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# Psychometric Properties of the Personal Wellbeing Index in Brazilian and Chilean Adolescents Including Spirituality and Religion

## *Propriedades Psicométricas do Personal Wellbeing Index em Adolescentes Brasileiros e Chilenos Incluindo Espiritualidade e Religião*

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### Abstract

This study compared the 7-item Personal Wellbeing Index (PWI) with two other versions which include the domains “Spirituality” and “Religion”, separately, in a sample of Brazilian ( $n = 1.047$ ) and Chilean ( $n = 1.053$ ) adolescents. A comparison of psychometric properties between the PWI versions was carried out through multigroup confirmatory factor analysis showing adequate adjustments ( $CFI > .95$ ,  $RMSEA < .08$ ), whereas the item spirituality presented better performance. For the analysis of the differential contribution of each domain to the notion of global satisfaction, a regression on the item Overall Life Satisfaction (OLS) was applied using structural equations. It is recommended the inclusion of the item spirituality in the original scale, considering the importance of such domain in both cultures.

**Keywords:** Personal wellbeing, spirituality, religion, adolescence.

### Resumo

Este estudo comparou o Índice de Bem-estar Pessoal (PWI) de sete itens, com duas versões que incluem os domínios “espiritualidade” e “religião” separadamente em uma amostra de adolescentes brasileiros ( $n = 1.047$ ) e chilenos ( $n = 1.053$ ). A comparação das propriedades psicométricas entre as versões do PWI foi realizada através de análise fatorial confirmatória multigrupo mostrando ajustes adequados ( $CFI > 0,95$ ,  $RMSEA < 0,08$ ), sendo que o item espiritualidade apresentou melhor desempenho. Para a análise da contribuição de cada domínio para a satisfação global, foram realizadas regressões com o PWI e o item de Satisfação Global com a Vida por meio de equações estruturais. Recomenda-se a inclusão do item espiritualidade na escala, considerando a importância deste domínio em ambas as culturas.

**Palavras-chave:** Bem-estar pessoal, espiritualidade, religião, adolescência.

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There is a consensus among researchers that studies on subjective wellbeing of children and adolescents are far from achieving the amount of research results offered by studies conducted with adults (Gademann, Schonert-Reichl, & Zumbo, 2010; Tomy & Cummins, 2011). This is particularly relevant if we consider that the available data about childhood and adolescence shows that during earlier stages of life wellbeing has its own evolutionary idiosyncrasy, in such a way that we can't assume that results from samples with adults can be applied to younger

populations even if they belong to the same sociocultural context (Casas, 2010).

In order to contribute to the knowledge of subjective wellbeing in the child and adolescent populations, one of the main challenges is that wellbeing measuring instruments for children and adolescents are scarce. Therefore short and multidimensional instruments that measure life satisfaction are needed, particularly those that can be used in large-scale studies (Hubner & Gilman, 2002). The availability of such instrument is highly valuable for the implementation of studies at the national and transnational levels, similarly to the approaches developed for the adult population (Seligson, Huebner, & Valois, 2003) in culturally diverse environments (Sarriera et al., 2012).

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Particularly, one must consider that the empirical data available on childhood and adolescence comes mainly from studies on English speaking population, with a few exceptions (Casas et al., 2012b). In addition, research on the subjective wellbeing domain in children and adolescents (and also adults), has not advanced significantly in developing countries as observed by Lau, Cummins, and McPherson (2005). In Latin America, specifically, children and adolescent's subjective wellbeing has not been studied after considering the different contexts in the region (Aguado Quintero, 2009).

#### *Personal Wellbeing Index (PWI)*

Among the existing studies with adolescents one of the main instruments used is the Personal Wellbeing Index (PWI; Cummins, Eckersley, Pallant, Van Vugt, & Misajon, 2003). The PWI has seven items about different dimensions of satisfaction: standard of living, health, life achievements, personal relationships, personal safety, groups and future security. The International Wellbeing Group (2006) has incorporated an eighth item related to spirituality or religion. Even though the PWI has been designed for the adult population, its formulation is broad enough to be used in all types of populations (Lau et al., 2008).

One of the unsolved problems of research with PWI in the adolescent population is that the share of explained variance is generally smaller than in a sample of adults in the same sociocultural context, which suggests that other dimensions should be included in the adolescent population scale in order to increase its explanatory power (Casas et al., 2012b). On this regard, recent literature has discussed the inclusion of satisfaction with religion or spirituality in the corresponding measure (Wills, 2009). This topic has proven to be problematic when different sociocultural contexts are compared and, in particular, when used with samples of adolescents, since the different meaning given to these dimensions influence the results (Casas, Gonzalez, Figuer, & Malo, 2009).

