Current Psychology (2021) 40:629–638
https://doi.org/10.1007/s12144-018-9981-9

Past, present, and future life satisfaction: The role of age, positive and negative mood

Alba Carrillo [1,2] · Ernestina Etchemendy [2,3] · Rosa M. Baños [1,2]

Published online: 5 September 2018

Abstract
Life satisfaction (LS) is one of the key elements of subjective wellbeing (SWB). The Temporal Satisfaction with Life Scale (TSWLS; Pavot et al. 1998) measures LS including its temporal aspects, and provides scores for past, present, and future LS. The aim of this study was to replicate the three-factor structure found in previous studies in a Spanish-speaking general population, to analyze potential differences in temporal LS on different age groups and gender, and to explore the relationships between past, present, and future LS and the affective components of SWB (positive and negative mood). The sample consisted on 491 participants with an age range of 18 to 80 years old ($M = 32.07$, $SD = 14.59$). Confirmatory factor analysis, bivariate Pearson's correlations, and multiple regression analyses were conducted. Results confirmed the three-factor structure of the scale and its good psychometric properties. All participants showed higher levels of present LS than past LS, and older respondents presented higher levels of present LS than future LS. No gender differences were found, but younger respondents scored higher on future LS than older ones. Significant correlations were found between mood and temporal LS, and happiness emerged as a predictor of present LS, whereas positive affect was a predictor of past and future LS. Negative mood played a minor role as a predictor of temporal LS. These findings shed light on the patterns of past, present, and future LS in different age groups, and contribute to the knowledge about how mood and temporal LS are related.

Keywords Satisfaction with life · Subjective wellbeing · Temporal satisfaction with life scale · Affect · Happiness

Introduction

Subjective Wellbeing (SWB) has been defined as a multifaceted concept that refers to people's overall emotional experiences and their appraisals of their own life (Diener et al. 2017). Thus, it can be divided into the equilibrium between positive and negative experienced emotions and mood (e.g. frequent feelings of happiness or absence of depressive symptoms) and the cognitive evaluation of one's life, also known as "life satisfaction" (LS) (Diener 1994; Pavot and Diener 1993; Lucas et al. 1996; Luhmann et al. 2012). These two factors are interrelated, and even though LS is somewhat stable in time, it can be influenced by life events and affective states: when people make judgments about their LS, the balance between positive and negative emotions and the valence of their experiences influence on their responses (Kuppens et al. 2008; Lucas et al. 1996). There are significant correlations between the affective and cognitive components of SWB. Certainly, general LS has consistently been found to be positively related to the frequency of pleasant emotions and negatively related to negative mood, depressive symptoms, and other clinical measures of distress (e.g. Diener and Lucas 2000; Kuppens et al. 2008; Lucas et al. 1996; Nes et al. 2013; Suh et al. 1998). However, both constructs are independent and need to be measured separately (Lucas et al. 1996; Pavot and Diener 2008).

Several approaches have been used to measure LS. One of them is the well-known *Satisfaction With Life Scale* (SWLS) (Diener et al. 1985), a brief 5-item assessment of one's general sense of satisfaction with life as a whole. It is a widely used measurement, and it has shown good psychometric properties in a plethora of studies (see Pavot and Diener 2008; Vassar

✉ Alba Carrillo
alba.carrillo@uv.es

[1] University of Valencia, Valencia, Spain

[2] PROMOSAM Excellence in Research Program, Ministry of Economy and Competitiveness, Valencia, Spain

[3] University of Zaragoza, Teruel, Spain

2008). It has been translated into many languages (e.g. Spanish, French, German or Czech) and assessed in different cultures (see Pavot and Diener 2008) and contexts (e.g. Arrindell et al. 2001; Elliott et al. 2001). However, this scale does not include the temporal aspect of LS in the global assessment of the construct. Therefore, when asked to make judgments about their life as a whole, respondents may wonder whether the question refers to all aspects of their current life, their life over time, or both (Pavot et al. 1998). Depending on the focus that respondents may choose, their responses will likely be different. Furthermore, the original items of the scale seem to reflect different temporal foci (Pavot et al. 1998; Pavot and Diener 2008). For example, item #5 ("If I could live my life over, I would change almost nothing") seems to imply a past orientation, and it has shown lower correlations with the rest of the scale, whereas other items seem to refer to a present orientation or a temporal summary, yet they do not provide temporal cues. For example, in the item #3 ("I am satisfied with my life") respondents might answer by thinking about their recent days, months, or years, visualizing a future event that is coming soon, or even thinking about a traumatic past event in their childhood. Adding temporal specificity may not eliminate all the potential sources of error when assessing LS, but it can prompt the focus on a specific time frame, and thus permit a more accurate assessment of LS (Pavot et al. 1998).

