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The Evolution of Life Satisfaction Throughout Childhood and Adolescence: Differences in Young People's Evaluations According to Age and Gender

Maria Aymerich[1] · Ramon Cladellas[2] · Antoni Castelló[2] · Ferran Casas[1] · Mònica Cunill[1]

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Abstract

The level of life satisfaction perceived during childhood and adolescence is an excellent indicator of healthy psychological emotional development. The main aim of this work is to study the levels of life satisfaction perceived by young people throughout their childhood and adolescence. To this end, an innovative retrospective approach is adopted that shows how the evolution of life satisfaction is perceived at different ages according to gender. The present study is based on a sample of 600 Spanish adolescents (58.1% girls; mean age = 16.64) who report the evolution of their life satisfaction from 6 years to 18, through the Life Satisfaction Chart (LSCh). The Goldberg Anxiety and Depression Scale (GADS) is also administered to record levels of anxiety and depression. The results indicate no gender differences in terms of life satisfaction during childhood. Levels of life satisfaction are significantly higher in childhood than in pre-adolescence and adolescence and a significant decrease in levels appearing towards the age of 11. As for gender, significant differences in life satisfaction appear from the age of 12, with girls being significantly more dissatisfied, more depressed and more anxious than boys. Current levels of anxiety and depression do not appear to interfere with retrospectively reported levels of life satisfaction throughout the developmental years studied, except among the female population, where minimal interference is detected. Life satisfaction retrospectively reported by young people shows a significant decrease after the age of 11 years, with greater emotional and psychological vulnerability after this age, mainly and notably among girls. The present results highlight the importance of psychological/affective care in the pre-adolescent and adolescent stages, especially among the female population.

Keywords Life satisfaction · Gender · Age · Childhood · Adolescence · Development

✉ Maria Aymerich
maria.aymerich@udg.edu

Extended author information available on the last page of the article

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1 Introduction

Life satisfaction (LS) is a relevant indicator of successful psychological development and a predictor of psychiatric disorders (Goldbeck et al., 2007), and its study throughout the periods of childhood and adolescence is therefore of growing interest to public health (Walsh et al., 2020). Research in this area will provide a better understanding of how these stages are experienced and help identify periods of development with lower life satisfaction. This information can then be used to implement preventive or intervention measures aimed at improving the quality of life of children and young people in critical periods of development.

However, little is known about life satisfaction during the infant developmental stage, which comprises 6- to 12-year-olds, and especially that of children aged 6 to 10. This therefore constitutes an unstudied and unknown period that requires further research (González-Carrasco et al., 2020). The same cannot be said of research in the adolescent stage. It is well known that adolescence is a period of important changes that occur in many facets: on the physical level, sexual development and maturity; on the psychological level, the consolidation of powerful cognitive assets or the search for a differentiated identity; and important changes in the socio-cultural space, related to academic demands, inter-personal relationships and new social requirements and expectations, which may differ according to gender. Given that all of the aforementioned changes can exert a notable influence on life satisfaction, several studies have focused on their evaluation. These have obtained heterogeneous results, as we shall point out in this article.

Before specifying the objectives and contributions of the present work, it is necessary to review some fundamental aspects, such as what is understood by life satisfaction, how it is commonly assessed, what is currently known about life satisfaction in the stages of childhood and adolescence and the pros and cons of current research design on life satisfaction.

1.1 Life Satisfaction

Life satisfaction (LS) is commonly described as a process of subjective evaluation, comparing one's expectations and goals with one's capability of progressing towards achieving those goals (Diener et al., 1985; Myers & Diener, 1995). It is concerned with the overall assessment that a person makes of their life by comparing what they have achieved with their challenges and expectations (Diener et al., 1985, 1999; Rees, 2017; Suldo & Huebner, 2006; Veenhoven, 1996). Hence, it can be considered a non-absolute parameter that depends on both life outcomes and expectations. Life outcomes will partially depend on the person's behaviour and decisions, though many factors that are out of an individual's control may also have strong effects on such outcomes. In contrast, expectations are fully psychological and susceptible to being modified, at least to some degree. Therefore, life satisfaction may be adjustable not only through objective outcomes but also, and more interestingly, by modifying individual expectations, a fact that opens up a reasonable space for intervention.

Recent research has established the concept of Life Satisfaction (LS) as one of the major components of Subjective Well-Being (SWB), the latter being composed of cognitive and affective dimensions (Campbell et al., 1976). The *cognitive dimension* includes people's sense of satisfaction with their lives as a whole (*Overall Life Satisfaction*) or with particular aspects of their lives, such as family, social relationships or health (*Domain Satisfactions*). The *affective dimension* refers to moods and emotions, and is further divided into *positive* and *negative affect*. Cognitive SWB is generally considered to be more stable over time than affective SWB, which may be more prone to fluctuations due to daily life events (Rees, 2017). This division of SWB into cognitive satisfaction (either overall or domain-based), positive affect and negative affect is often referred to as the "tripartite model", as originally named by Arthaud-Day et al. (2005) and popularized by the reviews of Metler and Busseri (2017).

The present study focuses on satisfaction with life as a whole (cognitive subjective well-being), the aim being to distinguish variations in said satisfaction during the stages of childhood and adolescence, controlling for different effects attributable to gender. The approach is based on a retrospective estimation of life satisfaction by teenagers themselves.

