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Subjective Well-Being Decreasing With Age: New Research on Children Over 8

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An increasing number of scientific publications have provided data from different countries suggesting subjective well-being (SWB) continuously decreases during adolescence. A review of these publications reveals authors have used dissimilar scales in diverse countries. Using data from the international *Children's Worlds* project (N = 48,040), involving 15 countries, a comparative analysis was performed to determine how mean scores evolve with different SWB scales from the age of 8 onwards. The results support the hypothesis that the tendency of SWB to decrease with age starts at around 10 years of age in most countries, while also confirming that different psychometric scales display different levels of sensitivity to diverse sociocultural contexts and more than one should be used in any research on children and adolescents' SWB.

Over the past decade, an increasing number of scientific publications have provided data from different countries suggesting that subjective well-being (SWB) continuously decreases during adolescence (Holte et al., 2013). SWB refers to how people evaluate their lives, both in general and for specific life domains (family, friends, leisure time, etc.), this definition being equally applicable to adults and children (Ben-Arieh, Casas, Frønes, & Korbin, 2014).

Until recently, most of the studies to have been published on this decreasing trend were based on small samples from only one country, using a different measuring instrument each time. Most of such publications do not offer an explanation for this decreasing trend and the most commonly used theoretical approaches—particularly those based on set-points—do not always fit with data available for children and adolescents.

In this article, we first review some of the existing literature on this decreasing-with-age tendency in order to identify consistencies and inconsistencies in the previous findings. The article then contributes additional evidence to the current international debate by analyzing data from large representative samples of children—with younger participants than in previous research—using data from 15 countries and measuring SWB with different psychometric scales.

The oldest reference we have identified to focus on the decreasing-with-age tendency is in the article by Petito and Cummins (2000), which used a multi-item SWB scale—the ComQol-S5 (Comprensive Quality of Life Scale–School Version, Grades 7–12, by Cummins, 1997a)—in Australia with a sample of N = 279 adolescents aged 12–17. These authors observed significantly higher scores among the younger adolescents and considerably below normative adult levels for older adolescents. At the same time, they observed that primary control decreased with adolescent age while secondary control remained stable, and that both, together with perceived social support, predicted SWB (which, when measured with the ComQol-S5, these authors call "subjective quality of life").

The above authors used an 11-point scale and underlined that the increased number of choice points in relation to previous studies provided a more accurate and sensitive measure, as had been argued by Cummins and Gullone (2000). Petito and Cummins (2000) attributed this decrease to a demanding environment, more independence from parenting control, and conditions where primary

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control is increasingly failing and not substituted by secondary control strategies or substituted by secondary control strategies that disengage from goal achievement. These authors based their explanations on the two-process model of primary and secondary control proposed by Rothbaum, Weisz, and Snyder (1982), both of the studies they present finding primary control to be consistently used by all age groups and secondary control strategies to increase more with age.

In fact, researchers using 4-, 5-, or 6-point multi-item scales have presented contradictory results, some identifying a decreasing-with-age trend and some not. For example, using a 4-point version of the SLSS (Students' Life Satisfaction Scale, by Huebner, 1991) multi-item scale with a sample of $N = 254$ Israeli native and immigrant adolescents aged 12–18, Ullman and Tatar (2001) observed that junior-high school students reported significantly more satisfaction with their lives than their senior counterparts. Bradford, Rutheford, and John (2002), using a 5-point multi-item scale (the Quality of Life Profile–Adolescent Version [QOLPAV], by Raphael, Rukholm, Brown, Hill-Bailey, & Donato, 1996) on a sample of $N = 899$ young people aged 12–16 in England, observed significantly higher scores among participants aged 12 and 13 than among those aged between 14 and 16. Chang, McBride-Chang, Stewart, and Au (2003), using a 6-point multi-item scale (the MSLSS [Multidimensional Students' Life Satisfaction Scale], by Huebner, 1994) on a sample of $N = 189$ young people aged 7–14 in Hong Kong, observed that adolescents (aged 13–14) scored significantly lower in life satisfaction than children aged 7–8. And Park (2005), using the MSLSS and the 6-point version of the SLSS (Huebner, 1991) on a sample of $N = 736$ South Korean young people aged 10–17, observed significantly higher SWB scores at elementary than at middle school, with the same tendency between middle and high school. However, Suldo and Huebner (2006), using the 6-point version of the SLSS (Huebner, 1991) with a sample of $N = 1{,}201$ students aged 11–19 in South Carolina, the United States, and Meuleners and Lee (2005), also using the 5-point multi-item QOLPAV with a sample of $N = 363$ Australian adolescents from metropolitan Perth aged 10–18, did not identify any significant age differences in SWB.

With the exception of Suldo and Huebner's (2006) study, all of the other samples used by researchers were rather small. This is also the case with some of the more recent publications, such as the ones by Tomyn and Cummins (2011), who used the 11-point multi-item PWI-SC (Personal Well-Being Index–School Children, by Cummins & Lau, 2005) with a sample of $N = 351$ Australian adolescents aged 12–20 and observed that 12- and 13-year-olds scored significantly higher than older participants, and Uusitalo-Malmivaara (2014), who used the multi-item 7-point Subjective Happiness Scale (Lyubomirsky & Lepper, 1999) with a sample of $N = 339$ Finnish students aged 12–15 and found that both overall and school-related happiness had significantly decreased during the 3-year period.

Growing Interest in the Decreasing-With-Age SWB Tendency

From 2007 on, several articles published in scientific journals and using much larger samples continued to point out this decreasing tendency, in some cases even in their titles. Such is the case with Goldbeck, Schmitz, Nesier, Herschbach, and Henrich (2007), who used the multi-item 5-point FLZ scale (*Fragen zur Lebenszufriedenheit* = Questions on Life Satisfaction, by Henrich & Herschbach, 2000) with a sample of $N = 1{,}274$ German adolescents aged 11–16, and Casas, Figuer, González, and Malo (2007), who presented the results of two Spanish samples, one from 1999 ($N = 1{,}634$), and one from 2003 ($N = 1{,}618$), both conducted on 12- to 16-year-olds and using the 11-point single-item Overall Life Satisfaction scale (OLS, as suggested by Campbell, Converse, & Rogers, 1976) and a list of 19 items measuring satisfaction with different life domains—on a 5-point scale in 1999, and on an 11-point scale in 2003. These authors highlighted the fact that a decreasing-with age tendency was observed in the two samples, although mean scores for all ages did not disagree with the normative data expected from Western societies, according to Cummins (1998).

One very frequent situation is that of researchers who use diverse psychometric scales publishing data that display decreasing-with-age SWB in different countries without awarding any relevance to any specific interpretation of such results (Ullman & Tatar, 2001). On the other hand, in some cases the analyzed variable was "grade" or "school year" rather than "age"—with similar decreasing results (Park, 2005) and no specific analysis of this tendency either (Chang et al., 2003).

Uusitalo-Malmivaara (2014) has clarified that the tendency of SWB decreasing with age is not the complete flip side of the increasing-with-age depression demonstrated by several authors, considering increasing school challenges, peer problems, stress at school and school dissatisfaction as explanations for this decrease in SWB. Furthermore, Goldbeck et al. (2007) underlined the relationship

between general life satisfaction and health-related life satisfaction, with girls probably reporting much lower health-related life satisfaction due to their more critical self-perception and conflict with exaggerated cultural norms of beauty; however, these authors also concluded that "decreasing life satisfaction has to be considered a developmental phenomenon" (Goldbeck et al., 2007, p. 969).

A number of publications have still observed this tendency after using single-item psychometric scales, mainly the 11-point Cantril's Ladder (Cantril, 1965), which is the instrument used in the HBSC (Health Behavior in School-Aged Children), supported by the World Health Organization (http://www.hbsc.org/). The HBSC collects subjective data from children aged 11, 13, and 15 years of age, in 39 countries (European countries, the United States, and Canada). According to the 2009/10 report (Currie et al., 2012), the prevalence of positive life satisfaction declined significantly between ages 11 and 15 in almost all studied countries and regions for girls and in some for boys.

After reviewing the quoted scientific literature, it becomes evident that in most cases researchers are using different instruments, or the same instrument with different scoring methods. Although it is assumed that the different scales measuring SWB usually maintain high correlations with one another in research with adults, this is not so evident among children and adolescents, and most researchers unfortunately use only one measure.

Casas, Sarriera, et al. (2012) conducted a comparative analysis using two 11-point single-item scales (the OLS and the HOL [Happiness with Overall Life], as suggested by Campbell et al., 1976) and three 11-point multi-item scales (the Personal Well-Being Index [PWI, by Cummins, Eckersley, Pallant, Van Vugt, & Misajon, 2003], the Subjective with Life Scale [SWLS, by Diener, Emmons, Larsen, & Smith, 1985] and the Brief Multidimensional Students Life Satisfaction Scale [BMSLSS, by Seligson, Huebner, & Valois, 2003]) at the same time, with samples of adolescents from Spain (N = 2,900), Brazil (N = 1,588) and Chile (N = 843) aged from 12 to 16 in Brazil and Spain, and from 14 to 16 in Chile. Most correlations between the scales were between .5 and .6, suggesting that each psychometric instrument measured slightly different aspects of SWB, and therefore that the choice of instrument may lead to different results. On the other hand, all of the instruments showed a modest but constant and significant tendency to display lower scores the older the adolescents were.