As observed by the International Wellbeing Group (2006), in the Australian population the domain "spirituality or religion" does not make a differential contribution, although it has proven to do so in other countries. For example, Wills (2009) reports empirical evidence of this contribution in the Colombian population and supports the inclusion of this new domain in the PWI. Moreover, Yiengprugsawan et al. (2010) conclude that "religion and spirituality" are important domains for wellbeing in Thailand.

Discussion on the importance of including religion and spirituality as one of the PWI domains leans towards the studies that show that they contribute to life satisfaction and happiness (Cohen, 2002). In this sense, some studies show spirituality and religion as important protective factors for adolescent (Moreira & Sarriera, 2006).

In many studies the domains religion and spirituality are treated similarly, as if they were synonyms. Like-

wise, by proposing its inclusion in the PWI, the specific question used both words –"How satisfied are you with your spirituality or religion?" (International Wellbeing Group, 2006). Wills (2009) also used only one question to carry out his study in Colombia, but he pointed out that this is a topic that must be assessed with more detail. Considering that it is a double-barreled item, it may lead to a misunderstanding of the concepts and a measurement problem.

Scholars have attempted to define both concepts, Religion and Spirituality, but as Zinnbauer, Pargament, and Scott (1999) show, there are many different possible definitions in the literature. Generally, the definition of religion is related with the institutional, ritual and ideological, whereas spirituality is related with the personal, affective, experiential, and reflective (Ubani & Tirri, 2006). In this sense, Van Dierendonck and Mohan (2006) observe that spirituality is centered in an inner attitude, unrelated with any specific religion. Likewise, empirical research has shown that the complexity in understanding this difference is also found in the general population. In a research with 102 adolescents between ages 12 and 13, Ubani and Tirri (2006) concluded that the participants indicated expressions of religion as related majority with institutional dimension and spirituality as the humanistic dimension. Moreover, studies with the young population in Cataluña, Spain (Casas et al., 2009) also show a different understanding of the two concepts. The majority believes that traditional religion contributes very little to their vital satisfaction, whereas the importance given to spirituality is greater.

Thus there is a need to continue exploring the PWI with adolescents in connection to satisfaction with religion and spirituality as combined or separate domains, and their linkage with age and different cultures, aiming for a better understanding of wellbeing in these specific populations. Therefore, this study analyzes the properties of the PWI-7, in comparison to its other versions that include an eighth item referring to the Religion domain (PWI + Religion) or alternatively referring to Spirituality (PWI + Spirituality). Also, for the analysis of the differential contribution of each domain to the notion of Global Satisfaction, a regression on the single item scale on Overall Life Satisfaction (OLS) was applied.

## **Method**

### *Sample*

The sample consists of 2,100 adolescents between the ages of 14 and 16. Out of the total, 1,053 are Chilean high school students from public institutions in the Valparaíso region, 45.8% being male and 54.2% female. The Brazilian participants are 1,047 from the capital and smaller cities of the State of Rio Grande do Sul, 32.7% being male and 67.3% female.

### Data Collection Procedure

In order to determine the sample, high schools from Brazil and Chile were randomly selected. In each school the procedure was carried out according to the ethical criteria for administration of questionnaires to adolescents in each country. In Brazil, parents' consent was required for each adolescent. Questionnaires were answered through self-administration during the school period 2009-2010, within regular school hours. The time required for the application of the questionnaire was between 45 and 60 minutes.

### Instruments

*Personal WellBeing Index* (PWI; Cummins, et al., 2003 and International Wellbeing Group, 2006). This scale measures subjective wellbeing within different domains of satisfaction: standard of living, health, life achievements, personal relationships, personal safety, groups and future security. According to the authors, these satisfaction domains are related with global wellbeing, each one as a specific item. In November 2006 the authors included the religion/spirituality domain, adding one item (International Wellbeing Group, 2006), and in April 2013, they decided to make the Spiritual/Religious domain optional, because it showed unique contribution in some countries, but not in others. In the revision of the instrument, the authors also recommend that researchers wishing to include this domain use two separate questions, one referring to spirituality and the other referring to religious beliefs (International Wellbeing Group, 2013). Thus, considering the previous findings about the eighth item, this research took into account two different versions of the wellbeing index, one including spirituality, and the other, religion.

*Single item Scale on Overall Life Satisfaction* (OLS; International Wellbeing Group, 2006). This item is not part of the PWI, but it is used by many to analyze the validity of the scale construct, as well as to determine the specific contribution of each item to the total variance. It consists of a question in the following terms: "*Considering your current life, how satisfied are you with your life as a whole?*".

