, evaluates to what extent the adolescents have suffered it in their dating relationship, such as Verbal Victimization (e.g., "My partner said something to me just to make me angry") and Physical Victimization (e.g., "My partner slapped me or pulled my hair"). The items were rated on a 7-point Likert scale that ranges from *never* to *always*. The reliability of this instrument in the present sample, measured through Cronbach's alpha, was .88 for the global scale of perpetrated violence; for the subscales, it was .86 for verbal violence and .81 for physical violence. The reliability for the global scale of victimization suffered in the dating relationship was .90; for the subscales, it was .90 for verbal victimization and .81 for physical victimization.

Procedure

Data for this research were collected as part of a larger study on psycho-socio-emotional adjustment in adolescence and violent behavior in the family, partner, and school contexts. This research received the approval of the corresponding research ethics committee of the University of Miguel Hernández (code DPS.ESL.01.19). It also complies with the ethical values required in research with human beings and respects the fundamental principles included in the Helsinki Declaration. The first step for data collection was to send a letter describing the study to the participating school directors. Subsequently, we contacted them by telephone, followed by a two-hour presentation with all the teaching staff in each school to inform them of the objectives and methodology of the study. In parallel, a letter with a summary of the research was sent to the parents, requesting them to indicate in writing if they did not wish their child to participate (1% of parents used this option). To ensure understanding of the items, at least two trained and expert researchers were presents in each application of the instruments, one of them being a PhD. Before data collection, students also attended a short briefing in which they provided consent to participate in the study. On the dates scheduled with the teaching staff, participants voluntarily and anonymously completed the scales in their respective schools during a regular class period of about one hour.

Data Analysis

First, an exploratory analysis was performed to determine the adequacy of the data for the present study. The average percentage of missing data was 3.3%, and it never exceeded 5% for an individual measure. In terms of efficiency and consistency, previous simulation studies have not found biases or practical implications when using percentages of missing data lower than 5% (Drechsler, 2015). Missing values were imputed using the regression method at the item level (Gottschall et al., 2012). Additionally, we excluded 75 cases where participants reported no relationship with their mother and 360 cases with no information about the father's socialization style. The total number of cases entered in the analyses was 2570. 1900 adolescents (M = 13.9; SD = 1.38) reported not having a partner. This group was introduced in the analysis to compare differences in suicidal behavior between adolescents with and without partner.

The main analyses of the study were performed with logistic regression models, considering dichotomized suicidal behavior as a dependent variable. The variable was dichotomized by grouping respondents who answered "no" to all items on the scale and creating another group for those who answered "yes" to any item. This divides the sample between adolescents who have not had thoughts of suicide (value 0) and those who have had suicidal behavior in the past year (value 1). The following variables were considered independent: victimization level, bullying level, classroom climate, cyber victimization level, cyberbullying level, dating relationship, mother's negative parenting, father's negative parenting, level of CPV toward mother, and level of CPV toward father. To identify significantly different levels in each variable, the items of each scale were entered in the two-step cluster analysis procedure of SPSS 27.0 (IBM Corp., 2020). Table 1 shows the levels identified, including the sample and the mean for the total and by levels of the variable, for all the adolescents and differentiating between boys and girls.

Table 1
Cluster Characteristics: Size, Means, and Standard Deviations of the Variables

