Cross-cultural validation of the positivity-scale in five European countries

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ABSTRACT

The aim of the present paper was to test the cross cultural validity of the Positivity Scale (*P Scale*), a new questionnaire designed for the measurement of *positivity* (i.e., general tendency to evaluate self, life, and future in a positive way). Participants (*N* 3544) from Italy, Germany, Spain, Poland, and Serbia answered eight items of the *P Scale* and responded to items from other well validated measures. Confirmatory Fac tor Analysis supported the assumed one factor structure of the *P Scale* and demonstrated its gender invariance in each country and cross cultural validity. Correlation analyses revealed significant and posi tive associations of the *P Scale* with self esteem, life satisfaction, optimism, and a latent factor variable of *positivity*, and a negative relation to depression. The findings provided support for the convergent validity of the *P Scale* across countries. Possible applications of the *P Scale* are suggested. Implications for further research on conditions and outcomes of *positivity* in different cultural contexts are discussed.

1. Introduction

Numerous studies revealed highly significant and positive interrelations among self esteem, life satisfaction, and optimism, constructs that are uniquely associated with positive outcomes in various life domains (e.g., health, academic success; Baumeister, Campbell, Krueger, & Vohs, 2003; Diener & Diener, 1995; Lyubomirsky, King, & Diener, 2005; Nes & Segerstrom, 2006; Scheier, Carver, & Bridges, 1994). Past research focused on unique associations of self esteem, life satisfaction, and optimism to life outcomes. However, a growing body of research has shown that a trait like dimension (i.e., positivity; hereinafter referred to as *POS*) is underlying individuals' evaluations towards self, life, and future (Caprara & Steca, 2005, 2006; Caprara, Steca, Alessandri, Abela, & McWhinnie, 2010; Caprara et al., 2009) and uniquely con tributes to optimal functioning (Alessandri, Caprara, & Tisak, 2012). Individuals high in *POS* tend to evaluate their lives as posi tive, have optimistic future expectations and a positive view of their self worth (Caprara et al., 2009; Caprara, Alessandri, & Eisenberg, et al., 2012a; Caprara, Alessandri, & Trommsdorff, et al., 2012b). Nevertheless, research on the cross cultural validity of measures to assess *POS* is scarce. The investigation of individual differences across cultures is important to corroborate the general izability and validity of a personality construct (Heine & Buchtel, 2009). Therefore, the aim of the present study was to investigate the cross cultural invariance of a newly developed measure to assess *POS* (i.e., Positivity Scale; hereinafter referred to as *P Scale*).

1.1. Positivity

Taking a person centered approach to optimal human function ing, *POS* represents a core dimension "that significantly affects how individuals predispose themselves to actions and experiences" (Caprara, Alessandri, & Trommsdorff, et al., 2012b, p. 77). This approach views individuals as agents who significantly contribute to chart the course of their life and accordingly focuses on their potentials and strengths. Accordingly, past research has shown that positive self evaluations (i.e., self esteem), positive attitudes toward life (i.e., life satisfaction), and optimism are associated with self confidence and aspirations conducive to success in different life domains (Lyubomirsky et al., 2005). For instance, optimistic

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individuals continuously engage in efforts for goal achievement (Nes & Segerstrom, 2006), because future oriented thinking is strongly associated with internal control beliefs (Trommsdorff, 1994). Moreover, the buffering effects of self esteem help to over come negative consequences of failure and increase sustained effort (Heimpel, Wood, Marshall, & Brown, 2002).

In recent research, latent variable models of POS were estimated with measures of life satisfaction (Diener, Emmons, Larsen, & Griffin, 1985), self esteem (Rosenberg, 1965), and optimism (Scheier & Carver, 1987) as indicators. Higher order confirmatory factor analyses supported the assumption that life satisfaction, self esteem, and optimism are the core features of a trait like con struct that was labeled first *positive thinking* (Caprara & Steca, 2005, 2006) and later *positive orientation* (Caprara et al., 2009) or *POS* (Caprara, Alessandri, & Eisenberg, et al., 2012a). Twin studies provided further evidence on this point, by showing that genetic factors contributed to explain a substantial amount of POS' variance (Caprara et al., 2009). Despite cultural differences in the means of the dimensions of POS, findings attested to the cross cultural stability of a common factor structure across Western (i.e., Italy, Canada, Germany) and Asian (i.e., Japan) samples (Caprara et al., 2010; Caprara, Alessandri, & Trommsdorff, et al., 2012b).