### Analysis Procedure

Initially, we performed internal consistency analyzes using Cronbach's alpha coefficient and item-total correlations, a measure for examining the relationship between individual items and the total scale, where smaller values indicate that the item is not well correlated with the other. After that, the correlations between the items are presented.

Confirmatory factor analyses (CFA) and structural equations were conducted using Maximum Likelihood estimation method (ML) on each of the index versions to verify the factor structure of the instrument, and to determine the contribution of each item to the explained variance, it was considered the OLS in the regression model. The PWI represents the first level deconstruction of the Campbell, Converse and Rodgers (1976) item of OLS.

Thus, the seven items that comprise this scale are the most parsimonious set of life domains for this purpose (Davern, Cummins, & Stoke, 2007). However, in addition to the seven items that make up the core of the PWI, the authors of the scale affirm that the domain of spirituality/religion also meets the criteria for inclusion in samples where the spiritual beliefs and/or religious beliefs are more common. Therefore, they point out this domain as optional, indicating its use in two separate items (International Wellbeing Group, 2013).

Several fit indices are suggested in scientific literature, the most relevant in this model is the Chi-square, the CFI (Comparative Fit Index), TLI (Tucker and Lewis Index), NFI (Normed Fit Index), the RMSEA (Root Mean Squared Error of Approximation) and SRMR (Standardized Root Mean Squared Residual). The models were tested with the software AMOS 18. It's desirable that the NFI, TLI and CFI are above .950 and the RMSEA and SRMR bellow .05 as supported by literature (Batista-Foguet & Coenders, 2000; Byrne, 2010).

Finally, we have tested the Multigroup Confirmatory analyses (MGCFA) considering each country group to verify the scale invariance. In these models, we have tested for the structure (unconstrained model) and factor (constrained factor loadings) invariance, and we have presented all the fit index as well as factor loadings for each observed variable, including the confidence interval calculated using bootstrap, considering that wellbeing measures usually violate normality assumptions because they are positive measures. To consider the difference between the models, we have used the CFI difference ( $\Delta$ CFI). The difference between the CFI should not be higher than .01, and thus, the overall results indicate the viability of constraining the factor loadings to be the same in the different groups (Milfont & Fisher, 2010).

## Results

### Internal Reliability of the Scale

The reliability analysis (Cronbach's alpha coefficient) of the different instrument specifications (with or without the inclusion of the domains "Religion" and "Spirituality") is shown on Table 1. The results for Chile range between .803 and .785 and for Brazil between .788 and .774. However, a decrease in their reliability occurs with the inclusion of the item Religion (increasing to .796 if the item is deleted in Chile, and to .779 in Brazil), what was confirmed in the item-test correlation with the same domain in both countries (.268 for Chile and .290 for Brazil), considerably smaller than for the remaining domains. On the other hand, the inclusion of the domain related to satisfaction with spirituality in the corresponding version of the PWI in both countries slightly increases reliability (alpha decreases when removed).

Table 1  
*Reliability Statistics and Item-total Correlation*

PWI Domains	Chile			Brazil		
	Item-total Correlation PWI-7	Item-total Correlation PWI-8 – Spi	Item-total Correlation PWI-8 - Rel	Item-total Correlation PWI-7	Item-total Correlation PWI-8 – Spi	Item-total Correlation PWI-8 - Rel
1. Health	.451	.444	.427	.453	.461	.461
2. Standard of Living	.555	.551	.538	.533	.528	.521
3. Life Achievements	.610	.612	.589	.560	.556	.548
4. Personal Safety	.598	.600	.573	.533	.524	.492
5. Groups	.472	.472	.468	.459	.473	.473
6. Future Security	.458	.468	.460	.531	.529	.511
7. Personal Relationships	.530	.542	.536	.444	.459	.443
8. Spirituality		.412			.400	
9. Religion			.268			.290
Cronbach's Alpha	.796	.803	.785	.779	.788	.774

Note. PWI-8-SPI is the Personal Wellbeing Index with the “spirituality” item and PWI-8-REL is the Personal Wellbeing Index with the “religion” item.

Likewise, comparatively lower values are observed in the item-total correlations of the domains “Religion” and “Spirituality” with the original domains (PWI-7). In addition, relative similarity can be observed in the correlations of the remaining domains between the different versions of the PWI. The range of the total-item correlation of the different domains (except for “Religion” and “Spirituality”) are between .427 and .612 for Chile and .443 and .560 for Brazil, all of them significant with  $p \leq .01$ .

#### *Correlation between Wellbeing Domains*

According to the results in Table 2, the range of the correlation between the PWI domains for Chile goes from .116 to .496. The domains with higher correlation levels are “Life Achievements” with “Personal Safety” (.496), followed by “Life Achievements” with “Standard of Living” (.488), while “Health” and “Religion” (.116) have the lowest correlations. Regarding the single item scale on OLS, its highest correlation is with the domain “Personal Safety” (.557), and the lowest with “Health” (.308) and “Religion” (.317).

