Measuring the Desire for Control: a Spanish Version of Burger and Cooper's Scale

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The following study will present findings on the validity of the adaptation of the Burger and Cooper's Desirability of Control Scale into Spanish. Two samples are present: the first involving 1,999 people to study their psychometric properties. In the second sample, 111 people were included to estimate test/ retest reliability. Cultural adaptation was performed using the translation & back-translation method. Item analysis, internal consistency and test/retest reliability were assessed, then evidence of the validity of the internal structure was determined by using exploratory and confirmatory factor analysis. Subject recruitment was performed to gather the 1,999 subjects stratified by age, gender quotas as designed in the sampling plan. Of the subjects, 51% were female, average age of 45 years old (SD = 17.5). All items from the original scale were understood correctly, while five items presented ceiling effect. Cronbach's alpha = .736 and a test-retest correlation r = .713 were obtained. The factor structure indicated the presence of four dimensions: forecast, autonomy, power and influence and reactance which were reassured in the confirmatory analysis (χ^2/df = 4.805, CFI =.932, TLI =.954, RMSEA = .062). The basic dimensions of the scale have shown to be stable and well-defined, though not perfect. The scope, possible applications of the scale and further research are later proposed and discussed.
Keywords: desire for control, adaptation, reliability, validity.

Se presenta la adaptación y validación al español de la Escala de Deseo de Control de Burger y Cooper. Se emplearon dos muestras. Para estudiar las propiedades psicométricas de la escala se contó con una primera muestra de 1999 (M_{edad} = 45 años, DS = 17,5; 51% mujeres). Para estimar la fiabilidad test-retest se contó con una segunda muestra de 111 personas. La adaptación cultural se llevó a cabo mediante el procedimiento de traducción–retrotraducción. Se presentan las evidencias de validez de la estructura interna de la escala mediante los resultados de sendos análisis factoriales, exploratorio y confirmatorio. El análisis de ítems reveló que todos los elementos presentaron unos valores aceptables, aunque cinco de ellos mostraron efecto techo. El Alfa de Cronbach fue de .736 y la Fiabilidad test–retest fue de .713. La estructura factorial indicó la presencia de cuatro dimensiones: previsión, autonomía, poder e influencia y reactancia. La estructura fue corroborada en el análisis confirmatorio (χ^2/df = 4.805, CFI = .932, TLI = .954, RMSEA = .062). Las dimensiones de la escala son estables y específicas, aunque no perfectas. Se discute el alcance y posibles aplicaciones de la escala y se proponen futuras investigaciones.
Palabras clave: deseo de control, adaptación, fiabilidad, validez.

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People need control over the situations, events and contexts that affect their lives, a fact which has been proven in multiple studies to the point that its statement could be considered tautological. They try to effectively interact with their environment producing desired outcomes and preventing undesired outcomes (Skinner, 1996). In short, people seek to control their own situation and this control is identified as a basic human need. Having control over surrounding circumstances has been associated with psychologically adequate running and healthy states (Langer, 1983; Miller, Combs, & Stoddard, 1989; Rodin, 1986). On the contrary, lack of control is considered a risk factor that induces the loss of psychological, social and biological health (Karasek, 1979; Woodward & Wallston, 1987).

The motivation to control behavior has been considered one of the central mechanisms for understanding and explaining human actions. Although previous research has indicated that the need for control is something relevant to all people, it has also been suggested that there may be individual differences in the extent it drives human action (Gebhardt & Brosschot, 2002). Merluzzi and Martinez (1997) studied the effects of exercising or not exercising control over individual welfare. Their findings indicate that providing control to those who do not wish to have it may be as damaging as removing control from those who seek it. In this context, the study of the "Desire for Control" (Burger & Cooper, 1979) regains importance, as it is based on the individual differences that exist in the motivation to control events that happen in daily life. Furthermore, when the social order that governs the evolution of daily life is losing its ability to guide human behavior, causing uncertainty to be the basic characteristic of social climate and fear its psychological translation (Bauman, 2007).

Despite the relevance of the topic, there is a lack of any instrument in Spanish measuring this motivation and able to establish individual differences. The research presented here is relevant in that it provides a proposal for measuring the desire for control in the Spanish population. To this end, we propose to adapt and validate the Desirability of Control Scale created by to Burger and Cooper (1979).