Casas, Tiliouine, and Figuer (2013) conducted a comparative analysis using different versions of the 11-point multi-item PWI with samples of adolescents aged 13–20 in Algeria (N = 1,156) and Spain (N = 2,304) and observed a significant decrease in the PWI scores in the two countries with age, although this was much more pronounced in Algeria.

Thus far, we have seen that most publications include only data ranged between 11 or 12 and 16 (to 20) years of age. Very few researchers have collected data on children under 11. One of the exceptions is the research conducted by Marriage and Cummins (2004) on a sample of N = 66 Australian children aged 5–12 using the multi-item ComQol-I5 5-point scale (Cummins, 1997b), in which children from the younger group (5–8 years of age) displayed clearly lower scores than children from the older group (9–12). However, authors underlined that scores for this sample were consistent with normative data obtained from Australian adults. Given the small sample size, it is doubtful these results can be generalized.

This array of puzzling results has raised new research questions and challenges: at what age does the decreasing-with-age tendency (usually) start? At what age does it (usually) finish? Although longitudinal data are needed to properly answer these questions, there is some evidence suggesting that the age of "stabilizing" the decreasing tendency may change according to the sociocultural context. Data from Tomyn and Cummins (2011) highlighted that among Australian adolescents from 12 to 16 years of age the decreasing tendency may reach means clearly below the country's normative adult scores before "recovering" at age 17–18. However, data from Brazil suggest that SWB may stop decreasing at 16 (Casas, Sarriera, et al., 2012), whereas data from Romania (Bălţătescu, 2006) suggest it may go on decreasing after 20 years of age. When we attempt to answer the first question, at what age this tendency may start, we become even more confused, because data on SWB under the age of 12 are missing or very scarce and samples are usually very small.

Additionally, there are very few publications available on children and adolescents' SWB using longitudinal data. One notable exception addressing the decreasing-with-age issue is the research by González-Carrasco, Casas, Malo, Viñas, and Dinisman (2017), which uses the PWI and 11-point versions of the BMSLSS, OLS and HOL in a two-point longitudinal data collection (at a 1-year time interval) with a sample of N = 940 Spanish students aged 9–16 (mainly 10–14). Their analysis was based on five children's age-cohorts, corresponding to

their school class-group. These authors observed a significant decrease in SWB measured using any of the two multi-item instruments from the first to the second data collection in all cohorts except the first (children mostly aged 9 and 10), while when using any of the single-item scales the age decrease for both the first and fourth cohorts did not reach significance, suggesting differing degrees of sensitivity between single-item and multi-item scales. An important conclusion of this research is that although a decrease in SWB seems to start earlier among some children, significance in the decrease-with-age tendency starts to be observed among children who are in the grade where the majority of pupils are aged 11 and 12.

In another study using the same sample (González-Carrasco, Casas, Viñas, et al., 2017) and the single-item OLS scale, these authors observed a decrease in SWB over 1 year (from the first to the second data collection) among 40.2% of the children in the sample (41.5% of the boys and 39.2% of the girls); however, 38.3% retained the same scores and 21.5% increased their SWB over the year. Last but not least, these authors demonstrated that patterns in the SWB decreasing-with-age tendency differ among boys and girls.

Summarizing, the most recent scientific literature on this decreasing trend seems to clearly support the hypothesis that the trend is consistent in many countries. While there is some evidence that the trend may stop at different ages depending on the sociocultural context, there is no consistent evidence regarding the age at which it starts and none of the authors who claim the tendency starts at 12 have collected data for younger children.

However, trying to delimitate the age-interval when the decrease happens does not exhaust all research questions and challenges. We may also ask: is this decreasing tendency similar in all countries? That said, the most challenging questions are probably: why does this happen? And additionally: why we did not notice it before? Although different theoretical explanations have been proposed to this end, no consensus appears to have been reached (Holte et al., 2013). Although this article addresses some of these gaps, others will need further research and theoretical discussion in the future and, particularly, the collection of more longitudinal data.

Theoretical Debates

For decades, the overwhelming assumption has been that SWB (and particularly, life satisfaction) remains more or less stable throughout life at an individual level, and can therefore be represented by an almost "flat" graph. At the same time, at the population level and at any given moment in time, the graph was assumed to be a non-normal curve, with the mean value on the right-hand side of the Cartesian coordinates, usually named the *life optimistic biased curve*. It is only recently that both assumptions have been questioned with regard to several aspects: (a) due to the fact that most research on adults' SWB has been done in developed countries, it is unclear whether the same curve should be expected in developing countries; the *World Happiness Report* (Helliwell, Layard, & Sachs, 2011) has demonstrated that in many African and south Asian countries the curves are different; (b) some authors have argued that the most frequent curve at the individual level in some Western countries is "U-shaped," with a decrease in SWB at mid-adulthood and a recovery after about 55 years of age; explanations suggest that the decrease may be due to increasing demands of children, mortgage and work during this age period, which are related to increased stress (Cummins et al., 2011); (c) there are increasingly more data available on adolescent populations that contradict the assumption of a "flat" graph at the population level.

Most explanations for changes in SWB are based on the homeostatic theory (Cummins, 1995), and particularly the Homeostatic Protected Mood (Cummins, 2010), concepts which were developed in relation to adult well-being, and whether their tenets apply to children is therefore a major test of their validity (Cummins, 2013). However, few attempts to give grounded explanations for the decreasing-with-age SWB tendency can be identified in the scientific literature and the extent to which it does or does not fit with homeostatic theory is still unclear.

The aforementioned theory (Cummins, 2013) argues that SWB is a basic property of human experience and not a simple antonym of "ill-being," proposing that SWB is actively controlled and maintained by automatic neurological and psychological processes. The purpose of SWB homeostasis is to maintain a normally positive sense of well-being. Data from adult samples have been used to demonstrate that there is a notable stability in SWB scores at the population level. At the individual level, it is argued that each person has a set-point for his or her SWB which constitutes a genetically determined, individual difference. According to Cummins (2013), calculations based on data collection in different countries suggest a mean point of 75 of 100 in Western societies, indicating that each

set-point has a normal operating range of around 6 percentage points on either side of its mean and is rather stable. Homeostatic processes seek to maintain SWB within this set-point-range for each person (Cummins, 2013). No wealthy population is expected to display more than 75 + 6 = 81 points in any sample.

According to this theory, under normal levels of challenge, homeostatic processes maintain SWB within its set-point-range for each person through three levels of defense called "buffers." The first line of defense is behavior (i.e., avoiding strong challenges); the second line includes external buffers (i.e., relationship intimacy, providing social support; and money, allowing oneself to pay others to perform tasks one cannot do or does not wish to do). The third line includes internal buffers that alter the way we see ourselves (i.e., self-esteem, perceived secondary control, optimism). The combined external and internal buffers ensure that SWB is robustly defended, and this is the reason for its considerable stability.

While homeostatic functioning has received much support from empirical evidence, some authors have criticized the idea of set-point stability, and this is particularly difficult to defend when analyzing SWB among children and adolescents from different age groups in many different countries. For example, Tsai's (2016) results, using a youth panel aged 13–22 from Taiwan, challenge this stability assumption and the author points out that a genetic explanation is not very helpful, because other contextual and environmental factors are in operation. Neither is a genetic explanation supported by research comparing the SWB of parents and their children (Bedin & Sarriera, 2014; Casas, Coenders, et al., 2012).

Fujita and Diener (2005) found significant individual differences in the rate of change in life satisfaction and proposed a "soft version" of the set-point theory, because people's psychological adjustment strategies to objective conditions appear to be remarkably flexible, and the objective level of other people's living conditions in one's environment is often much less important than flexible coping strategies, such as whom one selects for comparison. Veenhoven (2009, p. 58) states that

> set-points must have developed in the past on the basis of experience . . . it is likely that set-points root in earlier affective and cognitive appraisals . . . (and) are likely to wane in the course of time and then be revised, in particular when major life-change urges to a reappraisal.

González-Carrasco, Casas, Malo, et al. (2017), based on results from longitudinal data, state that individuals' set-points change throughout their lifespan, as suggested by Mroczek and Spiro (2005), particularly during important biological and social transitions such as adolescence—hence the importance of considering the possibility that causes are not only environmental, but also developmental. In fact, Mroczek and Spiro (2005), using a nationally representative longitudinal annual panel study of Germans, found that 24% of respondents' life satisfaction changed significantly from the first 5 years to the last 5 years of their study (from 1984 to 2000), with almost 9% of the sample changing an average of 3 or more points on a 10-point scale.

Summarizing, while it is unclear whether the homeostatic theory may be useful in explaining the trend in children's and adolescents' SWB decreasing with age, some authors prefer to suggest that only one aspect of this theory should be reviewed: the stability of individual set-points. On the basis of our literature review, it would appear that some authors place special emphasis on results being within the expected range of scores (normative data) in Western societies as a way to "protect" the theory. However, data provided by children in many countries (i.e., from the Children's Worlds project) are clearly higher than these expected means, particularly in Western societies (Rees & Main, 2015). In addition, longitudinal data analysis suggests that set-points change during adolescence, although no research was identified on set-points during childhood.

