

### **31. Assessing the convergent validity of the four dimensions of the resistance to change scale and the four higher-order values of Schwartz**

Luis M. Arciniega, Instituto Tecnológico Autónomo de México (ITAM), Mexico  
Luis González, Universidad de Salamanca, Spain

#### **Abstract**

The authors examined the convergent validity of the four dimensions of the Resistance to Change scale (RTC): *routine seeking*, *emotional reaction*, *short-term focus* and *cognitive rigidity* and the four higher-order values of the Schwartz's theory, using a nested sequence of confirmatory factor analyses. A sample of 553 undergraduate students from Mexico and Spain was used in the analyses. The results confirmed the external validity of the questionnaire.

#### **Introduction**

Prominent characteristics of modern society include the rapid and profound changes people have to face in every context of their lives (e.g., social, technological, educational, familial). Organizations are among the main sources of these changes, introducing constant modifications to their processes to adapt to environment's demands, with the purpose of increasing their competitiveness.

Drawing from the large body on research of resistance to change, Oreg (2003) proposed the existence of a multidimensional construct that he called "dispositional resistance to change" (RTC). The concept taps individuals' inherent tendency to resist changes: while some people openly accept and adapt to changes, others show an inclination to avoid and oppose them. According to Oreg (2006), those who are dispositionally resistant to change are less likely to voluntarily initiate changes in their lives, and are more likely to form negative attitudes towards specific changes they encounter.

Dispositional resistance to change comprises four dimensions: *routine seeking*, *emotional reaction*, *short-term focus* and, *cognitive rigidity*. *Routine seeking* involves the extent to which individuals prefer conventional and highly predictable tasks, procedures, and environments. *Emotional reaction* is focused on the extent to which individuals experience discomfort, lack of enthusiasm, and anxiety when changes are imposed upon them. *Short-term focus* addresses the degree to which individuals worry about all inconveniences and discomfort that change brings about, instead of focusing on the potential benefits and comfort that it could bring in the long term. Finally, *cognitive rigidity* involves individual's inflexibility in thinking and difficulty in accepting alternative ideas, perspectives, and methods.

The four dimensions of the construct have been operationalized through the resistance to change scale (RTC), a questionnaire containing 17 items. The composite RTC score has been shown to predict individuals' reactions to change in a variety of contexts under both voluntary and

imposed conditions (Oreg, 2003; 2006). The RTC scale has been used as a measure of dispositional resistance to change in samples comprised of English speakers, mostly from the U.S.

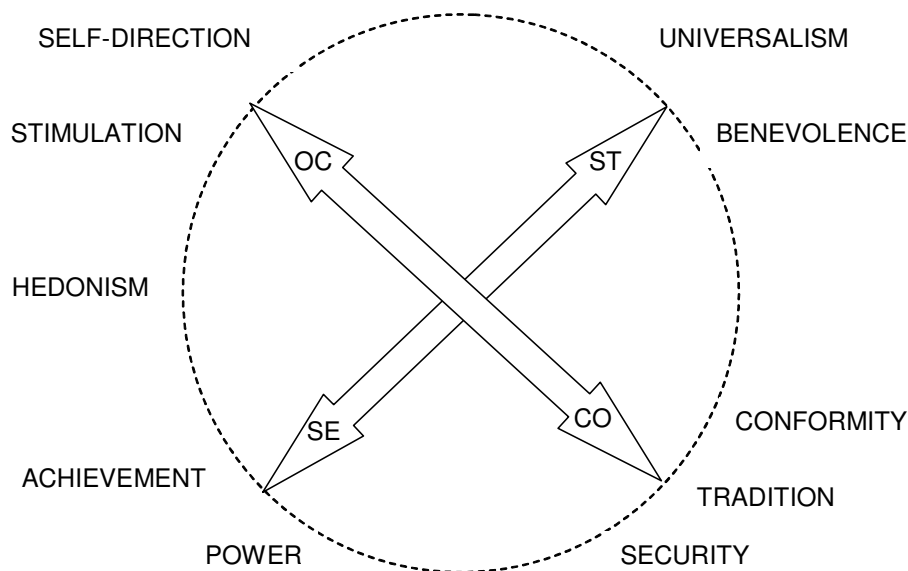
To facilitate cross-cultural research pertaining to the attitudes and beliefs that individuals have towards changes, we sought to develop and evaluate the psychometric properties of a Spanish-language version of the recently published RTC measure (Oreg 2003). Furthermore, we wish to establish the construct validity of the Spanish version by considering relationships between dispositional resistance to change and personal values.