	Total			**Boys**			**Girls**		
	n	%	*M (SD)*	*n*	%	*M (SD)*	*n*	%	*M (SD)*
					SCHOOL CONTEXT				
Victimization level	2,977	100.0	0.73 (0.74)	1,445	100.0	0.65 (0.69)	1,532	100.0	0.80 (0.77)
No victimization	794	26.7	0.00 (0.00)	429	29.7	0.00 (0.00)	365	23.8	0.00 (0.00)
Low	1,457	48.9	0.59 (0.28)	718	49.7	0.59 (0.28)	739	48.2	0.59 (0.27)
High	726	24.4	1.80 (0.53)	298	20.6	1.76 (0.54)	428	27.9	1.85 (0.53)
Bullying level	2,977	100.0	0.28 (0.44)	1,445	100.0	0.32 (0.48)	1,532	100.0	0.23 (0.39)
No bullying behavior	1,538	51.7	0.00 (0.00)	693	48.0	0.00 (0.00)	845	55.2	0.00 (0.00)
Low	595	20.0	0.25 (0.00)	305	21.1	0.25 (0.00)	290	18.9	0.25 (0.49)
High	844	28.4	0.80 (0.52)	447	30.9	0.87 (0.54)	397	25.9	0.72 (0.49)
Classroom climate	2,977	100.0	4.72 (1.04)	1,445	100.0	4.81 (1.01)	1,532	100.0	4.64 (1.06)
Less positive	1,378	46.3	3.84 (0.65)	634	43.9	3.90 (0.62)	744	48.6	3.79 (0.68)
More positive	1,599	53.7	5.48 (0.64)	811	56.1	5.52 (0.63)	788	51.4	5.44 (0.64)
					ONLINE CONTEXT				
Cibervictimization level	2,977	100.0	0.23 (0.38)	1,445	100.0	0.18 (0.32)	1,532	100.0	0.27 (0.42)
No cibervictimization	1,361	45.7	0.00 (0.00)	744	51.5	0.00 (0.00)	617	40.3	0.00 (0.00)
Low	1,175	39.5	0.32 (0.35)	528	36.5	0.31 (0.33)	647	42.2	0.33 (0.37)
High	441	14.8	0.69 (0.47)	173	12.0	0.58 (0.39)	268	17.5	0.77 (0.50)
Ciberbullying level	2,977	100.0	0.08 (0.22)	1,445	100.0	0.09 (0.22)	1,532	100.0	0.07 (0.22)
No ciberbullying behavior	2,137	71.8	0.00 (0.00)	998	69.1	0.00 (0.00)	1,139	74.3	0.00 (0.00)
Low	513	17.2	0.21 (0.32)	273	18.9	0.22 (0.29)	240	15.7	0.21 (0.35)
High	327	11.0	0.42 (0.31)	174	12.0	0.41 (0.30)	153	10.0	0.42 (0.31)
					PARTNER RELATIONSHIP				
Partner relationship	2,977	100.0	1.52 (0.73)	1,445	100.0	1.45 (0.71)	1,532	100.0	1.58 (0.73)
No violence/victimization problems	742	24.9	0.00 (0.00)	377	26.1	0.00 (0.00)	365	23.8	0.00 (0.00)
With some problems	253	8.5	1.82 (0.32)	85	5.9	1.79 (0.32)	168	11.0	1.83 (0.32)
With frequent problems	82	2.8	3.34 (0.92)	33	2.3	3.43 (0.98)	49	3.2	3.28 (0.88)
No partner	1,900	63.8	-	950	65.7	-	950	62.0	-
					FAMILY CONTEXT				
Mother's negative parenting	2,977	100.0	1.60 (0.60)	1,445	100.0	1.55 (0.52)	1,532	100.0	1.64 (0.61)
Less negative	2,167	74.7	1.41 (0.36)	1.089	77.4	1.40 (0.34)	1.078	72.1	1.42 (0.38)
More negative	735	25.3	2.31 (0.65)	318	22.6	2.23 (0.64)	417	27.9	2.37 (0.65)
No relationship with mother	75	n.i	n.i.	38	n.i	n.i.	37	n.i	n.i.
Father's negative parenting	2,977	100.0	1.72 (0.58)	1,445	100	1.67 (0.54)	1,532	100.0	1.77 (0.62)
Less negative	1,593	60.6	1.49 (0.40)	839	64.6	1.48 (0.37)	749	56.8	1.50 (0.44)
More negative	1,036	39.4	2.21 (0.61)	459	35.4	2.15 (0.60)	570	43.2	2.26 (0.61)
No relationship with father	360	n.i	n.i.	147	n.i	n.i.	213	n.i	n.i.
	Total			Boys			Girls		
	n	%	*M (SD)*	n	%	*M (SD)*	n	%	*M (SD)*
Mother CPV level	2,977	100.0	0.31 (0.31)	1,445	100.0	0.28 (0.31)	1,532	100.0	0.33 (0.30)
No Mother CPV	370	12.7	0.00 (0.00)	232	16.5	0.00 (0.00)	138	9.2	0.00 (0.00)
Low (below the mean)	1,206	40.5	0.18 (0.10)	598	42.5	0.17 (0.10)	608	40.7	0.18 (0.10)
Moderate	715	24.0	0.32 (0.13)	321	22.8	0.31 (0.13)	394	26.4	0.34 (0.12)
High	611	20.5	0.73 (0.38)	256	18.2	0.72 (0.42)	355	23.7	0.74 (0.34)
No relationship with mother	75	n.i	n.i.	38	n.i	n.i.	37	n.i	n.i.
Father CPV level	2,977	100.0	0.25 (0.32)	1,445	100.0	0.23 (0.33)	1,532	100.0	0.27 (0.31)
No Father CPV	719	27.5	0.00 (0.00)	434	33.4	0.00 (0.00)	285	21.6	0.00 (0.00)
Low	800	30.6	0.15 (0.09)	380	29.3	0.15 (0.09)	420	31.8	0.15 (0.09)
Moderate	676	25.8	0.43 (0.21)	333	25.7	0.43 (0.22)	343	26.0	0.42 (0.20)
High	422	16.1	0.57 (0.53)	151	11.6	0.62 (0.64)	271	20.5	0.55 (0.45)
No relationship with father	360	n.i	n.i.	147	n.i	n.i.	213	n.i	n.i.

