

# Psychometric Properties of the Spanish Version of the Personal Wellbeing Index-School Children (PWI-SC) in Chilean School Children

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**Abstract** Child and adolescent measures of the quality of life or subjective well-being are scarce in Latin American countries. Chile is no exception to this situation that represents a gap in the literature for South American countries research. Thus, the aim was to analyze the psychometric properties of the Personal Well-being Index for School Children (PWI-SC) of Cummins et al. *Social Indicators Research*, 64(2), 159–190, (2003) in a sample of Chilean school children. We use a sample of 1096 pupils between 10 and 12 years old ( $M=11.03$ ;  $SD=0.89$ ) and residents of three major Chilean cities. Results of Exploratory and Confirmatory Factor Analysis provided evidence for only one single factor solution. Moreover, an acceptable level of internal reliability was observed ( $\alpha=0.77$ ). The discussion of results considers other international applications of PWI-SC.

**Keywords** Subjective well-being · Life satisfaction · PWI-SC · School children · Psychometric properties

Well-being as a concept includes three main perspectives: psychological well-being, social well-being, and subjective well-being (Blanco and Varela 2007). The psychological well-being is based on a eudemonic perspective grounded in the humanistic research tradition (Casas 2010), and it is related to self-realization processes, the development of human potential, and complete psychological functioning (Ryff and Singer 2006). The social well-being perspective is based on a tradition that indicates interpersonal and intergroup relationships as part of a particular socio-historical context (Blanco and Varela 2007). Finally, a subjective well-being tradition refers to an

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affective and cognitive evaluation that individuals make about their lives (Diener 1984).

The well-being construct has been studied in diverse fields, and recently these areas have increased the number of publications addressing this topic, such as public policies (Kroll and Delhey 2013; Spruk and Kešeljevic 2015), psychological processes (Cohen and Cairns 2012; Dinisman and Ben-Arieh 2015), and applied research at different educational levels (Klug and Maier 2015; Liu et al. 2015; Navarro et al. 2015; Ruppel et al. 2015).

The current study considered subjective well-being (SWB) as its main topic. Moreover, it incorporates the three categories of SWB identified by researchers from this field (Diener et al. 1999), including negative affect, positive affect, and life satisfaction. The affective components of SWB include emotional responses that represent daily life, considering its everyday variations and duration (Gilman et al. 2000). The components are positive affect (i.e., happiness, gratitude), negative affect (i.e., anger, sadness), and life satisfaction defined as different constructs (Lucas et al. 1996), which can be assessed independently from SWB (Diener et al. 1999; Pavot and Diener 2004).

## 1 Subjective Well-Being in Childhood

Infancy SWB research has received increasing attention in the international academic and political context in the past two decades. Such SWB research is useful to understand better differences among the population and to identify important people's life topics (Dinisman et al. 2015). Life satisfaction research is one example because it is important for children's positive development, and for the recognition of risk and vulnerabilities among them (Rees et al. 2010). In addition, researchers have pointed out that children's well-being and happiness can be explained by considering different factors such as housing, safety, intimidation, school achievement, and social interactions (Bradshaw et al. 2013).

Moreover, previous studies have highlighted the importance of considering the self-reported perceptions of children and youth have regarding their personal well-being as a way to support research in the field (Dex and Hollingworth 2012; Fattore et al. 2009, 2012). Ben-Arieh (2005) postulates that children must participate in the entire well-being research process as an active social subject in society. Therefore, to recognize children's active participatory role, they must provide input themselves about their well-being.