1.2 Evaluating Life Satisfaction in Children and Adolescents

A number of specific measures have been devised to evaluate child and adolescent overall life satisfaction or cognitive subjective well-being, and these can be categorized into different types of instruments (Gilman & Huebner, 2000; Strózik et al., 2016) (see Table 1). On the one hand, there are context-free, single-item scales, such as the OLS, which measures Overall Life Satisfaction (Campbell et al., 1976), or multiple-item scales on Overall Life Satisfaction, such as the Students' Life Satisfaction Scale (SLSS) (Huebner, 1991). And, on the other hand, there are the

Table 1 Types of psychometric scales used to evaluate life satisfaction. *Table taken from* Strózik et al., (2016)

Instruments	Response scales	Items included
OLS	5-point smiley faces scale 11-point scale, from *Not at all satisfied (0)* to *Totally satisfied (10)*	How satisfied are you with your life as a whole?
SLSS-5	5-point scale, from *I don't agree* to *Totally agree* 11-point scale, from *Not at all agree (0)* to *Totally agree (10)*	My life is going well My life is just right The things in my life are excellent I have a good life I have what I want in life
BMSLSS	5-point smiley faces scale 11-point scale, from *Not at all satisfied (0)* to *Totally satisfied (10)*	Satisfaction with your family life Satisfaction with your friends Satisfaction with your school experience Satisfaction with your own body Satisfaction with the area where you live

domain-based life satisfaction scales, such as the Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS) (Seligson et al., 2003), which is derived from the Multidimensional Students' Life Satisfaction Scales (MSLSS) (Huebner, 1994). All of these scales have been administered using different response intervals (5, 7, or 11 points).

The following table presents an example of each of the three types of scale used to measure life satisfaction (LS) in childhood and adolescence.

Available research on the psychometric characteristics of these scales shows that they have a rather variable and heterogeneous degree of sensitivity in evaluating LS. As Casas and González-Carrasco (2019) concluded, psychometric SWB scales with different characteristics are not consistent enough in some cultural contexts, at least with the adolescent population, and more research is therefore needed to determine the reasons for such inconsistencies.

1.3 Previous Results for Life Satisfaction in Childhood and Adolescence

Despite the aforementioned interest in evaluating LS in childhood (from 6 to 12 years of age), very little research has gathered data from this developmental period due to the many difficulties that arise when attempting to assess it. These are mostly attributable to the inadequate cognitive resources available at this age when it comes to identifying and gauging satisfaction, particularly with existing life satisfaction questionnaires.

A study of children aged 9 to 14 ($N=25{,}906$) from 14 countries across Africa, Asia, Europe and North and South America revealed the strongest predictors of children's life satisfaction to be gender (girls reporting lower satisfaction) and age (older children reporting lower satisfaction), together with other dimensional variables such as home context and family relationship quality (Newland et al., 2018).

Of the research available, the project comprising the International Survey of Children's Well-Being (ISCWeB) (http://www.isciweb.org/) included data from 15 participating countries ($N=48{,}040$). This cross-sectional investigation measured SWB in 8, 10 and 12-year-olds by means of an international, inter-cultural and multi-language survey (Dinisman et al., 2015), with adaptations being made to the instruments for the youngest children. Different researchers on this international project found that subjective well-being (SWB) and LS decrease from 10 years of age onwards in 15 countries from four continents (Casas & González-Carrasco, 2019; Dinisman & Ben-Arieh, 2016; Newland et al., 2018; Rees, 2017; Strózik et al., 2016).

Another cross-national data collection worthy of note is the HBSC (Health Behaviour in School-Aged Children, supported by the World Health Organization http://www.hbsc.org/). This survey focuses on early adolescence (ages 11, 13 and 15 years) and collects data on social environments, health, behaviours and well-being every four years (Nagata, 2020). Using one of its datasets, Currie et al. (2012) identified a decrease in LS in 39 countries (European countries, USA and Canada). After examining the trends in LS in the countries covered by the HBSC from 2002 to

2010, Cavallo et al. (2015) also identified a decreasing LS tendency as age increased across all countries.

Furthermore, other authors have also identified this decrease from early to late adolescence in different national samples using different instruments (Chui & Wong, 2015; Goldbeck et al., 2007; Liu et al., 2016; Park, 2005; Petito & Cummins, 2000; Soares et al., 2019). Results seem to point to a reduction in SWB associated with an increase in age up to 15 or 16 years. Willroth et al. (2021) examined life satisfaction pathways from middle (age 14) to late adolescence (age 17), their results showing that, on average, life satisfaction does not change significantly between the ages of 14 and 17.

However, Cosma et al. (2020) found no evidence to support substantial declines in mental well-being among adolescents. In their study, country differences in trends in both adolescent mental well-being outcomes and schoolwork pressure were considerable, which suggests the need for caution when it comes to the cross-national generalization of national trends.

In relation to gender, findings are much more confusing. A recent meta-analysis (Chen et al., 2020) concluded that there are no significant differences between boys' and girls' LS and that, at most, we can speak of a slight trend in favour of boys. However, many studies have reported girls' scores being significantly lower than boys' (Goldbeck et al., 2007; Kaye-Tzadok et al., 2017; Newland et al., 2018). This was also the case with the research conducted by Cavallo et al. (2015), which used HBSC data from 2002 to 2010 from different studies that had collected data on specific SWB life domains (Chui & Wong, 2015; González-Carrasco et al., 2017b; Liu et al., 2016). Some other studies focusing on adolescents considered to be at-risk have reported similar findings, with girls scoring significantly lower than boys (Llosada-Gistau et al., 2015; Tomyn et al., 2015).

Walsh et al. (2020) found few gender differences in predictors of risk behaviours and risk factors to explain adolescents' mental well-being, while the results obtained by Soares et al. (2019), evaluating teenagers aged 13 to 19, indicated that boys report significantly higher levels of life satisfaction than girls.