Note. n.i.: not included in the analysis.

Once the levels of the variables were identified, we calculated the non-adjusted coefficients obtained in univariate logistic regression models to determine whether all the variables should be entered into subsequent multivariate models (Hosmer & Lemeshow, 2000). All variables showed significant coefficients in their relationship with suicidal behavior (Table 2). Two

sociodemographic variables were entered in these calculations: the first, sex, considered a binary variable where the effect of being female was estimated regarding the reference category, being male; and the second was age, entered to control for its potential effect.

Before the construction of the final models with adjusted Odds Ratios (*OR*a), we evaluated the collinearity between all the independent variables, finding appropriate Variance Inflation Factors (VIF), between 1.06 and 1.49, below the problematic limits identified for the values of 10.0, 5.0, and 2.5 (James et al., 2017; Johnston et al., 2018; Vittinghoff, 2005). In the adjusted model with the total sample, the interactions of sex with the rest of the variables were analyzed. In the sex models, interactions were analyzed following the theoretical assumptions that guide the study. The results show the values of the ORs with their confidence interval and significance. An *OR* > 1 indicates that the increase of that level of the independent variable leads to an increase in the probability of an event's occurrence compared with the reference group or level. An *OR* < 1 indicates that an increase in that level of the independent variable leads to a decrease in the probability of an event's occurrence compared with its reference category. The logistic regression models and interaction analyses were performed with the Stata 17.0 package (StataCorp., 2021). All models were significant, and the Hosmer-Lemeshow tests showed optimal values ($p > .05$).

Results

Suicide-Related Outcomes

The sample presented the following suicide-related outcomes in each of the items of the Paykel suicide scale: (1) "Have you ever felt that life is not worth living?": 43.3%; (2) "Have you ever wished you were dead (e.g., going to sleep and wishing you wouldn't get up)?": 35.4%; (3) "Have you ever thought about taking your own life even if you really weren't going to do it?": 36.5%; (4) "Have you ever really considered taking your own life or planned how you would do it?": 18.7%; (5) "Have you tried to take your own life?": 7.7%.

Associations With Suicidal Behavior

The non-adjusted coefficients indicated that all the variables included in the present study had a significant association with suicidal behavior. All independent variables increased the *OR* of suicidal behavior, except for positive school climate, very frequent cyberbullying, and not having a partner, which significantly reduced it compared with their reference categories (Table 2). The adjusted coefficients, controlling for the effect of the rest of the variables, showed the importance of the sex variable: the *OR*a was multiplied by 1.93 in girls, compared to boys. In the school context block, victimization had a strong effect on suicidal behavior. The *OR*a of suicidal behavior differed significantly from the reference category, even with a low level of victimization (*OR*a = 1.53, *p* < .001). With a high level of victimization, the *OR*a tripled compared to the previous one (*OR*a = 3.10, *p* < .001). In the online context, high levels

of cybervictimization and cyberbullying were associated with a significant increase in the ORs. A high level of cybervictimization increased the *OR*a of suicidal behavior by multiplying the category "without cybervictimization" by 1.67, whereas a high level of cyberbullying reduced that *OR*a by multiplying it by 0.55.

In the area of partner relationships, we observed that frequent problems of violence and victimization significantly multiplied the *OR*a of suicidal behavior (*OR*a = 2.72, *p* < .001). However, not having a partner reduced the likelihood of suicidal behavior compared to having a partner and not reporting violence problems (*OR*a = 0.61, *p* < .001). Regarding the family context, negative maternal and paternal socialization styles significantly increased the *OR*a of suicidal behavior (*OR*a = 1.89, *p* < .001; *OR*a = 1.28, *p* = .01, respectively). Also, the violence perpetrated by the adolescent towards their mother progressively increased the *OR*a of suicidal behavior at all levels compared with not having performed any violence in the past year. In the case of violence towards fathers, significant effects were observed only at "moderate" and "high" levels of violence.