The recent international Children's Worlds project (see Introduction of this Special Issue) is among the few that have collected data on children under 12 years of age and may therefore contribute new information regarding the age at which this tendency may start. As pointed out in the Introduction to this Special Section, the most outstanding limitation of using this database is probably that data were collected from 8-year-olds using different scales (five-graded emoticons) to those used for 10 and 12-year-olds (11-point scales), and they are therefore not strictly comparable.

However, because there is no other international source of information on the SWB of children under 11, we are using the Children's World database for a preliminary cautious—but broad—approach to new analysis and debate on the topic we address in this article. An additional advantage of using this database is that the consistency, validity and comparability of the multi-item scales included have

already been tested for the 10 and 12-year-old age groups by means of confirmatory factor analysis and multigroup structural equation modeling (Casas, 2016).

Aims of This Research

The main goal of this article is to analyze the scores of children aged between 7 and 14 using 3 multi-item and one single-item SWB scales in order to explore at what age the assumed decreasing-with-age trend might start and confirm whether or not the decreasing-with-age trend is supported in each of the 15 countries included in our database. Because previous research on this trend has not included large samples of children under 11, no hypothesis was formulated.

Method

All information regarding data collection, procedure and sample characteristics—including country and gender distributions—is provided in the Introduction article of this Special Section. The age distribution in the three samples used here is displayed in Table 1. None of the SWB scales analyzed here were included in the questionnaires administered to the 8-year-old group in Estonia or Poland, and these countries are therefore not included in the results for this age group.

The three Children's Worlds databases—one for each age group—were carefully scrutinized and submitted to additional depuration in order to exclude participants with many missing answers or inconsistent answers in relation to their SWB (i.e., extremely high scores on one scale and extremely low scores on another). After deleting all subjects with more than two missing values on any of the psychometric scales from the databases, the remaining missing values were substituted by regression, as implemented in version 19 of the SPSS (IBM – International Business Machines Co., Armonk, NY 10504, USA).

Table 1
Age Distribution by Age Groups, and by the Respective Scholar Course

	8-Years-old group	10-Years-old group	12-Years-old group	Total
7-Years-old	1,088	0	0	1,088
8-Years-old	10,666	0	0	10,666
9-Years-old	1,887	1,111	0	2,998
10-Years-old	191	12,989	0	13,180
11-Years-old	0	2,673	1,522	4,195
12-Years-old	0	219	12,679	12,898
13-Years-old	0	0	2,797	2,797
14-Years-old	0	0	218	218
Total	13,832	16,992	17,216	48,040

The OLS, SLSS, BMSLSS, and a reduced version of the PWI-SC (henceforth PWI-SC4) were used as indicators of SWB. As indicated in the Introduction of this Special Section, in the *Children's Worlds* database the PWI-SC has only four items, which are worded exactly the same across all age groups.

Data Analysis

As a first step in the data analysis procedure, the comparability of the psychometric scales used for the different age groups has been tested by means of Multi-group Confirmatory Factor Analysis (MCFA), using version 19 of AMOS (Amos Development Corporation, Wexford, PA 15090, USA).

This comparability analysis is very important due to the fact that, as stated earlier, we are aware that different scoring methods have been used in the scales of the 8-year-old children, than in the ones of the older children. Therefore, our departure point is to consider that results obtained from the 8-year-old age group may not be strictly comparable with those of the 10- and 12-year-olds.

A bootstrap Maximum Likelihood (ML) correction with AMOS19 has been used due to the fact that data presented higher multivariate kurtosis than desirable, as a consequence of the optimistic bias in children's answers. Maximum likelihood estimation has been used.

CFI (comparative fix index), RMSEA (root mean square error of approximation) and SRMR (standardized root mean square residual) have been used as fit indexes. We assumed that results higher than .950 for CFI and results below .05 for RMSEA and SRMR are excellent, in accordance with Batista-Foguet and Coenders (2000), Arbuckle (2010) and Byrne (2010). RMSEA values up to .08 have been considered as acceptable errors of approximation in larger samples (Browne & Cudeck, 1993; Byrne, 2010; Marsh et al., 2010), while a CFI of above .90 has been considered to reflect acceptable fit to the data (Marsh et al., 2010).

In order to meaningfully compare statistics across groups, measurement invariance is required. Three steps are required to check for this: (a) configural invariance (unconstrained variables); (b) metric invariance (constrained factor loadings); (c)

scalar invariance (constrained factor loadings and intercepts). Metric invariance allows meaningful comparison of correlations and regressions, while scalar invariance allows meaningful comparison of the latent means (Coenders, Batista-Foguer, & Saris, 2005). We therefore tested each multi-group model using these three steps. When any constraint was added to a model, a change in the CFI of more than .01 was considered unacceptable (Chen, 2007; Cheung & Rensvold, 2002).

As the next step, the overall indexes underwent a linear transformation for each psychometric scale into 0–100 scores in order to make comparisons of their overall means across age groups more visually friendly. All mean comparisons are presented four times, once with each of the four psychometric scales used here, in order to check how far results differ due to their different characteristics. Previous literature has demonstrated that despite the relatively high correlations usually observed among these scales, they do not capture the same aspects of SWB in every diverse context (Casas, Coenders, et al., 2012).

Results

Scale Comparability Across Age Groups

A CFA of the initial *SLSS* model using the pooled sample did not fit well statistically (Model 1 in Table 2). Adding one error covariance generated an acceptable model fit (Model 2 in Table 2). The multi-group models, when considering each age group as a different group for the statistical analysis, displayed excellent fit indexes, whether unconstrained (Model 3 in Table 2), with constrained loadings (Model 4 in Table 2) or with constrained loadings and intercepts (Model 5 in Table 2, and Figures 1–3), the decrease in the CFI after each additional constraint being lower than .01. Therefore, we can assume that the mean values for the SLSS scale are comparable among the three age groups.

A CFA of the *BMSLSS* version used here with the pooled sample displayed an excellent statistical fit (Model 6 in Table 2). The multi-group models, when unconstrained (Model 7 in Table 2), and with constrained loadings (Model 8 in Table 2) displayed excellent fit indexes. However, with constrained loadings and intercepts (Model 9 in Table 2), the decrease in the CFI was higher than acceptable. A detailed analysis of the model led to the surprising revelation that when deleting the 12-year-old group, the two remaining groups—8- and 10-year-olds—displayed scalar invariance ($\chi^2 = 338.43$; $df = 18$; p-value = .000; CFI = .984; RMSEA = .024 < .022–.028 >; SRMR = .010; ΔCFI = .009), that is to say, their means were comparable. However, when the 8-year-old group was deleted, scalar invariance was not acceptable ($\chi^2 = 663.97$; $df = 18$; p-value = .000; CFI = .973; RMSEA = .032 < .030–.034 >; SRMR = .022; ΔCFI = .013), indicating that the means of the 10- and 12-year-old groups are not comparable.

Table 2
Fit Statistics of the CFA of the Three Multi-Item Scales Used in This Study

Model		χ^2	*df*	*p*-Value	CFI	RMSEA [CI]	SRMR
1. SLSS	Pooled	2567.30	5	.000	.992	.103 [.100, .107]	.010
2. SLSS + 1 error covariance (1ec)	Pooled	485.31	4	.000	.998	.050 [.046, .054]	.004
3. SLSS + 1ec unconstrained	Multigroup	468.82	12	.000	**.997**	.028 [.026, .030]	.008
4. SLSS + 1ec constrained loadings	Multigroup	579.68	20	.000	**.996**	.024 [.022, .026]	.011
5. SLSS + 1ec constrained loadings & intercepts	Multigroup	1393.64	28	.000	**.990**	.032 [.030, .033]	.014
6. BMSLSS	Pooled	234.29	5	.000	.993	.031 [.028, .034]	.012
7. BMSLSS unconstrained	Multigroup	279.51	15	.000	**.992**	.019 [.017, .021]	.007
8. BMSLSS constrained loadings	Multigroup	385.42	23	.000	**.989**	.018 [.017, .020]	.010
9. BMSLSS constrained loadings & intercepts	Multigroup	1108.30	31	.000	.966	.027 [.026, .028]	.013
10. BMSLSS constrained loadings & semipart constrained intercepts	Multigroup	507.95	27	.000	**.985**	.019 [.018, .021]	.010
11. PWI-SC4	Pooled	107.17	2	.000	.996	.033 [.028, .039]	.013
12. PWI-SC4 unconstrained	Multigroup	124.12	6	.000	**.995**	.020 [.017, .023]	.013
13. PWI-SC4 constrained loadings	Multigroup	177.57	12	.000	**.994**	.017 [.015, .019]	.015
14. PWI-SC4 constrained loadings & intercepts	Multigroup	559.66	18	.000	.979	.025 [.023, .027]	.016
15. PWI-SC4 constrained loadings & semipart constrained intercepts	Multigroup	235.69	16	.000	**.992**	.017 [.015, .019]	.015

Note. SLSS = Students' Life Satisfaction Scale; BMSLSS = Brief Multidimensional Students' Life Satisfaction Scale; PWI-SC = Personal Well-Being Index–School Children; CFA = confirmatory factor analysis; CFI = comparative fix index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual.