The *Temporal Satisfaction with Life Scale* (TSWLS) was developed to overcome these limitations (Pavot et al. 1998). It comprises 15 questions derived from the 5 original items on the SWLS, and it measures LS on three temporal axes: past, present, and future. Hence, it makes it possible to examine more comprehensively the level of LS across the different portions of the lifespan. For example, the original item "I am satisfied with my life" was reworded as "I am satisfied with my life in the past" (past LS), "I am satisfied with my current life" (present LS), and "I will be satisfied with my life in the future" (future LS). Therefore, the questionnaire has three subscales, each corresponding to a temporal focus: past LS (items 1 to 5), present LS (items 6 to 10), and future LS (items 11 to 15). In the original work by Pavot and colleagues (Pavot et al. 1998), a three-factor structure was found, corresponding to the three subscales (past, present, and future LS) along three studies with University students, adults and older adults, respectively. The scale has been validated in several languages with mixed results regarding its structure, which were applied to samples either young (McIntosh 2001; Ye 2007) or old (Tomás et al. 2016). The three-factor structure was confirmed in a Canadian construct validity study (McIntosh 2001) within a young sample of undergraduates, and partially confirmed in a non-western context, in which a Chinese validation (Ye 2007) also found this structure in University students but excluding the first and fifth items from each subscale (items 1, 5, 6, 10, 11, and 15). There is a German adaptation (Trautwein 2004) only available in German language that could not be reviewed for this study. On the other hand, a Spanish version of the scale applied in an elderly population (55 to 92 years old) found, unlike previous studies, a bifactorial model to be the structure with the best fit, with one general dimension of life satisfaction and three domain-specific factors of past, present, and future LS (Tomás et al. 2016). These divergences might be due to the fact that LS scores can be sensitive to age: life experiences and satisfactions can be different across different developmental stages (Pavot et al. 1998; Pavot and Diener 2008). In this sense, Proyer et al. (2011) analyzed the scores of the TSWLS among different age stages in a German-speaking women sample with a German version the scale that comprised 12 items (Trautwein 2004). It was found that females of 41 to 55 years old scored significantly lower on past LS than younger and older participants. However, this study included only German-speaking women, and no other studies have carried out specific analyses comparing past, present, and future LS in different age stages neither with other language variants of the scale. In addition, given that the aforementioned validation studies only included samples that were either young or old, it is still necessary to explore how temporal LS is related to age, and to confirm the structure of the scale with a broader sample. On the other hand, although LS tends to be stable among males and females, results on temporal LS are not clear: whereas the original study (Pavot et al. 1998) and the subsequent construct validity study (McIntosh 2001) found no significant differences depending on gender, the Chinese validation study found that females scored significantly higher on past LS than males (Ye 2007). Consequently, there is a need to further explore whether there are differences between males and females in temporal LS.

As previously sated, mood and LS have been consistently found to be correlated, but the knowledge about the nature of this relationship is still scarce in the case of temporal LS. Only two studies explored the relationship between mood and LS including its temporality, which involved diverse mood measures and found different results regarding the weight of the correlations. Authors of the original validation of the TSWLS (Pavot et al. 1998 Study 3) found significant positive correlations between

happiness and temporal LS in a study with older participants (which were moderate to large in the case of past LS, small in the case of present LS, and moderate for future LS according to Cohen 1988), and significant negative large correlations between depressive symptoms and temporal LS (past, present and future LS). Sailer et al. (2014) found significant positive correlations between temporal LS and positive affect (small in the case of past LS, large for present LS and moderate for future LS), and significant negative correlations between this construct and negative affect (moderate to large in all cases) in a sample of university students and attendants to a gym complex from Sweden. Although both studies found similar negative correlations among temporal LS and negative mood (negative affect or depressive symptoms), it is worth to note that some differences emerged in the magnitude of the correlations of the positive measures. In the first study (Pavot et al. 1998), happiness showed a stronger correlation with past LS comparing with present and future LS, and the second mentioned study (Sailer et al. 2014) found an opposite result for positive affect: present and future LS showed stronger correlations than past LS. It is worth to note that these studies did not include the same measures (e.g. happiness vs. positive affect), therefore they are not directly comparable. As far as we know, no other studies have explored the relationship between mood and LS including the different time frames, and none of them have been carried out in a Spanish-speaking sample with wide age ranges.

Therefore, this study had three objectives: first, to replicate the three-factor structure of the TSWLS found in previous studies in a Spanish-speaking general population; second, to explore the role of sociodemographic factors (age and gender) in past, present, and future LS; and third, to explore the relationship between mood and LS, including its temporality. For this third objective, measures included in previous studies were used (Pavot et al., 1988; Sailer et al. 2014): positive and negative affect, happiness, and depressive symptoms.

Method

Participants

The sample consisted of 491 participants (74.5% women) with ages between 18 and 80 years old ($M = 32.07$, $SD = 14.59$). All participants were Spanish-speakers; 89% were Spanish, 3.3% from other European countries, 7.1% from Latin American countries, and 0.6% did not report their nationality. Regarding occupation, 51.4% were studying, 36.4% were working, and 12.1% were unemployed or retired. With regard to marital status, 44.8% were single, 49.3% had a stable relationship or were married, 4.9% were divorced, and 1% were widowed.

Instruments

The Temporal Satisfaction with Life Scale (TSWLS; Pavot et al. 1998). This scale measures past, present, and future LS. It contains 15 items divided into three subscales: past LS (items 1–5), present LS (items 6–11), and future LS (items 12–15). It is also possible to calculate a global LS score by adding the scores of all items together. Respondents rate their agreement with each statement on a 7-point Likert style scale (1 *strongly disagree* – 7 *strongly agree*). All items are positively worded; hence, the higher the score, the higher level of LS. Cronbach's alphas for the complete scale ranged from .91 to .93 in the original studies (Pavot et al. 1998). In the elderly Spanish validation study, the total scale's alpha was .91 and it ranged from .81 to .86 among the subscales (Tomás et al. 2016). For the purposes of this study, the original scale (Pavot et al. 1988) was translated from the original English to Spanish language by a bilingual expert in the field (AC). Then, two experts in the area revised this translation (RM and EE) (see Appendix). In this version, Cronbach's alpha was .89 for the total scale, .84 for the past LS subscale, .91 for the present LS subscale, and .87 for the future LS subscale.