Longitudinal studies have shown that POS is stable through ado lescence and into adulthood and positively associated to indicators of successful adjustment across domains of functioning. In con trast, POS was negatively associated with negative affect (Alessandri, Caprara, & Tisak, 2012a). Most notably, the latent var iable POS explained additional variance over and above what was explained by the indicator variables (i.e., self esteem, life satisfac tion, optimism) alone (Alessandri et al., 2012b; Caprara et al., 2010).

However, the approach to asses POS as a latent variable is not without limitations. In lack of a suitable measure POS has been assessed indirectly with a large number of items from instruments originally designed to assess other constructs than POS. In order to account for these limitations a new scale was developed to assess POS as a unique construct, the *P Scale* (Caprara, Alessandri, & Eisenberg, et al., 2012a). Based on an initial item pool of 36 items assessing aspects of POS exploratory and confirmatory factor anal yses were computed. This procedure yielded an 8 item scale. Fur ther studies attested to good convergent and discriminant validity, temporal stability, and to cross cultural invariance. Moreover, the *P Scale* was positively associated with emotional stability and neg atively related to depression (Caprara, Alessandri, & Eisenberg, et al., 2012a).

1.2. Study aims

The aim of the present study was to investigate cross cultural invariance of the *P Scale* across Italy, Germany, Spain, Poland, and Serbia. These countries differ with regard to prevailing living conditions (Böhnke, 2008; European Bank for Reconstruction, 2011; Organisation for Economic Co operation, 2011) and value orientations (Schwartz & Bardi, 1997). However, we did not expect that countries' differences in socioeconomic and political condi tions would have any impact on the validity and factor structure of the scale. Indeed, correlations of the core dimensions of POS at the individual level were rather robust against influences of the socio cultural context in previous studies (Caprara et al., 2010; Caprara, Alessandri, & Trommsdorff, et al., 2012b).

We addressed the scale's construct validity by examining the associations of the *P Scale* with self esteem, life satisfaction, opti mism, depression, and POS computed as a factor score derived from self esteem, life satisfaction, optimism. We expected that the *P Scale* would be positively related to self esteem, life satisfaction,

and optimism and negatively associated with depression (Caprara, Alessandri, & Eisenberg, et al., 2012a). Although previous studies did not reveal any impact of gender on the structural validity of the *P Scale*, the cross gender invariance of the *P Scale* was tested to further corroborate this result (Alessandri et al., 2012a; Caprara, Caprara, & Steca, 2003).

2. Method

2.1. Participants

The Italian participants were college students (690 women, 534 men) ranging in age from 19 to 39 years ($M = 23.66$, $SD = 3.80$). German participants were college students (118 men, 202 women), ranging in age from 18 to 29 years ($M = 21.31$, $SD = 1.49$). Polish participants were college students (354 women, 345 men), ranging in age from 18 to 35 years ($M = 21.55$, $SD = 2.13$). Participants from Serbia (501 men, 509 women) were between 19 and 79 years old ($M = 42.03$, $SD = 14.16$). Spanish participants were college students (151 men, 189 women), ranging in age from 18 to 31 years ($M = 27.11$, $SD = 5.13$).

2.2. Procedure

In Italy, Spain, Poland, and Germany participants were recruited from university courses. Italian, Spanish, Polish and Serbian partic ipants did not receive credit points or any other gratification for their participation. For compensation, German participants could participate in a lottery of vouchers worth 10 Euros or receive course credit. Serbian participants were recruited by students and answered questionnaires individually at their homes.

2.3. Instruments

All participants answered the *P Scale*. Moreover, country specific versions of each instrument (see below) were adminis tered in order to assess self esteem, life satisfaction, optimism, and depression respectively. Data on the Self Esteem Scale, the Satisfaction with Life Scale (SWLS), the Life Orientation Test (LOT R), and the Center for Epidemiologic Studies Depression Scale (CES D) were not available for the Polish sample because data collection was part of a larger study on students' career plans.