Table 2  
*Correlations Between Domains (Chile and Brazil)*

	1	2	3	4	5	6	7	8	9	10
1. Health	1	.393*	.284*	.304*	.239*	.342*	.275*	.260*	.220*	.290*
2. Standard of Living	.473*	1	.460*	.335*	.267*	.385*	.291*	.251*	.196*	.370*
3. Life Achievements	.330*	.488*	1	.438*	.350*	.356*	.324*	.268*	.210*	.404*
4. Personal Safety	.301*	.379*	.496*	1	.306*	.439*	.281*	.242*	.123*	.371*
5. Groups	.267*	.301*	.324*	.379*	1	.316*	.375*	.281*	.238*	.264*
6. Future Security	.224*	.285*	.424*	.423*	.236*	1	.265*	.262*	.177*	.407*
7. Personal Relationships	.293*	.328*	.379*	.428*	.451*	.298*	1	.277*	.188*	.285*
8. Spirituality	.208*	.267*	.316*	.313*	.242*	.273*	.314*	1	.510*	.279*
9. Religion	.116*	.175*	.188*	.177*	.182*	.193*	.230*	.486*	1	.293*
10. OLS	.308*	.434*	.463*	.557*	.324*	.402*	.377*	.365*	.317*	1

Note. The correlations below the diagonal are from Chile and the correlations over the diagonal are from Brazil.

\*  $p \leq .01$ .

The range of the correlations between the PWI domains for Brazil goes from .123 to .510 and all correlations are significant (Table 2). The domains that show higher correlation levels are “Spirituality” with “Religion” (.510), followed by “Life Achievements” with “Standard of Living” (.460), while “Personal Safety” with “Religion” (.123) have the lowest correlations. Regarding the single item scale on OLS, its highest correlation is with “Future Security” (.407), and its lowest are with “Groups” (.264) and “Spirituality” (.279).

#### Factor Validity: Confirmatory Factor Analysis (CFA)

The CFA was applied separately with data from the two countries, and then considering the multigroup data with the PWI-7 with spirituality, followed by a similar analysis with religion. In Figure 1, the standardized factor weights can be observed, including three error covariance's, as shown in previous research (Casas et al., 2012a): (a) satisfaction with interpersonal relationships and satisfaction with the groups to which they belong, (b) satisfaction with the quality of life and satisfaction with one's own achievements, and (c) the level of satisfaction with life and satisfaction with health.

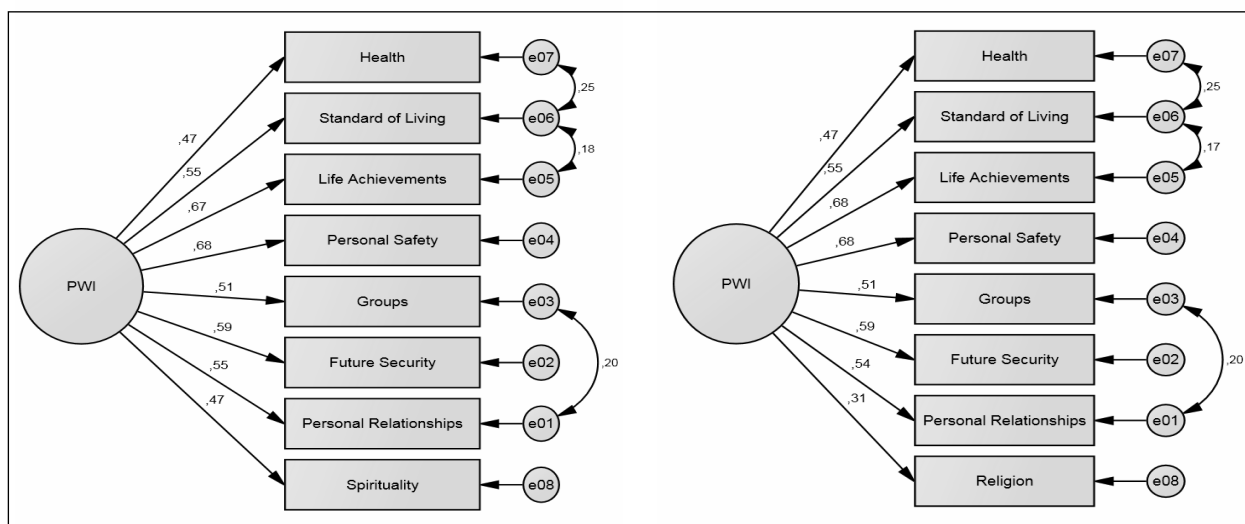


Figure 1. Confirmatory factor analysis of the PWI with the spirituality item and the religion item, with combined data from Chile and Brazil, standardized weights.