Sex Differences

An interaction was found in this model (Figure 1), indicating that the mother's negative parenting tends to influence girls more than boys (*OR*a = 1.57, *p* = .05). The fact that the *OR*a associated with the sex variable was so high in the adjusted model and also the interaction of this variable with another variable of the model suggests the need to analyze the prediction of suicidal behavior separately for boys and girls.

Context-Specific Insights

Table 3 shows the results of the sex-differentiated regression models, which confirmed the existence of non-trivial differences. Only three variables with similar behavior were found for both sexes. The level of victimization and more negative mother's parenting style had a significant influence, increasing the *OR*a of suicidal behavior in both cases, whereas the bullying level was nonsignificant both for boys and girls.

The two online context variables showed a significant interaction in the case of boys but not girls: a low level of cyberbullying reduced the likelihood of suicidal behavior when the level of cybervictimization was also low (Figure 2). In girls, the high level of cyberbullying shows a main effect, reducing suicidal behavior, which behaved independently of the cybervictimization values (*OR*a = 0.43, *p* < .001). In the case of girls, an interaction was identified between two family context variables: a high level of violence towards the father only influenced the probability of suicidal behavior significantly when it was associated with a situation of more negative mother's parenting (*OR*a = 4.66, *p* = .02) (Figure 3). In the case of boys, both variables significantly but independently multiplied the ORs of suicidal behavior. Finally, the effect of classroom climate in the prediction of suicidal behavior was also different depending on sex: whereas a more positive climate significantly reduced *OR*a in girls (*OR*a = 0.77, *p* = .05), its effect was nonsignificant in the case of boys (*OR*a = 0.96, *p* = .75).

Summary of Findings

In summary, the models as a function of sex showed differences in the significance and non-significance of some variables concerning the probability of suicidal behavior. In addition, specific interactions of variables associated with sex were observed, which were not evident in the general model.

Table 2
Non-Adjusted and Adjusted Odds Ratios for the Study Variables

		OR (95% CI)	p-values	ORa (95% CI)	p-values
				SOCIODEMOGRAPHICS	
Gender (Ref: Boys)					
	Girls	2.20 (1.90-2.55)	< .001	1.93 (1.46-2.17)	< .001
Age		1.25 (1.07-1.45)	< .001	1.04 (0.97-1.10)	.27
				SCHOOL CONTEXT	
Victimization level (ref: no victimization)					
1	Low	2.03 (1.70-2.42)	< .001	1.53 (1.23-1.92)	< .001
2	High	4.92 (3.94-6.14)	< .001	3.10 (2.32-4.14)	< .001
Bullying level (ref: no bullying behavior)					
1	Low	1.47 (1.22-1.79)	< .001	1.17 (0.91-1.51)	.22
2	High	1.75 (1.48-2.08)	< .001	0.99 (0.78-1.25)	.91
Classroom climate (ref: less positive)					
1	More positive classroom climate	0.64 (0.55-.074)	< .001	0.86 (0.72-1.03)	.91
				ONLINE CONTEXT	
Cybervictimization level (ref: no Cybervictimization)					
1	Low	1.63 (1.39-1.91)	< .001	1.11 (0.91-1.37)	.32
2	High	4.55 (3.52-5.87)	< .001	1.67 (1.19-2.33)	< .001
Cyberbullying level (ref: no Cyberbullying behavior)					
1	Low	1.85 (1.51-2.27)	< .001	0.96 (0.73-1.27)	.78
2	High	0.92 (0.73-0.17)	.51	0.55 (0.40-0.76)	< .001
				PARTNER RELATIONSHIP	
Partner relationship (ref: no violence/victimization problems)					
1	With some problems	2.26 (1.63-3.12)	< .001	1.35 (0.92-2.00)	.13
2	With frequent problems	5.05 (2.57-9.95)	< .001	2.72 (1.22-6.06)	.01
3	No partner	0.62 (0.52-0.75)	< .001	0.61 (0.49-0.75)	< .001
				FAMILY CONTEXT	
Mother's negative parenting (ref: less negative)					
1	More negative mother's parenting	2.61 (2.17-3.13)	< .001	1.89 (1.46-2.44)	< .001
Father's negative parenting (ref: less negative)					
1	More negative father's parenting	2.15 (1.83-2.53)	< .001	1.28 (1.04-1.58)	.01
Mother CPV level (ref: no Mother CPV)					
1	Low	2.19 (1.71-2.79)	< .001	1.40 (1.03-1.90)	.03
2	Moderate	2.82 (2.17-3.66)	< .001	1.55 (1.10-2.19)	.01
3	High	4.58 (3.48-6.04)	< .001	1.82 (1.25-2.65)	< .01
Father CPV level (ref: no Father CPV)					
1	Low	1.54 (1.26-1.88)	< .001	1.17 (0.92-1.50)	.20
2	Moderate	2.24 (1.81-2.78)	< .001	1.37 (1.03-1.81)	.03
3	High	3.15 (2.44-4.07)	< .001	1.71 (1.25-2.33)	< .001
Constant		-	-	0.19	.08
Interaction	MNP (1) x Gender (1)			1.57 (1.00-2.45)	.05