The development of SWB instruments has increased in the past decades. Children's evaluations of their own lives have provided useful reports to researchers about how children live their lives, as well as the relationship of their well-being to other psychological, social, behavioral, environmental, and educational variables (Proctor et al. 2009). Researchers have provided evidence of how life satisfaction is positively related to physical and mental health, positive interpersonal relationships, and academic and professional success (Park 2004). And, conversely, low levels of satisfaction have been found to be negatively related to risky behavior such as drug or alcohol abuse, violence, aggression, and sexual harassment (Proctor et al. 2009). Lower levels of life satisfaction among youth are associated with different social and psychological

problems, such as depressive symptoms, violent and aggressive behavior, drug use, suicidal intent and suicidal ideation, low self-esteem, and relationship problems (Suldo and Huebner 2004; Zullig et al. 2001). Therefore, research about this subject supports the importance of well-being promotion for preventing childhood problems and dysfunction (Huebner et al. 2004).

In Chile, little research has been developed to validate instruments in the national context, despite efforts to support and assess children's well-being. Valid instruments are needed to arrive at a deeper understanding of the state and determinants of well-being, to make comparisons with other geographical and cultural contexts. Examples of existing studies in this area are *The Second Infancy Chilean Report*, published by Children and Youth Adolescence (Sepúlveda et al. 2014), *The Seventh National Youth Report*, developed by the National Institute of Youth (INJUV 2013), and the *First National Study of Subjective Well-Being* (Oyanedel et al. 2014). Studies about instrument validation in Chile are scarce. There are several worth noting, however, such as that of Alfaro et al. (2013) that validated the psychometric properties of the Well-Being Index (Cummins et al. 2003) for the adolescent population, and a study conducted by Alfaro et al. (2015) assessed the psychometric properties of the BMSLSS scale (Seligson et al. 2003) for 10- to 12-year-olds. Thus, we hope to contribute to closing that gap by assessing the psychometric properties of the Personal Well-being Index for School Children (PWI-SC) for 10 to 12 years old.

## 2 Life Satisfaction

Since the concept of subjective well-being is closely linked to satisfaction with various areas in life, its study requires a more comprehensive instrument, such as one that measures life satisfaction (Figuer et al. 2004). This construct relates the argument of Cummins et al. (2003), for whom the fundamentals of subjective well-being are found in the assessments that each person establishes regarding the overall satisfaction with their lives. Specifically, life satisfaction is described as a general assessment that a person makes of the quality of his or her life in different circumstances (Seligson et al. 2003), and it includes overall evaluations (Veenhoven 2002) but also evaluations that consider specific domains like family, friends, school, and self (Seligson et al. 2005).

The importance of knowing life satisfaction is that it allows us to calculate the quality of life achieved in a country or social class and, thus, helps to design and assess public policies focused on designing strategies for social development. Moreover, this construct is empirically useful to validate the necessary conditions to “live well,” providing information to understand what a “good” society would consist of (Veenhoven 2002). Although life satisfaction has both cognitive and affective-evaluative aspects and can be indirectly influenced by transitory emotional states (Seligson et al. 2005), most researchers agree that the evaluative component is dominant (Lau et al. 2005).

According to Veenhoven (1994) this is a vital distinction because life satisfaction research is useful for quality of life evaluation in the society and, therefore, reporting the levels of a satisfied society. This type of assessment can then contribute to the evaluation of public policy and social development strategies for children (Veenhoven 2002). Life satisfaction studies are relevant for assessing the quality of life in the society because these studies connect to actual social problems that influence individual

and social development. Also, they provide useful information for prevention, early detection, and intervention for at-risk populations (Seligson et al. 2005).

### 3 Life Satisfaction in Childhood and Adolescence

As mentioned, life satisfaction research has allowed us to identify risk factors for underage groups in psychological and social dimensions, and it contributes to the accumulation of valuable information that can be used for early detection and intervention in diverse populations with at-risk conditions (Seligson et al. 2005). In adolescents, life satisfaction appears to be a mediating variable between stressful life events and adolescent internalized behaviors, but it also acts as a moderating variable, which in these cases can ameliorate the consequences that stressful life events have on externalizing behaviors (Huebner et al. 2006). It has been shown that adolescents dissatisfied with their lives are more likely to abuse drugs and alcohol, take part in violent and aggressive behavior, and increase sexual risk-taking behavior (e.g., have sex without using protection) (Paxton et al. 2006). Other problems associated with low life satisfaction among adolescents are ideation and suicidal behavior (Valois et al. 2004a), food-related adjustment disorders (Valois et al. 2003), and physical activity (Valois et al. 2004b). Consequently, life satisfaction is strongly linked to a broad range of physical, mental, academic, emotional, and social indicators of human functioning, which suggests that this notion reveals a relevant psychological strength (Jiang et al. 2013).