Along with the multitude of cross-sectional studies on LS in adolescence, a few longitudinal ones have also been identified, suggesting that gender differences may be associated with the age of the sample. González-Carrasco et al. (2017a) and González-Carrasco et al. (2017b) found a certain decrease in life satisfaction in the 11–12 age group, which turned out to be higher among girls. The study collected two SWB measurements for each age group, one at the beginning and the other at the end of the academic year. Even though their results are interesting, they do not provide much information regarding the evolution of LS during the adolescent development process. In a more recent study, Casas and González-Carrasco (2020) explored the evolution of Positive and Negative Affect (PA and NA) and their relationship with a single-item measure of overall life satisfaction (OLS) through a 5-year longitudinal study on 10 to 18-year-olds. The results showed that trends in PA and NA differ by gender, with a more pronounced decrease in PA and a more pronounced increase in NA among girls. The results of the data analysis by González-Carrasco et al. (2020) also revealed the decrease in scores for the OLS and a domain-based SWB measure to be more pronounced among girls than boys. Other authors have

also pointed out this possibility, including Lawton et al. (1993), Weinstein et al. (2007) and Martin-Krumm et al. (2018), and further research from more contexts and countries is therefore required in this area.

1.4 Pros and Cons of Current LS Research Design: A Potential Alternative

As the review of studies on the evolution of LS during child and adolescent development reveals, most of the available research is based on cross-sectional designs. The main disadvantages of these studies are that their conclusions attributed to the effect of age or gender cannot be separated from the cohort effect implicit in the comparison of different groups of individuals. Studies that employ longitudinal designs could overcome this drawback, but these are scarce and those that are available have only studied a few specific years of the pre-adolescent and adolescent stages. This is understandable, given the high time, economic and loss of participants involved in such studies.

The fact is that all designs, whether cross-sectional or longitudinal, have their limitations. The present work therefore offers an innovative approach to the study of LS throughout child and adolescent development, which may well prove an interesting complement to the results of cross-sectional and longitudinal studies available to date: the retrospective recording of life satisfaction levels during childhood and adolescence, using the LSCh. Let us now consider how these approaches may complement one another.

If one of the disadvantages of cross-sectional studies on the evolution of life satisfaction during development is that they are based on comparing groups of subjects of different ages and attributing the results to age or gender differences, in contrast, the retrospective approach always uses information provided by the same group of individuals, who evaluate their satisfaction throughout their life trajectory. Other disadvantages usually attributed to longitudinal studies are the short timespan they usually cover (preadolescence and adolescence) and the small number of published studies, while the retrospective approach easily allows for the study of broader age ranges, including childhood ages, which cannot be addressed directly due to obvious limitations linked to the evolutionary development that these ages entail.

As present challenges for research, different authors (Casas & Frønes, 2020) have highlighted the importance of the time axes in childhood and of a deeper understanding of how SWB relates to the time axis in children and adolescents. Taking the need to analyse life satisfaction data from a single cohort as a starting point, and given the lack of research on which to base the study of LS throughout the childhood to adolescence stages due to the difficulties found in measuring LS from childhood to adolescence, the present study makes an innovative contribution: it provides a graphic representation of the evolution of perceived life satisfaction throughout childhood and adolescence, reflecting the retrospective estimation of boys' and girls' LS over the time-axis of their development. The main advantage of such an approach is that adolescents have adequate cognitive abilities to support a thorough understanding of life satisfaction and can make a backward estimation of its level from infancy to the present

time. Drawbacks may entail forgetting or distorting past states of satisfaction, or the interference of current mood, which could tint memories. Nevertheless, such threats can be neutralized through anchoring techniques, and current mood effects can be controlled for in the research design.

Summarizing these ideas, the main expectation is that life satisfaction will decrease in adolescence due to the increasing social pressures. Additionally, we aim to explore differences associated to gender, provided contradictory results are observed in the existing literature. The existence of differences makes sense theoretically, since teenage girls typically feel more social pressures than boys when it comes to their weight, being sexually attractive or avoiding pregnancy, to name but a few examples.

Moreover, Agrahari and Kinra (2017) described teenage males as having a better self-concept (perception or image of their abilities and their uniqueness) than teenage females. The third facet to be explored is the possible distortion produced by anxiety/depression levels in retrospective perception. The expectation in this case is that the level of anxiety/depression should be a consequence of actual conditions of life and should not affect retrospective perception, provided that such levels were not extremely high in the past.

Accordingly, the present study departs from the following aims and hypotheses:

Aim 1: To determine whether there are life satisfaction differences between childhood and adolescence.
Hypothesis 1: Children's satisfaction scores will be significantly higher than adolescents', for both boys and girls. The main conceptual reason for this is that adolescence is a period when plenty of changes take place, while social pressures also increase during this life stage. Objective life conditions become tougher, making the mismatch between actual outcomes and expectations more acute.
Aim 2: To determine whether there are differences in life satisfaction according to gender.
Hypothesis 2: Adolescent girls will display significantly lower LS scores than boys. The explanation for gender differences is founded on the intensity of the changes experienced by girls, which coincide with broader and stricter social pressures.
Aim 3: To establish whether the level of anxiety and depression reported at the time data were collected is associated with the satisfaction level declared at any time or only with the current time.
Hypothesis 3: The expectation is that retrospective estimation will not be distorted by the current level of anxiety/depression, meaning that only present – and not past—life-satisfaction scores will be associated with adolescents' anxiety/depression levels. In general, anxiety/depression values are expected to be an indicator of perceived current malaise, and therefore expected to be higher among girls due to the pressures on them being more intense. However, if the observed levels are not extreme, this should not affect memories of previous life periods.

2 Method

2.1 Participants

The study sample consisted of a total of 600 adolescents (from Catalonia, northeast Spain) enrolled in Years 7 and 8 of secondary school. The pupils, who attended 12 different state schools, were selected by means of a random, stratified, multistage clustering process (Ramos et al., 2004). The first-stage units were the schools, the second-stage the classrooms and the third-stage the students. The error for the whole sample, using the finite population formula and assuming the hypothesis of maximum population variance was 2.27% at the 95% confidence level. All participants took part in the study voluntarily after obtaining prior authorization from their parents and the school managers. In addition, these were all full-time students with no obligation to financially support themselves.

