

Life satisfaction and risk of depression: The role of adolescents' social-emotional skills

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Abstract

The absence of mental illness does not necessarily mean the presence of mental health or well-being. Especially after the COVID-19 pandemic, it is important to identify the risk and prevent the development of mental illness. The present study aimed to: a) characterize the levels of well-being and life satisfaction of adolescents; b) identify the risk of depression; c) analyze differences in the three dimensions of mental health considering sociodemographic characteristics (gender and level of education); and d) analyze predictors of life satisfaction and risk of depression, considering the sociodemographic characteristics and social-emotional skills. Participated in the study 3235 adolescents (50% female), aged between 11 and 20 years ($M=14.47$, $SD=1.91$). Participants attend public schools in the 3rd cycle of basic education (47.9%) and secondary education (52.1%), and responded to self-report measures. The results revealed that most adolescents (58.5%) have an average level of life satisfaction. However, 51.1% of participants have a low level of well-being and 19.6% are at risk of depression. All the social-emotional skills included in the models proved to be significant predictors of life satisfaction and lower risk of depression, especially optimism (besides emotional control, stress resistance and sociability). The results reinforce the existence of a double continuum of mental health and mental illness. The results also support the relevance of implementing school-based interventions to promote social-emotional skills that help adolescents deal with the challenges of a changing world, and to prevent depression. From a public health perspective, it is essential to implement universal prevention programs that are part of the paradigm of health-promoting schools.

Keywords: well-being; life satisfaction; depression; social-emotional skills; adolescents.

Resumen

Satisfacción con la Vida y Riesgo de Depresión: El papel de las habilidades socioemocionales de los adolescentes. La ausencia de enfermedad mental no significa necesariamente la presencia de salud mental o bienestar. Especialmente después de la pandemia de COVID-19, es importante identificar el riesgo y prevenir el desarrollo de enfermedades mentales. El presente estudio tuvo como objetivos: a) caracterizar los niveles de bienestar y satisfacción con la vida de los adolescentes; b) identificar el riesgo de depresión; c) analizar las diferencias en las tres dimensiones de la salud mental teniendo en cuenta las características sociodemográficas (sexo y nivel de estudios); y d) analizar predictores de satisfacción con la vida y riesgo de depresión, considerando las características sociodemográficas y las habilidades socioemocionales. Participaron en el estudio 3235 adolescentes (50% chicas), con edades comprendidas entre 11 y 20 años ($M=14,47$, $DT=1,91$). Los participantes asisten a escuelas públicas de 3er ciclo de enseñanza básica (47,9%) y enseñanza media (52,1%), y respondieron a medidas de autoinforme. Los resultados revelaron que la mayoría de los adolescentes (58,5%) tienen un nivel medio de satisfacción con la vida. Sin embargo, el 51,1% de los participantes tiene un nivel bajo de bienestar y el 19,6% está en riesgo de depresión. Todas las habilidades socioemocionales incluidas en los modelos resultaron ser predictores significativos de la satisfacción con la vida y de un menor riesgo de depresión, especialmente el optimismo (además de control emocional, resistencia al estrés y sociabilidad). Los resultados refuerzan la existencia de un doble continuo de salud mental y enfermedad mental. Los resultados también apoyan la relevancia de implementar intervenciones escolares para promover habilidades socioemocionales que ayuden a los adolescentes a afrontar los retos de un mundo cambiante, y para prevenir la depresión. Desde la perspectiva de la salud pública, es esencial implementar programas de prevención universal que formen parte del paradigma de las escuelas promotoras de la salud. *Palabras clave:* bienestar; satisfacción con la vida; depresión; habilidades socioemocionales; adolescentes.

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Highlights

- Almost one in five adolescents (19.6%) are at risk of depression; this risk is almost three times higher for girls in comparison with boys.
- Most adolescents say they are satisfied with their lives, but at the same time have a low level of well-being; although they are related, satisfaction with life and well-being are distinct concepts.
- Optimism and other social-emotional competences (e.g., emotional control) are important predictors of life satisfaction and lower risk of depression.
- It is essential to implement school-based interventions to promote the social-emotional skills that help adolescents face the challenges of a changing world and prevent depression.

