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Who are the Happy Girls? Gender Comparison Using a Biopsychosocial Approach: Health Behavior School-Aged Children Study in Portugal During Covid-Pandemic

Tania Gaspar[1,2,3] · **Marina Carvalho**[2,3,4,5] · **Fábio Botelho Guedes**[2,3,6] · **Ana Cerqueira**[2,3,6] · **Margarida Gaspar de Matos**[2,3]

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Abstract

From an ecological perspective, this study aimed to understand and characterize the similarities and differences between girls and boys regarding the perception of happiness. This paper is based on the Health Behaviour in School-aged Children (HBSC) 2022 study. 5809 students from 6th (29.6%), 8th (33.5%), and 10th (37%) grades responded, of whom 50.9% were female, with a mean age of 14.09 years ($SD = 1.82$). The results allow us to study and identify similarities and differences between four groups from an ecological perspective: happy girls, happy boys, unhappy girls, and unhappy boys. For both boys and girls, quality of life, low psychological symptoms, and body image best explain their well-being. Among unhappy girls, the mother's job, life satisfaction, health literacy, communication with the father, and relationship with teachers explain their well-being. In the case of unhappy boys, in addition to these variables, the father's job and the relationship with the family also explain their well-being.. Mental health factors, such as life satisfaction, quality of life, and low psychological symptoms, explain well-being in both boys and girls. For happy girls, age, mother's job, stress management, health literacy, and liking school explain their well-being. Happy boys report that not being so sad that they cannot stand it, not having worries, having a good relationship with teachers, and feeling safe in their living area contribute to their well-being. We conclude that unhappy adolescents are the ones who report more socioeconomic and family relationship difficulties, especially in communication with their fathers. Girls have weaker psychological health indicators and a more negative body image.

Keywords Happiness · Well-being · Adolescents · Gender · Ecological Approach

Extended author information available on the last page of the article

1 Introduction

Health determinants are known to impact development. Studies in the last decades show that social circumstances may be related to health inequalities (Inchley et al., 2016). Some of the social inequalities in health involve education and socioeconomic status, age, and gender. However, the role of gender, among other social determinants, is less studied.

According to the literature, there are several factors associated with adolescents' happiness, including subjective well-being and health, social support, the experience of bullying, and self-directed violence (Lukoševičiūtė et al., 2022a, 2022b). Psychological well-being is defined by the personal experience of fulfillment, namely a sense of life and personal growth, happiness and satisfaction with one's life, and optimism, among others (Ross et al., 2020). Conversely, happiness encompasses mental and emotional well-being, with positive emotions, joy, and pleasure. Happiness integrates cognitive and emotional evaluations of life (Lukoševičiūtė et al., 2022a, 2022b),

In its different dimensions, psychological well-being is related to life satisfaction and psychological and somatic complaints, among other relevant factors for mental health (Cerqueira et al., 2021; Gaspar et al., 2022a, 2022b, 2022c). Several studies show an association between well-being and parental support (Gaspar et al., 2021; Guedes et al., 2022; Jusienė, et al., 2022; Wu & Lee, 2022), anxiety (Wu & Lee, 2022), gender (Branquinho et al., 2021; Jusienė et al., 2022; McKay et al., 2020; Wu & Lee, 2022), emotional and behavioral problems (Carvalho et al., 2018; Gaspar et al., 2022a, b, c; Jusienė et al., 2022; McKay et al., 2020), physical activity and school social capital (Jusiene et al., 2022). Lower levels of happiness were observed among girls and older adolescents (Lukoševičiūtė et al., 2022a, 2022b).

The level of life satisfaction, quality of life, and well-being during childhood and adolescence is an excellent indicator of healthy psychological and emotional development (Aymerich et al., 2021; Gaspar et al., 2022, Gomez-Baya, et al., 2023),

One theoretical model that can explain individual differences in well-being is the Dual-Factor Model of Mental Health (Greenspoon & Saklofske, 2001). This model proposes that mental health results from a continuum of two dimensions related to psychological symptoms and psychological health. When accounting for adversity, studies developed based on this model have found that the main differences in individual and contextual factors were found in the groups that differed in well-being (e.g., Grych et al., 2020). In a recent study based on this model, in which data from the HBSC 2018 and 2022 were analysed, Matos et al. (2023a) found a significant gender association, with more boys in the Complete Psychological Health Group (high life satisfaction and low psychological symptoms) and more girls in the Complete Psychological Disorder Group (low life satisfaction and high psychological symptoms). These results were replicated using a nationwide population of pupils aged 10 to 18 attending public schools in Portugal (Matos et al., 2023b).

These results emphasize the double standard pattern of gender differences in psychological well-being and psychological symptoms. For example, in a report

of the HBSC studies in over 40 North American and European countries, Inchley et al. (2016) showed that boys reported better life satisfaction than girls. When considering specific countries, Cosma et al. (2021), in one of the HBSC studies developed to analyse trends in adolescent mental well-being in the Czech Republic between 2002 and 2018, found that girls reported poorer mental well-being than boys. Portugal presented a similar pattern, with girls reporting poorer mental well-being, specifically during adolescence (Gaspar et al., 2022).

These results suggest that gender differences in psychological well-being may depend on the developmental phase and specific individual and contextual variables. These findings are consistent with a biopsychosocial perspective (Bowes & Grace, 2008; Bronfenbrenner, 1979, 2005), according to which health determinants include individual, social, and contextual (family, school, community, among others) factors within a micro–macro continuum. According to this perspective, well-being may depend on the individual and the context (Baya-Goméz et al., 2020; Gaspar et al., 2022a, b, c; Reis et al., 2020).