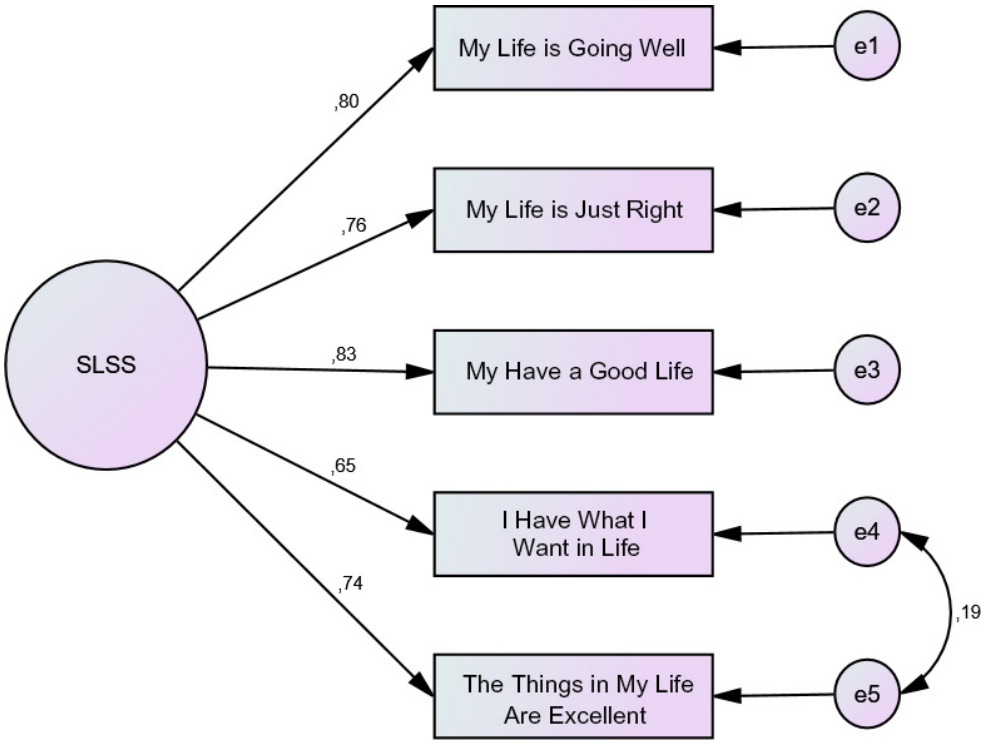

Figure 1. SLSS. Multigroup CFA. 8 year-olds. Constrained loadings and intercepts. CHI = 1,393.638; CFI = .990; RMSEA = .032; SRMR = .014. SLSS = Students' Life Satisfaction Scale; CFA = confirmatory factor analysis; CFI = comparative fix index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual. [Color figure can be viewed at wileyonlinelibrary.com]

An item-specific analysis showed that the lack of comparability between the 10- and 12-year-old groups was due to the different answer styles found in each group for two items: *Satisfaction with your family life* and *Satisfaction with your own body.* When a model with semi partial intercepts constraint (these two items unconstrained) was tested, the fit statistics were acceptable (Model 10 in Table 2, and Figures 4–6).

When testing a CFA of the *PWI-SC4* using the pooled sample, the initial model displayed an excellent statistical fit (Model 11 in Table 2). The multigroup models, when unconstrained (Model 12 in Table 2), and with constrained loadings (Model 13 in Table 2) displayed excellent fit indexes. However, with constrained loadings and intercepts (Model 14 in Table 2), the decrease in the CFI was higher than acceptable.

A detailed analysis of the model revealed that when deleting the 12-year-old group, the two remaining groups—8- and 10-year-old groups—displayed scalar invariance (χ^2 = 248.15; *df* = 10; *p*-value = .000; CFI = .984; RMSEA = .028 < .025–.031 >; SRMR = .015; ΔCFI = .010), that is to say, their means were comparable. When the 8-year-old group was deleted, scalar invariance was also acceptable (χ^2 = 186.82; *df* = 10; *p*-value = .000; CFI = .992; RMSEA = .023 < .020–.026 >; SRMR = .014; ΔCFI = .003), indicating that the means of the 10- and 12-year-old groups are also comparable. Given this apparently contradictory result, we performed an item-specific analysis, which showed that the lack of comparability can be attributed to the functioning of a single item: *Satisfaction with your relationships with other people in general.* When a model with semipartial intercepts constraint (this item unconstrained) was tested, the fit statistics were excellent (Model 15 in Table 2, and Figures 7–9).

Internal Consistency of Scales Across Age Groups

The standardized regression weights of each item on its latent variable are displayed in Table 3.

In general, we observe that these weights increased with age for all latent variables, with only two exceptions: *Satisfaction with your own body* constantly decreases and *Satisfaction with school*

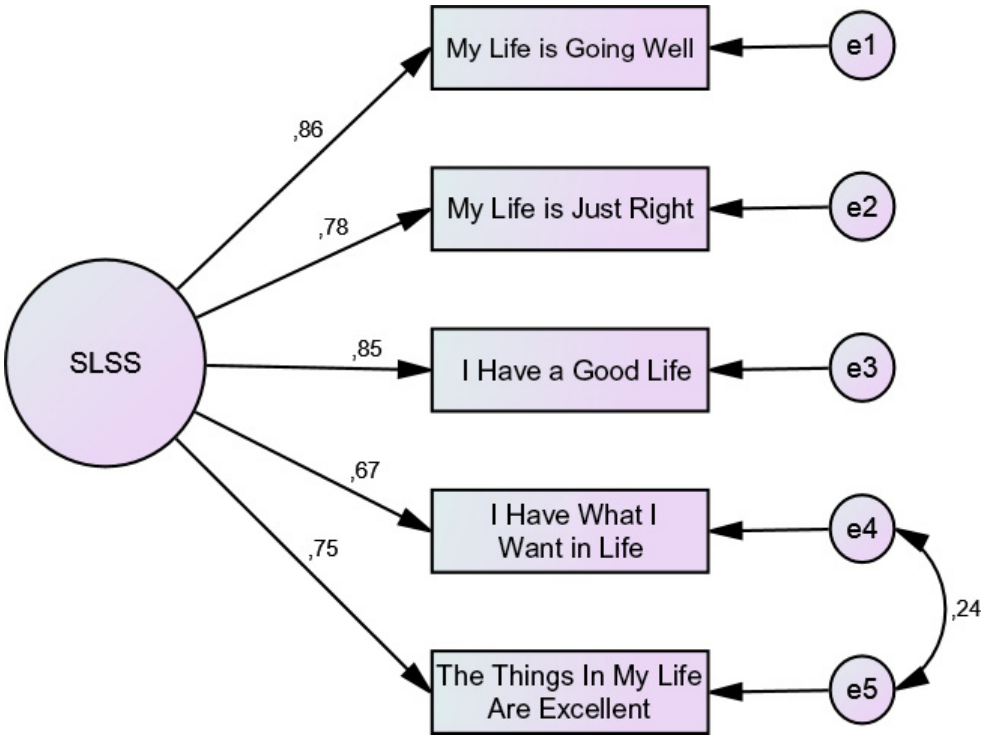

Figure 2. SLSS. Multigroup CFA. 10 year-olds. Constrained loadings and intercepts. CHI = 1,393.638; CFI = .990; RMSEA = .032; SRMR = .010. SLSS = Students' Life Satisfaction Scale; CFA = confirmatory factor analysis; CFI = comparative fix index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual. [Color figure can be viewed at wileyonlinelibrary.com]

experience slightly decreases from the 10- to the 12-year-old group.

Loadings on the latent SLSS were clearly higher than on the other two latent variables. The distribution of loadings was fairly homogeneous across the three age groups for the three psychometric scales, with some exceptions. With the SLSS, the item *I have a good life* displayed the highest contribution to the latent variable in the 8-year-old group, but the increase in contribution in the 10- and 12-year-old groups is less pronounced than for the item *My life is going well*, which displayed the highest contributions in the 10- and 12-year-old groups. With the BMSLSS, *Satisfaction with your own body*, which displayed the highest contribution in the 8-year-old group, showed the lowest contribution in the 12-year-old group, while *Satisfaction with school experience* made the highest contribution to its latent variable in the 12-year-old group. Finally, with the PWI-SC4, *Satisfaction with how safe you feel* displayed the highest contribution in all age groups, but *Satisfaction with all the things I have* was the lowest in the 12-year-old groups, because it displayed a slower increase than *Satisfaction with my relationships with other people in general*.

Comparison of Mean Overall SWB Scores Across Age Groups

The four psychometric scales used in this study coincided in displaying a significant increase in SWB from the 8- to the 10-year-old age groups, and a significant decrease from the 10 to 12 year-old age groups (see Table 4). In all cases, mean values were lower in the 12-year-old than in the 8-year-old group. The compensation between the initial increase and subsequent decrease resulted in a non-significant difference from the ages of 8 to 12 with all instruments.