Table 3  
CFA Fit Indices

	$\chi^2$	df	p-value	NFI	TLI	CFI	RMSEA (IC)	SRMR
CFA PWI-7 Chile+Brazil	19.28	11	.056	.994	.995	.998	.019 (.000-.033)	.0139
CFA PWI-7 Chile	22.87	11	.018	.988	.987	.993	.032 (.013-.051)	.0208
CFA PWI-7 Brazil	34.00	11	<.001	.978	.971	.985	.045 (.028-.062)	.0224
CFA PWI-8 – Spirituality Chile+Brazil	38.34	17	<.001	.990	.991	.994	.024 (.014-.035)	.0164
CFA PWI-8 – Spirituality Chile	29.71	17	<.001	.985	.990	.994	.027 (.009-.042)	.0202
CFA PWI-8– Spirituality Brazil	51.91	17	<.001	.970	.966	.980	.044 (.031-.058)	.0256
CFA PWI-8 – Religion Chile+Brazil	49.75	17	<.001	.986	.985	.991	.030 (.021-.040)	.0196
CFA PWI-8 – Religion Chile	37.14	17	<.001	.981	.982	.989	.034 (.019-.048)	.0232
CFA PWI-8 – Religion Brazil	64.08	17	<.001	.961	.952	.971	.051 (.038-.065)	.0295
Multigroup Unconstrained Model CFA PWI-7	57.34	22	<.001	.983	.980	.989	.028 (.019-.037)	.0224
Multigroup Constrained Factor Loadings CFA PWI-7	73.06	28	<.001	.978	.980	.986	.028 (.020-.036)	.0275
Multigroup CFA PWI-8 – Spirituality Multigroup Unconstrained Model	81.63	34	<.001	.978	.979	.987	.026 (.019-.033)	.0256
CFA PWI-8– Spirituality Constrained Factor Loadings	97.41	41	<.001	.974	.979	.985	.026 (.019-.032)	.0296
Multigroup CFA PWI-8– Religion Unconstrained Model	101.22	34	<.001	.972	.969	.981	.031 (.024-.038)	.0295
Multigroup CFA PWI-8– Religion Constrained Factor Loadings	117.52	41	<.001	.967	.970	.978	.030 (.024-.036)	.0338

The model showed a good fit with the data from both countries separately and also with the combined data, tested as a multigroup model (Table 3). The multigroup models had a good fit index, without restrictions, as well as with restricted factor loadings with the data from both countries separately and with the combined data.

#### *Specific Contributions of the Domains to the “Global Life Satisfaction (OLS)”*

After the CFA, a regression model was estimated with the PWI-7 with spirituality and religion separately with the

single item scale on OLS in order to test the differential contributions of these PWI domains in its different versions. These specifications can be verified in Figure 2.

Table 4 presents the overall fit index for the structural models. Despite the fact that the fit indices in the models from each country and from the multigroup model are lower than the PWI indices, when the items spirituality or religion are present the adjustments are appropriate, showing that spirituality and religion contribute to the PWI construct.

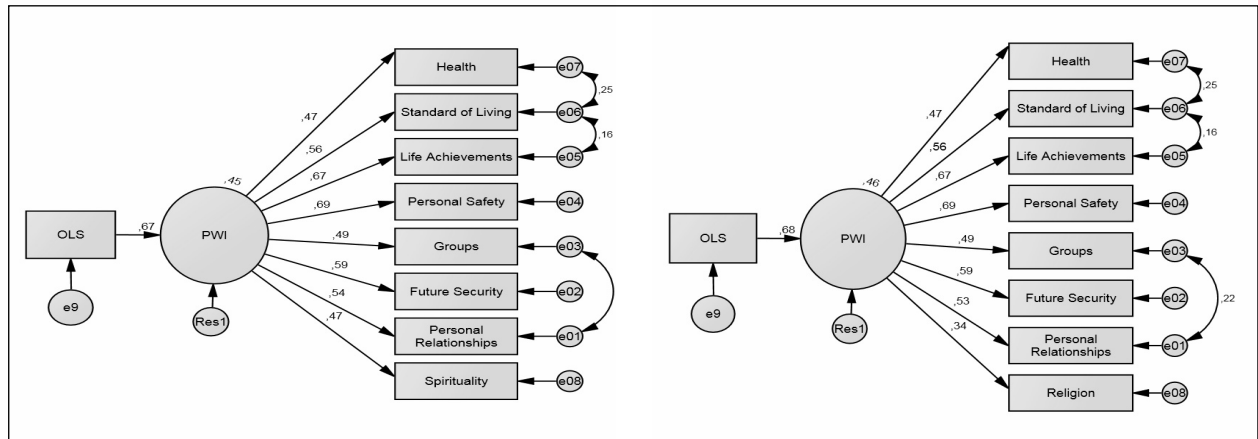


Figure 2. Structural equations model of the OLS with PWI and the spirituality and religion items with joined data from Chile and Brazil, with standardized weights.