Girls comprised 58% of the sample ($n = 348$) and boys the remaining 42% ($n = 252$). The majority ages were 16 (49.5%) and 17 (39.4%), with 18-year-olds accounting for only 11.1% of the sample studied (*mean* = 16.64 years; sd = 0.744).

2.2 Measures

The following instruments were used in this research:

2.2.1 Life Satisfaction Chart—LSCh

The Life Satisfaction Chart (LSCh) (Aymerich, 1999) provides a graphic evaluation of subjective well-being and its evolution, retrospectively reported by the subject in relation to the passage of time and past events. Initially designed to evaluate adaptation to retirement (Aymerich, 1999; Aymerich et al., 2010), the method has been successfully applied in clinical settings and in research on adolescent life satisfaction (Aymerich & Casas, 2020). It involves a merging of the "Life Line" and "Life Chart Methodology-retrospective" (LCM-r), methods adapted to measuring well-being on an 11-point scale (0 to 10). The Life Chart Methodology-retrospective (LCM-r) is widely used in the study of bipolar disorders in clinical psychology (Denicoff et al., 2000; Kanady et al., 2015; Karthick et al., 2015; Leverich & Post, 1998; Van der Markt et al., 2019) and the instrument has shown robust performance in ascertainment of retrospective information from patients (Roy-Byrne et al., 1985).

Subjects must represent the evolution of their subjective well-being over the years by marking events that occurred on a graph, where the horizontal line (x-axis) corresponds to age, in this case from 6 to 18, and the vertical line (y-axis) levels of well-being, ranging from 0 to 10. Well-being scores from 0 to 2.5 correspond to feeling "Very dissatisfied"; from 3 to 4.5 "Dissatisfied"; from 5 to 6.5 "Moderately satisfied"; from 7 to 8.5 "Satisfied"; and from 9 to 10 "Very satisfied".

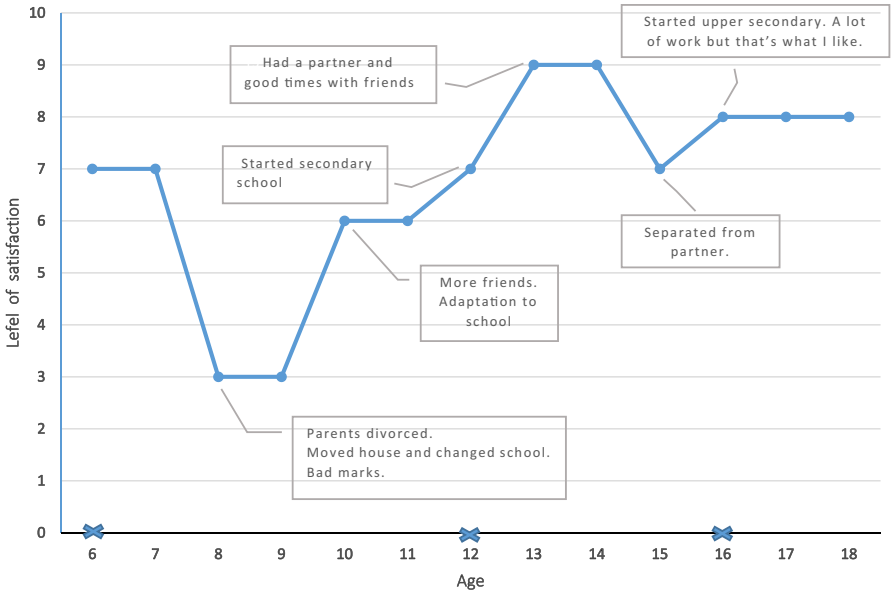

Fig. 1 One of the example LSCh profiles shown to participants

Before doing the task, subjects were given three examples of the LSCh from three adolescents who have experienced life satisfaction differently, an example of which can be seen below (see Fig. 1).

The following examples were presented: one LSCh with lower levels of child satisfaction than adolescent satisfaction, another with higher levels of child satisfaction than adolescent satisfaction, and then another with virtually no variation between the two. The aims here were threefold: firstly, to show participants how to complete the instrument; secondly, to emphasize that there are multiple possible perceptions regarding levels of satisfaction experienced throughout development; and thirdly, to avoid any bias that might have occurred from having only one example of levels of LSCh for each life stage.

The evaluator offered verbal comments on the graphic representations in the examples and how the different events affected the subjects. It was emphasized that the example representations reflected how subjects felt over these years, but that each subject may be affected differently and that the important thing was for the graph to faithfully reflect the experience of the person who compiles it.

Together with these examples, participants were given a sheet on which to compile their LSCh. This had the axes of the graph with values for level of satisfaction from 0 to 10 under the title "Levels of (dis)satisfaction" on the vertical axis and "Ages" from 6 to 18 on the horizontal axis. The rest of the graph was empty. The following instructions were specified on one side: "First: Mark the ages at which you started primary and secondary school with an **x** on the Age axis; Second: Mark the levels and changes in your personal satisfaction (well-being/discontent) over the passage of time up to the present day; Third: Write down the events that have

influenced your level of satisfaction. Remember: The graph must correspond to the levels of well-being or discontent that you remember having experienced throughout your life, from when you started primary school until the present day".

The Cronbach's alpha was $\alpha = 0.89$ in the current study.

2.2.2 Goldberg Anxiety and Depression Scale—GADS

Goldberg developed the *Goldberg Anxiety and Depression Scale* (Goldberg et al., 1988) with the aim of creating a brief questionnaire to detect possible problems with anxiety and depression based on the Psychiatric Assessment Schedule.