Thus, an ecological lifespan perspective in which individual and contextual factors can interact to explain individual differences allows us to better understand individuals' well-being and underlying needs. Moreover, examining the role of social determinants such as gender in these interactions can contribute to a more comprehensive understanding of the mediating factors involved. Consequently, considering gender specificities when studying the main factors associated with well-being can contribute to a more comprehensive understanding of the factors associated with these differences. It also points to the need to consider them when implementing strategies aimed at positive health outcomes(Branquinho et al., 2021; Gaspar et al., 2022a, 2022b, 2022c).The impact of the COVID-19 pandemic on the mental health of children and adolescents is multifaceted and substantial (Deng et al., 2022; Gierczyk et al., 2022; World Health Organization, 2023a, 2023b). Research into the mental health of children and adolescents in a COVID-19 context has indicated that anxiety, depression, loneliness, stress, and pressure were the most commonly observed symptoms (Gaspar et al., 2022a, 2022b, 2022c; Jones et al., 2021; Panchal et al., 2021; Theberath et al., 2022). Irritability (between 16.7–73.2%) and anger (between 30.0–51.3%) were also frequently reported by children and adolescents (Panchal et al., 2021). Several studies (Jones et al., 2021) have also found a higher frequency of alcohol and cannabis use by adolescents during the pandemic. According to the systematic review by Panchal et al. (2021), special needs or mental disorders that existed prior to the lockdown and excessive exposure to the media were significant risk factors for anxiety. Positive management strategies with family and social support can be essential to achieve better results (Gaspar et al., 2022a, b, c; Jones et al., 2021; Panchal et al., 2021; Theberath et al., 2022).

To the best of knowledge, studies developed to compare boys and girls based on psychological health indicators for individual and contextual factors are scarce. For that purpose, in the present study, four groups were composed based on psychological well-being (high or low) and gender (male and female) to analyse common and specific individual and contextual factors that may characterize each group.

2 Method

2.1 Data Collection and Sampling

Questionnaires were applied online in 40 groups of regular schools across the mainland country (5 school regions) in 452 classes. The sample is representative of the years of schooling under study. 5809 students from the 6th (29.6%), 8th (33.5%) and 10th (37%) years of schooling responded, of which 50.9% were female, with an average age of 14. 09 ($SD = 1.82$).

More details on the data collection procedures for the HBSC 2022 study in Portugal are available in Gaspar et al., (2022a, b, c).

2.2 Instrument and Procedures

This paper is based on the Health Behaviour in School-aged Children (HBSC) 2022 study (Gaspar et al., 2022a, b, c; Inchley et al., 2016, 2020), a survey carried out every 4 years, in collaboration with the World Health Organization (WHO), following an international protocol (Roberts et al., 2009). In Portugal, this study has been applied since 1998.

The data collected intend to study adolescents' behaviours and health habits in their life contexts and their influence on their health/well-being. In 2022, the HBSC/WHO study in Portugal was approved by the Ethics Committee of the Centro Académico de Medicina de Lisboa, Centro Hospitalar Lisboa Norte, and the General Directorate of Statistics for Education and Science. According to the protocol for applying the HBSC questionnaire, "cluster sampling" was used for data collection, where the unit of analysis was the class. School clusters voluntarily agreed to participate, and informed consent was obtained from all students' parents or legal guardians. Responses to the questionnaire were obtained online and anonymously (Table 1).

2.3 Data Analysis

Descriptive statistics were performed, Pearson's chi-square test, Student´s T-test and Linear Regression were used using the SPSS program.

3 Results

Table 2 presents the descriptive characterization of the girls according to their perception of happiness. This characterization respects an ecological perspective since it integrates sociodemographic, psychological, social, and environmental factors.

Next, we characterize the happy girls at the sociodemographic level. We verify that they are younger than boys, have a higher socioeconomic status, and less frequently present chronic diseases.

Table 1 Description of variables and measures

Measures	Description of the measures
Happiness	Question about happiness perception with 4 answer options. To dichotomise the variable: for "unhappy" we added up the answers (I don't feel happy at all + I don't feel very happy) and for "happy" we added up the answers (I feel happy + I feel very happy) 1 – Unhappy; 2 – Happy
Socioeconomic Status	FAS Scale—Family Affluence Scale, with 6 items that reflect the family's material resources, such as owning a car or individual computer. The FAS score (Boyce et al., 2006; Hartley et al., 2015) is calculated for each adolescent based on the responses to these 6 items, on a scale ranging from 0 to 13 points, with the highest values indicating a better financial level
Life satisfaction	Scale adapted from Cantril (1965), consisting of 11 steps, where the lowest step (0) corresponds to the worst possible life and the highest step (10) to the best possible life
Well-being (WHO5)	Scale with 5 items, on a 6-point Likert scale, 1 being all the time and 6 never. Lower values are indicators of greater well-being $\alpha = 85$
Quality of Life	Scale Kidscreen with 10 items with scores from 0 to 5. A minimum score of 5 and a maximum score of 50. Higher values reveal a better perception of quality of life. $\alpha = 0.85$
Physical symptoms	Scale with four items (back pain; neck pain, headache, dizziness and stomach pain), on a five-point Likert scale (1- almost every day and 5—rarely or never) with a minimum score of 5 and a maximum of 25. Higher values reveal fewer physical symptoms
Psychological symptom	Scale with four items (nervousness, irritability or bad mood, sadness and fear), on a five-point Likert scale (1- almost every day and 5—rarely or never) with a minimum score of 4 and a maximum of 20. Higher values reveal fewer psychological symptoms
So sad you cannot stand it	Question "A sadness so great that it seems like you cannot stand it", with 5 frequency response hypotheses. The higher the value, the less the sadness. The answers were dichotomized by 1 – sad; 2 – No sad
Worry	Question "You are or stay worry…" with 5 frequency response hypotheses. The higher the value, the lower the worries. The answers were dichotomised by adding up the positive and negative answers in relation to the concerns 1 – Yes; 2 – No

Table 1 (continued)