### **Values and resistance to change**

Values have been generally referred to as needs, beliefs, or norms. Values can be best understood as cognitive representations of universal needs (Schwartz, 1992). According to Schwartz and Rokeach, values occupy a central position in the cognitive system of the subject, having a determinant influence on perceptions, attitudes, and decision making processes. Accordingly, it is logical to believe that individuals' value priorities could just as well influence their predisposition to resist change.

The universal theory of the content of values (Schwartz, 1992), establishes that the essence of a value is the motivational goal it expresses. Based on this idea, the author has derived 10 types of values that conforms a dynamic structure (see figure 1), where types sharing a similar motivational goal appear closer between them (for a full description of the 10 motivational types see Schwartz, 1992), while types representing incompatible motivational goals occupy opposite places in the continuum. These assumptions are based on the idea that actions taken in the pursuit of each typology have psychological and practical

Figure 1.- *The ten value types and the four higher-order values of the Schwartz's theory.*



consequences, which may be compatible or in conflict with the goals derived from other values. As seen in figure 1, the ten types comprise four higher-order values. It is possible to distinguish two large bipolar dimensions, and each dimension presents opposed, higher-order values on each of its poles.

The basic structure of ten value types has been validated in more than 60 countries worldwide and has been used to explain and predict how value structures are related to diverse attitudes and behaviors (Schwartz, Melech, Lehmann, Burgess, Harris, & Owen, 2001).

The four higher-order values are labeled: *self-enhancement*, *self-transcendence*, *openness to change* and *conservation*. The first two are part of a bipolar dimension that refers to opposite motivational objectives: one to enhance personal interests, even at the expenses of others, and the other to transcend selfish concerns and promote the welfare of others. The other bipolar dimension clusters two different objectives: one refers to the extent to which they motivate persons to follow their intellectual and emotional interests and being open to changes, while the other is centered on preserving the status quo and the stability in relations with other persons and institutions (Schwartz, 1992).

Based on the nature of the higher-order values *conservation* and *openness to change*, we expect high and positive correlations between each of the four dimensions of the construct of RTC and *conservation*, and high and negative correlations with *openness to change*. Concerning the correlations with the other two higher-order values, we expect low correlations. This assessment will allow us to demonstrate the external validity of the new developed instrument for operationalizing RTC for Spanish speaking students.

## **Method**

### **Participants**

The sample consisted of 553 college undergraduates from Business Administration and related fields (e.g., International Business, Marketing, Accounting) from four different universities in Mexico and Spain. The questionnaire used in this study was administered to 265 individuals in Mexico and 288 in Spain. The mean age of the sample was 21.3 ( $sd=1.88$ ), 55.1% were female and 44.9% male.

### **Measures**

*Dispositional Resistance to Change*. In order to develop the Spanish version of the RTC (Oreg, 2003) a translation-back-translation process was followed based on the method proposed by Brislin (1986). Once the instrument was back-translated, it was discussed and edited by the authors (one Mexican and one Spaniard) to remove wording that were meaningful in only one of the two countries; the main purpose of this final step, was to obtain a decentered version of the RTC in Spanish.

The 17 Spanish items are listed in the Appendix. Respondents are asked to rate the extent to which they agree with each of the items using a six-points, Likert-type scale, ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). The RTC scale has been used in employees and

students, 15 of the 17 items are context-free. Items 6 and 9 were specifically contextualized for academic settings.

*Values.* Values were assessed using a Spanish version of the *Portrait Values Questionnaire* (PVQ; Schwartz et al., 2001), previously used in other studies (e.g., Arciniega, Woehr, & Poling, 2006). The 40-items PVQ measures the ten value types, and the four higher-order values proposed by Schwartz (1992). Respondents are asked to rate how much they agree with each item on a scale from 1 (*not like me at all*) to 6 (*very much like me*). The PVQ has been used in several studies, across numerous countries, and has been shown to be a reliable and valid measure of personal values (e.g. Koivula & Verkasalo, 2006; Schwartz et al., 2001).

### **Analysis**

For the purpose of evaluating the validity of the construct structure of the RTC measure, we computed a nested sequence of confirmatory factor analyses using EQS 6.0 software (Bentler, 2006). First, we assessed the goodness of fit of the data to a single-factor model, indicating a global uniform construct. We then tested a model with four oblique dimensions, and finally, a model with four first-order factors loading on a second-order factor.

Given that the models represent a parameter nested sequence, we initially used the  $\chi^2$  test statistic and a difference of  $\chi^2$  test to evaluate the fit of each model in the sequence. In addition, we used three additional fit indices that have been identified as proving the most stable assessments, across sample sizes and model complexities (Hu & Bentler, 1998). These were: Steigers's (1990) Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI; Bentler, 1990), and the Non-Normed Fit Index (NNFI; Tucker & Lewis, 1973).