Note. *OR*a = Adjusted Odds Ratio; (95% *CI*) = 95% Confidence Interval; CPV: Child-to-Parent Violence; MNP: Mother's Negative Parenting.

Table 3
Gender-Specific Multivariate Logistic Regression Models: Results for Boys and Girls

		Boys		Girls	
		*OR*a (95% CI)	*p*-values	*OR*a (95% CI)	*p*-values
		SOCIODEMOGRAPHICS			
Age		1.06 (0.97-1.16)	.16	1.00 (0.91-1.10)	.96
		SCHOOL CONTEXT			
Victimization level (ref: no victimization)					
1	Low	1.38 (1.01-1.90)	.05	1.65 (1.20-2.26)	< .01
2	High	3.02 (2.02-4.51)	< .001	2.90 (1.90-4.42)	< .001
Bullying level (ref: no bullying behavior)					
1	Low	1.31 (0.92-1.87)	.13	1.02 (0.70-1.50)	.91
2	High	1.00 (0.72-1.38)	.99	1.03 (0.73-1.46)	.86
Classroom climate (ref: less positive)					
1	More positive classroom climate	0.96 (0.74-1.24)	.75	0.77 (0.59-0.99)	.05
		ONLINE CONTEXT			
Cybervictimization level (ref: no Cybervictimization)					
1	Low	1.20 (0.86-1.68)	.28	1.23 (0.91-1.65)	.18
2	High	2.07 (1.11-3.86)	.02	1.68 (1.02-2.78)	.04
Cyberbullying level (ref: no Cyberbullying behavior)					
1	Low	1.80 (0.95-3.40)	.07	1.02 (0.65-1.59)	.93
2	High	1.02 (0.38-2.72)	.97	0.43 (0.26-0.70)	< .001
		PARTNER RELATIONSHIP			
Partner relationship (ref: no violence/victimization problems)					
1	With some problems	1.31 (0.74-2.33)	.35	1.44 (0.83-2.50)	.20
2	With frequent problems	3.57 (1.14-11.18)	.03	2.19 (0.71-6.76)	.17
3	No partner	0.62 (0.47-0.83)	< .01	0.58 (0.43-0.80)	< .001
		FAMILY CONTEXT			
Mother's negative parenting (ref: less negative)					
1	More negative mother's parenting	1.59 (1.11-2.29)	.01	2.32 (1.15-4.70)	.02
Father's negative parenting (ref: less negative)					
1	More negative father's parenting	1.26 (0.93-1.71)	.14	1.35 (1.00-1.81)	.05
Mother CPV level (ref: no Mother CPV)					
1	Low	1.72 (1.15-2.59)	< .01	1.03 (0.63-1.66)	.91
2	Moderate	1.76 (1.10-2.80)	.02	1.22 (0.72-2.07)	.46
3	High	2.08 (1.26-3.45)	< .01	1.41 (0.79-2.52)	.24
Father CPV level (ref: no Father CPV)					
1	Low	1.05 (0.75-1.48)	.77	1.35 (0.90-2.02)	.15
2	Moderate	1.41 (0.96-2.07)	.08	1.56 (0.99-2.45)	.06
3	High	1.58 (1.00-2.50)	.05	1.46 (0.91-2.36)	.12
Constant		0.12	< .001	0.71	.66
		Boys		Girls	
		*OR*a (95% CI)	*p*-values	*OR*a (95% CI)	*p*-values
Interactions					
	CB level x CV level				
	CB (1) x CV (1)	0.39 (0.18-0.88)	.02	-	-
	CB (1) x CV (2)	0.41 (0.15-1.12)	.08	-	-
	CB (2) x CV (1)	0.54 (0.18-1.64)	.28	-	-
	CB (2) x CV (2)	0.54 (0.04-7.40)	.64	-	-
	Father CPV level x MNP level				
	Father CPV (1) x MNP (1)	-	-	1.06 (0.42-2.64)	.91
	Father CPV (2) x MNP (1)	-	-	0.58 (0.23-1.42)	.23
	Father CPV (3) x MNP (1)	-	-	4.66 (1.31-16.54)	.02