The original scale valued the desire for control in general terms (e.g., I enjoy having control of my own destiny) and in specific situations (e.g., I'd rather start my own business and make my own mistakes than listen to someone else's orders). The psychometric properties of the scale were acceptable and appropriate. Reliability rates of the scale also reached acceptable levels, measuring both internal consistency ($KR = .80$) and reliability test/ re-test at six weeks ($r = .75$). Exploratory Factor Analysis revealed a five-factor structure which accounted for 50.4% of the total variance (Burger & Cooper, 1979). Subsequent studies have confirmed the psychometric properties, though not the factor structure. (Aarnio & Lindeman, 2004; Abdullatif & Hamadah, 2005; Gebhardt & Brosschot, 2002; McCutheon, 2000; Myers, 2000). Additionally, various adaptations to different languages

have maintained the psychometric guarantees. Among them, the French version ($\alpha = .7$) (Alain, 1989), German ($\alpha = .77$) (Braukmann, 1981), Dutch ($\alpha = .77$) (Gebhardt, & Brosschot, 2002), Greek ($\alpha = .84$) (Pierro, Lavinia, & Raven, 2008), Turkish ($\alpha = .75$) (Egrigozlu, 2002) and Kuwaiti ($\alpha = .65$) (Hamadah & Abdullatif, 2000). The adaptations to specific contexts has also been successful: the scale for children ($\alpha = .81$) (Heft et al., 1988); the scale for health contexts ($\alpha = .84$) (Smith, Wallston, Wallston, Forsberg, & King , 1984); the scale for dental treatment ($\alpha = .68$) (Logan, Baron, Keeley, Law, & Stein, 1991); the scale combined with anxiety ($\alpha = .81$) (Moulding, Kyrios, Doron, & Nedeljkovic , 2009) and the scale for examination contexts ($\alpha = .74$) (Wise, Roos, Leland, Oats, & McCrann, 1996).

Differences in the desire for control, as measured by this scale, have been capable to account for a significant percentage of the variance of several behaviors hypothetically related to motivation for control. For example, Green, Gidron, Frigo, and Almog (2005) found that patients hospitalized in the Intensive Care Unit needed higher doses of sedation when they expressed a strong desire for control. In 2007, Ogle and Clements conducted a study with a sample of individuals who had been victims of domestic violence. Their findings indicate that subjects who had less desire for control and lower perceived control tended to double the number of physical aggressions when compared to the group with a greater desire for control. In accordance with these results, Parker, Jimmieson, and Amiot (2009) also found that individuals with a high desire for control are more satisfied with the work they accomplish, perform better and hold a greater sense of control in their tasks than others with a lower desire for control. Replicating Milgram's obedience studies in 2009, Burger found that the greater the desire for control, the lower the level of electric shock administered by the study participants to their human subjects. These results apply to different contexts and different applications in which the scale has been used. After conducting a descriptive analysis of the measures of motivation over the last 75 years, (Mayer, Faber, & Xu, 2007) concluded that the Desirability of Control Scale is one of the most valuable emerging motivation measures on the area of social psychology.

The objectives of the following study are: 1) To adapt Burger and Cooper's Desirability of Control Scale (1979) to Spanish culture, 2) Factor validation of the Spanish version, and 3) Verification of the factor structure of the original scale.

Method

Participants

The subjects chosen for this study are a representative sample of the adult Spanish population. A stratified random sampling procedure was used with age quotas (18-24, 25-

34, 35-44, 45-54, 55-64 and 65 or more) and sex quotas, and sizes proportional to the Spanish population above 18 years of age (see table 1). The sampling plan recommended to include a total of 1,999 cases and the recruitment of participants was kept open until each quota was met. In order to achieve the final effective sample, 3,507 protocols were collected and 1,508 were rejected due to incomplete responses. Incompleteness was due to lack of socio-demographic data, which prevented correct assignment to a stratum, or incomplete responses to an additional scale of locus of control, which was ultimately discarded because of its incorrect metric behavior. The error rate to be assumed in estimating a population proportion was .0224, for a 95% confidence level and $p = q = .5$.