Access to validated SWB instruments in developing countries is an important step that is needed to conduct further research in middle school students. Early adolescence represents a vital developmental period, and particularly for the well-being of children. One of those scales is the Personal Well-being Index for School Children (PWI-SC) developed by Cummins and Lau (2005). Thus, the aim of current study was to analyze the psychometric properties of this scale in a group of Chilean students in order to expand the knowledge of children's subjective well-being by providing a perspective from a developing country such as Chile.

## 4 Method

### 4.1 Participants

One thousand ninety six students participated in this study, with an age range of between 10 and 12 years old ( $M=11.03$ ;  $SD=0.89$ ). The age of the participants was selected for two reasons. As this project is part of a broader international research, first, its guidance defines different ages for data collection for later international comparisons, and the present sample aimed to match one of these age groups to facilitate such future comparisons. Second, children younger than 10 years old may not be able to understand adequately the items included in the measures, which may affect later interpretation.

Demographic information of the sample is available in Table 1. The sampling process followed the criteria implemented by the rest of the countries participating in ISCWeB by using a stratified sampling in two stages. Thus, samples collected in each

**Table 1** Sample description of sex, age, cities, school type, and grade

Variables	n (%)
Sex	
Boys	598 (49)
Girls	498 (51)
Age	
10	421 (38.4)
11	217 (19.8)
12	458 (41.8)
Cities	
Santiago	296 (27)
Valparaíso	375 (34.2)
Concepción	425 (38.8)
School type	
Public / Local District Schools	633 (57.8)
Subsidized Private Schools	387 (35.3)
Private Schools	76 (6.9)
Grade	
Fifth Grade	660 (60.2)
Seventh Grade	436 (39.8)

city were segmented by school type and socioeconomic status (SES) of the schools. The sampling determined the SES of schools using the Vulnerability Index (IVE) from 2011 that is used by the Ministry of Education to inform the vulnerability level of a specific school. Its score uses a scale from 0 to 100 (the higher the score, the lower the vulnerability). The sample size had a maximum error of  $\pm 1.9\%$ , with a confidence level of 95 %; the sample by years of study had a maximum error of  $\pm 1.9\%$ , with a confidence level of 95 % (Dinisman and Rees 2014).

## 4.2 Instruments

**Personal Well-being Index for School Children (PWI-SC)** Cummins et al. (2003) designed the Personal Well-being Index for Adults (PWI-A) with each of its items corresponding to a different domain of quality of life (i.e., achievements in life; interpersonal relationships). Based on this measure, Cummins and Lau (2005) created the Personal Well-being Index for School Children (PWI-SC) that contains 7 items, which was adapted for its application in school children between 5 to 18 years of age. This instrument has some differences compared with the PWI-A: It does not include the religion-spirituality item; it uses more accessible language for school children (e.g., satisfaction is changed to happiness); and the question about links with the community is replaced with “How happy do you feel about doing things outside your home?” (Cummins and Lau 2005; Alfaro, Axford and Hobbs 2011; Alfaro et al. 2013). The current study used the PWI-SC with seven items, based on Cummins and Lau (2005). Tomy and Cummins (2011) describe that the scores of general life satisfaction

measures in school children show an average of 74.7 (scale of 0–100), observing greater satisfaction in males and a decrease in the level of satisfaction in middle adolescence when compared to early adolescence. Moreover, studies that have analyzed their psychometric structure have consistently found a single factor that explains 48 % of the variance explained.