Measures	Description of the measures
Stress management skills	Scale with 4 items on a three-point Likert scale, with 1 never/almost never and 3 often/very often. Higher values reveal a greater perception of stress management. $\alpha = 0.68$
Health literacy	Scale with 10 items with scores from 0 to 5. Minimum scores of 5 and maximum scores of 50. Higher values reveal a better perception of health literacy. $\alpha = 0.89$
Bogy image	A question about the perception of the body with 5 response options. The variable was dichotomised by adding up the response options related to a positive perception of the body and those representing a negative perception of the body 1 – Like body; 2 – Body fat or thin
Medication as a drug, selfharm, tabaco, alcohol, marijuana, drunkness, sexual intercourse, victim of bullying	Question about the frequency of behaviours. The variables were dichotomised as to whether or not the adolescent had the mentioned behaviours 1 – No; 2 – Yes
Communication with father and communication with mother	The variable was dichotomised by adding up the answer hypotheses revealing quality of communication and adding up those revealing difficulty 1 – Easy; 2 – Difficult
Relationship with family	Scale adapted from Cantril (1965), consisting of 11 steps, where the lowest step (0) corresponds to the worst quality of the family relationship and the highest step (10) to the best quality of the family relationship
Relationship with friends	Scale with 4 items, on a 7-point Likert scale, with 1 being very strongly disagree and 7 being very strongly agree. Higher values reveal a better relationship with friends. $\alpha = 0.93$
Relationship with colleagues	Scale with three items, on a five-point Likert scale, with 1 being strongly agree and 5 being strongly disagree. Higher values reveal a better perception of acceptance by colleagues. $\alpha = 0.79$
Relationship with teachers	Scale with three items, on a five-point Likert scale, with 1 being strongly agree and 5 being strongly disagree. Higher values reveal a better perception of acceptance and monitoring by teachers. $\alpha = 84$
Like school	Question about liking school with 4 answer options. The variable was dichotomised by adding the two options associated with liking school and the two options associated with not liking school 1 – Like; 2 – Dislike
Pressure from school	Question about feeling pressure from school with 4 answer options. The variable was dichotomised by adding the two options showing pressure and the two options associated with not feeling pressure 1 – Little; 2 – A lot

Table 1 (continued)

Measures	Description of the measures
Safety at school	Question about safety at school with 4 answer options. The variable was dichotomised by adding the two options showing safety at school and the two options associated with not feeling safety at school 1 – Yes; 2 – No
Safety in the living area	Question about the safety in the area where the adolescents live, with 4 answer options. The variable was dichotomised by adding the two options showing safety and the two options associated with not feeling safety in the living area 1- Yes; 2—No

Regarding psychological health, we can observe that happy girls have more life satisfaction, a higher level of well-being, more quality of life, fewer physical and psychological symptoms, and are less often so sad that they cannot stand it. Notably, 86.4% of the unhappy girls and 32.8% of the happy girl's report being at least once a week so sad that they cannot stand it. The happy girls are less worried, report less stress, show better health literacy, are more often satisfied with their bodies, less often take medication as a drug, and less often have self-injurious behaviours.

Concerning risk behaviours, happy girls report more often not using tobacco, alcohol, drugs, being drunk, and having sexual intercourse.

In terms of interpersonal relationships, happy girls are less frequently involved in bullying situations, have better communication with their mother and father, and report better relationships with family, friends, colleagues, and teachers when compared to unhappy girls.Happy girls also show better indicators concerning school (i.e., they likeschool more, feel less pressure, and feel safer at school. Finally, happy girls feel safer and like the area where they live more than unhappy girls.

Table 3 presents the descriptive characterization of boys according to their perception of happiness. This characterization respects an ecological perspective since it integrates socio-demographic, psychological, social, and environmental factors. When we characterize the happy boys at the socio-demographic level, we found that they are younger than unhappy boys, have a higher socioeconomic status, and are less frequently chronically ill.

Regarding psychological health, we found that happy boys have greater satisfaction with life, a higher level of well-being, more quality of life, fewer physical and psychological symptoms, and are less often so sad that they cannot stand it. Notably, 86.4% of unhappy boys and 32.8% of happy boys report being so sad that they cannot stand it at least once a week. The happy boys are less worried, report less stress, show better health literacy, are more often satisfied with their bodies, less often take medication as a drug, and less often have self-injurious behaviours.

Regarding risk behaviours, happy boys report more often not using tobacco, alcohol, drugs, being drunk, and having sexual intercourse.

Table 2 Bivariate analysis of differences between girls' level of happiness

	M ± *SD* or % (*n*)		X^2 / *T*	*p*	*Effect size (d Cohen)*
	Unhappy	Happy			
Age[1]	14.5 ± 1.72	13.9 ± 1.81			
Father			0.848	0.357(n.s)	
Employed[2]	95.4 (881)	96.2			
yes	4.6 (42)	(1764)			
no		3.8 (70)			
Mother			6.031	0.014	
Employed[2]	86.9 (868)	*89.9			
yes	*13.1	(1710)			
no	(131)	10.1 (192)			
SocioEconomic Status[1]	7.56 ± 2.26	8.07 ± 2.15	36.06	≤ 0.001	
Health Chronic			17.800	≤ 0.001	
condition[2]	*23.2	16.8 (323)			
yes	(236)	*83.2			
no	76.8 (781)	(1601)			
Life Satisfaction[1]	6.00 ± 1.92	8.00 ± 1.38	1062.02	≤ 0.001	
Well-being (WHO5)[1]	20.32 ± 4.39	13.90 ± 4.73	1281.65	≤ 0.001	5.56
Quality of Life[1]	29.15 ± 5.24	38.50 ± 5.73	1879.05	≤ 0.001	4.62
Physical Symptoms[1]	17.02 ± 5.06	20.73 ± 4.29	438.91	≤ 0.001	4.57
Psychological symptom[1]	13.74 ± 5.29	21.18 ± 5.80	1160.93	≤ 0.001	5.63
So sad you can't stand it[2]	*86.4	32.8 (632)	764.655	≤ 0.001	
yes	(879)	*67.2			
no	13.6 (138)	(1292)			
Worry[2]			174.127	≤ 0.001	
yes	*96.2	77.3			
no	(978)	(1488)			
	3.8 (39)	*22.7			
		(436)			
Stress management skills[1]	13.92 ± 2.46	10.42 ± 2.68	1201.60	≤ 0.001	2.61
Health Literacy[1]	29.4 ± 4.89	32.6 ± 4.61	142.42	≤ 0.001	4.71
Bogy image[2]			181.106	≤ 0.001	
Like body	31.6 (321)	*57.6			
Body fat or thin	*68.4 (696)	(1109) 42.4 (815)			
Medication as a drug[2]	96.6 (850)	*99 (1621)	17.572	≤ 0.001	
no	*3.4 (30)	1 (17)			
yes					
Selfharm[2]			229.692	≤ 0.001	
no	52 (418)	*83 (1054)			
yes	*48 (386)	17 (216)			