Puntos clave

- Casi uno de cada cinco adolescentes (19,6%) corre el riesgo de sufrir depresión; este riesgo es casi tres veces mayor en las chicas que en los chicos.
- La mayoría de los adolescentes dicen estar satisfechos con su vida, pero al mismo tiempo tienen un bajo nivel de bienestar; aunque están relacionados, la satisfacción con la vida y el bienestar son conceptos distintos.
- El optimismo y otras competencias socioemocionales (por ejemplo, el control emocional) son importantes predictores de la satisfacción con la vida y de un menor riesgo de depresión.
- Es esencial llevar a cabo intervenciones escolares para promover las competencias socioemocionales que ayudan a los adolescentes a afrontar los retos de un mundo cambiante y prevenir la depresión.

Young people's mental health (and illness) has been a global concern, even more evident after the start of the COVID-19 pandemic (Jansen et al., 2020). In recent years, it has also become increasingly evident in the scientific literature that the absence of mental illness (e.g., depression, anxiety) does not necessarily mean the presence of mental health, well-being, or life satisfaction. Although correlated, health and mental illness can be considered two distinct dimensions, framed in a "double continuum" model (Keyes, 2002). Mental health is understood as the continuum from the state in which the individual considers that they are not well emotionally nor functioning well (languishing), to the extreme, which is characterized by a combination of emotional well-being and positive functioning (flourishing). In turn, the mental illness continuum refers to a crescendo of psychological symptoms that impair psychosocial functioning, associated with emotional suffering. For example, the correlation between levels of flourishing and anxious-depressive symptoms was only moderate in a sample of adolescents, which supports the idea that mental health and the ability to flourish do not "only" correspond to the absence of problems or the ability to adapt to the context (Francisco et al., 2018).

On the one hand, mental illness, especially severe mental illness, is associated with lower quality of life, worse physical health and shorter longevity (Thornicroft, 2011). However, subjective well-being is an important predictor of success in many domains of life, such as better physical health, healthier interpersonal relationships, more altruism and involvement in society, and even greater longevity (Maddux, 2018). Therefore, especially after the public health crisis that significantly affected the daily life and mental health of the world population, it is important to assess the levels of subjective well-being and life satisfaction of the adolescent population, identify the risk of mental illness, as well as possible predictors of life satisfaction and risk of depression that can be considered in preventive actions or to promote the mental health of adolescents, such as certain social-emotional skills. As adolescence is a critical period for maintaining positive mental health, with an impact on subsequent generations (Patton et al., 2018), it is essential that researchers, policy makers and professionals invest in the definition of strategies to mitigate the

development of psychological problems and promote well-being and mental health of adolescents, from a perspective of promoting global public health.

Subjective Well-Being and Life Satisfaction

Since 1948, the World Health Organization (WHO) has defined health as a "situation of complete physical, mental and social well-being, more than the mere absence of disease". In this sense, health and well-being are increasingly associated and considered interdependent from research to practice, from health promotion to medical sociology (Chavez et al., 2005). Subjective well-being corresponds to the individual's perception and evaluation of their life in terms of their affective states and psychological and social functioning, representing their beliefs and feelings in relation to the fact that they are living a desirable and rewarding life (Diener, 2012; Keyes & Waterman, 2003). It therefore involves three key components: emotional well-being, psychological well-being and social well-being. It is the emotional well-being that refers to the presence or absence of positive feelings in relation to life, i.e., to the perception of life satisfaction (Keyes, 2002).

Although well-being and life satisfaction are more studied in the adult population than in adolescents, some studies have identified several individual and social factors with a relevant role in these variables, such as self-regulation skills, school involvement, or family support (e.g., Calmeiro et al., 2018; Morgan et al., 2012; Piko, 2023). These studies, carried out in several countries, have also consistently revealed that boys (vs. girls) and adolescents from higher (vs. lower) socioeconomic levels have better levels of well-being and life satisfaction, and that these indicators also tend to decrease with age (e.g., Hendriks et al., 2020; Luijten et al., 2021). Obern et al. (2022) argue that this decrease can be explained by the challenges inherent to the period of adolescence, guided by greater autonomy/insecurity and successive transformations in all dimensions of young people's lives. The WHO collaborative study (Health Behaviour in School-aged Children; HBSC) also shows a decrease in life satisfaction and the perception of happiness among Portuguese

adolescents between 2018 and 2022, along with an increase in physical and psychological symptoms, including depressive symptoms (Gaspar et al., 2022).