The scale consists of a total of 18 items, to which individuals respond yes or no as to whether they have experienced the given symptoms over the previous two weeks. The first 9 items constitute the anxiety subscale and the following 9 the depression subscale. The maximum score for each subscale is therefore 9 and for the entire instrument 18, the cut-off points being 4 or above for anxiety and 2 or above for depression.

The GADS scale is widely recommended as a screening tool for anxiety and depression due to its excellent characteristics, which are as follows: simplicity, good sensitivity (83%) and specificity (82%) indices, capacity for discriminating between and assessing levels of severity, and high levels of convergent capacity with other specific clinical instruments aimed at anxiety and depression. The Spanish version has been validated by Montón et al. (1993).

The instrument's reliability was first determined with a Cronbach's Alpha Coefficient of 0.72 for the anxiety subscale, which is considered acceptable, while the depression subscale obtained a value of 0.80, which is considered good (Carmines & Zeller, 1979; Nunnally & Bernstein, 1994).

2.3 Procedure

After contacting the schools and obtaining their agreement to participate in the study, as well as the corresponding authorization from the parents or guardians of participating students, the researchers went to the schools to carry out data collection. The tests were administered collectively in classrooms, by class groups, and participation in the study was presented as voluntary, although all students in each of the classes participated in all cases.

The instruments were distributed as follows: the LSCh was distributed in a random order with its three examples, the GADS, a pencil and an eraser. First, the researchers commented on the examples for the LSCh and then the students were instructed to make their own graph following the instructions on the answer sheet. It was made clear that they could erase and redo it as many times as necessary until they obtained a reliable representation of how their life satisfaction had evolved globally from the beginning of schooling at age six to the present day. The researchers repeated the information that pupils would all have different graphs according to what they had experienced, and that all contributions were valid and totally anonymous. They then ensured that the task had been correctly understood and answered

any specific questions pupils had regarding the method. Once the LSCh graph was finished, the students went on to answer the Goldberg Anxiety and Depression Scale (GADS).

2.4 Data Analysis

A first General Linear Model (GLM) 5×2 of repeated measures was performed to contrast levels of satisfaction among five age groups (6 to 8-year-olds; 9 to 10-year-olds; 11 to 12-year-olds; 13 to 15-year-olds and 16 to 18-year-olds) comprising boys and girls. A second General Linear Model (GLM) 2*2 of repeated measures was performed to contrast levels of satisfaction between two age groups (childhood and adolescence) comprising boys and girls. Partial eta-square (η2) and observed power were also calculated. Furthermore, Pearson correlations were calculated between scores for anxiety and depression at the present time and level of satisfaction in childhood and adolescence for the whole sample. Finally, descriptive statistics were obtained and the Student's t test was performed for anxiety and depression scores by gender.

The SPSS (version 22.0) was used to perform the statistical tests, all of them being bilateral, with a Type I error set at 5%.

3 Results

The following results were obtained after implementing the LSCh method, which retrospectively evaluates life satisfaction and its evolution from childhood to adolescence:

3.1 Evolution of Life Satisfaction during Childhood and Adolescence

To determine whether there is a difference between childhood and adolescent life satisfaction, scores for the LSCh scale were divided into five groups (two childhood groups and three adolescents). Within the childhood stage, two subgroups were created (early childhood and late childhood) and within adolescence, three groups (pre-adolescence, early adolescence and late adolescence). Thus, the groups corresponded to the following age ranges: (6 to 8-year-olds), (9 to 10-year-olds), (11 to 12-year-olds), (13 to 15-year-olds) and (16 to 18-year-olds).

The following test was then applied: a General Linear Model 5×2 of repeated measures.

Table 2 and Fig. 2 show the evolution of life satisfaction on the LSCh scale from 0 to 10 points among boys and girls in the sample for the five age groups.

Significant differences were found between the different age groups. After performing post-hoc contrasts, significant differences were observed between the 6 to 8-year-old group and the other groups: with the 9 to 10-year-old group ($t = 2.334$; $p < 0.001$); with the 11 to 12-year-old group ($t = -7.545$; $p < 0.001$); with the 13 to 15-year-old group ($t = -6.729$; $p < 0.001$); and with the 16 to 18-year-old

Table 2 Evolution of participants' life satisfaction during childhood and adolescence, by age group

	Gender					
	Boys	Girls				
Age Group	Mean (sd)	Mean (sd)	F	*P*	ηp2	*Observed Power*
6–8 years	7.21 (1.73)	7.33 (1.74)	19.687	.000	.033	1.000
9–10 years	7.25 (1.66)	7.11 (1.85)				
11–12 years	6.84 (1.68)	6.68 (1.73)				
13–15 years	6.93 (1.50)	6.51 (1.66)				
16–18 years	6.87 (2.02)	6.57 (2.08)				

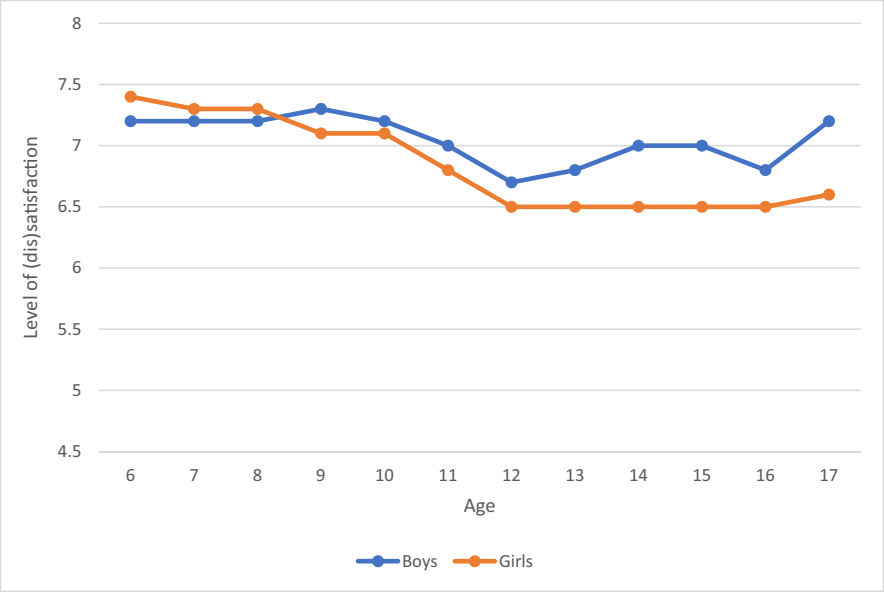

Fig. 2 Evolution of participants' life satisfaction during childhood and adolescence by age group and gender