The final sample was composed by participants ranging from 18 to 93 years of age ($M = 45.53$, $SD = 17.47$) with a ratio of 51% women and 49% men. In regards to occupation, 57.3% were currently employed, 17.4% retired, 12.9% students, 8.4% performed unpaid domestic work, and 3.8% were unemployed. Spanish was the native language for 98.4% of individuals. Participants were recruited by a team of 25 interviewers, who followed a standardized set of instructions taught in a training session. Participants were recruited off the street and in occupational, employment, leisure and training centres. A telemetric version of the questionnaire was also available. Along with technical instructions, some other issues such as the voluntary participation, the purpose of the work and the guaranteeing anonymity to participants were stressed before measurements.

When implementing the factor analysis, a cross-validation was conducted: the sample was randomly divided in two halves, preserving age and sex quotas. In the exploratory factor analysis, a sub-sample of 1,000 participants was assessed, and a different sub-sample of 999 participants was used in the confirmatory factor analysis, aiming to compare estimation procedures with independent samples.

In order to study scale test/re-test reliability, a separate sample composed of 190 different participants was recruited.

The final second sample was composed of 111 participants with valid measures, added ad hoc to check test/ re-test reliability. This second sample was made up of participants who could be tracked more easily, reducing the risk of follow-up loss, and due to the fact that monitoring the 1,999 participants sample was very complex. Furthermore, individuals consenting for a second re-test measure could have introduced undesirable bias. This is due to the difficulty to control the reason for non-response in large samples, given that it is not possible to comprehensively monitor the entire sample. Moreover, insisting on getting a response may influence the measurement of the desire for control.

Therefore, the test/re-test reliability estimation study should be considered a complementary measure to provide additional evidence of the psychometric properties of the instrument. A total of 79 people were lost in follow-up, and 111 participating (88 female, 23 male) within the age range of 19 to 24 years ($M = 20.29$, $SD = 1.01$). The native language for 99.1% of the participants was Spanish. Participants were students voluntarily recruited at the Universidad Autónoma de Madrid. There was an interval of four months between the two measurements.

Variables and measures.

The Desire for Control is defined as the individual differences in the general level of motivation to control the events in one's life (Burger & Cooper, 1979, pp. 382-383). In this case, it was measured by the Spanish cultural adaptation of the Desire for Control Scale, which is the validation object of this study (see table 2).

A data collection form was created consisting of: (a) the adapted version of the Desirability of Control Scale, (b) two more scales to be used in future studies of convergent and divergent validation and (c) socio-demographic characteristics of participants (age, sex, level of education, occupation and employment status, and native language).

Table 1
Sample distribution in sex and age quotas

Age (years)	Men		Women		
	n	%	n	%	
18-24	108	5.40	103	5.15	
25-34	217	10.86	202	10.11	
35-44	201	10.06	193	9.65	
45-54	158	7.90	158	7.90	
55-64	123	6.15	130	6.50	
65 or more	172	8.60	234	11.71	
Total	979	48.97	1020	51.03	1.999

Note. Source, Spanish population data, 2007. Instituto Nacional de Estadística, 2008. Age range took from Centro de Investigaciones Sociológicas.