In the second step of the analyses, and in order to test the convergent validity of the RTC scale, we computed partial correlations between the four subscales of the RTC measure and the four higher-order values, controlling by the subject's means to the 40 items of the PVQ. Schwartz establishes that individuals differ in the ways they distribute their importance ratings across the rating scales, suggesting a need for statistical control for differences in scale use when comparing value priorities. The specific recommendation consists of the use of the partial correlations previously described.

Finally, a Harman's one-factor test was used to diagnose the possibility of bias due to mono-method variance since we used self-reported measures exclusively (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

### **Results**

For Model 1, the CFI was .764 and the RMSEA was .093 (see Table 1), reflecting a poor fit of the uni-dimensional structure. Model 2 reflects the notion of RTC as a multidimensional construct with four oblique, latent variables. Items 1 to 5 represent *routine seeking*, items 6

**Table 1: Evaluation of the Construct Structure Validity of the RTC Measure through Four Alternative Models**

Model	<i>df</i>	$\chi^2$	$\chi^2$	RMSEA	CFI	$\Delta$ CFI	NNFI	$\Delta$ NNFI
Model 1: One-factor model	116	654.58**	--	.093	.764	--	.729	--
Model 2: Four oblique factors (RS, ER, STF & CR).	110	254.68**	399.98**	.049	.937	.173	.922	.193
Model 3: Three oblique factors (RS, ER+STF, & CR).	113	296.50**	358.08**	.049	.920	.156	.903	.174
Model 4: Four first-order factors (RS, ER+STF, & CR) and the second-order factor RTC.	111	259.92**	394.66**	.050	.935	.171	.920	.191

\*  $p < .05$  \*\*  $p < .001$

Notes: RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; NNFI = Non-Normed Fit Index.

$\Delta$ 's for each model are relative to Model 1.

RS=*Routine Seeking*, ER=*Emotional Reaction*, STF=*Short Term Focus*, CR=*Cognitive Rigidity*

to 9 *emotional reaction*, 10 to 13 *short-term focus*, and 14 to 17 *cognitive rigidity* (see the Appendix). The  $\chi^2$  difference test comparing Models 1 and 2 was significant ( $\Delta\chi^2_{(6)}=399.90$ ,  $p<0.001$ ). An examination of the increase in the other fit indices across models also indicates the substantial improvement of Model 2 over Model 1: The CFI increased from .764 to .937 ( $\Delta\text{CFI}=.173$ ), and in the NNFI increased from .729 to .922 ( $\Delta\text{NNFI}=.193$ ).

An examination of the factors covariance structure provided additional information pertaining to the appropriateness of Model 2. Consistent with Oreg's (2003) findings, there was a particularly high covariance (.81) between *emotional reaction* and *short-term focus* ( $p<.001$ ). This calls for a test of a three-factor model, whereby *emotional reaction* and *short-term focus* were merged to form a single affective factor (Model 3). As can be seen in Table 1, no improvement was found when comparing Model 3 to Model 2.

We next turned to examine another model, also tested by Oreg (2003). Oreg proposed that together, the four construct dimensions constitute the higher-order dispositional resistance construct. Model 4 therefore consisted of four first-order factors, loading on a single second-order RTC factor. The  $\chi^2$  difference test comparing Models 1 and 4 was significant ( $\Delta\chi^2_{(5)}=394.66$ ,  $p<.001$ ). This is consistent with the observed changes in the RMSEA, CFI and NNFI. A comparison of Models 2 and 4 indicates an equivalent fit, and that the small variations of .001 for the RMSEA and .002 for the CFI and the NNFI, are not sufficient for preferring one model over the other. It is important to recall, however, that the NNFI penalizes for freeing parameters that do not markedly improve model fit. Considering that such a penalization is not apparent in the transition from Model 2 to Model 4, and considering the theoretical formulations of the RTC construct, we consider Model 4 to be the most appropriate representation of the data.

The partial correlations between the four dimension of the RTC construct and the Schwartz's higher-order values (see Table 2), clearly support our hypothesized relationships: the four correlations between conservation and the four dimension of RTC are positive, significant, and with coefficients ranging from .15 to .35, with an average of .24. The pattern concerning the opposite higher-order value (i.e., openness to change), is almost identical, except for the negative sign: the coefficient average is -.22 and the range in the four coefficients go from -.12 to -.33, making three of the four coefficients statistically significant.