This scale has closed questions, which inquire about various domains of satisfaction. The students answered the questions using an 11-point scale (0 = Totally dissatisfied; 10 = Totally satisfied). The 7-items were: (1) “To what extent are you satisfied with each of these things in your life?”; (2) “To what extent are you satisfied with your relationships with people in general?”; (3) “To what extent are you satisfied with your health?”; (4) “To what extent are you satisfied with how safe you feel?”; (5) “To what extent are you satisfied with the things you want to be good at?”; (6) “To what extent are you satisfied with the things you do outside of your home?”; (7) “To what extent are you satisfied with what could happen to you later in life?”. The items were averaged to obtain the total score of the PWI-SC, which represents general subjective well-being.

### 4.3 Procedure

Data collection for the study belonged to the national assessment of the ISCWeB study (*The International Survey of Children's Well-Being*) provided by the International Society for Child Indicators. The research team conducted a pilot study during May and June of 2012 with the purpose of verifying the quality of the items. Parent organizations at the participating schools were contacted by telephone to explain the general objective of the investigation and to invite them to participate. The institutions that agreed to collaborate had to sign an institutional consent so that their students could participate. Subsequently, all of the students were invited to participate voluntarily in the study; those who were agreed had to sign a consent form. The questionnaire was applied through self-administration and during school hours, with previous authorization from the teacher in charge, during the second semester of the school year in 2012. Personnel from the research team administered the self-administration of the questionnaire. Ethical research protocols were met with a special emphasis on the confidentiality of the produced information, and the consent given by the schools, and by the participants of the study.

Besides the PWI-SC, other scales namely SLSS and BMSLSS were part of this study. Considering that the purpose of the current research was to analyze the psychometric properties of PWI-SC in a group of Chilean students, the results from these other scales were not part of this report.

## 5 Results

### 5.1 Preliminary Analyses

The procedure applied for missing data imputation was the Expectation-Maximization algorithm (EM, Schlomer et al. 2010). The skewness and kurtosis of the seven items of the scale showed values within  $-7.0$  and  $+7$ , a range considered acceptable by Cohen and Cohen (1983). The maximum values of the skewness were between  $-2.42$  (“all of

the things that you have”) and  $-1.82$  (“doing things outside of home”). Moreover, the kurtosis values fluctuated between  $5.59$  (“all of the things that you have”) and  $2.51$  (“safety”), as reported in Table 2. In this Table, the mean and standard deviation were also recorded for each item. In general, the students reported a psychological well-being very similar to the maximum point of the scale (10) in all evaluated dimensions. Moreover, the average total score was  $8.55$  ( $SD=1.72$ ), which informs us that the students reported high personal well-being.

A series of one-way ANOVA analyses were performed to analyze gender and age differences in the scores of the PWI-SC. Regarding the sex variable, the results show significant differences in two dimensions: the girls were more satisfied with things they own ( $F(2, 1094) = 4.29, p < .05; \eta^2 \text{ partial} = .04$ ) and their safety ( $F(2, 1094) = 4.18, p < .05; \eta^2 \text{ partial} = .04$ ) than boys. As for the age of participants, significant effects were only observed in the “safety” dimension. To identify the age group where these differences were reported, multiple comparisons were performed using the Games-Howell method because some items violated the assumption of homogeneity of variance. The 11-year-old students were more satisfied with their safety ( $F(2, 1093) = 2.93, p < .05; \eta^2 \text{ partial} = .05$ ) than 10-year-old students.

Table 3 shows the correlations between the 7-items of the PWI-SC. In general, all correlations showed acceptable scores and were in the expected direction. However, four items showed higher inter-correlations: “safety”, “becoming good at something”, “doing things outside of home”, and the “future” (ranging between  $0.55$  and  $0.61$ ). Also, correlation values were similar to outcomes reported by a study conducted in non-native Australian adolescents (Tomyn et al. 2014).