Depression during Adolescence

Depression is the main cause of disability worldwide (WHO, 2021), with most cases starting in adolescence and a significantly higher incidence in girls, comparing to boys (e.g., Frey et al., 2020; Gaspar et al., 2022; Luijten et al., 2021) especially from the age of 13 years old (Frey et al., 2020). A study with a very large sample of adolescents from 11 European countries, aged between 14 and 16, showed a prevalence of 10.5% of depression and 29.2% of subclinical depression, although the latter were cases also associated with high risk of functional impairment and suicide (Balázs et al., 2013). LoParo et al. (2024) recently revealed that depression increases from mid-childhood through adolescence before stabilizing in early adulthood, and that academic achievement and learning disabilities were identified as the stronger predictors.

Although different developmental trajectories of depressive symptoms can lead to specific social and health outcomes, depression during adolescence negatively affects physical health and lifestyle habits (e.g., substance use, diet, sleep), well-being, socialization processes with peers, family relationships, and school performance (e.g., Ames & Leadbeater, 2018; Bulhões et al., 2021; Raposo & Francisco, 2022). All these dimensions have also been mentioned as having been affected during the COVID-19 pandemic (e.g., Branquinho et al., 2020; Francisco et al., 2020).

Effects of the COVID-19 Pandemic on Adolescents' Mental Health and Well-Being

Considering the disruptive nature of the pandemic context, several studies have identified significant impacts on the mental health of children and young people, such as higher levels of anxiety and depression, irritability, feelings of loneliness, and lower quality of life and life satisfaction (e.g., Francisco et al., 2020; Magson et al., 2021; Orgilés et al., 2022; Ravens-Sieberer et al., 2022). Despite recognizing this period as an opportunity for personal and interpersonal development, young people considered that the pandemic was difficult for their social life and for their well-being (Branquinho et al., 2020). School closures during lockdowns, for example, significantly reduced the opportunities for social interaction, as well as cognitive and physical stimulation essential for the growth of adolescents, contributing to heightened anxiety and depression, loneliness feelings, and negative well-being (e.g., Evans et al., 2021; Orgilés et al., 2022), and to a decrease in their social-emotional skills (Martinson et al., 2022). A recent meta-analysis, based on 191 studies, examined the prevalence of depressive symptoms, anxiety symptoms, and sleep disturbances in children and adolescents during the pandemic, and revealed a pooled prevalence of 31%, 31%, and 42%, respectively, which represents an increase in the prevalence of these problems compared to studies prior to the pandemic (Deng et al., 2023).

In studies carried out in the period before the pandemic, a higher prevalence of mental health problems in young people had already been observed in periods of crisis (Frasquilho

et al., 2016). However, the pandemic crisis seems to have had unprecedented consequences, especially in the younger population. The most recent report from the Organization for Economic Cooperation and Development (OECD) on health states that symptoms of anxiety and depression have doubled the pre-pandemic levels in several countries, with the relationship between mental health problems and socioeconomic inequalities becoming more pronounced (OECD/European Union, 2020). In 2022, a Portuguese study allowed to conclude that around a third of young people showed some sign of psychological distress and weak social-emotional skills (Matos et al., 2022), so it is important to explore the role that social-emotional skills can play in mental health or illness during adolescence.

The Role of Social-Emotional Skills in Mental Health and Well-Being

Over the last few decades, cross-sectional and longitudinal studies have revealed the essential role of social-emotional skills in numerous developmental outcomes, including the protection against the development of mental health problems (e.g., Taylor et al., 2017). Emotional stability and regulation are fundamental skills for an individual's well-being and mental health, from an individual and interpersonal perspective (e.g., Robson et al., 2020). Research has demonstrated the existence of deficits in emotional regulation skills in adolescents with mental disorders, such as anxiety, depression or anorexia nervosa (e.g., Liu et al., 2024; Raposo & Francisco, 2022; Zsigo et al., 2023). However, and considering especially the stage of adolescence in which peers assume extreme importance for the well-being of individuals, sociability has also revealed an essential role. Social-emotional skills such as optimism, persistence, confidence and sociability have been linked in previous studies to a higher life satisfaction on the one hand, and less psychopathological symptoms on the other (Arslan & Yıldırım, 2021; Ayllón-Salas & Fernández-Martín, 2024; Sakka et al., 2020). For example, emotional competence in general (i.e., perceiving and understanding emotions, expressing and naming emotions, regulating emotions) was considered predictor of depression in a sample of adolescents (Vucenovic et al., 2023).