Positive and Negative Affect Scale (PANAS; Watson et al. 1988). It is a 20-item scale with 10 positive emotions and 10 negative emotions, divided into two subscales: positive affect (e.g. proud) and negative affect (e.g. ashamed). Respondents indicate how they usually feel on a 5-point Likert-type scale. In this study, the Spanish version was used (Sandín et al. 1999). Cronbach's alpha for the original scale ranged from .86 to .90 for positive affect and from .84 to .87 for negative affect, and in this sample, they were .89 for positive affect and .86 for negative affect.

Happiness Measures (HM; Fordyce 1988). It is a measure of the intensity and quantity of happiness. It is a short, two-item scale that includes an 11-point Likert scale in which respondents rate to what extent they usually feel happy or unhappy from 0 *extremely unhappy* to 10 *extremely happy* ("happiness intensity") and a question about the total percentage of time spent being happy, unhappy, and neutral ("percentage estimates"). Reliability scores have been found to be acceptable in different studies (Fordyce 1988). A

combination score was calculated using the following formula as an overall happiness score (Fordyce 1988).

$$\text{Overall happiness score} = \frac{(\textit{happiness intensity} \times 10) + \textit{happy percentage}}{2}$$

Beck Depression Inventory II (BDI-II; Beck et al. 1996). It is one of the most widely used measures of depression. It consists of 21 items that ask about the presence of depressive symptoms in the past two weeks. Participants can respond with more than one option per item, and the total score is calculated by adding together the highest scores on each item. In this study, the Spanish version was used (Sanz et al. 2003). Cronbach's alphas in most studies range from 0.83 to 0.96 (Wang and Gorenstein 2013), and an alpha of .86 was found in this sample.

Procedure

Participants were recruited using two methods: the snow-ball procedure through an online survey ($N = 367$); and students enrolled in classes in several public universities in Spain through a paper and pencil survey ($N = 124$). All participants signed an informed consent before filling out the questionnaires. No exclusion criteria were considered, but it was necessary to be over 18 years old and a Spanish-speaker to be enrolled in the study.

Data Analyses

Statistical analyses were conducted using SPSS for Windows (version 24) and Mplus (version 6.12) (Muthén and Muthén 2011). To analyze the psychometric properties of the TSWLS, a Confirmatory Factor Analysis (CFA) was carried out. The specified model (3-factor model) was based on previous studies (Pavot et al. 1998; McIntosh 2001; Ye 2007). The normality of the sample was analyzed, verifying skewness values ≤ |2| and kurtosis values ≤|7| (West et al. 1995). Given the normality of the sample, the method used was Maximum Likelihood (ML) (Fabrigar et al. 1999). In order to analyze the goodness of the model fit, several indices were used: Root Mean Square Error of Approximation or RMSEA (where a value of 0.05 or lower indicates a good fit, values up to 0.8 indicate acceptable fit, and values up to 0.10 indicate marginally acceptable fit), Comparative Fit Index or CFI and Tucker-Lewis Fit Index or TLI (where values above 0.9 indicate acceptable fit on both indices), and Root Mean Square Residual or SRMR (where values under 0.9 indicate an acceptable fit) (Abad et al. 2011). Finally, the internal consistency of the scale was assessed using Cronbach's alpha coefficient.

The roles of gender and age were also analyzed. Regarding age, the sample was divided into four development stages (Arnett 2000; Steger et al. 2009): emerging adults (18–24 years old), young adults (25–44), middle-aged adults (45–64), and older adults (65 years or older). A mixed 4x2x3 ANOVA was conducted, with developmental stages and gender as between-factors, and the different time axes (past, present, and future LS) as within-factor. Pairwise comparisons using Bonferroni adjustment were conducted when significant effects were found.

Finally, to explore the relationship between temporal LS and mood, bivariate correlations using Pearson's correlation and stepwise multiple regression analyses were performed between past, present, and future LS and positive and negative affect (PANAS; Watson et al. 1988), happiness (HM; Fordyce 1988) and depressive symptoms (BDI-II; Beck et al. 1996).

Results

Confirmatory Factor Analysis (CFA)

Means (M), Standard Deviations (SD), and Skewness and Kurtosis indexes for all the items and subscales are shown in Table 1. Fit indices from the CFA with a 3-factor structure showed an adequate model fit (RMSEA = 0.099; CFI = 0.911; TLI = 0.893; SRMR = 0.066). Standardized factor loadings of the TSWLS items were all significant ($p < .05$), ranging from .48 to .91, and all factors were significantly inter-correlated ($p < .05$) (see Fig. 1).

All Cronbach's alpha values showed good internal consistency: the alpha coefficient for the overall scale was high ($\alpha = .89$), as were those for the subscales of the past ($\alpha = 0.84$), present ($\alpha = 0.91$), and future LS ($\alpha = .87$).