The P Scale. The *P Scale* has been introduced by Caprara, Alessandri, and Eisenberg, et al. (2012a) as a direct measure of POS. Participants answered eight items on a 5 point scale from 1 (*strongly disagree*) to 5 (*strongly agree*) (see Appendix; Cronbach's αs: .81 [Italy], .85. [Germany], 77, [Poland], .81, [Serbia], 89. [Spain]). The Italian, Spanish and Polish versions of the *P Scale* were available from previous studies (Caprara, Alessandri, & Eisenberg, et al., 2012a; Łaguna, Oleś, & Filipiuk, 2011). In Germany and Serbia, the *P Scale* items were translated and back translated to ensure cultural appropriateness and accuracy.

Self esteem. Eight items (two were taken out due to content overlapping with those from the *P Scale*), were used from the specific cultural adaptations of the original Rosenberg (1965) Self Esteem Scale (Caprara, Alessandri, & Trommsdorff, et al., 2012b; Collani & Herzberg, 2003; Martín Albo, Núñez, Navarro, & Grijalvo, 2007; Opačić, 1993) (Cronbach's αs: .89 [Italy], .86. [Germany], .81, [Serbia], .80. [Spain]).

Life satisfaction. Four items (one was taken out due to content overlapping with those from the *P Scale*) were used from previ ously validated cultural adaptations of the original SWLS (Atienza, Balaguer, & Garcia Merita, 2000; Caprara, Alessandri, & Trommsdorff, et al., 2012b; Sölva, Baumann, & Lettner, 1995;

Vasić, Šarčević, & Trogrlić, 2011) (Cronbach's αs: .91 [Italy], .78. [Germany], .80, [Serbia], .81. [Spain]).

Optimism. Country specific versions of the original LOT R (Scheier et al., 1994) were used (Caprara, Alessandri, & Trommsdorff, et al., 2012b; Ferrando, Chico, & Tous, 2002; Herzberg, Glaesmer, & Hoyer, 2006; Jovanović & Jerković, 2011) (Cronbach's αs: .77 [Italy], .81 [Germany], .73, [Serbia], 71. [Spain]).

POS. Individuals' scores on latent *POS* were estimated using maximum likelihood explorative factor analysis in Italy, Germany, Serbia, and Spain. Indices of fit for this analysis revealed only one Eigenvalue higher than 1 (mean variance explained by the one fac tor solution across cultures was 54% ranging from 40.21% in Italy to 60.21% in Serbia, SD = 6.2; mean SRMR = .02, SD = .01).

Depression. Italian (Fava, 1983), German (Hautzinger & Bailer, 1993), Serbian (Gagić, 2012), and Spanish (Roberts & Vernon, 1983) versions of the CES D Scale (Radloff, 1977) were used to assess depression (Cronbach's αs: .89 [Italy], .88 [Germany], .83 [Serbia], .90 [Spain]).

3. Results

3.1. Statistical analysis

First, we examined the factor structure of the *P Scale* for gender and each country separately, using Confirmatory Factor Analysis (CFA). The error covariances between items 1 and 6, and between item 3 and 7 were freely estimated in all models. This is consistent with the previous study of Caprara, Alessandri, & Eisenberg, et al., 2012a. After the fit of the model was established, we used Multigroup Confirmatory Factor Analysis (MGCFA) to examine mea surement invariance (Steenkamp & Baumgartner, 1998). In preli minary analyses items showed a reasonably well normal distribution within each country. Therefore, Full Information Maxi mum Likelihood was employed to fit all models and to deal with missing data, by using Mplus 4.01 (Muthén & Muthén, 2004). The following criteria were employed to evaluate the absolute goodness of fit of each model: chi square likelihood ratio statistic, Tucker Lewis fit index (TLI), comparative fit index (CFI), the root mean square error of approximation (RMSEA) with associated confidence intervals, and the standardized root mean square residual (SRMR). The chi square test is sensitive to sample size. Obtaining a non sig nificant chi square becomes increasingly unlikely with complex models and large sample sizes, even for very small group differences or model misspecifications (Kline, 2005). Following Hu and Bentler (1998), we chose cut off values of .95 for TLI and CFI, .06 for RMSEA, and .08 for the standardized root mean square residual (SRMR). Then measurement invariance was tested, by fitting a sequence of increasingly restrictive models, in accordance with widely accepted guidelines (Steenkamp & Baumgartner, 1998). In the first (uncon strained) model, the factor loadings, the item intercepts, and the error variances were allowed to differ across groups (configural invariance). In the second model (metric invariance), the first order factor loadings were constrained to be equal (i.e., equal λ). In the third model, we maintained the restrictions of Model 2, imposing additional equality constraints on the first order intercepts (equal τ).