Table 2 (continued)

	$M \pm SD$ or % (n)		X^2 / T	p	*Effect size (d Cohen)*
	Unhappy	Happy			
Tabaco[2]			78.475	≤ 0.001	
no	83.1 (845)	*93.5			
yes	*16.9	(1798)			
	(172)	6.5 (126)			
Alcohol[2]			105.815	≤ 0.001	
no	52.6 (535)	*71.6			
yes	*47.4	(1378)			
	(482)	28.4 (546)			
Marijuana[2]			34.036	≤ 0.001	
no	93.3 (949)	*97.7			
yes	*6.7 (68)	(1879)			
		2.3 (45)			
Drunkness[2]			64.521	≤ 0.001	
no	83 (844)	*92.6			
yes	*17 (173)	(1782)			
		7.4 (142)			
Sexual intercourse[2]	*14.2	5.9 (114)	56.366	≤ 0.001	
no	(144)	*94.1			
yes	85.8 (873)	(1810)			
Victim of bullying[2]	72.8 (740)	*86.1	78.044	≤ 0.001	
no	*27.2	(1656)			
yes	(277)	13.9 (286)			
Communication with father[2]	43.3 (391)	*75.1	266.837	≤ 0.001	
Easy	*56.7	(1360)			
Difficult	(512)	24.9 (450)			
Communication with mother[2]	64.6 (643)	*91.2	313.234	≤ 0.001	
Easy	*35.4	(1731)			
Difficult	(352)	8.8 (167)			
Relation with family[1]	6.98 ± 2.32	8.61 ± 1.76	328.98	≤ 0.001	
Relation with friends[1]	7.49 ± 2.22	8.50 ± 1.72	134.46	≤ 0.001	2.22
Relation with collheagues[1]	7.32 ± 2.60	6.06 ± 2.27	187.71	≤ 0.001	2.39
Relation with teachers[1]	7.82 ± 2.44	6.38 ± 2.34	245.67	≤ 0.001	2.38
Like School[2]			211.630	≤ 0.001	
Like	54.6 (555)	*80.1			
Dislike	*45.4	(1541)			
	(462)	19.9 (383)			
Pressure from school[2]	16.9 (172)	*38.8	148.088	≤ 0.001	

Table 2 (continued)

	$M \pm SD$ or % (n)		X^2 / T	p	*Effect size (d Cohen)*
	Unhappy	Happy			
Little	*83.1	(746)			
A Lot	(845)	61.2			
		(1178)			
Safety at school[2]			114.011	≤0.001	
yes	60.7 (488)	*81.9			
no	*39.3	(1040)			
	(316)	18.1 (230)			
Safety in the area where live[2]	76.6 (616)	*88.9	55.632	≤0.001	
yes	*23.4	(1129)			
no	(188)	11.1 (141)			

1Student´s T-Test; 2Chi-square

*Adjusted residuals >1.96

M, Mean; SD, standard deviation

In terms of interpersonal relationships, happy boys are less frequently involved in bullying situations, have better communication with their mothers and fathers, and express better relationships with family, friends, colleagues, and teachers when compared to unhappy boys.

Also, happy boys show better school indicators school (i.e., they like school more, feel less pressure and feel more safety). Finally, happy boys feel safer and like the area where they live more than unhappy boys.

Table 4 presents two robust models that allow explaining 39% ($F = 10.82$; 33(570); $p < 0.001$) of the well-being of the unhappy girls and 49% ($F = 28.04$; 33(983); $p < 0.001$) of the well-being of the happy girls. It also allows the identification of the factors that best explain the well-being of the happy and the unhappy girls, organized from an ecological perspective. We found that factors contribute to explaining the well-being of all girls regardless of their perception of happiness, namely the mother having a job, and factors related to psychological health, such as life satisfaction, quality of life, fewer psychological symptoms, stress management, and health literacy. As for the unhappy girls, the body perception, communication with the father, and better relationship with the teachers also contribute to understanding their well-being. In the case of happy girls, liking school also helps to explain well-being.

Table 5 presents two other robust models that explain 51% ($F = 26.26$; 33(198); $p < 0.001$) of the well-being of the unhappy boys and 39% ($F = 20.63$; 33(1052); $p < 0.001$) of the well-being of the happy boys. We found that only two factors contribute to explaining well-being for all boys regardless of their perception of happiness, namely factors related to psychological health, such as life satisfaction and fewer psychological symptoms. For the unhappy boys, the father's employment, health literacy,