Differences in Past, Present, and Future LS Depending on Gender and Age

Means (M) and Standard Deviations (SD) of past, present, and future LS divided into gender and developmental stages are shown in Table 2. Mauchly's test indicated that the assumption of sphericity had been violated for the main effect of time, X^2 (2) = 0.95, $p < .001$; therefore, degrees of freedom were

Table 1 Mean (M) and Standard Deviation (SD), Skewness and Kurtosis indexes for all items and subscales

TSWLS	Range	M (SD)	Skewness	Kurtosis
Item 1	1–7	4.07 (1.87)	−.056	−1.213
Item 2	1–7	4.84 (1.56)	−.641	−.479
Item 3	1–7	4.03 (1.67)	−.076	−.883
Item 4	1–7	4.33 (1.72)	−.174	−.942
Item 5	1–7	5.10 (1.55)	−.724	−.203
Past LS	5–35	22.38 (6.56)	−.230	−.495
Item 6	1–7	4.59 (1.73)	−.289	−1.015
Item 7	1–7	5.33 (1.48)	−1.008	.417
Item 8	1–7	4.77 (1.55)	−.524	−.607
Item 9	1–7	4.80 (1.62)	−.616	−.429
Item 10	1–7	5.53 (1.41)	−1.158	1.004
Present LS	5–35	25.03 (6.68)	−.614	−.345
Item 11	1–7	3.86 (1.57)	.012	−.574
Item 12	1–7	5.01 (1.27)	−.363	−.080
Item 13	1–7	4.96 (1.25)	−.169	−.256
Item 14	1–7	4.76 (1.20)	−.105	.035
Item 15	1–7	5.10 (1.27)	−.340	−.133
Future LS	5–35	23.68 (5.33)	−.107	.134

TSWLS temporal satisfaction with life scale, *LS* life satisfaction

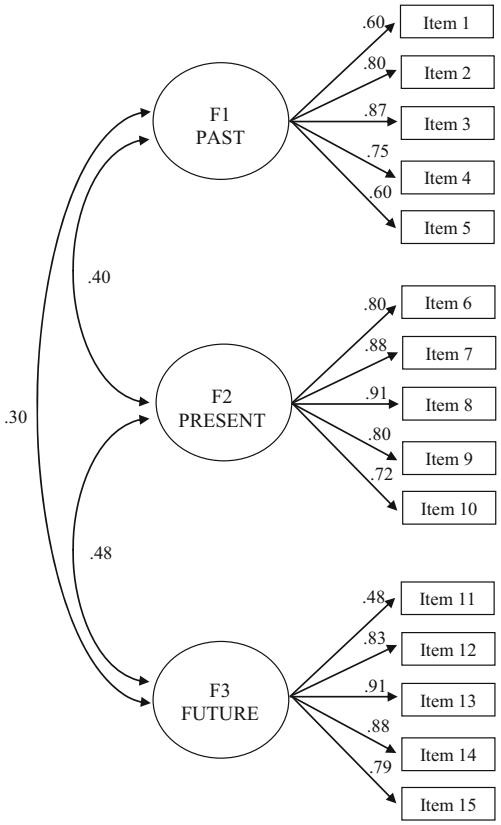

Fig. 1 Confirmatory factor model for the Temporal Satisfaction With Life Scale

corrected using the Greenhouse-Geisser estimation of sphericity (ε = 0.95).

There was a main effect of the temporal axis (past, present, and future) on LS, $F(1.90, 917.25) = 27.75$, $p < .001$, $\eta^2_p = .05$. Pairwise comparisons showed that, in the entire sample, present LS ($M = 25.03$, $SD = 6.68$) was higher than future LS ($M = 23.68$, $SD = 5.33$), and both were higher than past LS ($M = 22.38$, $SD = 6.56$).

A significant interaction effect between the temporal axis and the developmental stage was found, $F(5.71, 917.25) = 2.17$, $p = .047$, $\eta^2_p = .01$. Pairwise comparisons indicated that emerging adults (18–24 years old) showed higher future LS than middle-aged adults (45–64 years old) ($p = .013$).

Regarding the divergence in the time frames of the TSWLS in each developmental stage (see Fig. 2), pairwise comparisons indicated that all participants showed higher levels of present LS than past LS ($p < .05$ in all cases). Older participants (both middle-aged adults and older adults) showed higher levels of present LS than future LS ($p = < .001$ and $p = .005$, respectively). Only emerging adults showed higher levels of future LS than past LS ($p = .001$).

Finally, no significant interactions were found between the time axis (past, present, and future LS) and gender, $F(1.90, 917.25) = 0.53$, $p = .580$, $\eta^2_p = .00$, or between the time frame, age, and gender, $F(5.71, 917.25) = 0.49$, $p = .816$, $\eta^2_p = .00$.[1]

Temporal LS and its Relationship with Mood

Bivariate Pearson's correlations for the different time axes of LS, happiness, depression, and positive and negative affect can be found in Table 3. On the one hand, positive significant correlations were found between the three axes (past, present, and future LS) and happiness and positive affect. Regarding happiness, correlations were small in the case of past LS, moderate in the case of future LS, and large in the case of present LS (Cohen 1988). Regarding positive affect, moderate correlations were found with past, present, and future LS. Furthermore, negative significant correlations were found between the three axes (past, present, and future LS) and depression and negative affect. According to Cohen (1988), all correlations were small, except the one between present LS and depression, which was moderate.