## 5.2 Psychometric Properties of the PWI-SC

The EFA identifies and evaluates dimensionality of a theoretical construct, and it additionally provides evidence regarding the construct validity of specific self-report scales (Streiner et al. 2015). 300 students of the total sample were randomly chosen using the program Factor (Version 10.3.01; Lorenzo-Seva and Ferrando 2006), and through EFA we examined their responses. The EFA method selected was Unweighted Least Squares (ULS) and Promax rotation. Univariate descriptive inform 3 items with higher kurtosis values (range  $17.75$  and  $37.23$ ), therefore a Polychoric Correlations

**Table 2** Skew, Kurtosis, Averages and Standard Deviation for the items and total score from the PWI-SC Scale

Domains	Asymmetry	Kurtosis	M	SD
Standard of Living	$-2.42$	$5.59$	$8.85$	$2.28$
Personal Relationships	$-1.90$	$3.13$	$8.38$	$2.52$
Personal Health	$-2.43$	$5.32$	$8.83$	$2.39$
Personal Safety	$-1.84$	$2.51$	$8.37$	$2.76$
Achievement in Life	$-2.17$	$4.07$	$8.65$	$2.50$
Feeling Part of the Community	$-1.82$	$2.57$	$8.30$	$2.70$
Future Security	$-1.96$	$3.23$	$8.45$	$2.57$

**Table 3** Bivariate correlations between the PWI-SC domains

Domains	1	2	3	4	5	6	7	8
1. Standard of Living	1							
2. Personal Relationships	0.27**	1						
3. Personal Health	0.22**	0.19**	1					
4. Personal Safety	0.28**	0.31**	0.33**	1				
5. Achievement in Life	0.23**	0.26**	0.32**	0.61**	1			
6. Feeling Part of the Community	0.28**	0.30**	0.29**	0.55**	0.59**	1		
7. Future Security	0.21**	0.29**	0.28**	0.55**	0.61**	0.57**	1	

\*\* $p < 0.01$

Matrix was considered, follow some researchers recommend to deal with non-normal data (Muthén and Kaplan 1985). The analysis considered only items with factorial loadings over .30. The presence of a significant Chi-square of Bartlett's Sphericity Test,  $\chi^2(21) = 1246.9, p < .001$ , and a Kaiser-Meyer-Olkin value of 0.81 indicate that the data were suitable for this analysis (EFA). The EFA produced a single factor solution with 1 Eigenvalue above 1 (4.88). To confirm this result, a Parallel Analysis was developed which support the one-factor solution explaining 82 % of the variance. In addition, other adjustment measures confirm this results, such as Goodness of Fit Index (GFI) = 1.00 and Root Mean Square Error of Approximation (RMSEA) = .04, with a 95 % confidence interval.

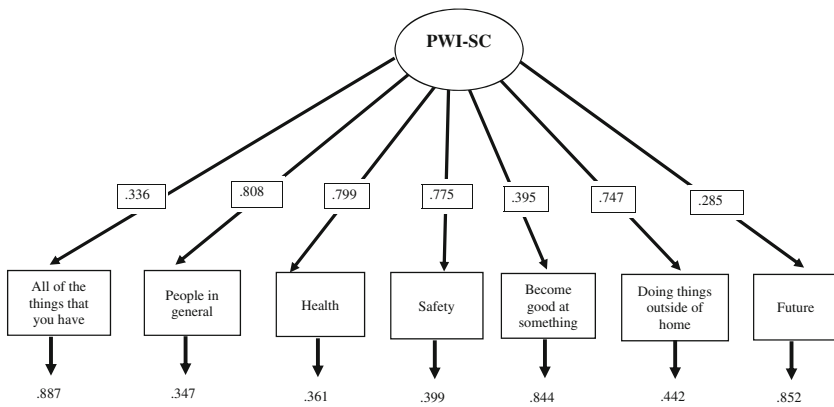
A confirmatory factor analysis (CFA) was applied to the rest of the students in the sample ( $n = 796$ ) to determine if the one-factor hypothesized model from the PWI-SC fit our data. One of the advantages of CFA is to compare two different versions of the same scale (Streiner et al. 2015). In this study, CFA contributed to corroborating whether PWI-SC has a unidimensional structure. To perform this analysis, we used the statistical program Mplus, version 7.0 (Muthén and Muthén 2012). The analysis used was the Maximum Likelihood (ML) estimator, and the fit indices that were revised were: (a) Chi-square, (b) RMSEA, (c) Comparative Fit Index of Bentler (CFI), (d) Tucker-Lewis Index (TLI), and (e) Standardized Root Mean Square Residual (SRMR).