Table 3 Bivariate analysis of differences between boys' level of happiness

	M ± *SD* or % (*n*)		X^2 / *T*	*p*	*Effect size (d Cohen)*
	Unhappy	Happy			
Age[1]	14.5 ± 1.91	13.9 ± 1.81			
Father Employed[2]			6.034	0.014	
yes	92.7 (408)	*95.5			
no	*7.3 (32)	(1966)			
		4.5 (92)			
Mother Employed[2]			4.294	0.038	
yes	86 (392)	*89.3			
no	*14 (64)	(1887)			
		10.7(225)			
SocioEconomic Status[1]	7.64 ± 2.37	8.07 ± 2.19	14.89	≤ 0.001	
Health Chronic condition[2]	*22.6	16.8 (361)	8.973	0.003	
yes	(107)	*83.2			
no	77.4 (367)	(1793)			
Life Satisfaction[1]	6.11 ± 2.00	8.16 ± 1.40	703.48	≤ 0.001	
Well-being (WHO5)[1]	18.2 ± 4.99	11.7 ± 4.08	890.88	≤ 0.001	5.33
Quality of Life[1]	31.7 ± 5.77	41.2 ± 5.22	1241.61	≤ 0.001	4.26
Physical Symptoms[1]	19.7 ± 4.85	22.5 ± 3.24	233.00	≤ 0.001	3.59
Psychological symptom[1]	17.5 ± 5.80	24.7 ± 4.69	840.75	≤ 0.001	4.91
So sad you can't stand it[2]	*72.4	16.9(363)	609.315	≤ 0.001	
yes	(343)	*83.1			
no	27.6 (131)	(1791)			
Worry[2]			197.383	≤ 0.001	
yes	*90.1	55.4			
no	(427)	(1194)			
	9.9 (47)	*44.6			
		(960)			
Stress management skills[1]	12.7 ± 2.56	9.54 ± 2.56	613.24	≤ 0.001	2.56
Heath Literacy[1]	28.9 ± 5.63	32.1 ± 5.05	157.82	≤ 0.001	5.16
Bogy image[2]			62.824	≤ 0.001	
Like body	37.8 (179)	*57.8			
Body fat or thin	*62.2	(1245)			
	(295)	42.2(909)			
Medication as a drug[2]			15.869	≤ 0.001	
no	95.1 (368)	*98.4			
yes	*4.9 (19)	(1707)			
		1.6(28)			
Selfharm[2]			116.383	≤ 0.001	
no	63.5 (224)	*87.6			
yes	*36.5	(1259)			

Table 3 (continued)

	M ± *SD* or % (*n*)		X^2 / *T*	*p*	*Effect size (d Cohen)*
	Unhappy	Happy			
	(129)	12.4(178)			
Tabaco[2]			40.695	≤ 0.001	
no	84.4 (400)	*93.3			
yes	*15.6 (74)	(2010)			
		6.7(144)			
Alcohol[2]			42.741	≤ 0.001	
no	56.5 (268)	*71.9			
yes	*43.5	(1548)			
	(206)	28.1(606)			
Marijuana[2]			14.204	≤ 0.001	
no	93.2 (442)	*96.9			
yes	*6.8 (32)	(2087)			
		3.1 (67)			
Drunkness[2]			28.264	≤ 0.001	
no	84.6 (401)	*92.3			
yes	*15.4 (73)	(1989)			
		7.7(165)			
Sexual intercourse[2]			28.884	≤ 0.001	
no	*20.7 (98)	11.5(247)			
yes	79.3 (376)	*88.5			
		(1907)			
Victim of bullying[2]			55.963	≤ 0.001	
no	69.6 (330)	*84.3			
yes	*30.4	(1816)			
	(144)	15.7(338)			
Communication with father[2]	62.3 (256)	*84.7	111.710	≤ 0.001	
Easy	*37.7	(1716)			
Difficult	(155)	15.3 (309)			
Communication with mother[2]	72.5 (332)	*93.1	170.015	≤ 0.001	
Easy	*27.5	(1957)			
Difficult	(126)	6.9 (144)			
Relation with family[1]	6.96 ± 2.15	8.69 ± 1.74	254.44	≤ 0.001	
Relation with friends[1]	7.28 ± 2.18	8.56 ± 1.75	135.64	≤ 0.001	2.14
Relation with collheagues[1]	6.86 ± 2.45	5.61 ± 2.26	115.91	≤ 0.001	2.29
Relation with teachers[1]	7.59 ± 2.66	5.94 ± 2.36	178.92	≤ 0.001	2.42
Like School[2]			101.625	≤ 0.001	
Like	50.0 (237)	*73.6			
Dislike	*50.0	(1585)			
	(237)	26.4(569)			

Table 3 (continued)

	M ± *SD* or % (*n*)		X^2 / *T*	*p*	*Effect size (d Cohen)*
	Unhappy	Happy			
Pressure from school[2]			98.297	≤ 0.001	
Little	37.8 (179)	*62.6			
A Lot	*62.2	(1348)			
	(295)	37.4(806)			
Safety at school[2]			108.456	≤ 0.001	
yes	63.2 (223)	*86.8			
no	*36.8	(1248)			
	(130)	13.2(189)			
Safety in the area where live[2]	80.7(285)	*88(1264)	12.695	≤ 0.001	
yes	*19.3(68)	12(173)			
no					

1Student´s T-Test;2Chi-square

*Adjusted residuals >1.96

M, Mean; SD, standard deviation

body perception, and relationship with the family also contribute to understanding their well-being. As for the happy boys, it is life satisfaction, fewer worries, less sadness that they cannot cope with, better relationship with teachers, and perceived safety in their living area that also help explain their well-being.

We add the similarities and differences between boys and girls (Tables 4 and 5). By analyzing the results of the unhappy girls and boys, we found that for both boys and girls, the quality of life, low psychological symptoms, and body perception best explain their well-being. For unhappy girls, the mother's job, life satisfaction, health literacy, communication with the father, and the relationship with the teachers also help explain well-being. In the case of unhappy boys, in addition to these variables, the father's job and the relationship with the family also explain their well-being. The analysis of girls and happy boys shows that psychological health factors, such as life satisfaction, quality of life, and low psychological symptoms explain the well-being of both boys and girls. For happy girls, age, mother's job, stress management, health literacy, and liking school explain their well-being. Happy boys report that not being so sad that they cannot stand it, not having worries, Having a good relationship with with teachers, and feeling safe in their living area contribute to their well-being.

4 Discussion

Girls often have worse indicators of well-being, mental health, psychological symptoms, and happiness when compared to boys (Baya-Goméz et al., 2020; Blanchflower & Bryson, 2023; Branquinho et al., 2021; Gaspar et al., 2022a, b, c; Matos et al., 2023a, 2023b).