[1] No gender differences were found, controlling for age, F(1.90,974) =0.69, $p = .498$, η = .00

Table 2 Mean (M) and Standard Deviations (SD) for past, present, and future life satisfaction divided into gender and developmental stages

	% (N)	Past LS M (SD)	Present LS M (SD)	Future LS M (SD)
Gender				
Male	25.5 (125)	21.84 (6.51)	24.50 (7.04)	23.55 (5.42)
Female	74.5 (366)	22.56 (6.58)	25.22 (6.56)	23.72 (5.32)
Developmental stage (age range)				
Emerging adults (18–24)	45.1 (222)	22.83 (6.60)	25.36 (6.46)	24.51 (5.25)
Young adults (25–44)	33.6 (166)	22.22 (6.38)	24.22 (6.89)	23.42 (5.16)
Middle-aged adults (45–64)	16.6 (81)	21.90 (6.54)	25.05 (6.99)	21.79 (5.39)
Older adults (> 65)	4.5 (21)	20.67 (7.80)	27.67 (5.46)	23.48 (5.91)

LS life satisfaction

Multiple stepwise regression analyses were performed to evaluate whether mood variables predicted past, present, and future LS. The Variance Inflation Factor ranged from 1 to 1.496, indicating no problems with multicollinearity (Bowerman and O'Connell 1990; Myers 2000). Happiness, depressive symptoms, positive affect, and negative affect were entered simultaneously. Only positive affect remained as a significant predictor of past LS ($\beta = 0.283$, $t = 4.581$, $p < .001$), and this model was statistically significant, $F(242) = 20.988$, $p < .001$, $R^2 = .080$, $R^2_{\text{Adjusted}} = .076$, explaining 7.6% of the variance. Regarding present LS, a first model included only happiness ($\beta = .552$, $t = 10.264$, $p < .001$) and was statistically significant $F(242) = 105.349$, $p < .001$, $R^2 = .304$, $R^2_{\text{Adjusted}} = .301$, explaining 30.1% of the variance. However, a second model was also significant $F(242) = 60.766$, $p < .001$, $R^2 = .336$, $R^2_{\text{Adjusted}} = .331$, explaining 33.1% of the variance. In this model, happiness ($\beta = .435$, $t = 6.927$, $p < .001$) and depressive symptoms ($\beta = -.214$, $t = -3.401$, $p = .001$) were the significant predictors. Finally, for future LS, a first model included only happiness ($\beta = .335$, $t = 5.514$, $p < .001$) and was statistically significant $F(242) = 30.408$, $p < .001$, $R^2 = .112$, $R^2_{\text{Adjusted}} = .108$, explaining 10.8% of the variance. However, a second model was also significant $F(242) = 17.431$, $p < .001$, $R^2 = .127$, $R^2_{\text{Adjusted}} = .120$, explaining 12% of the variance. In this model, happiness ($\beta = 0.294$, $t = 3.377$, $p = .001$) and positive affect ($\beta = .149$, $t = 2.017$, $p = .045$) were the significant predictors.

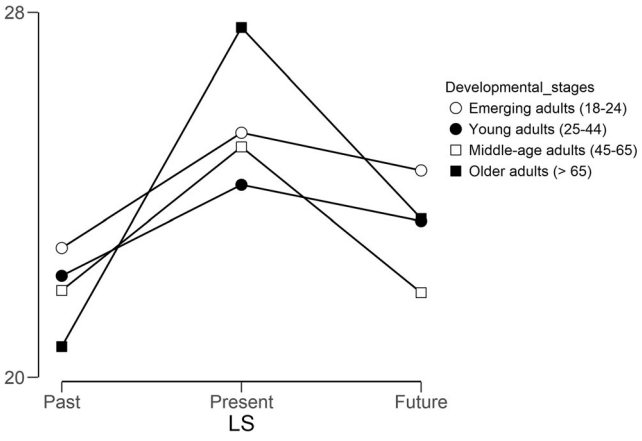

Fig. 2 Levels of past, present, and future LS across different developmental stages. Notes: LS = Life satisfaction

Discussion

The purpose of this study was to replicate the three-factor structure of the TSWLS (Pavot et al. 1998), to shed light on the patterns of past, present, and future LS in a general sample attending to possible differences depending on gender and age, and to explore the relationships between past, present, and future LS and mood (happiness, depression, and positive and negative affect).

The Spanish version of the TSWLS showed the same three-factor structure as in previous studies (McIntosh 2001;

Table 3 Bivariate Pearson's correlations between the Temporal Satisfaction With Life Scale and mood measures (happiness, positive affect, negative affect, and depressive symptoms)

	Past LS	Present LS	Future LS
Happiness (HM)	.247**	.533**	.366**
Positive affect (PANAS)	.301**	.432**	.339**
Negative affect (PANAS)	−.113*	−.280**	−.200**
Depression (BDI-II)	−.164*	−.451**	−.258**

*$p < .05$; **$p < .01$. LS = Life Satisfaction, *HM* happiness measures, *PANAS* positive and negative affect scale, *BDI-II* beck depression inventory II

Pavot et al. 1998; Ye 2007). Only one fit index showed low acceptability (TLI = 0.893) and all the subscales showed good internal consistency. Regarding the item loadings, only item #11 ("I will change nothing about my future") showed a smaller factor loading (.48), compared to the rest of the items (which ranged from .60 to .91). This item has also shown a similar pattern in previous studies (McIntosh 2001; Tomás et al. 2016; Ye 2007), hence it is possible that its content may contribute to some measuring error. It refers to the possibility of changing some aspects of one's future life. Contemplating this possibility may not reflect the expectation of being satisfied or unsatisfied with one's life, as one can expect to be satisfied, but also feel empowered to improve things in one's future life.