group (t = -5.322; $p < 0.001$). Significant differences were also observed between the 9 to 10-year-old group and all subgroups of the adolescent population: with the 11 to 12-year-old group (t = -6.532; t < 0.001); with the 13 to 15-year-old group (t = -5.600; $p < 0.001$); and with the 16 to 18-year-old group (t = -4.310; $p < 0.001$). No significant differences were found between the three subgroups of adolescents.

No significant differences were observed between boys and girls. However, as Figs. 2 and 3 show, it is worth noting that girls only displayed a higher level of satisfaction than boys in the first stage of childhood, displaying lower levels than boys in the other stages.

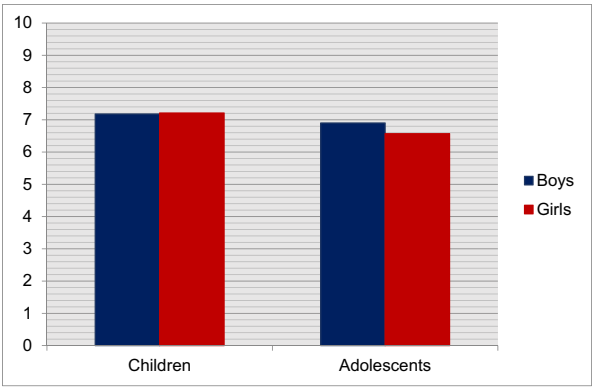

Fig. 3 Levels of participants' life satisfaction during childhood and adolescence, by gender

3.2 Life Satisfaction during Childhood and Adolescence According to Gender

Using the results obtained in the previous section, the same test was carried out (General Linear Model 2 × 2 of repeated measures), but considering only two groups (childhood and adolescence), given that significant differences were only found to be between the childhood group and the adolescence group (Table 3).

As had been observed previously, the participants reported higher levels of life satisfaction in childhood than in adolescence.

Significant differences ($p < 0.001$) were observed between the two age groups (children and adolescents). On average, and on a scale of 0–10, higher levels of life satisfaction were found during childhood (7.19) than during adolescence (6.71).

No significant differences were found between boys and girls during childhood ($t = -0.167$; $p = 0.867$), whereas they were during adolescence ($t = 3.082$; $p = 0.002$). The mean life satisfaction reported by girls was 6.57 (sd = 1.35), while that reported by boys was 6.90 (sd = 1.27).

Significant interaction was found between gender and age group. Girls reported greater life satisfaction than boys in childhood, but not in adolescence, as shown by the following graph.

Table 3 Levels of participants' life satisfaction during childhood and adolescence, by gender

	Children					
Satisfaction	Boys ($N = 254$)	Girls ($N = 355$)				
	Mean (sd)	Mean (sd)	F	p	ηp2	Observed Power
Children (6–10 years)	7.18 (1.68)	7.21 (1.72)	41.696	.000	.064	1.000
Adolescents (11–18 years)	6.90 (1.27)	6.57 (1.35)				

Table 4 Correlations between life satisfaction in childhood (6 to 10 years-olds) and adolescence (11 to 18 years-olds) and levels of anxiety and depression, for overall sample and gender

		All		Boys		Girls	
		Childhood (6–10 years)	Adolescence (11–18 years)	Childhood (6–10 years)	Adolescence (11–18 years)	Childhood (6–10 years)	Adolescence (11–18 years)
Anxiety	r(xy)	-.062	-.188	.080	-.109	-.174	-.217
	p	.139	.000	.212	.088	.001	.000
Depression	r(xy)	-.069	-.258	.068	-172	-.166	-.293
	p	.097	.000	.288	.007	.002	.000

Table 5 Means and standard deviations of anxiety and depression scores on the GADS scale by gender, t-test results and effect size

Scale	Boys Mean (sd)	Girls Mean (sd)	t (p)	d
Anxiety	4.5 (2.3)	5.4 (2.1)	-4.8 (<0.001)	0.41
Depression	3.3 (2.2)	4.0 (2.2)	-3.8 (<0.001)	0.32

3.3 Relationship between Current Levels of Anxiety and Depression and Levels of Dissatisfaction Self-Reported Retrospectively During Childhood and Adolescence

In order to verify whether participants' current levels of anxiety and depression exert an influence on levels of life satisfaction reported retrospectively, we proceeded to calculate the mean levels of satisfaction reported during the childhood (6 to 10 years old) and adolescent (11 to 18 years old) stages, before then calculating how these correlated with levels of anxiety and depression. The results, for all the sample and split by gender, are shown in Table 4.

For the total population, current levels of anxiety and depression were not related to retrospectively reported levels of satisfaction/dissatisfaction throughout the childhood stage. However, levels of anxiety ($p < 0.001$) and depression ($p < 0.001$) did display a slight significant negative correlation in the adolescent age group. However, when gender is considered separately, boys only display a significant negative correlation when depression is considered and only in adolescence. On the other hand, girls display significant, negative correlations both in childhood and adolescence, as well as in anxiety and depression.