Table 4 Linear regression model of the variables for the study of girls' well-being

	Unhappy				Happy			
	Non-standardised coefficient		Standardised coefficient	*t*	Non-standardised coefficient		Standardised coefficient	*t*
	B	error	β		B	error	β	
Age	0.07	0.13	0.02	0.54	0.22	0.10	0.06*	2.25
Father Employed	0.58	0.78	0.02	0.74	-0.21	0.54	-0.01	-0.39
Mother Employed	0.72	0.44	0.06*	-1.65	-0.80	0.35	-0.05*	-2.27
Socioeconomic Status	0.13	0.07	0.07*	2.00	-0.05	0.05	-0.02	-0.87
Health Chronic condition	0.15	0.33	0.02	0.45	0.26	0.27	0.02	0.98
Life Satisfaction	-0.55	0.09	-0.24***	-6.29	-0.47	0.09	-0.14***	-5.16
Quality of Life	-0.16	0.04	-0.20***	-4.53	-0.30	0.03	-0.36***	-10.66
Physical Symptoms	0.00	0.03	0.01	0.14	-0.04	0.03	-0.04	-1.33
Psychological symptom	-0.10	0.04	-0.12**	-2.50	-0.06	0.03	-0.08*	-2.25
So sad you can't stand it	0.41	0.42	0.04	0.98	0.12	0.26	0.01	0.45
Worry	0.53	0.90	0.02	0.60	-0.07	0.33	-0.01	-0.22
Stress management skills	0.26	0.07	0.15***	3.72	0.21	0.05	0.12***	4.07
Heath Literacy	0.08	0.31	0.09**	2.69	-0.07	0.03	-0.07**	-2.78
Body image	-0.63	0.30	-0.07*	-2.05	0.17	0.22	0.02	0.80
Medication as a drug	-1.36	0.79	-0.06	-1.71	0.68	0.97	0.02	0.70
Self-harm	-0.00	0.30	-0.00	-0.02	-0.18	0.31	-0.01	-0.59
Tabaco	0.14	0.45	0.01	0.31	-0.73	0.46	-0.05	-1.59
Alcohol	-0.26	0.32	-0.03	-0.83	0.15	0.25	0.02	0.60
Marijuana	0.76	0.64	-0.04	-1.19	1.04	0.73	0.04	1.43
Drunkenness	0.29	0.43	0.03	0.68	0.25	0.42	0.02	0.59
Sexual intercourse	0.62	0.46	0.05	1.34	0.67	0.46	0.04	1.44
Victim of bullying	-0.62	0.34	-0.06	-1.79	-0.61	0.33	-0.04	-1.87
Communication with father	0.87	0.32	0.10**	2.73	0.05	0.25	0.00	0.20
Communication with mother	-0.16	0.32	-0.02	-0.49	-0.29	0.37	-0.02	-0.78
Relation with family	-0.09	0.07	-0.05	-1.25	0.04	0.07	0.02	0.61
Relation with friends	-0.06	0.07	-0.03	-0.84	-0.03	0.07	-0.01	-0.49
Relation with colleagues	0.04	0.06	0.02	0.62	0.06	0.05	0.03	1.24
Relation with teachers	0.19	0.07	0.10**	2.72	0.07	0.05	0.04	1.32
Like School	0.14	0.30	0.02	0.48	0.89	0.27	0.08***	3.34
School pressure	0.33	0.45	0.02	0.73	0.39	0.27	0.04	1.45
Safe at School	0.26	0.31	0.03	0.86	0.51	0.30	0.04	1.72
Safety in the area where live[2]	-0.15	0.37	-0.01	-0.40	-0.30	0.37	-0.02	-0.79

*$p \leq 0.05$; **$p \leq 0.01$ ***$p \leq 0.001$

The present study aimed at understanding and characterizing from an ecological perspective the similarities and differences between girls and boys regarding the perception of happiness. We intend to understand who the happy girls are. The

Table 5 Linear regression model of the variables for the study of boys' well-being

	Unhappy				Happy			
	Non-standardised coefficient		Standardised coefficient	*t*	Non-standardised coefficient		Standardised coefficient	*t*
	B	Error	β		B	Error	β	
Age	0.26	0.23	0.07	1.16	0.09	0.09	0.03	0.97
Father Employed	-4.91	1.44	-0.21***	-3.42	0.40	0.50	0.02	0.80
Mother Employed	1.62	0.92	0.11	1.77	0.01	0.34	0.00	0.02
Socioeconomic Status	-0.07	0.12	-0.03	-0.55	0.09	0.05	0.05	1.90
Health Chronic condition	1.12	0.65	0.95	1.72	-0.22	0.26	-0.02	-0.84
Life Satisfaction	-0.23	0.16	-0.09	-1.41	-0.30	0.09	-0.10***	-3.52
Quality of Life	-0.26	0.07	-0.29***	-3.79	-0.31	0.03	-0.38***	-11.06
Physical Symptoms	-0.00	0.07	-0.00	-0.06	-0.04	0.04	-0.03	-0.10
Psychological symptom	-0.28	0.07	-0.32***	-4.05	-0.11	0.03	-0.13***	-3.58
So sad you can't stand it	-0.07	0.62	-0.01	-0.12	1.14	0.33	0.10***	3.47
Worry	1.10	1.12	0.05	0.99	-0.50	0.23	-0.06*	-2.14
Stress management skills	0.22	0.13	0.11	1.75	0.04	0.05	0.03	0.90
Heath Literacy	-0.06	0.05	-0.07	-1.16	-0.01	0.02	-0.01	-0.37
Body image	1.38	0.53	0.14**	2.60	0.35	0.20	0.04	1.73
Medication as a drug	-0.43	1.40	-0.02	-0.31	-0.95	0.85	-0.03	-1.12
Self-harm	-0.41	0.59	-0.04	-0.70	-0.01	0.34	-0.00	-0.03
Tabaco	-0.27	0.85	-0.02	-0.32	0.84	0.45	-0.06	-1.87
Alcohol	-0.70	0.60	-0.07	-1.19	0.46	0.24	0.05	1.94
Marijuana	-0.52	1.24	-0.03	-0.42	0.47	0.69	0.02	0.68
Drunkenness	0.78	0.91	0.06	0.85	0.07	0.42	0.00	0.17
Sexual intercourse	-0.05	0.75	-0.00	-0.07	0.16	0.32	0.01	0.51
Victim of bullying	-0.32	0.65	-0.03	-0.50	-0.26	0.33	-0.02	-0.79
Communication with father	-0.41	0.63	-0.04	-0.65	0.39	0.31	0.04	1.26
Communication with mother	0.03	0.70	0.00	0.05	0.26	0.42	0.02	0.62
Relation with family	-0.30	0.15	-0.13*	-2.05	0.01	0.07	0.00	0.11
Relation with friends	-0.01	0.14	-0.00	-0.04	0.02	0.07	0.01	0.27
Relation with colleagues	-0.01	0.13	-0.00	-0.07	0.06	0.05	0.03	1.14
Relation with teachers	0.17	0.12	0.09	1.39	0.17	0.05	0.10***	3.53
Like School	-0.01	0.56	-0.00	-0.02	0.44	0.23	0.05	1.94
School pressure	-0.27	0.55	-0.03	-0.50	-0.02	0.21	-0.00	-0.09
Safe at School	-0.62	0.56	-0.06	-1.12	0.39	0.32	0.03	1.22
Safety in the area where live	-1.02	0.74	-0.08	-1.37	-0.82	0.36	-0.06*	-2.26