The study developed by Hussong et al. (2021) suggest that young people who showed higher levels of self-esteem, good problem-solving capacity, as well as greater skills for self-regulation, presented lower levels of psychopathological symptoms during the COVID-19 outbreak. Moreover, optimism and resilience are also reported in the literature as being linked to better mental health and higher levels of well-being (Arslan & Yıldırım, 2021; van de Groep et al., 2020). Specifically, optimism has been identified as an important protective factor against internalising and externalising problems during the lockdown associated with the COVID-19 pandemic (Molloy-Vickers et al., 2024).

The Present Study

The present study aims to: a) characterize the levels of well-being and life satisfaction of adolescents; b) identify the risk of depression; c) analyze differences in the three dimensions of mental health (well-being, life satisfaction, and risk

of depression) considering sociodemographic characteristics (gender and level of education); and d) analyze predictors of life satisfaction and risk of depression, considering sociodemographic characteristics (gender, age, and education level) and a set of social-emotional skills (optimism, emotional control, stress resistance/resilience, and sociability) of adolescents.

Method

Participants

Participated in the study 3235 adolescents (50% female; 46.1% male; 3.9% preferred not to answer/identified themselves as “other”), aged between 11 and 20 years old ($M=14.47$, $SD=1.91$). Participants attended the 3rd cycle of basic education (47.9%) and secondary education (52.1%) of public schools from the various regions of mainland Portugal, specifically: Center (36.9%), North (34.8%), Alentejo (18.2%), Lisbon Metropolitan Area (6.8%) and Algarve (3.4%). The level of parents’ or main caregivers’ education corresponded mostly to secondary education, both for fathers (38.9%, followed by the 3rd cycle of basic education or lower 38.1%) and for mothers (39.1%, followed by higher education 33.9%).

Measures

Socio-Demographic Data

A general questionnaire allowed the collection of socio-demographic data from the participants (e.g., gender, age, parents’ education level).

Life Satisfaction

The Cantril scale (1965), which corresponds to a ladder of 11 steps was used, with the following instruction given to participants: “The top of the ladder is “10” and represents the best possible life for you, the bottom of the ladder is “0” and represents the worst possible life for you. Right now, where do you think you are on the ladder?”. The higher the score, the better the life satisfaction. The scale revealed good psychometric properties in a study conducted in Scotland, integrating the Health Behaviour in School-aged Children questionnaire since 2002 (Levin & Currie, 2014).

To calculate the levels of life satisfaction, the mean value (M) of the variable and the respective standard deviation (SD) were considered: $M=7.0140$, $SD=1.8677$. Thus, the low level of well-being is less than or equal to the M minus 1 SD ; average level of well-being is lower than M plus 1 SD and higher than the M minus 1 SD ; and a high level of well-being corresponds to values greater than or equal to the M plus 1 SD .

Well-Being and Risk of Depression

The WHO-5 Well-Being Index (WHO, 1998) measures the psychological well-being, identifying other aspects that go beyond the absence of depressive symptoms. It consists of 5 items (e.g., “I felt happy and in a good mood”), answered on a Likert scale ranging from 5 (“All the time”) to 0 (“Never”), and which are intended to reflect the way how the participant has been feeling over the last 2 weeks.

The score is calculated by adding the values of the 5 items, with a minimum score of 0 (worst well-being) and a maximum

score of 25 (better well-being). A score below 13 reveals a low level of well-being. In the present study, the WHO-5 presented an adequate level of internal consistency ($\alpha=.86$).

Considering the usefulness of the WHO-5 index as a depression screening tool, widely used internationally in clinical and non-clinical contexts, the cut-off point defined by Allgaier et al. (2012) for adolescents was used, which corresponds to a value equal to or less than 9.