*Notes. OR*a (95% *CI*): Adjusted Odds Ratio (95% Confidence Interval); CB: Ciberbullying; CV: Cybervictimization; CPV: Child-to-Parent Violence; MNP: Mother's Negative Parenting.
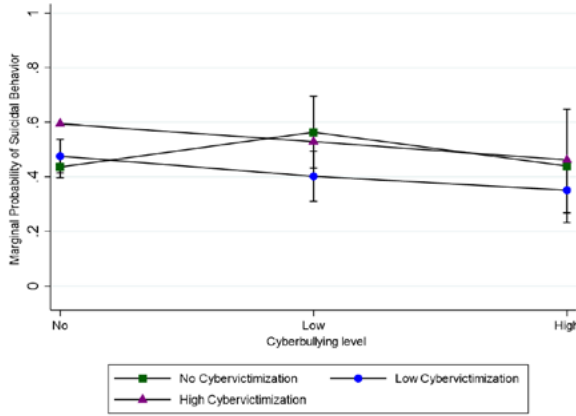
Figure 1

*Interaction between Mother's Negative Parenting and Child's Gender on Suicidal Behavior*
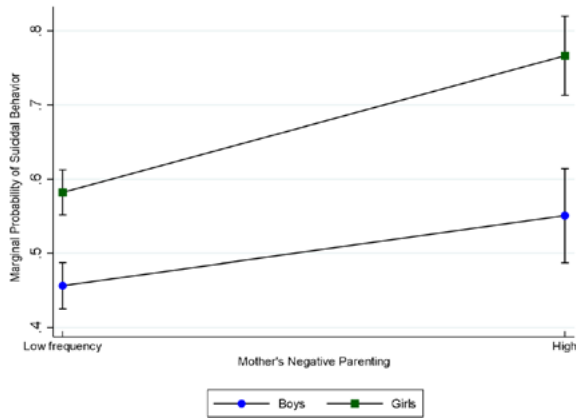
Note. Error bars represent 95% confidence intervals.

Figure 2

Interaction between Cyberbullying and Cybervictimization on Suicidal Behavior

Note. Error bars denote 95% confidence intervals.

Figure 3

Interaction between Child-to-Parent Violence and Mother's Negative Parenting on Suicidal Behavior
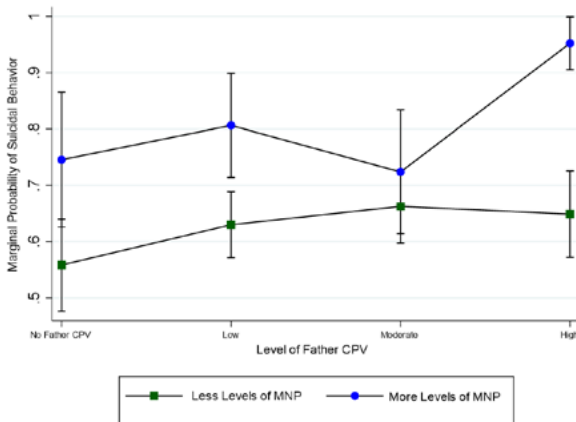
Notes. MNP: "Mother's Negative Parenting"; CPV: "Child-to-parent violence". Error bars show 95% confidence intervals.