To test differences among these nested models we calculated restricted chi square tests ($\Delta\chi^2$) along with the change in CFI. This is consistent with Cheung and Rensvold's (2002) recommendation that the addition of a constraint that leads to more than a .01 change in the CFI is practically important (Schmitt & Kuljanin, 2008). If a step resulted in a significant chi square difference test or in a non negligible difference in CFI, the particular restriction was rejected and parameters with the highest modification index were sequen tially estimated. When partial measurement invariance was estab lished the sequence was continued (Meredith & Teresi, 2006).

3.2. Gender invariance

As a preliminary step to the cross cultural analyses, MGCFA was used to assess measurement invariance of the *P Scale* across gen der in each country. Data analyses revealed a close fit of the hypothesized model for both males and females in each country.[1] Loadings for these models were high (M = .59; SD = .16), ranging from .30 (for Item 4, Serbia) to .90 (for item 3, Germany). Likewise, the configural model showed a god fit to the data, and was not supe rior to the metric invariance model in all countries. However, when we constrained the first order factor loadings to be equal across the males and females' sample, the changes in overall chi square and in the ΔCFI were significant in all countries. To achieve partial scalar invariance: (1) one intercept was relaxed to be different in Spain (i.e., item 2), (2) two intercepts were relaxed to be different in Italy (i.e., items 3 and 8), Germany (i.e., items 2 and 5), Poland (i.e., items 2 and 4), and (3) three intercepts were relaxed to be different (i.e., items 2, 4, and 5) in Serbia. Then, the chi square difference test and the ΔCFI supported the viability of the partial scalar invariance hypothesis. To investigate mean level gender differences in *POS*, we constrained latent means to be equal, and found no significant differ ences in Italy (i.e., $\Delta\chi^2(1)$ = 2.35, p = .13), Germany (i.e., $\Delta\chi^2(1)$ = .15, p = .70), Poland (i.e., $\Delta\chi^2(1)$ = 3.15, p = .08), Serbia (i.e., $\Delta\chi^2(1)$ = .26, p = .61), and Spain (i.e., $\Delta\chi^2(1)$ = 2.61, p = .11). [2]

3.3. Invariance across countries

The baseline model yielded an adequate fit within each of the five countries.[3] The configural invariance model fits the empirical data. Factor loadings of the items were all significant, ranging from .30 to .88 (M = .56; SD = .18). Having established the good fit of the hypothesized model, we proceeded with examining configural invariance and estimated this model in all five groups simultaneously.

The configural model showed a good fit to the data (Table 1). However, when we constrained the factor loadings to be equal across the five groups, the changes in overall chi square were sig nificant. A loading was relaxed to be different in Italy and in Spain (i.e., item 4). Then, the chi square difference tests and the ΔCFI supported the viability of the partial metric invariance hypothesis. The chi square difference test between the model with constrained intercepts and the less constrained model was significant. Two intercepts (i.e., items 5 and 7) were relaxed to be different across the five groups. Furthermore, one intercept (i.e., item 3) was relaxed to be different from the Polish and Spanish sample, and one additional intercept was relaxed to be different from the Ser bian sample. Then, the chi square difference test and the ΔCFI became no longer significant.[4]

3.4. Mean level comparison

The results supported partial scalar invariance for the *P Scale* model across Italy, Germany, Poland, Serbia, and Spain. Thus, latent means can be meaningfully compared (Steenkamp & Baumgartner, 1998). When we constrained the latent factor means to be equal

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[1] Correlations between residuals for items 1 and 6 and for items 3 and 7 were statistically significant in all samples across countries, ranging from .07 (items 3–7, Italy, males' sample) to .45 (items 1–6, Germany, females' sample), with a mean of .25 (SD = .14).