According to the analyses, all participants were more satisfied with their present than with their future life. Past life satisfaction showed the lowest level compared to the other time axes. These results are distinct from previous studies carried out with young samples (Pavot et al. 1998 Study 1; Ye 2007), where future LS was higher than past and present LS, and similar to others carried out with older adults (Pavot et al. 1998 Studies 2 and 3), where present LS was higher than past and future LS. This might be due to the different age ranges included in the studies, as it seems that when older participants are included, present LS scores are higher than future LS scores. The obtained outcomes can be attributed to both men and women since no gender differences were found, which goes in line with previous studies (McIntosh 2001; Pavot et al. 1998).

Regarding age, no differences were found in past and present LS, but younger respondents (emerging adults, from 18 to 24 years old) showed higher levels of future LS than older ones (middle-aged adults, from 45 to 65 years old). When analyzing divergences in the three temporal frames within the developmental stages, middle-aged and older adults (that is, people 45 years old and up) showed higher levels of present LS than future LS. These differences were not found in the younger groups (up to 44 years old). Emerging adults were the only group that showed higher satisfaction with their future life compared to their past life. These results go in line with the aforementioned previous studies, in which older participants seem to present higher scores of LS in their present, whereas young participants obtain higher scores in future LS (Pavot et al. 1998; Ye 2007). In addition, participants from each developmental stage separately were more satisfied with their present life than with their past life. These results lead to conclude that people generally tend to be more satisfied with the life they are living in the current moment than with their past life. However, regarding future LS, there are relevant differences between young and older adults. Results suggest that young adults expect to be just as satisfied with their future life as they are with their current life: they think it will be at least as good as it is in the present moment. However, older adults may consider the current moment as the best part of their life and do not expect a better life in the future. Older participants might have appraised their future life satisfaction anticipating the normative changes expected in late life, which may include possible deterioration in their health and autonomy, or personal losses.

With respect to the relationship between past, present, and future LS and mood, results coincide with other studies that used overall LS measures (Diener and Seligman 2002; Pavot and Diener 2008) and temporal LS studies (Pavot et al. 1998; Sailer et al. 2014): past, present, and future LS showed positive significant correlations with positive mood (happiness and positive affect), and negative significant correlations with negative mood (depressive symptoms and negative affect). It is worth noting that these correlations were larger in the case of present LS, compared to past and future LS. These results go in line with the results of Salier and colleagues (2014) and could be explained by the fact that mood measures also refer to the present moment, and the existing association between current positive mood and LS (Kuppens et al. 2008). In addition, regression analyses shed light on the influence of mood on the levels of past, present, and future LS. Positive affect predicted both past and future LS, but it did not predict present LS, whereas happiness added a small percentage of variance in the case of future LS, but it explained a high level of variance (30%) in present LS. Depressive symptoms added a small percentage to present LS and did not explain neither past or future LS, and negative affect did not predict any level of LS. These results point out that happiness plays an important role on present LS predicting a high level of variance, whereas positive affect, although strongly correlated, does not predict present LS but does predict past and future LS. In the case of negative mood, only depressive symptoms seem to predict a small portion of present LS, and negative affect did not contribute to any prediction. This result goes in line with previous studies, showing that positive affect is more strongly related to global LS than negative affect (Kuppens et al. 2008). Therefore, the level of happiness of participants seemed to be the best predictor of how satisfied they were with their current lives, and to a lesser degree, with their future lives. Moreover, the frequency with which they experienced positive emotions influenced how satisfied they felt with their past and future lives. Conversely,

negative mood did not seem to have an influence on temporal LS predictions, although depressive mood seemed to have a slight effect when participants assessed their present LS.

This study has some limitations that should be pointed out, especially regarding the sample. First, although there were no significant gender differences, females were overrepresented in this study (74.5%), and 45 years old or older participants constituted only 21.1% of the sample. In addition, socioeconomic status and other demographic variables were not considered. In line with this, the sample included mainly Spanish participants (89%), but it also included participants from other European and Latin American countries. It is possible that these sociodemographic variables could have led to some biases in the results, although it is unknown whether it was the case, and if true, in which direction, given that there are no theories that explain how these variables can affect the temporal satisfaction with life. Future studies are needed to address this issue.

To sum up, this work replicated the three-factor structure of the TSWLS in a Spanish-speaking sample. Generally, present LS was found to be higher than future LS, and both were significantly higher than past LS. No gender differences were found, but the data pointed to interesting results for age. Middle-aged and older adults showed lower future LS than present LS, whereas emerging and young adults did not show these differences. In addition, emerging adults scored higher on future LS than middle-aged adults. Regarding the relationship between temporal LS and mood, happiness emerged as the best predictor of present LS, and positive affect only predicted past and future LS. On the other hand, negative mood measures (negative affect and depressive symptoms) did not play an important role in temporal LS predictions.