*$p \leq 0.05$; **$p \leq 0.01$ ***$p \leq 0.001$.

results allow us to study and identify similarities and differences between four groups from an ecological perspective: happy girls, happy boys, unhappy girls, and unhappy boys.

The characterization of girls and boys according to their perception of happiness reveals statistically significant differences between happy and unhappy girls and happy and unhappy boys for all the factors under study, considering an ecological perspective that integrates sociodemographic, psychological, social, and environmental factors.

The perception of happiness is complex and multidimensional. We found that adolescents who identify as unhappy have more risk factors related to socioeconomic issues, mental health, and psychological well-being factors, self-image, more difficulties in social relationships with family, peers, and school, and even in relation to the community context where they live (Gaspar et al., 2018; Lukoševičiūtė et al., 2022a, 2022b).

We identified factors associated with happiness and well-being for all adolescent boys and girls, namely the quality of life, psychological symptoms, and body perception.

The negative perception of quality of life and psychological symptoms, such as irritability, moodiness, and sadness, are associated with unhappiness in adolescents. Negative body image also has a substantial impact on unhappiness in adolescents. Adolescence is a phase of human development with significant body changes which, when associated with unhealthy lifestyles (Gaspar, et al., 2020; Gomez-Baya, et al., 2023; Marques et al., 2017) and social pressure for an ideal body (Gaspar et al., 2016), can interfere with the adolescents' perception of happiness. The study of happy and unhappy girls allow understanding that the mother having a job, life satisfaction, quality of life, psychological symptoms, stress management skills, and health literacy are strongly associated with the level of well-being of all girls.

What distinguishes happy girls from unhappy ones is that in unhappy girls, low socioeconomic status, negative body perception, and poor communication with fathers and teachers are the factors that most affect their well-being. What better explains the well-being of happy girls is age (younger girls have more well-being than older ones) and liking school.

These results show that well-being and perceived happiness decrease as girls age (Gaspar et al., 2018; Yoon et al., 2022). Azpiazu et al. (2022) study delves into the mediating and moderating role of age and gender. It concludes that age is the sociodemographic variable with the most significant impact on life satisfaction. A study by Aymerich et al. (2021) reveals age and gender differences concerning adolescents' mental health and well-being variables.. Significant differences in life satisfaction appear from age 12, with girls being significantly more dissatisfied, more depressed, and more anxious than boys. On the other hand, we found that liking school can be considered a protective factor concerning girls' happiness. The economic issues, difficulties in self-image, and difficult relationships with the fathers and teachers can act as risk factors for girls' happiness (Baya-Goméz et al., 2020; Branquinho et al., 2021; Gaspar et al., 2022a, 2022b, 2022c; Lukoševičiūtė et al., 2022a, 2022b).

Chen et al. (2020) also conclude that girls and older adolescents show less satisfaction with life. However, they recommend further analysis in different contexts and populations, such as geographical region, population type, age, and domain-specific life satisfaction measurements.

Lindberg et al. (2021) study analyses financial stress's impact on adolescents' subjective well-being. The authors conclude that adolescents with more financial stress experience lower well-being. What distinguishes happy boys from unhappy ones is that, in unhappy boys, the father not having a job, a poor relationship with the family, and a negative body perception are the factors that most affect their well-being. What best explains the well-being of the happy boys is satisfaction with life, fewer worries and less sadness that they cannot deal with, a good relationship with teachers, and feeling safe in the area where they live.

Unhappiness in boys has a particular focus on economic and family relationship issues. Boys' happiness is explained by general well-being and integrates environmental factors (Bronfenbrenner, 1979, 2005; Lukoševičiūtė et al., 2022a, 2022b).

Relating happy girls to happy boys, we found that they have in common higher life satisfaction, quality of life, and fewer psychological symptoms. For girls, being younger, having a working mother, having better stress management, having more health literacy, and liking school are related to their well-being. In happy boys, fewer worries and less sadness that they cannot deal with, good relationships with teachers, and feeling safe where they live are the factors most associated with their well-being. Girls with working mothers seem to be happier, and this result may be associated on the one hand with the mother's better well-being, since working mothers tend to have more autonomy and professional fulfilment. On the other hand, working mothers tend to bring more income into the family and to be an example of equality and gender equity that inspires the healthy development of their daughters.

Finally, comparing unhappy girls and unhappy boys, common aspects were identified, such as socioeconomic status or father without a job, quality of life, psychological symptoms, and negative body perception. For girls, dissatisfaction with life, difficulty in stress management, poor communication with the fathers, poor relationships with teachers and poor health literacy are related to well-being. In relation to unhappy boys they also have a poor relationship with the family.

This study was carried out at the end of the COVID-19 pandemic, and it is essential to emphasize that the pandemic has substantially impacted adolescents' mental health, life satisfaction, and well-being. The impact was even more significant among girls, older adolescents, and those with socioeconomic disadvantages. The pandemic has further increased the differences between these higher-risk groups (Deng et al., 2022; World Health Organization, 2023a, 2023b). The study by Gierczyk et al. (2022) aims to deepen the impact of protective factors of the COVID-19 pandemic on the well-being of children and adolescents. It concludes that social support and school appear as protective factors and are associated with adolescents who are more satisfied with life. Family support is more prominent factor related to happiness during adolescence.