Table 4  
Model Fit Indices

	$\chi^2$	$df$	$p$ -value	NFI	TLI	CFI	RMSEA (IC)	SRMR
OLS --> PWI-7 – Chile + Brazil	37.25	17	<.001	.991	.992	.995	.024 (.013-.034)	.016
OLS --> PWI-7 – Chile	42.54	17	<.001	.982	.982	.989	.038 (.024-.052)	.022
OLS --> PWI-7 – Brazil	42.48	17	<.001	.978	.978	.986	.038 (.024-.052)	.021
OLS --> PWI-8 – Spirituality Chile + Brazil	62.41	24	<.001	.987	.988	.992	.028 (.019-.036)	.018
OLS --> PWI-8 – Spirituality Chile	54.81	24	<.001	.979	.982	.988	.035 (.023-.047)	.022
OLS --> PWI-8 – Spirituality Brazil	61.74	24	<.001	.971	.973	.982	.039 (.027-.051)	.025
OLS --> PWI-8 – Religion Chile + Brazil	109.02	24	<.001	.979	.972	.981	.041 (.033-.049)	.023
OLS --> PWI-8 – Religion Chile	81.75	24	<.001	.968	.965	.977	.048 (.037-.059)	.027
OLS --> PWI-8 – Religion Brazil	89.29	24	<.001	.956	.951	.968	.051 (.040-.063)	.030
Multigroup OLS --> PW7 Unconstrained Model	85.03	34	<.001	.980	.980	.988	.027 (.020-.034)	.021
Multigroup OLS --> PW7 Constrained Factor Loadings	102.81	40	<.001	.976	.979	.985	.027 (.021-.034)	.027
Multigroup OLS --> PWI-8 – Spirituality Unconstrained Model	116.55	48	<.001	.975	.978	.985	.026 (.020-.032)	.025
Multigroup OLS --> PWI-8 – Spirituality Constrained Factor Loadings	134.18	55	<.001	.972	.978	.983	.026 (.021-.032)	.029
Multigroup OLS --> PWI-8 – Religion Unconstrained Model	171.05	48	<.001	.963	.959	.973	.035 (.029-.041)	.030
Multigroup OLS --> PWI-8 – Religion Constrained Factor Loadings	189.30	55	<.001	.959	.961	.970	.034 (.029-.039)	.034

All specifications of the multigroup model have good fit indices, both without restrictions and with restricted factor loadings. It can be observed that the model with the item “religion” has the lowest fit indices. Also, when analyzing each country separately, data from Chile has better adjustment to the model with spirituality as well as with religion, compared to Brazil.

Table 5 presents the factor loadings and the standardized weights of the PWI-7 for the combined database of both countries and for each country separately. Tables 7 and 8 show the factor loadings of the PWI with the spirituality and religion items and the standardized weights of the PWI with the OLS, the confidence intervals were

calculated with bootstrap method for both countries. The SMC (Squared Multiple Correlation) are presented for each regression model, indicating the explained variance proportion of the PWI in its regression relation with the OLS.

The data from Table 5 indicated that for the ages considered in this study, the domain that is most related with the latent variable PWI is satisfaction with perceived Personal Safety, followed by satisfaction with Life Achievements. On the other hand the domains that contribute less to the PWI are different in both countries. It can also be observed that the SMC of the PWI-7 is different, it's lower in Brazil (37%) and higher in Chile (51%), resulting in 44.9% in the combined sample.

Table 5  
*Standardized Estimations – PWI-7*

Bootstrap ML. 95% IC Sample = 500	Brazil+Chile			Brazil			Chile		
	Estim.	Low.	Up.	Estim.	Low.	Up.	Estim.	Low.	Up.
Standard of Living <--- PWI	.565	.512	.609	.571	.514	.617	.559	.503	.611
Life Achievements <--- PWI	.672	.625	.712	.647	.598	.694	.677	.625	.726
Personal Safety <--- PWI	.702	.667	.736	.664	.620	.704	.734	.691	.777
Groups <--- PWI	.483	.429	.544	.454	.396	.511	.505	.448	.568
Future Security <---PWI	.593	.548	.635	.596	.546	.643	.602	.554	.648
Personal Relations. <--- PWI	.525	.477	.570	.500	.440	.560	.536	.488	.589
Health <--- PWI	.463	.411	.518	.501	.444	.555	.431	.377	.487
PWI <--- OLS	.670	.630	.709	.608	.537	.678	.715	.668	.762
*SMC PWI <--- OLS	.449			.370			.510		

Note. \*SMC = Squared Multiple Correlation.