When the single-item *OLS* scale was used as an indicator of SWB, we observed a decrease in the scores in the 15 countries of our sample from the 10-year-old to the 12-year-old age group, with no exceptions, although without reaching statistical significance in South Africa, Israel and Ethiopia (see Table 5). In contrast, there was a decrease from the 8-year-old to the 12-year-old age group in Spain and South Africa, even though the general tendency was a significant increase. Differences between the 8-year-old and 12-year-old groups were mostly nonsignificant, with values usually lower in the

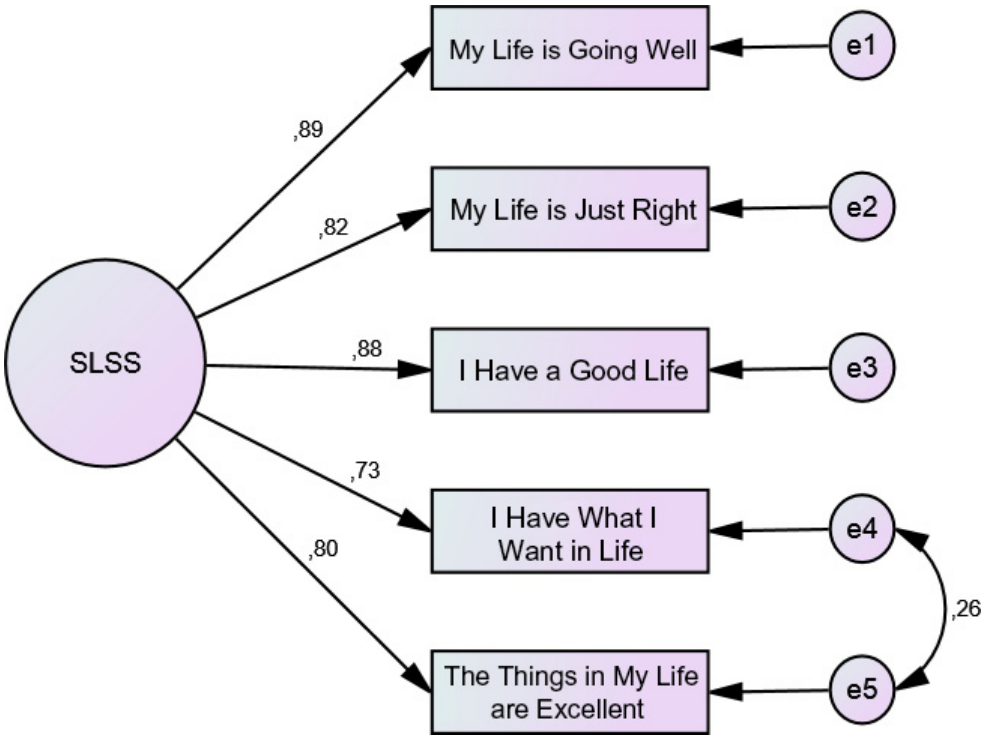

Figure 3. SLSS. Multigroup CFA. 12 year-olds. Constrained loadings and intercepts. CHI = 1,393.638; CFI = .990; RMSEA = .032; SRMR = .010. SLSS = Students' Life Satisfaction Scale; CFA = confirmatory factor analysis; CFI = comparative fix index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual. [Color figure can be viewed at wileyonlinelibrary.com]

latter group, except for Ethiopia; differences were only significant in Spain, Turkey and Romania.

When the multi-item *SLSS* is used as SWB indicator, we observe a decrease of the scores from 10- to 12-year-old group in 14 of the 15 studied countries, reaching statistical signification in 12 of them. Israel is the exception, because the mean increases, although not significantly (see Table 6). In contrast, from 8- to 10-year-old group an increase in the scores is observed in all countries, excepting South Africa and Algeria. As a consequence of these fluctuating changes, when we compare means at 8- and at 12-year-old groups, results are diverse and in seven countries are non-significant.

When the multi-item *BMSLSS* was used as an indicator of SWB, we observed a decrease in the scores from the 10- to 12-year-old groups in all countries, with no exceptions, this decrease reaching statistical significance in 8 of them (see Table 7). In contrast, an increase in the scores was observed in all countries between the 8- and 10-year-old age groups, excepting Spain, the United Kingdom, and South Africa. Once again, as a consequence of these fluctuating changes, when we compared the means of the 8- and 12-year-old groups, results were diverse: in seven countries there was a significant decrease, in three a significant increase, and in three no-significant change was observed.

Lastly, when the multi-item *PWI-SC4* was used as an indicator of SWB, we observed a decrease in the scores from the 10- to 12-year-old age groups in all studied countries, with no exceptions, although statistical significance was reached in 8 and not the other 7 (see Table 8). In contrast, an increase in scores was observed between the 8- and 10-year-old age groups in all countries, excepting Algeria, Spain, the United Kingdom, and South Africa. Once more, as a consequence of these fluctuating changes, when we compared the means of the 8- and 12-year-old groups, results were diverse: in two countries there was a significant decrease, in three a significant increase, and in eight no-significant change was observed.

Discussion

The comparability of scales among age groups was tested by means of MCFA. Our results lend strong

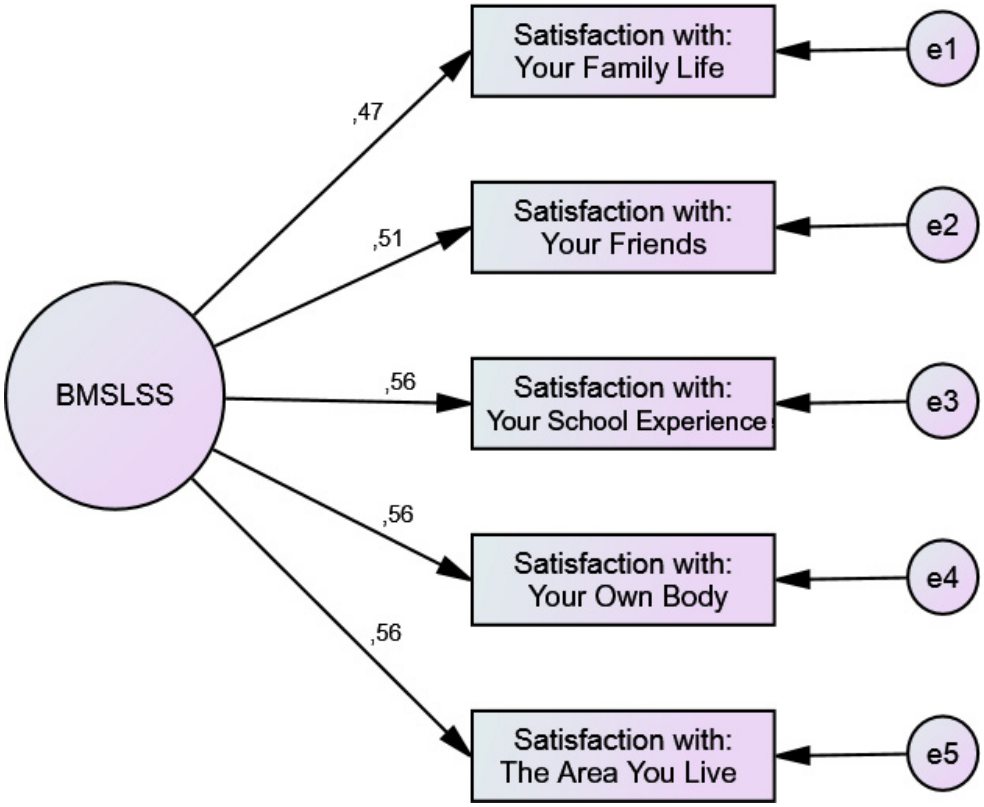

Figure 4. BMSLSS. Multigroup CFA. 8 year-olds. Constrained loadings and semipartial constrained intercepts. CHI = 507.951; CFI = .985; RMSEA = .019; SRMR = .010. BMSLSS = Brief Multidimensional Students' Life Satisfaction Scale; CFA = confirmatory factor analysis; CFI = comparative fix index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual. [Color figure can be viewed at wileyonlinelibrary.com]

support to the hypothesis that the SWB decreasing-with-age tendency starts at around 10 years of age in most countries, or even earlier in a few, and not about 12, as previous research appeared to suggest. The four psychometric scales used here reveal a decrease between the 10- and the 12-year-old group, which is significant in most countries, including when the pooled overall sample is used. This result also suggests that the trend is unrelated to school transition periods (i.e., from primary to middle or secondary school) since transitions do not take place at 10 in any country of our sample (depending on the country, the transition may take place at 8, 12 or 14). The remaining hypothesis would seem to be that this is a normal developmental phenomenon, as suggested by Goldbeck et al. (2007), which may start at around 10 years of age depending on the micro (i.e., family, school) and macro (i.e., country, cultural context) environment, and which has never previously been assumed to start around this age simply because no data were available on SWB for large samples of children of that age from several countries.

When we analyze the results country by country, some discrepancies are observed among the psychometric scales. The decreasing tendency is significant between the 10- and the 12-year-old group in 12 countries when using the OLS, and the same is true of the SLSS, whereas for the BMSLSS and PWI-SC4 it is eight countries—although not the same countries in each case. In fact, it is only in Ethiopia and Israel that the decrease does not reach significance for any of the scales used here. The decrease in South Africa is significant using the SLSS, but nonsignificant with the other three scales. In Nepal it is significant with the OLS, but with none of the others. A nonsignificant decrease is observed in Romania when using either of the two domain-based scales (the BMSLSS and the PWI-SC4), but it becomes significant with the two context-free scales. In Colombia and Norway, the BMSLSS does not capture a significant decrease, but the other three scales do. Finally, in the United Kingdom and Algeria, the PWI-SC4 does not capture a significant decrease, but the other three scales do.