The results obtained in this work can have important implications for different psychology areas. As previously stated, results on age differences highlight the importance of including the time factor when assessing LS, especially in areas such as developmental psychology. The data point out the importance of including the temporal aspects when LS is measured. Otherwise, relevant information could be missed or even distorted. For instance, in the case of older adults, lower levels of future LS can influence the overall score of LS, perhaps producing lower rates of LS that are not necessarily a reflection of their satisfaction with their current lives. If temporality is not considered when measuring the levels of LS in the elderly, it will not be possible to know whether a low global score of LS was influenced by low levels of future LS and not necessarily low satisfaction with their present or past life. LS is also a construct strongly associated with mental health. Even the temporal focus of the main symptoms can be different through different disorders: while anxiety patients are worried about their future, depressive patients tend to ruminate about their past. To distinguish between the three components of LS can provide a better understanding of these clinical conditions. In addition, it can help practitioners to assess the course of the therapy, providing a more precise measure of LS which could permit them to focus on the temporal frames that are more relevant to the symptomatology of their clients. In the same line, it can be highly pertinent in the development of evidence-based therapies, as it can provide valuable information for the efficacy tests of different psychological treatments. To finish, results obtained in this study are consistent with the field of positive psychology, where wellbeing is pursued not only through the treatment and prevention of negative emotions and mental illnesses, but also through the active pursuit of happiness and positive emotions (Seligman and Csikszentmihalyi 2000). Measures that provide more accurate information about one of the main components of wellbeing (i.e. LS) can make an important contribution to this emerging field. In addition, it can be especially helpful in the area of positive psychology interventions, which are specific activities designed with the aim of positive psychology. Many efficacy studies have been carried out to test whether these interventions are able to significantly improve participants' levels of wellbeing through self-report measures that assess, among others, life satisfaction (Bolier et al. 2013). In this sense, to consider the temporal aspects of LS can contribute to a more precise assessment of their efficacy.

In conclusion, as previously mentioned, it is highly convenient to discern between different time frames to assess a broad construct as LS, and to consider how the temporal focus can have different effects on wellbeing. To incorporate the temporal aspects of LS on its assessment will contribute to a better understanding of an essential constituent of wellbeing.

Acknowledgements This study was funded in part by the Generalitat Valenciana, Conselleria de Educación, Cultura y Deporte (Excellence Research Program PROMETEO II, PROMETEOII/2013/003) and the Spanish Ministry of Education, Culture and Sports (Training Program for University Professors, FPU13/03406).

Compliance with Ethical Standards

Conflict of Interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

Appendix

Temporal Satisfaction With Life Scale (Spanish version)

Las siguientes afirmaciones se refieren a su pasado, presente o futuro. Usando la escala que se presenta a continuación, indique su grado de acuerdo o desacuerdo con cada una de ellas:

1 = Muy en desacuerdo

2 = En desacuerdo

3 = Ligeramente en desacuerdo

4 = Ni de acuerdo ni en desacuerdo

5 = Ligeramente de acuerdo

6 = De acuerdo

7 = Muy de acuerdo

___ 1. Si tuviera que vivir mi pasado de nuevo, no cambiaría nada.

___ 2. Estoy satisfecho/a con mi vida en el pasado.

___ 3. Mi vida en el pasado fue ideal para mí.

___ 4. Las condiciones de mi vida en el pasado fueron excelentes.

___ 5. En mi pasado tuve las cosas importantes que quise.

___ 6. No cambiaría nada de mi vida actual.

___ 7. Estoy satisfecho/a con mi vida actual.

___ 8. Mi vida actual es ideal para mí.

___ 9. Las condiciones actuales de mi vida son excelentes.

___ 10. En la actualidad tengo las cosas importantes que quiero.

___ 11. No habrá nada que quiera cambiar de mi futuro.

___ 12. En el futuro estaré satisfecho/a con mi vida.

___ 13. Creo que mi vida en el futuro será ideal para mí.

___ 14. Las condiciones de mi vida en el futuro serán excelentes.

___ 15. En el futuro tendré las cosas importantes que quiera.

References

Abad, F. J., Olea, J., Ponsoda, V., & García, C. (2011). *Medición en ciencias sociales y de la salud [Measuring in social and Health Sciences]*. Madrid: Síntesis.

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*, 469–480. https://doi.org/10.1037//0003-066X.55.5.469.

Arrindell, W. A., van Nieuwenhuizen, C., & Luteijn, F. (2001). Chronic psychiatric status and satisfaction with life. *Personality and Individual Differences*. https://doi.org/10.1016/S0191-8869(00)00125-2.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II*. San Antonio: Psychological Corporation.

Bolier L., Haverman M., Westerhof G. J, Riper H., Smit F., Bohlmeijer E. (2013). Positive psychology interventions: A meta-analysis of randomized controlled studies. *BMC Public Health*, https://doi.org/10.1186/1471-2458-13-119.

Bowerman, B. L., & O'Connell, R. T. (1990). *Linear statistical models: An applied approach (2nd Edition)*. Belmont: Duxbury.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences (2nd Edition)*. Hillsdale: Erlbaum.

Diener, E. (1994). Assessing subjective well-being: Progress and opportunities. *Social Indicators Research, 31*(2), 103–157.

Diener, E., & Lucas, R. E. (2000). Subjective emotional well-being. In M. Lewis & J. M. Haviland-Jones (Eds.), *Handbook of emotions (2nd edition)* (pp. 325–337). New York: Guilford Press.

Diener, E., & Seligman, M. E. P. (2002). Very happy people. *Psychological Science*. https://doi.org/10.1111/1467-9280.00415.

Diener, E., Emmons, R., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*. https://doi.org/10.1207/s15327752jpa4901_13.

Diener, E., Heintzelman, S. J., Kushlev, K., Tay, L., Wirtz, D., Lutes, L. D., & Oishi, S. (2017). Findings all psychologists should know from the new science on subjective well-being. *Canadian Psychology/Psychologie Canadienne*. https://doi.org/10.1037/cap0000063.

Elliott, T. R., Shewchuk, R. M., Miller, D. M., & Richards, J. S. (2001). Profiles in Problem Solving: Psychological Well-Being and Distress Among Persons with Diabetes Mellitus. *Journal of Clinical Psychology in Medical Settings,* https://doi.org/10.1023/A:1011920914079.