Some limitations of the study can be identified. The Health Behaviour School-Aged Children studies the health of children and adolescents comprehensively, including individual, psychological, social, and environmental factors. This comprehensive approach makes it difficult to study specific variables in depth, such as happiness.

The study is self-reported, which may influence responses toward social desirability. However, the study has a random, stratified, and representative sample and is

anonymous and confidential, which mitigates the previously mentioned aspect. We conclude that unhappy adolescents report more socioeconomic and family relationship difficulties (especially in communication with the father in the case of girls), have weaker psychological health indicators and have a more negative body image. Regarding the question: Who are the happy girls? Are those who are younger, have a working mother, have more life satisfaction and quality of life, present fewer psychological symptoms, have developed stress management skills and health literacy, and like school.

Intervention in promoting adolescent happiness should consider an ecological approach (Kleszczewska et al., 2022; Matos et al., 2012), as well as gender similarities and differences.On the other hand, it is crucial to promote the quality of the parental relationship and communication by promoting parenting skills and developing activities between adolescents and families. It is also important to bring parents closer to the school and promote their participation (Gaspar, et al., 2022a, b, c; Guedes, et al., 2022). These interventions should promote adolescents' personal, social, and emotional skills by fostering self-knowledge, self-regulation, acceptance, empathy, mutual help, participation, critical reflection, creativity, and initiative (Gaspar et al., 2018). Developing these skills will allow adolescents to manage and adapt positively and resiliently to the changes, challenges, and risks they face in their development process.

5 Conclusions

5.1 An Ecologic Perspective

- An ecological perspective was used and proved helpful in understanding the similarities and differences between girls and boys regarding the perception of happiness.
- Happy girls, happy boys, unhappy girls, and unhappy boys differentiate among groups according to individual factors and factors related to their social and physical environments /lifeworlds.

5.2 Happiness for all

- Factors associated with happiness and well-being for all adolescent boys and girls are the quality of life, psychological symptoms, and body perception.

5.3 Unhappiness

- Adolescents who identify as unhappy have more risk factors related to socioeconomic issues, mental health, psychological well-being andself-image. They also have more difficulties in social relationships with family, peers, and school, and even concerning the community context where they live/lifeworlds.

• Unhappy adolescents are the ones who report more socioeconomic difficulties and more difficulties in family relationships, especially in communication with the father. In the case of girls, the most unhappy are those with weaker psychological health indicators and who report a more negative body image.

5.4 Being a Girl

• The study of happy and unhappy girls has revealed the importance of the mother having a job, life satisfaction, quality of life, psychological symptoms, stress management skills, and health literacy for increasing girls' perception of happiness.
• Unhappy girls have more frequently a low socioeconomic status, negative body perception, and poorer communication with fathers and teachers.
• What better explains the well-being of happy girls is age (being younger) and liking school.
• The happy girls are younger, have a working mother, report life satisfaction and quality of life, andpresent fewer psychological symptoms.They also report developed stress management skills and health literacy, and like school.

5.5 Being a Boy

• Unhappy boys more frequently refer to the fact that their fathers do not have a job, that they have a worse relationship with the family and a negative perception of the body.
• What best explains the well-being of the happy boys higher life satisfaction, fewer worries, and less perception of sadness in a way that they cannot deal with, a good relationship with teachers, and feeling safe in the area where they live.

5.6 No Matter if they are Boys or Girls

• The happy girls and the happy boys have in common that they have life satisfaction, quality of life, and fewer psychological symptoms.
• The unhappy girls and unhappy boys have in common economic issues (socioeconomic status or father without a job), quality of life, psychological symptoms, and negative body perception.

5.7 It Does Matter if they are Boys or Girls

• Considering the girls, being younger, having a working mother, having better stress management, having more health literacy, and liking school are related to their well-being. For happy boys, the most associated with well-being are fewer worries and less sadness that they cannot cope with, a good relationship with teachers, and feeling safe where they live.
• Considering the unhappy girls, dissatisfaction with life, difficulty in stress management, poor communication with the father, poor relationship with teachers,

and poor health literacy are related to well-being. As for unhappy boys, a poor relationship with the family has also emerged.

This is a strong message for families, health and education professionals and public policies regarding the relevance of implementing interventions that promote adolescents' happiness. These interventions should consider an ecological approach and gender similarities and differences.

The results highlighted the relevance of (1) preventing socioeconomic inequalities through support and opportunities for adolescents and families to promote adolescents' happiness; (2) promoting the quality of the parental relationship and communication through the promotion of parenting skills and the development of activities between adolescents and families; (3) bringing parents closer to the school and promoting their participation; (4) promoting personal, social and emotional skills among adolescents to help them manage the challenges and risks they face in their development process.

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Data Availability The data that support the findings of this study are available from the corresponding author upon reasonable request.

Declarations

Informed Consent Statement Informed consent was obtained from all subjects involved in the study.

Ethical Approval/ Research Involving Human Participants and/or Animals Statement The study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of Centro Académico de Medicina de Lisboa (protocol code N/A, 5 November 2021).

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Authors and Affiliations

Tania Gaspar[1,2,3] · Marina Carvalho[2,3,4,5] · Fábio Botelho Guedes[2,3,6] · Ana Cerqueira[2,3,6] · Margarida Gaspar de Matos[2,3]

✉ Tania Gaspar
tania.gaspar.barra@gmail.com

1 Lusófona University/HEI-LAB, Lisbon, Portugal

2 Institute of Environmental Health (ISAMB), Faculty of Medicine, University of Lisbon (FMUL), Lisbon, Portugal

3 Aventura Social Team, Lisbon, Portugal

4 University Hospital Center of Algarve, Faro, Portugal

5 Manuel Teixeira Gomes Higher Institute, Portimão, Portugal

6 Faculty of Human Kinetics, University of Lisbon/FMH-UL, Lisbon, Portugal