Discussion

The objective of the present study was to predict suicidal behavior from different relational factors of significant contexts (i.e., peers, teachers, partner, and family) in a large sample of adolescent secondary school students, paying particular attention to the potential effects of interaction between factors, as well as sex differences. The prevalence rates obtained in this study are even higher than those found in recent studies with Spanish school population (Fonseca-Pedrero et al., 2023). The results of the univariate analyses showed that, indeed, each of the variables analyzed (bullying/victimization, cyberbullying/cybervictimization, classroom climate, partner relationship problems, negative parental socialization, and CPV) was a significant predictor of suicidal behavior, confirming previous results of the related literature (for a review, see Gallagher & Miller, 2018; King & Merchan, 2008). However, multivariate analyses examined in greater detail the contribution of each factor to the joint prediction of suicidal behavior, revealing interaction effects and sex differences that add new information about the collective predictive power of relational factors. In fact, the multivariate model reported that adolescents who accumulate problems of victimization and violence in their significant relational contexts (peers, partner, and family) also accumulate the highest probability of suicidal behavior, including suicidal thoughts, planning and attempts. For both sexes high peer victimization and cybervictimization, together with a negative maternal socialization style, frequent problems of violence/victimization in the dating relationship, and CPV towards the mother and father, multiplied the probability of suicidal behavior by between 3.10 and 1.67. In addition, performing CPV towards the mother and father less frequently, perceiving a negative paternal socialization style, and being a victim of bullying less frequently also increased this probability. In the protective area, two factors were found that were related to a lower probability of suicidal behavior: high involvement in cyberbullying and not having a partner. In the general model, being a girl doubled the probability of suicidal behavior. A significant interaction was also found whereby the effect of the mother's negative socialization style on suicidal behavior was significantly greater in girls than in boys. These results justified the need for multivariate sex analyses, revealing important differences. These results are discussed below, and guidance for intervention and future research is provided.

Regarding the area of peers, we observed that, for boys and girls, and after controlling for the rest of the variables, being a frequent victim of bullying and cyberbullying multiplied the probability of suicidal behavior by between 3.02 and 1.68. This result confirms the idea that suicidal behavior is one of the most severe consequences and most closely linked to the experience of being a victim of peer bullying and cyberbullying (Buelga et al., 2022; Fonseca-Pedrero et al., 2022; Moore et al., 2017) and shows the need to prioritize the prevention of suicidal behavior in school bullying protocols (Sánchez-Sosa et al., 2010). It is important to highlight that, unlike other studies (Bauman et al., 2013; Hinduja & Patchin, 2010), our results clearly point to suicidal behavior as a consequence of the experience of victimization and not of involvement as an aggressor or cyberaggressor. On the contrary, in the case of girls, our results indicate that being frequently involved in cyberbullying acts as a protective factor that significantly reduces the probability of suicidal

behavior. In the case of boys, a protective buffering effect of low level of cyberbullying is observed in a situation of low level of cybervictimization. These surprising results could be explained by some previous evidence. First, it has been observed that aggressive victims of bullying and cyberbullying show lower levels of psychological maladjustment, such as depressive symptoms and feelings of loneliness, than pure victims, and that their scores are similar to uninvolved adolescents (Estévez et al., 2008; Ortega-Barón et al., 2016). Second, the perception of impunity associated with cyberbullying may facilitate using this means to engage in cyberaggression, which, as a form of revenge, allows one to recover a sense of control and cope with psychological maladjustment (König et al., 2010). In addition, the motivation for revenge against previous physical aggression offenses could be higher in girls (Gerlsma & Lugtmeyer, 2018), which may encourage them to engage in cyberbullying. Future research needs to delve into this potential role of cyberbullying as a way to cope with psychological maladjustment and its relationship with suicidal behavior.

Continuing with the school context, our results indicate that a positive classroom climate (i.e., a perception of peers' friendship and help and teacher's help) is a protective factor against suicidal behavior that is only relevant in girls. In this sense, it should be noted that girls generally perceive a greater connection with their teachers and classmates (Madill et al., 2014; Pedersen et al., 2007), which could explain why this factor is linked to their lower levels of suicidal behavior. Regarding the area of the partner, the high frequency of problems of violence/victimization is an especially problematic relational factor for boys because it multiplies the probability of having suicidal behavior by 3.57, compared to having a partner without problems. Numerous studies have found a relationship between dating violence and suicidal behavior (e.g., Belshaw et al., 2012; Datta et al., 2022), but very few have analyzed sex differences showing worst consequences for males (Cohen et al., 2022). In addition, we observed both in boys and girls that not having a partner is related to a lower probability of suicidal behavior compared to those who do have a partner without problems. Therefore, it seems that, at this life stage, when adolescents are still inexperienced in their romantic relationships, having a partner can be a stressor in itself, so not having a partner act as a protective factor against psychological maladjustment (Douglas & Orpinas, 2019).