In a second analysis, the means comparison test was applied with independent data to ascertain whether there were significant differences between the anxiety and depression scores reported by boys and girls.

Table 5 shows the mean anxiety and depression scores on the GADS scale by gender, the results of the t-test comparing means and the effect size. For the former two cases, girls' scores were significantly higher than boys in both anxiety and depression and the effect sizes were moderate ($0.2 < d < 0.5$).

4 Discussion

This article furthers our understanding of life satisfaction throughout childhood and adolescence (6 to 18 years, though mainly 6 to 17 in this case) and existing gender differences in this regard, as well as the possible influence of participants' current levels of anxiety and depression on self-reported levels of both current life satisfaction and life satisfaction reported retrospectively during the years of childhood and adolescence.

4.1 Evolution of Life Satisfaction during childhood and adolescence (from 6 to 18-year-olds)

Our findings reveal differences in levels of satisfaction between the two childhood groups, although these are counteracted by the gender effect. In the first childhood stage (6 to 8-year-olds), girls displayed a higher level of satisfaction than boys, this being reversed in the next childhood stage (9 to 10-year-olds). Furthermore, differences in levels of life satisfaction were also observed between these two childhood groups (6–8 and 9–10) and the adolescent groups, those of the former being significantly higher than those reported in pre-adolescence, early adolescence and late adolescence.

No previous studies have been found on children's levels of well-being during the first childhood stage (from 6 to 8 years). The main reason why there are no studies that provide information on LS at these early ages is due to the fact that the life satisfaction scales available to date have been based on verbal premises that are impossible for children to respond to due to a lack of the cognitive development and capacity for self-reflection necessary to answer them at these ages. Neither have previous studies been found that use the same group of individuals across the time axis development to analyse the evolution of life satisfaction from 6 to 18 years, making this study the first to yield such results.

Another novel feature of this research is the approach, which was based on retrospectively analysing levels of satisfaction and well-being experienced by the same individuals throughout their childhood and adolescence. Although the retrospective approach proposed by the LSCh is not without its limitations, which will be discussed in subsequent paragraphs, it does open up an interesting and promising line for future research on the subject. It is easy to apply as a method, which makes it possible to study broad age intervals during development in an inexpensive way. The findings of the present study agree with those reported in several previous cross-sectional design studies carried out with adolescent samples of these ages (Casas et al., 2012; Chui & Wong, 2015; Dinisman & Ben-Arieh, 2016; Goldbeck et al., 2007; Kelishadi et al., 2018; Liu et al., 2016; Park, 2005; Petito & Cummins, 2000; Rees, 2017; Ronen et al., 2016; Strózik et al., 2016). The results obtained by longitudinal studies (Casas & González-Carrasco, 2019; Casas & González-Carrasco, 2020; González-Carrasco et al., 2017a) are also congruent with the results obtained by the retrospective LSCh method. The fact that the present study on LS obtains the

same results as previous ones lends greater consistency and validity to the retrospective approach employed using the LSCh instrument, while confirming this decrease in life satisfaction in adolescence and also coinciding on the fact that 11 is the age at which a turning point occurs in terms of life satisfaction.

4.2 Life Satisfaction during Childhood and Adolescence According to Gender

The second aim of this article was to analyse whether there were differences in the evolution of life satisfaction throughout childhood and youth development according to gender.

Focusing on childhood, no significant differences in life satisfaction were found in relation to gender, although girls did report slightly higher life satisfaction scores between the ages of six and eight. In contrast, significant differences were observed between boys and girls in adolescence, with girls being significantly more dissatisfied than boys.

There is abundant scientific literature in this regard, which is based on cross-sectional studies with samples of adolescents and coincides with the results of the present work regarding girls reporting lower satisfaction than boys (Goldbeck et al., 2007; González-Carrasco et al., 2017b; Newland et al., 2018). Many possible reasons may be given for these gender differences, including a different incidence of sexual hormones in boys and girls during puberty and the weight of sociocultural influences exerting different levels of pressure on each gender. The latter would explain a greater emotional vulnerability among girls or, alternatively, a greater ease of recognizing and expressing emotional distress when compared to boys. Menstruation is a specially relevant issue concerning girls, which has been described as an important cause of anxiety and effects on self-esteem (Lawal et al., 2020) and, in general, on life-satisfaction in adolescents (Griffiths et al., 2017).

Furthermore, a significant interaction was found between gender and age group (childhood and adolescence). Girls displayed higher life satisfaction than boys in childhood, whereas the opposite was true in adolescence. These results are consistent with longitudinal studies that have analysed gender correlations with LS or SWB in pre-adolescence and adolescence, showing that as age increases, SWB decreases, and at a much faster rate among girls (González-Carrasco et al., 2020), while negative affect (that most related to depression and other mental health problems) also increases more rapidly among girls (Casas & González-Carrasco, 2020).

4.3 Relationship between Current Levels of Anxiety and Depression and Retrospectively Self-Reported Dissatisfaction during Childhood and Adolescence

The third aim of this work was to ascertain whether current levels of anxiety and depression are related to satisfaction levels reported retrospectively throughout development between the ages of six and eighteen.

The low correlations between current levels of anxiety and depression and levels of well-being and life satisfaction for the whole population studied allow us to rule

out the possible pernicious influence of these mood states on the retrospective information recalled and reported in relation to life satisfaction during development.

Regarding levels of anxiety and depression experienced according to gender, in this study, girls scored significantly higher than boys for both anxiety and depression, although the effect sizes were moderate. These results are consistent with those obtained for the adolescent population by Derdikman-Eiron et al. (2011) and Van Droogenbroeck et al. (2018), which revealed that girls display higher levels of depression and anxiety than boys, suggesting greater levels of potential mental health problems among young women in post-pubertal stages.