Social-Emotional Skills

Four social-emotional skills included in the Survey on Social and Emotional Skills (SSES; OECD, 2021b) were selected for this study, specifically optimism, emotional control, stress resistance/resilience, and sociability. Each skill is assessed using a subscale made up of eight items (e.g., “I believe good things will happen to me”, “I am not easily upset”, “I am relaxed and handle stress well”, “I like to be with friends”). The Portuguese version used presents satisfactory levels of internal consistency (ranging from $\alpha=0.68$ to $\alpha=0.80$ for the four subscales). In this study, all the subscales also showed adequate levels of internal consistency, ranging from $\alpha=0.79$ to $\alpha=0.88$.

Procedure

The present study corresponds to a part of the project “Psychological Health and Well-Being in Portuguese schools” (Matos et al., 2022), which was approved by the Ministry of Education and developed in collaboration between the Directorate-General for Education Statistics and Science, Directorate-General for Education, the National Program for the Promotion of School Success, Aventura Social Team/ISAMB of the University of Lisbon, Order of Portuguese Psychologists and Calouste Gulbenkian Foundation. The participating schools were invited to integrate the study based on a random selection and stratified based on the geographic region/NUTS III (Nomenclature of Territorial Units for Statistical Purposes). To guarantee a representative sample of pupils, classes within a school cluster were also chosen at random after the cluster consented to participate. Until participation was guaranteed, more clusters from the same NUTS III region were chosen at random if a cluster was not available. Teachers and psychologists from the participating schools administered the instruments, guaranteeing uniformity and sufficient assistance during the data collection procedure. Responses to the instruments were anonymous and voluntary and its application had an average duration of 50 minutes. Informed consent from participants and their parents/guardians was an essential criterion for inclusion in the study. The informed consents were collected by the school clusters/individual schools.

For data analysis, the assumption of normality was tested with the Kolmogorov–Smirnov test for gender and education level, which was guaranteed (except for emotional control SSES subscale) invoking the Central Limit Theory. Homogeneity was not guaranteed in most of the variables but was prioritized due to the similar number of cases in each subgroup and the robustness of the parametric tests in the face of violation. We began by performing descriptive statistics and Pearson correlations for the main variables under study. Gender and education level were transformed into dummy variables (0=male and 1=female for gender; 0=3rd cycle of basic education and 1=secondary

education for education level). To compare mean values in the main variables between genders and education level, a t-test was used. The effect size was interpreted according to Cohen's guidelines (1998; 0.2=small effect, 0.5=moderate effect, 0.8=large effect). Logistic regression models were used to identify the predictors of life satisfaction and the risk of depression (binary logistic regression). We began by entering sociodemographic characteristics in Step 1 (gender, age, and education level), and then adding social-emotional skills in Step 2 (optimism, emotional control, stress resistance/resilience, and sociability). All analyzes were carried out using IBM SPSS Statistics (version 26), considering the statistical significance value $p < 0.05$.

Results

Descriptive statistics and Pearson correlations between the main study variables for the overall sample are presented in Table 1. Well-being and life satisfaction were found to be positively correlated with all the social-emotional skills studied, while the risk of depression showed a statistically significant negative correlation with these variables. Gender was also significantly correlated with all the studied variables, with girls being more associated with worse social-emotional skills, a higher risk of depression and lower levels of well-being and life satisfaction. These are mainly weak correlations, except for emotional control and stress resistance, whose correlations are

moderate. Both age and educational level also showed weak correlations with all the studied variables (except emotional control, which showed no statistically significant correlation). This means that older adolescents are more likely to have poorer social-emotional skills, a higher risk of depression and lower levels of well-being and life satisfaction.

Levels of Well-being, Life Satisfaction and Risk of Depression

Considering the previously defined levels of well-being and life satisfaction, most adolescents have an average level of life satisfaction (58.5%; vs. low 20.8% vs. high 20.7%), but a low level of well-being (51.1%). Considering the WHO-5 cutoff point used in clinical samples with adolescents, 19.6% of the participants in the present study had values indicative of risk of depression.