Table 6  
*Standardized Estimations – PWI 8 – Spirituality*

Bootstrap ML. 95% IC Sample = 500	Brazil+Chile			Brazil			Chile		
	Estim.	Low.	Up.	Estim.	Low.	Up.	Estim.	Low.	Up.
Standard of Living <--- PWI	.565	.514	.612	.571	.517	.617	.560	.502	.614
Life Achievements <--- PWI	.668	.621	.709	.643	.593	.687	.675	.625	.724
Personal Safety <--- PWI	.692	.656	.728	.653	.609	.692	.724	.683	.766
Groups <--- PWI	.490	.435	.548	.461	.405	.517	.511	.454	.573
Future Security <--- PWI	.592	.548	.633	.593	.543	.639	.601	.556	.645
Personal Relations <--- PWI	.535	.489	.580	.510	.451	.569	.546	.497	.597
Health <--- PWI	.468	.417	.522	.507	.453	.560	.435	.382	.491
Spirituality <--- PWI	.470	.425	.518	.454	.405	.503	.473	.426	.528
PWI <--- OLS	.673	.636	.713	.610	.539	.680	.720	.675	.765
*SMC PWI <--- OLS	.453			.372			.518		

Note. \*SMC = Squared Multiple Correlation.



Regarding Table 6, the standardized factor loadings in the Brazilian sample ranged from .454 (Spirituality) to .653 (Security). The standardized factor loadings in the Chilean sample are from .435 (Health) to .724 (Security). The SMC of the PWI-8 with the item spirituality is not very different

from the SMC with the PWI-7, with Chile showing higher variances than Brazil. The regression standardized weights in the OLS and the PWI-8 are also similar to the PWI-7 weights: .67 for the combined sample, .61 for Brazil and .72 for the Chilean sample (Table 6).

Table 7  
*Standardized Estimations – PWI 8 – Religion*

Bootstrap ML. 95% IC Sample = 500	Brazil+Chile			Brazil			Chile		
	Estim.	Low.	Up.	Estim.	Low.	Up.	Estim.	Low.	Up.
Standard of Living <--- PWI	.565	.513	.608	.573	.518	.620	.559	.503	.612
Life Achievements <--- PWI	.667	.620	.708	.645	.594	.691	.672	.623	.722
Personal Safety <--- PWI	.690	.654	.724	.652	.607	.692	.721	.675	.765
Groups <--- PWI	.488	.430	.546	.460	.404	.517	.509	.453	.570
Future Security <--- PWI	.592	.546	.633	.594	.542	.640	.600	.553	.644
Personal Relations <--- PWI	.530	.481	.574	.505	.445	.563	.540	.492	.590
Health <--- PWI	.465	.412	.520	.506	.450	.560	.432	.379	.487
Religion <--- PWI	.341	.290	.386	.331	.275	.385	.345	.289	.397
PWI <--- OLS	.682	.644	.722	.621	.548	.691	.727	.683	.773
*SMC PWI <--- OLS	.465			.385			.528		

Note. \*SMC = Squared Multiple Correlation.

When adding the item “religion” to the PWI-7, the standardized factor loadings in the Brazilian sample ranges from .331 (Religion) to .652 (Security). In the Chilean sample the item “religion” also has the lowest factor loading (.345), while “Security” has the highest factor loading (.721). The SMC of the PWI-8 with the item religion is slightly higher than the SMC with the PWI-7, resulting in higher variance in the Chile specification in terms of the Brazil specification. The regression standardized weights of the OLS and the PWI-8 are also slightly higher than the weights of the PWI-7, with .68 for the combined sample, .62 for Brazil and .73 for Chile (Table 7).

## Discussion

The reliability of the PWI with or without the inclusion of the “Religion” and “Spirituality” domains in Chile ranges between .803 and .785 and in Brazil between .788 and .774, thus there is a decrease in reliability originated from the inclusion of the item religion (it is .796 when removing this item for Chile and .779 for Brazil). The same occurs in the item-test correlation for the same item in both countries (.268 for Chile and .290 for Brazil), significantly less than the other domains. Comparing both countries, the inclusion of the item spirituality slightly increases reliability. In this regard, the reliability coefficients for the PWI-7 and PWI-8 versions have values very close to those obtained by related studies in other countries (Nielsen,

Smyth, & Zhai, 2010; Rodriguez et al., 2011), obtaining an adequate reliability level.