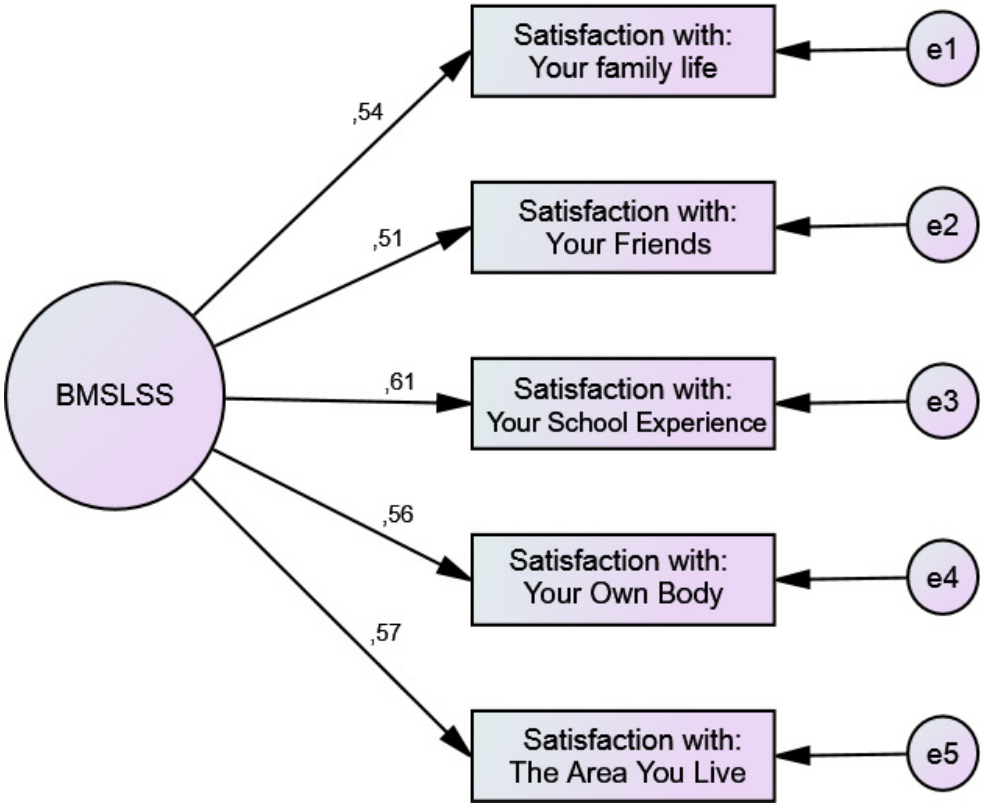

Figure 5. BMSLSS. Multigroup CFA. 10 year-olds. Constrained loadings and semipartial constrained intercepts. CHI = 507.951; CFI = .985; RMSEA = .019; SRMR = .013. BMSLSS = Brief Multidimensional Students' Life Satisfaction Scale; CFA = confirmatory factor analysis; CFI = comparative fix index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual. [Color figure can be viewed at wileyonlinelibrary.com]

Therefore, one apparent conclusion would be that for a few countries support for the hypothesis of the SWB decreasing-with-age tendency starting around 10 years of age will depend on the psychometric scale used as a SWB indicator. Once again, we have seen that the most frequently used SWB psychometric scales display different sensitivities in capturing changes, probably due to the different sociocultural contexts in which they are applied (Casas, Sarriera, et al., 2012). However, the question of whether inconsistencies appear due to the country, the scale, or interaction between all three cannot be solved by our analysis, and will require more in-depth research. In general, the context-free scales seem to report significant changes in more countries than the domain-based scales. This result could be related to the fact that multi-item context-free scales display better cross-cultural comparability than domain-based scales (Casas, 2016) and is worth exploring in more detail in future research.

In contrast, SWB seems to generally increase in most countries between the 8- and the 10-year age group, albeit with a few exceptions. This result is consistent with data obtained by Marriage and Cummins (2004) and raises the hypothesis that SWB may increase throughout childhood up to the age of 8 or 10. However, exploring this possibility requires the availability of new instruments adapted for younger ages. In our results, the increase from 8 to 10 is significant in 11 countries using the OLS, in 11 with the SLSS, in 10 with the BMSLSS and in 8 with the PWI-SC4. However, significant decreases are observed in Spain with the OLS, and in South Africa and Algeria with the SLSS. Therefore, in these three countries the decreasing-with-age trend may start at 8, but this is not confirmed by the other instruments used, and there does not appear to be any known common cultural characteristic that may explain why this trend starts earlier in only these countries. Additionally and curiously, a significant increase is displayed with the SLSS in Spain, whereas nonsignificant changes are observed when using the domain-based scales (the BMSLSS and the PWI-SC4); Algeria displays a significant

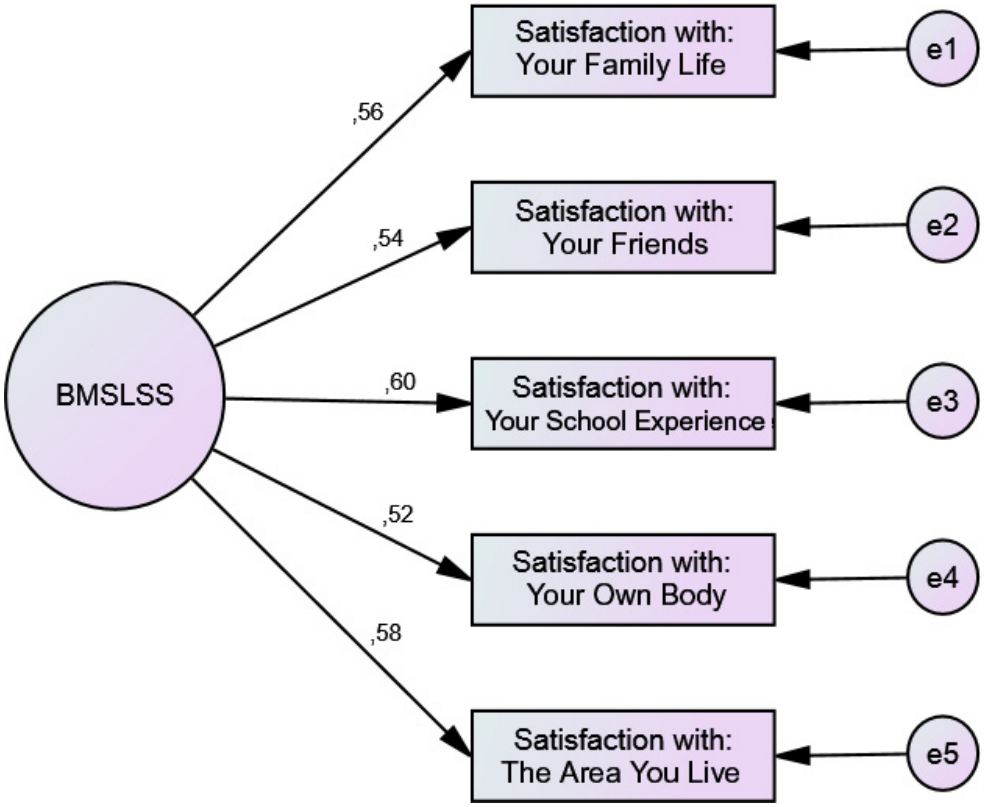

Figure 6. BMSLSS. Multigroup CFA. 12 year-olds. Constrained loadings and semipartial constrained intercepts. CHI = 507.951; CFI = .985; RMSEA = .019; SRMR = .013. BMSLSS = Brief Multidimensional Students' Life Satisfaction Scale; CFA = confirmatory factor analysis; CFI = comparative fix index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual. [Color figure can be viewed at wileyonlinelibrary.com]

increase with the OLS and the BMSLSS and a nonsignificant change with the PWI-SC4; and South Africa displays nonsignificant changes with the other three scales. However, in the United Kingdom a significant increase is observed between the 8- and the 10-year-old group when using the context-free scales, but nonsignificant decreases when using the domain-based scales. Finally, in Nepal nonsignificant changes are displayed using the PWI-SC4, compared to significant increases with the three other scales. The most plausible explanation is that psychometric SWB scales with different characteristics are not consistent enough in some cultural contexts, at least with these age groups, and more research is therefore needed to determine the reasons for such inconsistences.

In summary, notable discrepancies appear in the results displayed by the different SWB psychometric scales in a considerable number of countries, although they are fairly similar in many others. In our review of the scientific research in this field, we identified 13 different psychometric scales that have so far been used as indicators of SWB in studies reporting decreasing-with-age trend, but on the basis of our results it is not surprising that other studies have not identified this trend. Therefore, we can conclude that our results do not support those of some other authors who have analyzed adult scores with single-item and multi-item SWB scales and state that they perform very similarly and that "social scientists would get virtually identical answers to substantive questions regardless of which measure they use" (Cheung & Lucas, 2014, p. 2809).

After observing the fluctuating scores when comparing one age group to an older one, it was expected that the comparison between the 8- and the 12-year-old group would display diverse results; however, differences are nonsignificant in most cases, because increases from 8 to 10 appear to be compensated for in some way by decreases between 10- and 12-year-olds.