As for the other bipolar dimension of values, the correlation coefficients between self-enhancement and the four dimensions of RTC were lower than -.15, making just one of them significant and confirming our predictions. The correlations between self-transcendence and the dimensions of resistance to change, were also low except in the case of the moderately large and significant coefficient between the higher-order value and *cognitive rigidity* ( $r=-.20$ ,  $p<.001$ ).

To assess Harman's one-factor test an EFA was computed introducing all the items of both the RTC scale and the PVQ. The unrotated solution extracted 15 factors with eigen values greater than 1, accounting for 61.27 % of the variance, with factor 1 at 12.79 %. No other single factor accounted for more than 10% of the variance. Because a single factor did not occur and no single factor accounted for most of the variance, the common-method of data collection was an acceptable risk (Podsakoff, et al., 2003).

Table 2.- *Partial correlations between the four dimensions of RTC and the four higher-order values.*

RTC dimension / High-order value	1	2	3	4	5	6	7	8
1. Routine seeking	(.68)							
2. Emotional reaction	.36**	(.70)						
3. Short-term focus	.32**	.53**	(.71)					
4. Cognitive rigidity	.19*	.14*	.16*	(.80)				
5. Openness to change	.33**	-.20*	-.21*	-.12	(.78)			
6. Conservation	.35**	.24**	.22**	.15*	-.64**	(.76)		
7. Self-enhancement	.00	.06	.01	-.13*	.02	-.42**	(.82)	
8. Self-transcendence	-.07	-.16*	-.12*	-.20*	-.22**	.04	-.66**	(.82)

*Notes.* All correlations were controlled by the subjects means on their responses to the 40 items of the PVQ.

Internal consistency indices are reported on the diagonal.

\*\* Correlation is significant at the  $p < .001$  level.

\* Correlation is significant at the  $p < .05$  level.

### **Discussion**

This study reports a well-supported measure of dispositional resistance to change, which could be used in academic or organizational settings (changing the context in items 6 and 9).

As the results of the confirmatory factor analyses did not provide enough information to determine if the model of four oblique factors, or the model with four first-order and one second-

order factor provided a better fit with the sample's data, we support the latter model as the best theoretical representation. Any confirmatory factor analysis has to be theory-based (Brown, 2006), and in line with this premise, the theory-based model is the one with four first-order, and one second-order factors. From a technical point of view, it could be said that the available technology on CFA indices was not sufficient to allow us to make a decision on which of the two alternative models (i.e., models 2 and 4) offered the best fit.

Our assessment of the convergent validity between the four higher-order values of the Schwartz's theory, and the four dimensions of RTC, demonstrated the external validity of the instrument. The results also suggest that common method bias is not likely to be a significant problem in this study.

### References

- Arciniega, L.M., Woehr, D.J., Poling, T.L. (2006). The impact of personality and value diversity on team performance and team processes. In S. Stashesvsky (Ed.). *Work Values and Behavior* (pp. 361-371). Shreveport, LA.: Louisiana State University.
- Bentler, P. M. (1990). Comparative fit indices in structural models. *Psychological Bulletin*, *107*, 238-246.
- Bentler, P. M. (2006). *EQS 6.0: Structural Equations Program Manual*. Encino CA.: Multivariate Software, Inc.
- Brislin, R. W. (1986). The wording and translation of research instruments. In W. J. Lonner & J. W. Berry (Eds.), *Field methods in cross-cultural research* (pp. 137-164). Newbury Park, CA.: Sage.
- Brown, T.A. (2006). *Confirmatory factor analysis for applied research*. Guilford Press.: New York, NY.
- Hu, L., & Bentler, P.M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods*, *3*, 424-453.
- Koivula, N., & Verkasalo, V. (2006). Value structure among students and steelworkers. *Journal of Applied Social Psychology*, *36*(5), 1263-1273.
- Oreg, S. (2003). Resistance to change: Developing an individual differences measure. *Journal of Applied Psychology*, *88*(4), 680-693.
- Oreg, S. (2006). Personality, context, and resistance to organizational change. *European Journal of Work and Organizational Psychology*, *15*(1), 73-101.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y., and Podsakoff, N.P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies, *Journal of Applied Psychology* *88*, 879-903.
- Schwartz, S. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, vol. 25 (pp. 1-65). San Diego, CA: Academic Press.
- Schwartz, S., Melech, G., Lehmann, A., Burgess, S., Harris, M., & Owens, V. (2001). Extending the cross-cultural validity of the theory of basic human values with a different method of measurement. *Journal of Cross Cultural Psychology*, *32*(5), 519-542.



- Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research*, 25, 193-180.
- Tucker, L.R., & Lewis, C (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika*, 38, 1-10.