Differences according to Gender and Education Level

Table 2 presents the results of the comparison of means between genders and education levels for the main variables under study. Boys showed significantly higher levels of well-being, life satisfaction and all the social-emotional skills assessed than girls. Comparison by level of education revealed that participants in the 3rd cycle of basic education also have higher mean values than participants in secondary education,

Table 1. Main Study Variables: Correlations and Descriptive Statistics (N = 3223)

Variables	1	2	3	4	5	6	7	8	9	10
1. Age	-									
2. Gender ^a	.030	-								
3. Education level ^b	.655***	.023	-							
4. Well-being	-.177***	-.304***	-.135***	-						
5. Life satisfaction	-.155**	-.170***	-.117***	.585***	-					
6. Optimism	-.101***	-.263***	-.094***	.677***	.597***	-				
7. Emotional control	.029	-.323***	.010	.496***	.397***	.577***	-			
8. Stress resistance	-.075***	-.421***	-.078***	.505***	.397***	.553***	.652***	-		
9. Sociability	-.105***	-.171***	-.081***	.464***	.372***	.553***	.345***	.351***	-	
10. Risk of depression	.094***	.219***	.043*	-.734***	-.436***	-.493***	-.354***	-.334***	-.320***	-
M	14.47			14.285	7.014	25.484	21.322	19.256	24.095	
SD	1.91			5.367	1.868	0.8025	0.7715	0.8854	0.7480	
Mode				15	7	2.63	2.00	2.00	2.00	
Median				15	7	2.63	2.13	1.88	2.50	
Range	11-20	0 - 1	0 - 1	0 - 25	0 - 10	0 - 4	0 - 4	0 - 4	0 - 4	0 - 1

^aGender: 0 = male, 1 = female. ^bEducation level: 0 = 3rd cycle of basic education, 1 = secondary education. *** $p < .001$. ** $p < .01$. * $p < .05$.

Table 2. Comparison of mean values for well-being, life satisfaction and social-emotional skills between genders and educational levels (N = 3223)

Variables	Gender		t-test	Cohen's d	Education level		t-test	Cohen's d
	Female (n=1615) M (SD)	Male (n=1483) M (SD)			3rd cycle (n=1542) M (SD)	Secondary (n=1682) M (SD)		
Well-being	12.835 (5.176)	16.078 (4.951)	17.786***	0.64	15.042 (5.509)	13.593 (5.139)	7.724***	0.27
Life satisfaction	6.746 (1.842)	7.377 (1.809)	9.625***	0.35	7.241 (1.847)	6.805 (1.863)	6.665***	0.24
Optimism	2.363 (0.771)	2.782 (0.763)	15.093***	0.55	2.628 (0.818)	2.476 (0.782)	5.333***	0.19
Emotional control	1.904 (0.738)	2.401 (0.714)	18.867***	0.68	2.124 (0.777)	2.139 (0.766)	-0.552	
Stress resistance	1.577 (0.806)	2.321 (0.795)	25.619***	0.93	1.999 (0.891)	1.860 (0.875)	4.409***	0.16
Sociability	2.302 (0.747)	2.555 (0.708)	9.565***	0.35	2.474 (0.765)	2.352 (0.727)	4.556***	0.16

*** $p < .001$

Table 3. Summary of Hierarchical Regression Analysis for Variables Predicting Life Satisfaction (N = 3085)

Variable	Model 1			Model 2		
	B	SE B	β	B	SE B	β
Gender ^a	-0.60	0.07	-.16***	0.06	0.06	.02
Age	-0.13	0.02	-.14***	-0.09	0.02	-.10***
Education level ^b	-0.13	0.09	-.04	-0.04	0.07	-.01
Optimism				1.15	0.05	.50***
Emotional control				0.13	0.05	.05*
Stress resistance				0.15	0.04	.07***
Sociability				0.10	0.04	.04*
R ²	.053			.368		
F for change in R ²	56.891***			369.994***		

^aGender: 0 = male, 1 = female. ^bEducation level: 0 = 3rd cycle of basic education, 1 = secondary education. *** $p < .001$. ** $p < .01$. * $p < .05$.

except for emotional control, where there are no statistically significant differences. Although the gender differences had moderate to large effects for all the variables, the differences according to level of education had essentially small effects.

Social-Emotional Skills as Predictors of Life Satisfaction and Risk of Depression

Table 3 shows that male gender and younger age are considered significant predictors of adolescents' life satisfaction, but this model (model 1) explains only 5.3% of the dependent variable. However, when the four social-emotional skills under study are inserted into the model (model 2), they all have a predictive role in life satisfaction, especially optimism, and gender is no longer significant. This second model explains 36.8% of the variance in adolescents' life satisfaction.