The comparatively low item-total correlations and reliability coefficient obtained in the PWI + religion, and also its lowest fit indices in all models proposed, and the lowest factor loadings indicated the difficulty for including this domain specifically, despite remaining within acceptable ranges. When considering the correlations between the items religion and spirituality with the remaining items in the PWI, the ranges are similar to those found in Casas et al. (2009) with a sample of Spanish adolescents. Complementarily, the results of the item-total correlations show values within similar ranges to those shown by studies in other countries with adult samples (since there are very few studies published with adolescent): from .33 to .69 for Hong Kong and from .21 to .66 for Australia (Lau et al., 2005), and from .44 to .79, in Spain (Rodriguez et al., 2011). Likewise, the nine domains analyzed had significant correlations with the single item scale on OLS.

The highest correlations were found for “Personal Safety” in Chile and “Future Security” in Brazil, and the lowest are “Health” in Chile and “Groups” in Brazil. These results differ from other studies with adults, (Lau et al., 2005; Nielsen et al., 2010), which may point to a difference by age for the domains more related to overall life satisfaction. Although the weight of the correlations of the domains may vary with respect to the OLS, it is important to highlight that the four domains that show

the highest correlations are the same for both countries (Personal Safety, Life Achievements, Standard of Living and Future Security).

It was possible to conclude that the model fit indices for each country and for the multigroup model are lower than the PWI-7 indices when including the spirituality or religion items. However, the adjustments are appropriate, showing that spirituality and religion contribute to the "PWI" construct, also finding that the model with spirituality presents better adjustments than the model with religion.

In addition, the domain which is more related to the PWI latent variable is satisfaction with the feeling of Personal Safety, followed by satisfaction with Life Achievements. The explained variance of the PWI relative to the OLS is slightly higher when adding the "spirituality" or "religion" item to the PWI-7 for both countries. That indicates that the PWI contributes more to the explanation of overall life satisfaction when adding the variable spirituality or religion to the instrument.

The explained variances are similar to those from other studies: 43% (Lau et al., 2005); 47% (Chen & Davey, 2009); 47% for young adults and 57% for older people (Lau et al., 2008); 52% (Cummins et al., 2003). In our study, the results were 38% for Brazil, 51% in Chile and 45% for the combined sample. However, these results indicate that, especially for Brazilian adolescents, there are possible unidentified domains related with overall life satisfaction.

The lower weight given to "Health" when compared to other PWI domains (excluding Religion) indicates that although it is a domain that contributes to explaining wellbeing, health is not among the most relevant. Studies about health perception indicate that adolescents have a very positive perception of this domain (Garbin, Garbin, Moimaz, & Gonçalves, 2009) which may suggest that this is not a topic of concern for them.

About the understanding of spirituality and religion, a qualitative research with a group of children from South Brazil indicated that they understand "spirituality" as beliefs, religious practices and the use of religion and faith as a tool to deal with difficult situations (Strelhow, Paradiso, Sebold, Bedin, & Sarriera, 2011), showing the linkage between spirituality and religion. Research carried out with adolescents also found a link between concepts, but it was also possible to highlight differences (Van Dierendonck & Mohan, 2006).

Perhaps for the adolescents of this sample these are very closely related words. As observed by Casas et al. (2009) this might be a problem of understanding and meaning given to this dimension due to its high level of abstraction.

Regarding the inclusion of the domains religion or spirituality as two separate items, it was possible to observe that the reliability analyses indicate that the inclusion of religion decreases reliability and the item-test correlations of these two domains are lower than for the remaining domains. However, the rest of the analyses favors the un-

derstanding that the item "spirituality" contributes to the PWI as well as to OLS. Thus it seems relevant to continue studying these domains in terms of their contribution to life satisfaction of adolescents.

## Conclusions

The different PWI versions showed good psychometric properties in the samples in both countries of this study, as well as for the combined sample, indicating its potential for the development of transcultural studies. The item spirituality seems to contribute to the PWI more than the item religion, since in the analyses performed it had a regression weight close to those found for the items "Health" and "Groups", whereas the item religion showed the lowest weight between all other domains assessed.

This data analysis reinforces the hypothesis that, in both cultures, satisfaction with spirituality contributes to overall life satisfaction, and, thus, to subjective wellbeing. Therefore, it's recommended that future studies continue to include the item spirituality in the PWI when administered on adolescents in the Latin American context.

As a limitation of the study, the fact that the meaning given by adolescents to the terms "spirituality" and "religion" is not accurately understood should be highlighted. Furthermore, future research should also verify the PWI consistency including these two terms together or separately, considering age and gender differences, since these terms can be understood differently at different life stages.

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