The results in this study surpass the expected mean scores reported as normative data for the

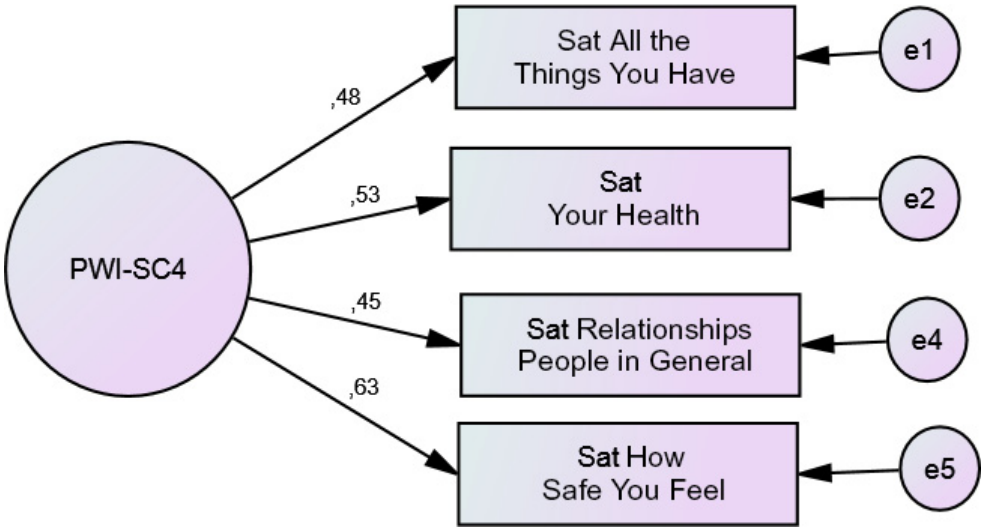

Figure 7. PWI-SC4. Multigroup CFA. 8 year-olds. Constrained loadings and semipartial constrained intercepts. CHI = 235.688; CFI = .992; RMSEA = .017; SRMR = .015. PWI-SC = Personal Well-Being Index–School Children; CFA = confirmatory factor analysis; CFI = comparative fix index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual. [Color figure can be viewed at wileyonlinelibrary.com]

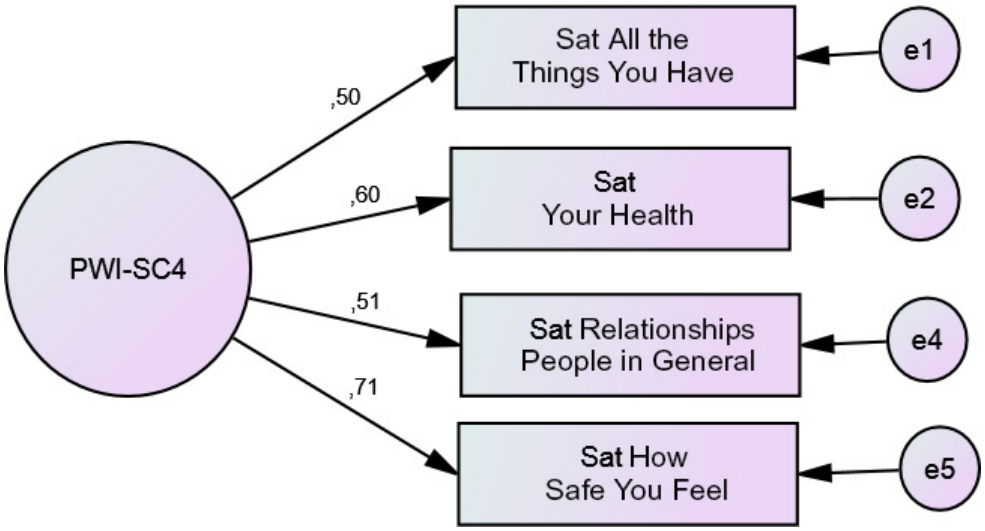

Figure 8. PWI-SC4. Multigroup CFA. 10 year-olds. Constrained loadings and semipartial constrained intercepts. CHI = 235.688; CFI = .992; RMSEA = .017; SRMR = .010. PWI-SC = Personal Well-Being Index–School Children; CFA = confirmatory factor analysis; CFI = comparative fix index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual. [Color figure can be viewed at wileyonlinelibrary.com]

adult population (75 ± 5 points on a 0–100 scale in Western societies, according to Cummins, 2010, 2013) in all countries. Additionally, the set-point-range in several countries is far from "about six percentage points," as theorized. Although scores may differ greatly depending on the psychometric scale considered as a SWB indicator, when analyzing differences between the 10 and the 12-year-old groups, in South Korea, for example, they are as high as 11.89 percentage points using the SLSS, 10.92 using the OLS, 8.40 using the BMSLSS and 7.34 using the PWI-SC4; domain-based scales display higher variations than context-free scales in almost all countries; for example, more than 7

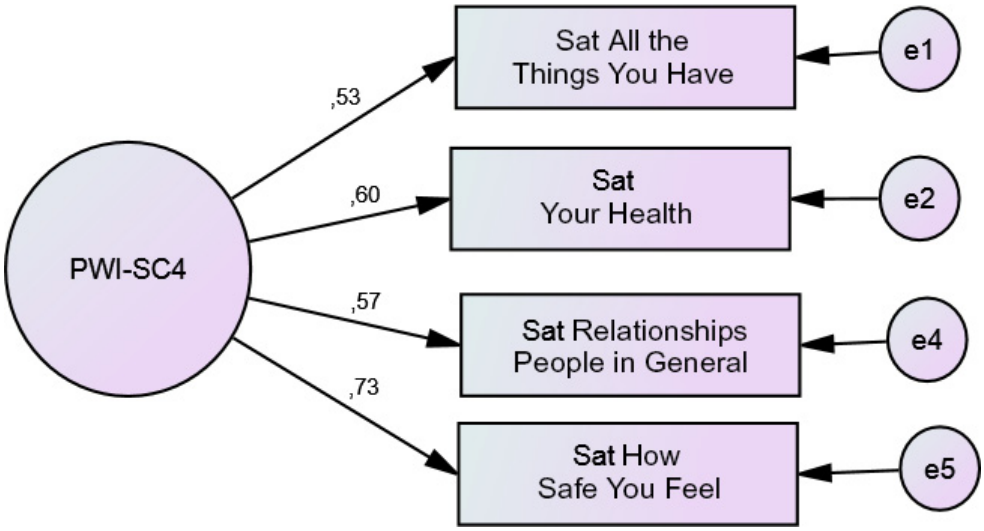

Figure 9. PWI-SC4. Multigroup CFA. 12 year-olds. Constrained loadings and semipartial constrained intercepts. CHI = 235.688; CFI = .992; RMSEA = .017; SRMR = .010. PWI-SC = Personal Well-Being Index–School Children; CFA = confirmatory factor analysis; CFI = comparative fix index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual. [Color figure can be viewed at wileyonlinelibrary.com]

Table 3
Standardized Regression Weights of the Items of Each Scale on Its Latent Variable

Bootstrap ML. 95% confidence intervals. Sample = 500	8-Year-olds group				10-Year-olds group				12-Year-olds group			
Parameter	Estimate	Lower	Upper	*p*	Estimate	Lower	Upper	*p*	Estimate	Lower	Upper	*p*
LifeGoingWell ← SLSS	.798	.787	.810	.004	.857	.846	.865	.005	.891	.884	.897	.007
LifeJustRight ← SLSS	.755	.744	.768	.003	.779	.766	.793	.004	.822	.810	.833	.004
HaveGoodLife ← SLSS	.826	.817	.837	.003	.852	.841	.862	.004	.878	.868	.887	.003
HaveWhatWant ← SLSS	.653	.643	.665	.004	.673	.659	.687	.005	.726	.715	.735	.004
ThingsLifeExcellent ← SLSS	.745	.736	.757	.003	.754	.742	.767	.004	.796	.786	.804	.005
SatisfiedFamilyLife ← BMSLSS	.449	.434	.465	.003	.527	.509	.545	.005	.548	.534	.565	.002
SatisfiedFriends ← BMSLSS	.506	.491	.525	.003	.509	.491	.528	.004	.540	.526	.555	.002
SatSchoolExperience ← BMSLSS	.559	.543	.577	.004	.606	.588	.622	.007	.603	.587	.621	.005
SatisfiedBody ← BMSLSS	.570	.554	.586	.005	.568	.554	.586	.003	.527	.512	.542	.004
SatisfiedAreaGeneral ← BMSLSS	.556	.541	.574	.003	.565	.549	.581	.004	.576	.562	.591	.004
SatisfiedThingsHave ← PWISC4	.478	.462	.493	.008	.499	.480	.516	.005	.527	.509	.543	.007
SatisfiedHealth ← PWISC4	.533	.515	.553	.004	.603	.586	.622	.002	.607	.593	.623	.003
SatRelationshipsGenerl ← PWISC4	.441	.425	.456	.004	.507	.489	.526	.003	.573	.556	.588	.004
SatisfiedSafety ← PWISC4	.632	.613	.651	.005	.717	.699	.735	.004	.734	.718	.752	.004

Note. Multigroup CFA with constrained loadings and intercepts. SLSS = Students' Life Satisfaction Scale; BMSLSS = Brief Multidimensional Students' Life Satisfaction Scale; PWI-SC = Personal Well-Being Index–School Children; CFA = confirmatory factor analysis.

percentage points of variation are also observed in Germany, Colombia, Spain and Poland when using the SLSS.