Regarding the risk of depression, Table 4 shows that, in addition to the sociodemographic variables included in model 1, the four social-emotional skills studied are significant predictors (model 2). This model explains 39.9% of the variance in adolescents' risk of depression. The model 2 correctly classifies 84.9% of participants (despite being especially accurate to classify the absence of risk than its presence; 95.4% vs 40.5%), instead of the previous models (constant and model 1) which classifies 80.9% of participants, but just the absence of risk of depression and not its presence (100% vs. 0%).

Discussion

The present study aimed to analyze the levels of well-being and life satisfaction of students in the 3rd cycle of basic education and secondary education, identify the risk of depression, analyze differences in these dimensions considering sociodemographic characteristics (gender and level of education), and identify predictors of life satisfaction and risk of depression, considering social-emotional skills, in addition to sociodemographic data.

The results showed that most adolescents who participated in the study have a low level of well-being (51.1%) but are moderately satisfied with their lives (58.5%). Although the data may seem contradictory, the results indicate that these are actually different constructs. Well-being is a broader construct, which includes in its definition satisfaction with life (and positive emotions, for example), considering the hedonic conception of well-being, although this is combined with a eudaimonic conception, which refers to good individual and social functioning (Diener, 2012). It is possible that the results found in terms of well-being are a consequence of the psychosocial difficulties that adolescents have experienced following the COVID-19 pandemic (e.g., Branquinho et al., 2020), which does not prevent relative satisfaction with their life in general.

On the other hand, it appears that around 20% of participants are at risk of depression and have low life satisfaction, with more than half having a low level of well-being. These results support the idea that well-being is more comprehensive than the absence of mental illness, as well as the theory of the double continuum of illness and mental health (Keyes, 2002). The percentage of adolescents at risk of depression is a result that should be viewed with some concern, especially in a period of "aftermath" of the COVID-19 pandemic. Although we do not have data on this measure in the pre-pandemic period, it is believed that these values are in line with international studies, which indicate that symptoms of depression among young people have more than doubled in several European countries (Deng et al., 2023; OECD/EU, 2020).

In the three assessed mental health dimensions – well-being, life satisfaction and risk of depression – the results confirm the trend identified in previous studies regarding gender differences, with girls presenting less positive results in the field of mental health than boys (e.g., Luijten et al., 2021; Piko, 2023;

Table 4. Summary of Binary Logistic Regression Analysis for Variables Predicting Risk of Depression (N = 2974)

Variable	Model 1				Model 2			
	95% CI for Odds Ratio				95% CI for Odds Ratio			
	B (SE)	Lower	Odds Ratio	Upper	B (SE)	Lower	Odds Ratio	Upper
Constant	-4.58*** (0.48)				0.49 (0.60)			
Gender ^a	1.20*** (0.11)	2.70	3.32	4.08	0.59*** (0.13)	1.40	1.81	2.32
Age	0.17*** (0.04)	1.11	1.19	1.27	0.20*** (0.04)	1.12	1.22	1.32
Education level ^b	-0.22 (0.13)	0.62	0.80	1.05	-0.40* (0.16)	0.49	0.67	0.91
Optimism					-1.50*** (0.10)	0.18	0.22	0.27
Emotional control					-0.39*** (0.10)	0.60	0.68	0.83
Stress resistance					-0.18* (0.09)	0.70	0.83	0.99
Sociability					-0.26** (0.09)	0.65	0.77	0.91
R ² (Cox & Snell)	.057				.248			
R ² (Nagelkerke)	.092				.399			

^aGender: 0 = male, 1 = female. ^bEducation level: 0 = 3rd cycle of basic education, 1 = secondary education. *** $p < .001$. ** $p < .01$. * $p < .05$.

Vucenovic et al., 2023). The same happens in relation to the negative evolution of mental health results throughout adolescence (e.g., Frey et al., 2020; Orben et al., 2022) and corroborated by the differences found between the two levels of education analyzed. This is consistent with recent studies showing that the mental health of older adolescents and girls has been most affected during the pandemic (Deng et al., 2023). Therefore, female and older adolescents should be the target of interventions focused on the higher risk they present of developing internalizing problems and reduced well-being.