In Fig. 1, it can be seen that only three items had factor loadings less than 0.40 while the rest were between 0.77 and 0.80. Then, indices were compared to the parameters usually accepted in the literature. The results were the following:  $\chi^2(14) = 67.96, p = 0.01$ ; RMSEA = 0.07 (90 % confidence interval = 0.05–0.08); CFI = 0.97; TLI = 0.95 and SRMR = 0.03. In general, while the Chi-square was significant, the rest of the fit indices obtained appropriate values, which suggests that the specified model fits the data adequately.

## 6 Conclusions and Discussion

The present study expands the repertoire of psychometric measurement tools for the child population, adapting a scale that has been validated in adolescents to young boys and girls (Tomyn and Cummins 2011; Tomyn et al. 2011), while also offering the





**Fig. 1** Model of one factor of the PWI-SC

possibility to establish international comparisons. This is particularly relevant as this study used a sample of boys and girls from the Latin American context, from a developing country like Chile, and in an area where there is low availability of psychometric tools adapted for this population. The results of the psychometric analysis from the PWI-SC scale applied to Chilean school children agree with similar studies conducted internationally (Casas et al. 2012a, b). Overall, the reliability coefficient in the Chilean children population was similar to the validation in the adolescent population, since the latter obtained a result of Cronbach's alpha between 0.78 and 0.81 (Tomin et al. 2011), while the results of the present study were 0.77. This outcome shows the stability of the items that comprise the scale and an adequate level of reliability in line with results from international studies such as those mentioned earlier.

Regarding the correlation analysis between items, our findings acceptable correlate the items to each other in the expected theoretical direction. The high correlations that stood out were between the dimensions "safety", "become good at something", "doing things outside the home", and the "future" (ranging between 0.55 and 0.61), which could be related to the beginning of the perspective-taking process (Selman 1980) characteristic of the participants' age group.

In the EFA, the results indicate the presence of only a single factor, assimilating results from other studies where a unique structure of the PWI-SC was found (Tomin and Cummins 2011). About the outcome of the CFA, we observed acceptable fit index values, which support the unique structure of the PWI-SC scale. Having access to more psychometric tools to evaluate subjective well-being expands our knowledge about children in the country. Considering the *International Convention on the Rights of the Child* as a reference, the current study brings new opportunities for more research that assesses the subjective perception of children of their everyday life. Future research can examine other explanatory variables that can contribute to explain the subjective well-being of children, such as school life, and peer relationships, as part of this unique structure, or by complementing other aspects of this construct. The results of the study highlight a single unique structure to measure this subject.

Some limitations of the study must be considered. First, the study only considers the urban population in Chile, which represents a higher percentage of the national population. Conversely, the rural population only represents 13 % of the total

inhabitants of the country. Thus, the data collection of the study prioritized a more viable access to the urban population. Second, different ethnicities were not considered due to the lack of a national database to identify different ethnic groups across the country, which represent 5 % of the population.

Future research in Latin American contexts can follow two paths. First, it could define the concurrent validity of the scales such as PWI-SC with BMSLSS, SLSS, OLS, and GSDI in the Chilean context. Second, it could expand in terms of longitudinal design to assess psychological development in Latin American cultural, social, and economic contexts. In these ways, more psychometric and complex studies will facilitate cultural comparisons of SWB in developing countries, taking advantage of the importance that this subject has been shown to have in these countries.

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