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 4*(3), 272–299.

Fordyce, M. W. (1988). A review of research on the happiness measures: A sixty second index of happiness and mental health. *Social Indicators Research, 20*(4), 355–381.

Kuppens, P., Realo, A., & Diener, E. (2008). The role of positive and negative emotions in life satisfaction judgment across nations. *Journal of Personality and Social Psychology,* https://doi.org/10.1037/0022-3514.95.1.66.

Lucas, R. E., Diener, E., & Suh, E. (1996). Discriminant validity of well-being measures. *Journal of Personality and Social Psychology, 71*(3), 616–628.

Luhmann, M., Hofmann, W., Eid, M., & Lucas, R. E. (2012). Subjective well-being and adaptation to life events: A meta-analysis on differences between cognitive and affective well-being. *Journal of Personality and Social Psychology*. https://doi.org/10.1037/a0025948.

McIntosh, C. (2001). Report on the construct validity of the temporal satisfaction with life scale. *Social Indicators Research*. https://doi.org/10.1023/A:1007264829700.

Muthén, L. K., Muthén, B. O. (2011). *Mplus statistical modeling software (Version 6.12)*. Los Angeles: author.

Myers, R. (2000). *Classical and modern regression with applications (2nd Edition)*. Boston: Duxbury.

Nes, R. B., Czajkowski, N. O., Røysamb, E., Ørstavik, R. E., Tambs, K., & Reichborn-Kjennerud, T. (2013). Major depression and life satisfaction: A population-based twin study. *Journal of Affective Disorders*. https://doi.org/10.1016/j.jad.2012.05.060.

Pavot, W., & Diener, E. (1993). Review of the satisfaction with life scale. *Psychological Assessment, 5*, 164–172.

Pavot, W., & Diener, E. (2008). The satisfaction with life scale and the emerging construct of life satisfaction. *The Journal of Positive Psychology*. https://doi.org/10.1080/17439760701756946.

Pavot, W., Diener, E., & Suh, E. (1998). The temporal satisfaction with life scale. *Journal of Personality Assessment*. https://doi.org/10.1207/s15327752jpa7002_11.

Proyer, R. T., Gander, F., Wyss, T., & Ruch, W. (2011). The relation of character strengths to past, present, and future life satisfaction among German-speaking women. *Applied Psychology. Health and Well-Being*. https://doi.org/10.1111/j.1758-0854.2011.01060.x.

Sailer, U., Rosenberg, P., Nima, A. A., Gamble, A., Gärling, T., Archer, T., & Garcia, D. (2014). A happier and less sinister past, a more hedonistic and less fatalistic present and a more structured future: Time perspective and well-being. *PeerJ*. https://doi.org/10.7717/peerj.303.

Sandín, B., Chorot, P., Lostao, L., Joiner, T. E., Santed, M. A., & Valiente, R. M. (1999). Escalas PANAS de afecto positivo y negativo: Validación factorial y convergencia transcultural [PANAS scales of positive and negative affect: Spanish validation and transcultural convergence]. *Psicothema, 11*(1), 37–51.

Sanz, J., Navarro, M., & Vázquez, C. (2003). Adaptación española del Inventario para la depresión de Beck-II (BDI-II): 1. Propiedades psicométricas en estudiantes universitarios. [Spanish adaptation of Beck-II depression inventory (BDI-II)]. *Análisis y Modificación de Conducta, 29*(124), 239–288.

Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*. https://doi.org/10.1007/978-94-017-9088-8_18.

Steger, M. F., Oishi, S., & Kashdan, T. B. (2009). Meaning in life across the life span: Levels and correlates of meaning in life from emerging adulthood to older adulthood. *The Journal of Positive Psychology*. https://doi.org/10.1080/17439760802303127.

Suh, E., Diener, E., Oishi, S., & Triandis, H. C. (1998). The shifting basis of life satisfaction judgments across cultures: Emotions versus norms. *Journal of Personality and Social Psychology, 74*, 482–493.

Tomás, J. M., Galiana, L., Oliver, A., Sancho, P., & Pinazo, S. (2016). Validating the temporal satisfaction with life scale in Spanish elderly: A bifactor model application. *Behavioral Psychology, 24*(3), 555–567.

Trautwein, U. (2004). Die temporalen Facetten der Lebenszufriedenheit. Eine deutsche Adaptation der Skala von Pavot, Diener und Suh (1998) [The temporal facet of life satisfaction. A German adaptation of the scale of Pavot, Diener and Suh (1998)]. *Diagnostica,* https://doi.org/10.1026/0012-1924.50.4.182.

Vassar, M. (2008). A note on the score reliability for the satisfaction with life scale: An RG study. *Social Indicators Research*. https://doi.org/10.1007/s11205-007-9113-7.

Wang, Y., & Gorenstein, C. (2013). Psychometric properties of the Beck depression inventory-II: A comprehensive review. *Revista Brasileira de Psiquiatria*. https://doi.org/10.1590/1516-4446-2012-1048.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063–1070.

West, S. G., Finch, J. F., & Curran, P. J. (1995). Structural equation models with non-normal variables: Problems and remedies. In R. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 56–75). Thousand Oaks: Sage Publications.

Ye, S. (2007). Validation of the temporal satisfaction with life scale in a sample of Chinese University students. *Social Indicators Research*. https://doi.org/10.1007/s11205-006-0010-2.