Also in all the social-emotional skills assessed in this study, girls reported significantly lower values than boys, which is in line with current studies assessing these same competences (OECD, 2021a). When levels of education are compared, it is the older students (secondary education) who show lower scores in social-emotional skills, which is also consistent with previous studies (OECD, 2021a), including studies developed during COVID-19 pandemic (e.g., Martinsone et al., 2022). The emotional control skill is an exception, as the differences are not statistically significant. However, it is interesting to note that it shows an opposite trend, i.e., older adolescents show a tendency towards better emotional control skills. This result points to a possible maturing in this domain, which could protect them from developing depression, as the literature suggests, considering the association of effortful control with lower level of depressive symptoms through increasing the use of cognitive reappraisal in preadolescents (Liu et al., 2024).

The model tested for predicting the risk of depression seems to have a better ability to detect a low risk of depression in our sample, which could be an important contribution in terms of prevention. According to the model, particular attention should be paid to girls, older adolescents, and adolescents with lower optimism, but also lower emotional control, stress resistance, and sociability skills. Regarding the predictive model of life satisfaction, when the four social-emotional skills are considered, they make a more significant contribution than sociodemographic characteristics, although it is confirmed that younger adolescents tend to be more satisfied with their lives (e.g., Hendriks et al., 2020). Although the other skills also proved to be important, optimism emerged as the skill with the most weight in both predictive models, which is in line with the study by Molloy-Vickers et al. (2024), which revealed the protective role of optimism in various mental health outcomes during the pandemic, namely internalising difficulties and well-being. These results reinforce the need to invest in promoting optimism and resilience in schools, using methodologies based on Positive Psychology, which have shown very important results related to adolescents' mental health and well-being (Owens & Waters, 2020).

Implications for Practice

Several studies show that there are risk and protective factors linked to depression that can be modifiable by adolescents themselves. In this sense, health education interventions focused on preventing depression among adolescents may include reducing substance consumption (e.g., alcohol, tobacco, cannabis) and diet behaviors, as well

eating habits (see review by Cairns et al., 2014). On the other hand, promoting social-emotional skills is equally relevant for the prevention of depressive symptoms and the promotion of well-being (Barata et al., 2024; Greenberg et al., 2017; Taylor et al., 2017). Therefore, structured and scientifically validated programs promoting well-being, resilience, mental health and healthy lifestyles (e.g., WHO/UNESCO, 2021) are important resources that Portuguese schools can benefit from (see, for example, #EntreViagenseAprendizagens, Challenge: To Be+, or RESCUR; Francisco et al., 2023; Freire et al., 2018; Simões et al., 2021). An effort is recommended to ensure that programs are adopted in a sustainable way, aiming at changing steadily the schools' culture at a long run, and avoiding short and unstable projects. The use of universal prevention programs will make it possible to reach a significant number of adolescents with reduced cost-effectiveness.

Limitations and Future Research

Its cross-sectional nature is the main limitation of this study, as it only provides a 'snapshot' of mental health/illness indicators and some social-emotional skills at the time the data was collected. Future studies should therefore adopt a longitudinal design, which will help to deepen our knowledge of the evolution of these indicators throughout adolescence and confirm the potential predictors of life satisfaction and depression identified in the present study. Since this study used a community sample, based on randomly selected schools, future studies should also include clinical samples of adolescents diagnosed with depression, for a more detailed and comparative analysis of the role of social-emotional skills in the risk of depression in adolescence. Finally, future studies should also consider other social-emotional skills (e.g., assertiveness, trust) and other factors (e.g., self-esteem, sense of school belonging, social support) as predictors of mental health or illness in adolescence, so that the selection of dimensions to be included in preventive or therapeutic interventions in this age group is more refined.

Conclusion

Almost one in five adolescents were at risk of depression, with this risk being almost three times higher for girls in comparison with boys. Knowing that people with low levels of psychological well-being are around seven times more likely to develop depression in the following 10 years (Wood & Joseph, 2010), and considering the overall results found in the present study, it becomes urgent to intervene in four different ways in the school context: 1) psychological assessment to identify clinical and subclinical cases of depression, and subsequent referral to nearby psychological support services; 2) promotion of well-being globally and life satisfaction in particular; 3) prevention of the development of depressive conditions (and other internalizing problems); and 4) promotion of social-emotional skills, which revealed to be related to higher life satisfaction and lower risk of depression. The implementation of educational policies focused on social and emotional learning and well-being promotion will enable schools to assume their role as health-promoting schools (WHO/UNESCO, 2021).

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Conflicts of Interest

The authors declare no conflict of interest.

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