Table 2
Items analysis

	M	SD	H_{j1}	H_{j2}	α_1	α_2
1. Prefiero un trabajo donde tenga mucho control sobre lo que hago y cuando lo hago	3.73	1.23	.244	.239	.701	0.725
2. Disfruto de la participación política porque quiero tener tanta influencia en el gobierno como sea posible	2.63	1.28	.169		.709	
3. Trato de evitar las situaciones en las que otra persona me dice que es lo que tengo que hacer	3,46	1,17	.282	.312	.697	0.717
4. Prefiero ser líder que seguidor	3.41	1.12	.477	.485	.678	0.698
5. Disfruto pudiendo influir en las acciones de los demás	2.94	1.18	.179	.185	.707	0.731
6. Soy cuidadoso comprobando todo en un coche antes de realizar un largo viaje	3.58	1.25	.172	.212	.708	0.729
7. Normalmente, los demás saben qué es lo mejor para mí	3.57	1.12	.154		.708	
8. Disfruto tomando mis propias decisiones	4.27	.901	.490	.489	.682	0.702
9. Disfruto teniendo control sobre mi propio destino	4.15	.947	.452	.461	.684	0.704
10. Prefiero que otro asuma el rol de líder cuando estoy implicado en un proyecto de grupo	3.05	1.15	.275	.346	.697	0.714
11. Considero que generalmente estoy más capacitado para manejar situaciones que otros	3.18	.994	.317	.368	.694	0.711
12. Prefiero emprender mi propio negocio y cometer mis propios errores que escuchar las órdenes de otra persona	3.34	1.15	.320	.349	.693	0.715
13. Me gusta tener una idea clara acerca de cómo es el trabajo antes de empezarlo	4.42	.823	.321	.340	.695	0.715
14. Cuando veo un problema, prefiero hacer algo al respecto antes que dejarlo pasar	4.24	.90	.341	.467	.693	0.701
15. Prefiero dar órdenes en lugar de recibirlas	3.41	1.06	.428	.290	.684	0.719
16. Desearía poder delegar muchas de las decisiones de mi vida diaria a otras personas	3.44	1.25	.148		.710	
17. Cuando conduzco, trato de evitar situaciones donde pueda resultar herido por culpa de los errores de otros	4.25	1.03	.257	.402	.699	0.707
18. Prefiero evitar las situaciones donde alguien me diga lo que debería hacer	3.56	1.10	.353	.216	.690	0.727
19. En muchas situaciones preferiría tener sólo una opción antes que tener que tomar una decisión	2.99	1.27	.122		.713	
20. Me gusta esperar y ver si alguien va a resolver un problema para no tener que molestarme	3.68	1.21	.229	.146	.702	0.735

Note: Items removed from the original scale are in italics.
M = Mean, SD = Standard Desviation, H_{j1} = Homogeneity Index (first analysis), H_{j2} = Homogeneity Index (second analysis), α_2 = Cronbach's alpha (first analysis), α_1 = Cronbach's alpha (second analysis).

Procedure

In order to translate the scale, the method used was translation and back-translation of the original instrument (Hambleton, Merenda, & Spielberger, 2005; Sperber, 2004). Four bilingual translators translated the scale from English into Spanish. The research expert panel monitored a process to settle translation differences and agreed on the final draft of the items to be included in the conciliation version. Lastly, a fifth bilingual translator, who was not involved in the previous process, translated the conciliation version from Spanish into English, in order to corroborate that the translation was correct. The scale consists of 20 items with ordinal responses in a 5-point Likert scale, where 1 = strongly disagree and 5 = strongly agree. In 1979, the original scale ranged from 1 to 7 (e.g.: 1 = the statement does not apply to me at all; 2 = the statement usually does not apply to me). However, aside from translating and adapting the items on the scale, the research team

determined it was necessary to adapt the scale metric in order to facilitate the responses of the participants and to avoid possible inconsistencies previously observed in response scales with five or more possible choices (Abad, Olea, Ponsoda, & Garcia, 2011). The research team also considered whether to adapt the wording of the answers, only defining the extreme cases of the measurement scale. Research on the anchoring of the metric scale by all responses or only by extreme anchors concludes that the use of either option does not affect the results (Chang, 1997). In addition, the literal translation of the content of scale points was meaningless in Spanish. Nevertheless, since this is a self-reported measure, we determined that it would be more appropriate to declare responses anchors in terms of agreement or disagreement so that they could reflect the degree of participants attribution to certain actions in their every day behavior. In the original form, participants answered categorically as to whether their conduct matched the item content.

To obtain a total score on the scale, it is necessary to consider that item 10 is reversed. Before using the scale, a pilot study was conducted, gathering detailed qualitative information from 20 different subjects. The translation of the Desirability of Control Scale did not impede the participants' understanding of the items.