The causes of gender differences in mental health problems among adolescents are not fully understood, but previous research has indicated that boys may have more difficulties in acknowledging their mental health problems and tend to mask them by acting out their difficulties, resulting in more externalizing disorders that are problematic for others, such as antisocial personality disorders and substance abuse or dependence. Girls, on the other hand, report more internalizing disorders such as depression and anxiety (Patel et al., 2007; Van Droogenbroeck et al., 2018).

Finally, it is worth highlighting that the scores obtained by both boys and girls on the anxiety and depression subscales were above the cut-off points, these being 4 or above for anxiety and 2 or above for depression. These results provide further support for the theory that the emotional state experienced during the adolescent stage does not influence the evaluations made at different life stages, in the sense of tainting them all with pessimism or not valuing the happier times. Equally, they also show how this stage is especially stressful for young adolescents. A possible explanation for this may be that, in a current context where it is common for boys and girls to lack for nothing and also live free from worries and responsibilities during their childhood, from pre-adolescence onwards, with all the physical and mental changes this already entails, they are suddenly required to behave in an adult way, which they are not prepared for. Our results also reveal the inverse relationship that exists during adolescence between high levels of anxiety and depression and a low level of life satisfaction, lending further weight to the validity of the procedure used in this study. This leads us to consider the value of an effective tool that retrospectively evaluates life satisfaction so as to prevent possible problems of anxiety and depression, since, in more serious terms, these can trigger self-harm in adolescents. It is worth remembering that the highest number of suicides occurs during this life stage.

The results obtained in our study may have important practical implications. On the one hand, understanding the gender differences in life satisfaction may help us pay more attention to children and adolescents' psychological development and consider educational and other approaches to promote their life satisfaction in different domains. And on the other, as stated by Chen et al. (2020) and González-Carrasco et al. (2017a), longitudinal research may be needed to understand gender differences in LS, so as to develop a better understanding of how gender groups may change in their satisfaction with life as children and adolescents grow up. Retrospective research using the LSCh may be of interest as a valid alternative to the expensive longitudinal studies proposed. Although more research is certainly needed to prove its usefulness, for the time being, the results obtained are consistent with those of

previous cross-sectional studies, with the added plus of intra-individual follow-up throughout the development process allowed by retrospective analysis.

4.4 Limitations and Future Research

As a possible limitation of the study, it should be noted that perceived life satisfaction collected retrospectively is necessarily based on memory and respondents' cognitive reconstruction of the events they experienced in the past, which is not a direct measure of life satisfaction at each stage of development. Despite the influence of memory being a limitation, it must be emphasized that direct measurement of life satisfaction would not be possible in young children anyway, given evolutionary restrictions at these ages (cognitive, verbal and emotional), even if the LSCh does represent a novel and interesting tool with which to approach this. All that being said, and despite their being minimized as far as possible after following the instructions of the LSCh instrument, possible inaccuracies and biases must be taken into account in the values collected. However, a positive counter point to this is the longer life experience participants have (at least double than in their childhood), which provides a sounder basis on which to interpret previous stages of their lives.

Considering the observed differences associated to gender, it should be interesting, in future studies, refining the general age-groups in different periods for girls and boys, since girls' maturation follow a different path than boys'. The possible bias in current data would affect the beginning of boys' adolescence, which should be placed a few years after (e.g. 12 instead of 10).

As explained throughout this article, the present work opens up an interesting and novel line of future research. Replicating the research carried out on the Spanish population with adolescents from other countries or cultures will allow us to verify whether the observed patterns of life satisfaction based on age and gender are common and, if not, what patterns characterize different socio-cultural environments. Another possible route for future research could be analysing possible applications of the LSCh in clinical psychology. Among many others, some such possibilities that can be developed from this work might be, for example: measuring retrospective life satisfaction in order to determine how a young person perceives the impact of stressful life events; understanding the repercussions that suffering a mental disorder has had on subjects and its evolution over time (degree of affectation, chronicity, etc.); or assessing a patient's evolution and improvement in response to clinical-psychological treatment.

5 Conclusions

The innovative retrospective approach adopted in the present study contributes novel results on the evolution of life satisfaction throughout the developmental stages from ages 6 to 18. For the first time, SWB has been collected in relation to its time axis, from childhood to adolescence, based on the respondents' lifepaths.

The main results of the study show that, during childhood, specifically from six to ten years of age, levels of life satisfaction turn out to be significantly higher than those reported in the adolescent stage. This is true for both boys and girls.

Levels of perceived life satisfaction show a statistically significant decrease after the age of 11, with a greater emotional and psychological vulnerability starting from this age, mainly and notably among girls. The present results highlight the importance of providing psychological/emotional care for young people around the ages of 11 and 12 and from these ages onwards, with special attention to the female population.

Current levels of anxiety and depression interfere very little with levels of satisfaction remembered and reported retrospectively, the correlation between the two variables being either not significant or very weak. This could reflect the validity of the information collected, although more studies would be necessary to confirm these results. Once more, the differences obtained between boys and girls highlight the need for further research to explain the different patterns detected between the two genders. Only a better understanding of this will make it possible to propose intervention measures sensitive to the specific needs of each gender and contribute to increasing the psychological and emotional well-being of boys and girls in childhood, pre-adolescence and adolescence.

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Declarations

Conflict of Interest The authors declare that they have no conflict of interest.

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Authors and Affiliations

Maria Aymerich[1] · Ramon Cladellas[2] · Antoni Castelló[2] · Ferran Casas[1] · Mònica Cunill[1]

[1] Institute of Research on Quality of Life (IRQV), University of Girona (UdG), Girona, Spain

[2] Faculty of Psychology, Universitat Autònoma de Barcelona (UAB), Barcelona, Spain