The results presented here do not appear to conflict with the functioning of a homeostatic system based on buffers that maintain a set-point range for each person, but they definitively do not support the hypothesis that set-points are stable, at least during childhood and adolescence. Rather, set-points seem to evolve depending on interactions with each specific sociocultural context, which have a major influence on the developmental process for each child. Our results support important set-point changes taking place in countries such as South

Table 4
Mean Comparison on a 0–100 Scale of the Overall Indexes of Each Psychometric Scale Used in This Study, by Age Group

	8 Years-old group	10 Years-old group	12 Years-old group	Significant difference 8–10	Significant difference 10–12	Significant difference 8–12
OLS	89.50	91.08	86.21	↑*	↓*	*ns*
SLSS	84.51	87.73	82.42	↑*	↓*	*ns*
BMSLSS	87.28	88.65	84.22	↑*	↓*	*ns*
PWI-SC4	87.40	89.11	85.76	↑*	↓*	*ns*

Note. Pooled sample. *ns* = nonsignificant difference; OLS = Overall Life Satisfaction; SLSS = Students' Life Satisfaction Scale; BMSLSS = Brief Multidimensional Students' Life Satisfaction Scale; PWI-SC = Personal Well-Being Index–School Children.
*$p > .001$.

Table 5
SWB Measured With the OLS, by Country and Age Group

	8 Years-old group	10 Years-old group	12 Years-old group	Overall mean	Significant difference 8–10	Significant difference 10–12	Significant difference 8–12
Algeria	91.23	92.75	90.27	91.23	↑*	↓*	↓*ns*
Nepal	85.42	87.27	84.81	85.42	↑*	↓**	↓*ns*
Estonia		91.92	87.56		—	↓*	—
Spain	93.53	92.99	88.10	93.53	↓***	↓*	↓**
Colombia	95.08	95.38	93.75	95.08	↑***	↓**	↓*ns*
Turkey	93.21	96.05	89.19	93.21	↑*	↓*	↓*
Ethiopia	82.50	87.88	86.85	82.50	↑*	↓*ns*	↑*
South Korea	85.29	86.02	75.10	85.29	↑*	↓*	↓*ns*
Germany	90.16	90.91	84.82	90.16	↑*	↓*	↓*ns*
United Kingdom	87.51	88.92	84.06	87.51	↑*	↓*	↓*ns*
Israel	91.30	92.44	90.97	91.30	↑*	↓*ns*	↓*ns*
Romania	95.02	96.05	94.75	95.02	↑*	↓*	↓***
Norway	90.32	92.35	87.85	90.32	↑*	↓*	↓*ns*
Poland		92.13	83.46		—	↓*	—
South Africa	88.28	88.16	86.36	88.28	↓*ns*	↓*ns*	↓*ns*

Note. No data available in Estonia and Poland for the 8-year-olds group. *ns* = nonsignificant difference; SWB = subjective well-being; OLS = Overall Life Satisfaction.
*$p > .001$. **$p > .01$. ***$p > .05$.

Korea, Germany, Turkey, Spain, and Poland using any of the four psychometric SWB scales. However, because results for the different psychometric SWB scales are not consistent in some countries, from our data we cannot know to what extent different social and cultural conditions may separately influence set-point changes and the understanding of items on each scale—and therefore its scores—or both.

Limitations and Future Challenges

The mean comparisons presented in this study when using multi-item psychometric scales must be considered with caution. Although fit statistics for the SLSS support its comparability among the three age groups, we must remember that the 8-year-old groups used different scoring methods. Furthermore, our item analysis highlighted that two items on the BMSLSS and one on the PWI-SC4 display different answering styles across groups, even when the 10- and 12-year-old groups are compared. We must also therefore be cautious when comparing these two groups, even though they answered using scales with the same scoring methods.

A cross-sectional survey like the one presented here does not allow for the inference of causal relationships. However, it does help us to think about the diverse influence of different sociocultural environments on SWB changes, in coherence with what some authors have called the *positive youth development approach* (Larson, 2006).

Table 6
SWB Measured With the SLSS, by Country and Age Group

	8 Years-old group	10 Years-old group	12 Years-old group	Overall mean	Significant difference 8–10	Significant difference 10–12	Significant difference 8–12
Algeria	87.49	87.17	85.86	86.86	↓*	↓*	↓***
Nepal	77.23	84.85	80.00	80.78	↑**	↓*ns*	↑*ns*
Estonia		85.98	81.04	83.51	—	↓***	—
Spain	87.31	91.13	84.71	87.22	↑*	↓*	↓*ns*
Colombia	88.65	91.04	87.30	89.02	↑*	↓*	↓*ns*
Turkey	87.14	92.77	85.02	88.47	↑*	↓*	↓*ns*
Ethiopia	75.14	83.24	79.67	79.34	↑*	↓*ns*	↑*
South Korea	78.70	83.36	71.47	77.75	↑*	↓*	↓*ns*
Germany	83.78	87.36	80.11	84.08	↑*	↓*	↓*ns*
United Kingdom	83.01	86.89	83.41	84.39	↑*	↓*	↑*ns*
Israel	87.69	88.29	88.67	88.18	↑*	↑*ns*	↑**
Romania	90.79	94.27	92.88	92.72	↑*	↓**	↑*
Norway	86.73	90.33	87.97	88.37	↑*	↓***	↑*
Poland		87.95	80.55	84.50	—	↓*	—
South Africa	91.96	85.13	80.85	85.76	↓*	↓***	↓*

Note. No data available in Estonia and Poland for the 8-year-olds group. *ns* = nonsignificant difference; SWB = subjective well-being; SLSS = Students' Life Satisfaction Scale.
*p > .001. **p > .01. ***p > .05.

Table 7
SWB Measured With the BMSLSS, by Country and Age Group

	8 Years-old group	10 Years-old group	12 Years-old group	Overall mean	Significant difference 8–10	Significant difference 10–12	Significant difference 8–12
Algeria	88.84	89.24	86.26	88.16	↑**	↓**	↓*ns*
Nepal	82.78	85.77	84.82	84.49	↑**	↓*ns*	↓*
Estonia		88.54	82.93	85.73	—	↓*	—
Spain	92.08	90.41	85.50	88.63	↓*ns*	↓**	↓*
Colombia	90.86	92.36	89.81	91.02	↑**	↓*ns*	↓**
Turkey	91.93	93.76	87.38	91.07	↑*	↓*	↓*
Ethiopia	80.63	84.09	83.11	82.61	↑*	↓*ns*	↑*
South Korea	84.55	85.48	77.28	82.35	↑***	↓*	↓**
Germany	84.03	86.73	80.63	84.07	↑*	↓*	↓*ns*
United Kingdom	86.72	86.57	82.12	84.84	↓*ns*	↓***	↓***
Israel	86.40	89.23	86.89	87.69	↑**	↓*ns*	↑**
Romania	90.81	92.85	91.53	91.76	↑*	↓*ns*	↑*
Norway	90.29	91.45	88.02	89.93	↑**	↓*ns*	↓*ns*
Poland		89.34	82.00	85.92	—	↓*	—
South Africa	88.01	86.66	83.28	85.89	↓*ns*	↓*ns*	↓***

Note. No data available in Estonia and Poland for the 8-year-olds group. *ns* = nonsignificant difference; SWB = subjective well-being; BMSLSS = Brief Multidimensional Students' Life Satisfaction Scale.
*p > .001. **p > .01. ***p > .05.

Much more research is needed in this field, and in more countries, particularly to identify the strengths and weaknesses of each measure in different sociocultural contexts, while more longitudinal studies are needed to identify the causes of this decreasing-with-age tendency.

Last but not least, whenever decision makers need to collect data on children's SWB at the population level, both to be used as social indicators or in program evaluation design, it is recommended they use more than one psychometric instrument as indicators of SWB—preferably with different

Table 8
SWB Measured With the PWI-SC4, by Country and Age Group

	8 Years-old group	10 Years-old group	12 Years-old group	Overall mean	Significant difference 8–10	Significant difference 10–12	Significant difference 8–12
Algeria	87.91	86.31	85.22	86.52	↓*ns*	↓*ns*	↓*ns*
Nepal	81.99	83.77	81.72	82.50	↑*ns*	↓*ns*	↓*ns*
Estonia		88.66	85.38	87.02	—	↓***	—
Spain	91.96	91.23	87.86	89.90	↓*ns*	↓***	↓*ns*
Colombia	91.48	93.10	90.54	91.72	↑*	↓**	↓*ns*
Turkey	91.59	94.53	89.16	91.85	↑*	↓*	↓**
Ethiopia	77.48	82.56	81.07	80.37	↑*	↓*ns*	↑*
South Korea	84.18	85.33	77.99	82.43	↑***	↓*	↓*
Germany	88.58	90.74	86.37	88.76	↑*	↓*	↓*ns*
United Kingdom	87.97	87.90	86.50	87.36	↓*ns*	↓*ns*	↓*ns*
Israel	88.12	90.50	90.12	89.61	↑*	↓*ns*	↑*
Romania	92.16	94.35	93.51	93.39	↑*	↓*ns*	↑*
Norway	90.75	92.96	90.17	91.31	↑*	↓*	↓*ns*
Poland		91.91	85.70	89.01	—	↓*	—
South Africa	86.16	85.86	84.48	85.47	↓*ns*	↓*ns*	↓*ns*

Note. No data available in Estonia and Poland for the 8-year-olds group. *ns* = nonsignificant difference; SWB = subjective well-being; PWI-SC = Personal Well-Being Index–School Children.
*$p > .001$. **$p > .01$. ***$p > .05$.

characteristics—in order to avoid the obvious potential biases of using only one instrument.

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