Data Analysis

Reliability was measured using several indicators: Cronbach's alpha, Spearman-Brown coefficient and test-retest correlation. We used Exploratory Factor Analysis (EFA) using item correlations in order to estimate the composition of the underlying factors. Since item scores are measured in ordered categories, the EFA was performed over the polychoric correlation matrix (Lancaster & Hamdan, 1964; Olsson, 1979). To determine the number of underlying data factors, we used several heuristics: K1 rule, the scree plot, and a repertory of goodness of fit statistics: chi-square (and the quotient by its degrees of freedom), RMSR (Root Mean Square Residual) and RMSEA, and parallel analysis using principal axes (O'Connor, 2000). We also took previous theories into account to assess the suitability of different factor solutions. For the extraction of factors, a robust weighted least squares estimation (WLSMV) was used, suitable for categorical data (Muthén & Muthén, 2007). After confirming that oblique rotation (Promax) solution matched the original structure, an orthogonal rotation (Varimax) was allowed. In order to check the fit of the structure obtained through EFA, a Confirmatory Factor Analysis (CFA) was also completed. The CFA reveals the theoretical commitment with an existing model, so that it can be tested with data obtained in the sample (Ruiz, 2000). The estimation method used was WLSMV. First, we used the ratio of chi-square to the degrees of freedom. As comparative indexes, CFI (Comparative Fit Index) and TLI (Tucker-Lewis Index) were used. Finally, two residual indexes were obtained SRMR (Standard Root Mean Square Residual) and RMSEA.

Analysis was performed using SPSS version 19 and Mplus (Muthén, 2007) softwares.

Results

First, it was checked that there were no significant differences between the participants who were recruited by the survey team and answering to the paper-and-pencil version and those who answered the questionnaire in telemetric version. Data analysis showed no significant differences in mean score on the Desirability of Control Scale between participants responding to an interviewer (M = 71.32, SD = 8.84) and those responding electronically (M = 71.17, SD = 7.5), (t = .229, p > .05).

Item Analysis

Item means varied between 2.63 (Item 2) and 4.42 (Item 13) and overall item average was 3.56. Regarding item standard deviations, they ranged from .823 (Item 13) to 1.287 (Item 2). A ceiling effect was observed for items 8, 9, 13, 14, 17. On these items, the highest category was chosen by 43.6-57.8% of participants.

All items attained an adjusted homogeneity index significantly different from zero (see Pardo & San Martín, 2001). However, in a first analysis, four items were removed (items 2, 7, 16 and 19) which presented an adjusted homogeneity index less than .170 and also barely contributed to the test internal consistency. After this first analysis, we repeated the procedure, finding that item 20 showed a low homogeneity index (H_{20} = .14) and its removal contributed to increase the test internal consistency. The final questionnaire consisted of 15 items. (See Table 2).

Indicators of Reliability

Internal consistency reliability was calculated for the whole sample (n = 1999). Cronbach's alpha coefficient for the 15 items was .736. The reliability coefficient for the entire test using the Spearman-Brown estimate was .757. Test-retest reliability was computed using the second sample (n = 111), and the result obtained for a time interval of four months was .713. The three reliability indicators were above .700 and should be considered modest, although they exceed Nunnally's recommendations (1981) for tests in the validation or adaptation stage.

Exploratory Factor Analysis

As a whole, we decided to retain four factors, and this model fitted well to the data (n = 1000). The absolute fit index chi-square to degrees of freedom was less than 3 (exceeding Carmines & McIver´s, 1981 more restrictive recommendations), RMSEA was less than .05 (Browne &

Cudeck, 1993) and an RMSR less than .1 (Chau, 1997). The observed values were CMIN / DF = 2.5, RMSEA = .039, and RMSR = .023. The model explained 55% of the total variance. The factor solution after orthogonal rotation exhibited the underlying structure depicted in Table 3. In regard to item contents, obtained factors included: Forecast, Reactance, Power and Influence and Autonomy. Based on the results attained, a theoretical model was proposed for confirmation where: (1) each factor accounts for those items suggested by the EFA, and (2) the four factors may co-vary.

Confirmatory Factor Analysis

The structure proposed by EFA was simplified, assigning items 1 and 12 to the more conceptually sustainable dimension, and having exhibited empirical loading within that dimension. To determine the fit of the new structure, a Confirmatory Factor Analysis (CFA) was estimated. Using the second half of the sample ($n = 999$) a CFA was carried out, which showed an adequate fit to the data. The representation of the model and the standardized weights obtained are shown in Figure 2. The model absolute goodness of fit index was acceptable (CMIN / DF = .4805). The comparative goodness fit indexes obtained were CFI=.932 and TLI=.954. Referencing the bench-mark values proposed by Schreiber, Nora, Stage, Barlow and King (2006), the results of these indexes were considered acceptable.