[2] Details about factor loadings and intercepts are available upon request from the corresponding author.

[3] Correlations between residuals for items 1 and 6, and items 3 and 7 were statistically significant in all samples across countries, ranging from .14 (items 3–7, Spain) to .47 (items 1–6, Italy, Germany, and Poland), with a mean of .36 (SD = .06).

[4] Details about factor loadings and intercepts are available upon request from the corresponding author.

Table 1
Results from model comparisons.

	χ^2	df	TLI	CFI	RMSEA	SRMR		$\Delta\chi^2$	Δdf	p	ΔCFI
Italy	136.04*	18	.949	.951	.064	.037					
Germany	40.89*	18	.966	.978	.063	.036					
Poland	67.56*	18	.949	.963	.063	.035					
Serbia	61.60*	18	.975	.983	.047	.023					
Spain	25.10	18	.969	.980	.036	.031					
M1.Configural	331.19*	90	.951	.968	.062	.034					
M2.Metric	418.42*	118	.939	.949	.069	.075	M2vsM1	87.23	28	.00	−.019
M3.Metric - *Partial*	368.1*	116	.950	.961	.063	.063	M3vsM2	37.62	26	.07	−.007
M4.Scalar	420.15*	143	.930	.932	.081	.071	M4vsM3	51.34	27	.00	−.029
M5.Scalar – *Partial*	395.89*	133	.943	.954	.065	.064	M5vsM3	27.08	17	.06	−.007

Note. M = model.
* $p < .05$.

Table 2
Descriptive statistics and correlations between variables for Italy, Germany, Serbia, and Spain.

	Italy			Germany			Serbia			Spain		
	M	SD	rPOS	M	SD	rPOS	M	SD	rPOS	M	SD	rPOS
Self-esteem	3.14	.49	.70**	3.26	.61	.79**	2.34	.53	.65**	3.10	0.51	.62**
Life satisfaction	4.53	1.31	.64**	5.24	1.08	.70**	4.33	1.24	.64**	3.89	0.69	.53**
Optimism	3.37	.71	.52**	3.67	.77	.73**	3.54	.56	.65**	3.42	0.61	.57**
POS (factor score)	.00	1.00	.81**	.00	1.00	.86**	.00	1.00	.78**	.00	1.00	.80**
Depression	1.81	.53	−.54**	1.63	.68	−.66**	.91	.50	−.48**	1.83	0.45	−.49**

Note. rPOS = correlation with *P-Scale* scores.
** $p < .01$.

across the three samples, the chi square difference test between this model and the less constrained model was significant ($\Delta\chi^2(4) = 101.97$, $p < .001$). Therefore, latent means should be con sidered different across countries.

ANOVAs revealed significant group differences in the individual's factor scores obtained by previous MCFA,[5] $F(4, N = 3495) = 11.60$, $p < .01$; $\eta^2 = .01$. Tukey post hoc tests revealed that Spain ($M = .23$, $SD = .90$) scored significantly lower than Germany ($M = .19$, $SD = .91$; $d = .50$), Serbia ($M = .07$, $SD = .91$; $d = .36$), Poland ($M = .02$, $SD = .85$; $d = .33$), and Italy ($M = .06$, $SD = .92$; $d = .20$). Germany scored significantly higher than Italy ($d = .30$), Poland ($d = .23$), and Spain, but not than Serbia. No significant differences were found between Italy and Poland.

3.5. Construct validation

Correlation analyses revealed that the *P Scale* scores were sig nificantly and positively associated with self esteem, life satisfac tion, optimism, and the latent factor variable of *POS* across countries. These results indicate a high degree of convergent valid ity of the *P Scale* in Italy, Germany, Serbia, and Spain. Finally, total scores on the *P Scale* were negatively correlated with depression across all four countries (see Table 2).

4. Discussion

The present findings provided support for the expected cross cultural invariance of the *P Scale*, its one factor structure, and the cross cultural comparability of the derived mean scores. Moreover, the results revealed that the structure (i.e., loadings, intercepts) was not different for males and females. In line with previous find ings (Caprara, Alessandri, & Eisenberg, et al., 2012a), men and

women did not differ significantly on the mean scores of the *P Scale*.