Regarding the family environment, a surprising result that has been little addressed in the previous literature is that the perception of a negative socialization style in the mother and the presence of violence in the relationships of adolescents with their parents is at the next level of importance (after victimization and partner relationship problems) in the prediction of suicidal behavior. In both cases—CPV and negative socialization style—, problematic relationships with the mother obtained higher predictive values of adolescent suicidal behavior. The models calculated by sex yielded results that help us better understand the risk dynamics present in these family factors as a function of sex, both of the children and the parents. First, an interaction effect was observed in the model whereby girls significantly increased their suicidal behavior compared to boys when the maternal socialization style was negative. Secondly, CPV towards the mother, regardless of the frequency level, was significant in predicting suicidal behavior only in boys, whereas negative socialization by the father was only significant in girls. Thirdly, in girls, a very frequent CPV towards

the father triggered the probability of suicidal thoughts and attempts only when the maternal socialization style was negative; that is, characterized by a lack of affection, hostility, indifference, and rejection. Therefore, our results extend the scarce previous evidence regarding the relationship between CPV and suicidal behavior. The study of Kennedy et al. (2010) showed that adolescents with a judicial history of CPV reported suicide attempts more frequently, and the studies of Martínez-Ferrer (2020) and Suárez-Relinque et al. (2023) showed that high levels of CPV towards both parents were related to higher suicidal ideation. In addition, we can understand the relevance of the sex differences observed in light of previous research. On the one hand, maternal hostility, essentially linked to rejection, has emerged as one of the most pernicious factors of negative parenting, both as a trigger for internalized disorders, especially in adolescent daughters, and externalized ones, especially in adolescent sons (Carrasco et al., 2009; Killoren & Deutsch, 2013; McLeod et al., 2007). On the other hand, it is observed that boys are more involved in CPV, that mothers are attacked more than fathers (Carlson, 1990; Ulman & Straus, 2003), and that boys use more physical aggression, whereas girls use more verbal or psychological aggression (Ibabe & Jaureguizar, 2011). Our results indicate that, in boys, the transition to behaving aggressively towards the mother— at all levels of frequency— has important consequences for suicidal behavior. In contrast, for girls, the co-occurrence of very frequent aggression towards the father in an environment of negative maternal socialization reveals a family relational panorama of high risk for suicidal behavior. This result is consistent with Bowen's systemic conception of the relational triangle (mother-father-adolescent) as the building block of the family system and its relevance to explain clinical problems (Bowen, 1978). Longitudinal studies would allow us to deepen this triadic analysis and also elucidate whether CPV could also be the result of suicidal behavior as a way of dealing with the psychological maladjustment caused by other contexts of violence, such as cybervictimization and school victimization (Martínez-Ferrer et al., 2020).

Overall, the results of this work contribute to expanding knowledge about the role of relational factors in suicidal behavior. However, the authors acknowledge certain limitations that should be considered for future research. One of them is the cross-sectional nature of the data, which limits establishing causal relationships between the variables analyzed. As pointed out before, longitudinal studies would clarify the observed relationships. Also, it should be noted that the results of this study are limited to the adolescent stage of 11 to 17 years, so they are not generalizable to individuals of other ages or other educational levels (early childhood education, primary education, and university education), or even to school or family environments from other cultures that could be very different. Despite these limitations, we highlight the contribution of the present work to our understanding of adolescents' suicidal behavior, due to the scarcity of studies focused on an ecological-relational perspective. Mental health is intimately connected to the quality of relationships within the closest social network, especially among children and adolescents. Hence, our findings underscore the imperative to embrace a more ecological-relational approach, complementing individual psychological interventions (Al-Halabí & Fonseca-Pedrero, 2023). Young people are a vulnerable population requiring accessible mental health services and educational settings equipped for early detection, and socioemotional interventions

(Fusar-Poli, 2019; Fonseca-Pedrero et al., 2022; Fonseca-Pedrero et al., 2023; World Health Organization & United Nations Educational, Scientific and Cultural Organization, 2021). There is a pressing need to roll out educational programs centered around addressing the relationships of adolescents within all their significant contexts, thereby bolstering their mental health and overall well-being.

Author Contributions

Teresa I. Jiménez: Conceptualization, Funding Acquisition, Investigation, Methodology, Project Administration, Validation, Writing – Original Draft, Writing – Review & Editing. **Estefanía Estévez**: Funding Acquisition, Investigation, Project Administration, Supervision, Writing – Original Draft, Writing – Review & Editing. J. **Francisco Estévez-García**: Data Curation, Formal Analysis, Methodology, Resources, Software, Visualization, Writing – Original Draft, Writing – Review & Editing. Writing – Original Draft, Writing – Review & Editing.

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Declaration of Interests

The authors declare that there is no conflict of interest.

Data Availability Statement

The data that support the findings of this study are not openly available due to reasons of confidentiality, but can be available from the corresponding author upon reasonable request.

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