A factor structure built on four dimensions was proposed. The Forecast factor consisted of items 6, 13, 14 and 17 ($\alpha = .567$, $n = 1999$). The Reactance factor consisted of items 3, 12, and 18 ($\alpha = .585$, $n = 1999$). Power and influence factor consisted of items 4, 5, 10, 11 and 15 ($\alpha = .665$, $n = 1999$). The Autonomy factor consisted of items 1, 8 and 9 ($\alpha = .512$, $n = 1999$).

Residual-based indexes were SRMR = .046 and RMSEA = .062. Considering Browne and Cudeck criteria (1993), these values are acceptable. Considering the absolute, comparative and residual fit indexes as a whole, it was concluded that there is an adequate fit between the theoretical model and empirical data.

Given the observed degree of correlations between factors, we also considered a model in which four factors were influenced by a second order factor. This model of a single second order factor achieved a less acceptable fit to the data and also less explanatory power.

Normative Data

Lastly, a good discrimination of participants was observed when using the distribution of scores ($M = 55$, $SD = 7.46$, max = 75, min = 15). The null hypothesis of normality of the scores was rejected ($Z = 2031$, $p < .01$), although a visual inspection of the histogram showed a distribution close normal, though with negative skewness.

Table 3
Loading matrix, Weighted squares estimation method, Varimax rotation

Item	Factor			
	I	II	III	IV
13	**.772**	.108	.000	.120
14	**.622**	−.060	.051	.168
17	**.550**	.127	−.009	.089
6	**.417**	.070	.010	.034
1	**.268**	.103	.083	.161
18	.209	**.693**	.167	.108
3	.038	**.668**	.074	.081
4	.087	.158	**.709**	.115
15	.083	.315	**.666**	.055
11	.061	.100	**.555**	.055
5	−.070	−.046	**.488**	.003
12	.178	.330	**.337**	.157
10	.004	.009	**.333**	.186
9	.282	.133	.213	**.752**
8	.400	.201	.155	**.613**
Eigenvalues before rotation	3.827	2.072	1.288	1.043
% Variance explained	25.51	13.81	8.59	6.95
Cronbach's Alpha ($n = 1999$)	.536	.604	.670	.703