Mean level comparisons revealed significant differences in the *P Scale* at the group level. Participants from Germany and Serbia scored higher on the *P Scale* than Italian and Spanish participants. Given the current negative economic situation in Southern Europe (Eurofound, 2012), we cannot exclude the possibility that the gen eral quality of life in these countries may have influenced individ uals' evaluation of *POS*. In comparison to the other samples the Serbian sample differed with regard to age range and academic background. Therefore, mean differences should be interpreted with caution. Further studies need to investigate the validity of the *P Scale* across samples varying in age and demographic back ground. Nevertheless, despite differences at the group level, analy sis of structural equivalence revealed satisfying fit indices of the one factor model. Findings provided evidence of configural, metric, and scalar invariance across cultures. That means the items repre senting *POS* had the same meaning for individuals from different countries and the participants responded similarly using the same measurement scale.

These results have implications for the use of the *P Scale* as a measure for a trait like characteristic (i.e., *POS*) that predisposes behaviors and experiences conducive to promote individuals' opti mal functioning in different cultural settings. Construct equiva lence represents a prerequisite for unambiguously interpreting differences in mean scores and for examining relations of *POS* with other variables of interest across different settings. Past research has shown that *POS* significantly and uniquely contributes to opti mal human functioning. For instance, *POS* explained additional var iance in positive outcomes (e.g., resilience) above and beyond the sum of variance that was explained by self esteem, life satisfaction, and optimism (Alessandri et al., 2012b). In line with these findings, the present study revealed significant associations of *POS* with well being (i.e., absence of depressive symptoms) across cultures. Nevertheless, future research needs to investigate in more detail the interplay between *POS* and optimal functioning in different

[5] Factor scores were highly correlated with mean scores with coefficients ranging from .91 (Spain) to .95 (Germany), with a mean of .93 ($SD = .01$).

contexts. For instance, past research revealed cultural differences regarding individuals' approaches toward self (e.g., self compas sion; Neff, Pisitsungkagarn, & Hsieh, 2008) and life (e.g., interde pendent happiness; Hitokoto & Uchida, 2014). Therefore, further studies should investigate psychological processes (e.g., need for self presentation) associated with subjective evaluations of self, life, and future in order to identify theoretically meaningful vari ables that explain cultural differences in POS ("unpacking of cul ture"; Bond & van de Vijver, 2011).

Furthermore, convergent validity of the P Scale was supported by significant positive correlations of the P Scale with self esteem, life satisfaction, optimism, and the latent factor score of POS. These findings indicated that the 8 item scale is a parsimonious, reliable, and valid measure useful to asses POS. Moreover, the P Scale was negatively and significantly associated with depression across countries. This further corroborates earlier findings on relations between POS and self efficacy beliefs in coping with negative emo tions (Caprara & Steca, 2005, 2006).

5. Conclusions

A strength of the present study is the selection of samples from different European countries. As the selected countries differ consid erably with regard to living conditions, research on well being in these countries is particular informative. However, the majority of the samples consisted of well educated college students, and thus, generalizability to older age groups and to groups of people with dif ferent socio economic background characteristics is limited. For instance, recent findings suggested a curvilinear relation between age and POS with a peak in middle adulthood (Caprara, Alessandri, & Eisenberg, et al., 2012a). Since an increased risk of depression fol lowing adverse living conditions has been observed in less affluent countries (Levecque, van Rossem, de Boyser, van de Velde, & Bracke, 2011), further studies may investigate conditions for the sta bility of POS across the lifespan in different cultures.

The present work provided evidence for gender and cross cul tural invariance and construct validity of the P Scale in different samples across Europe. The P Scale provides a measure of POS with good internal consistencies that is short and easy to administer in large scale studies and in concurrent research designs. Future research can use this measure to examine conditions for the improvement of optimal human functioning in different cultural contexts.

Acknowledgements

Appendix A

1. I have great faith in the future.
2. Others are generally here for me when I need them.
3. I am satisfied with my life.
4. At times, the future seems unclear to me. (r)
5. I generally feel confident in myself.
6. I look forward to the future with hope and enthusiasm.
7. I feel I have many things to be proud of.
8. On the whole, I am satisfied with myself.

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