Note. Allocation of items to each factor based on its factor loading are in boldtype.
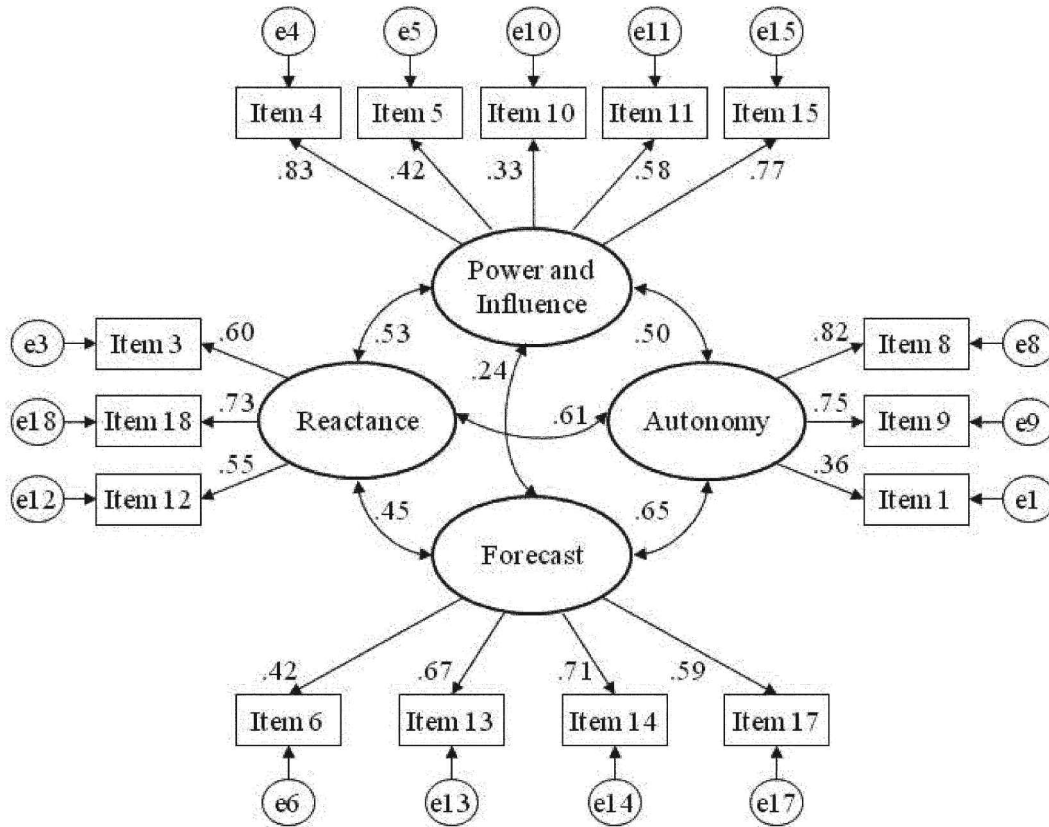
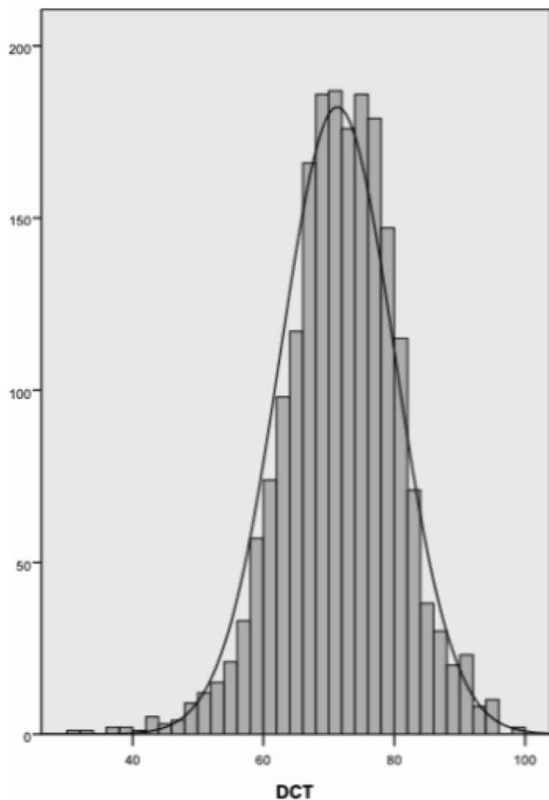*Figure 1.* Hypothetical model of 4 correlated factors. Standardized coefficients.

Figure 2.

Discussion

The results of the study suggest that the Spanish version of the Desirability of Control Scale by Burger and Cooper (1979) has sufficient psychometric guarantees, making it acceptable to use it on the Spanish adult population. The Spanish version has similar psychometric properties to the original version and its various adaptations used in multiple situations. However, the factor structure of the scale must be completed and improved, as a number of dimensions that explain the motivation of control are missing. This improvement is necessary to the extent that the standardized weights of some items reveal an unacceptable error level.

Due to these results, we propose a tentative structure model for the Spanish version of the Desirability of Control Scale consisting of four factors. Considering substantive content both of items and factors, the four dimensions measured by the instrument were named Forecast, Reactance, Power and Influence and Autonomy.

Forecast: Anticipating future events and situations in order to be prepared for action. This anticipation is made based on information and resources available (Dantzer, 2004).

Reactance: Motivational stress which is activated when removed, restricted or threatened with elimination or limitation of freedom of action. This force is designed to restore eliminated, limited or threatened freedoms (Brehm, 1966).

Power and Influence: Power is defined as the ability or potential to influence others. Influence is understood as the effective production of changes in behavior, or the effective exercise of power (Michener & Suchner, 1972).

Autonomy: The degree of responsibility, independence and freedom that individuals have to make decisions (De Miguel, 1999). Furthermore, according to Campbell, Dunnette, Lawler, and Weik (1970), autonomy also includes guidance toward rules and opportunities to exercise individual initiative.

Nevertheless, the study of motivation of control and its measurement should not be restricted to factors related to the desire for control. While the definition of Burger and Cooper's (1979) scale of desire for control refer to individual differences in motivation of control, the relationship of similarity between motivation of control and the desirability of control can be questioned. Doubts arise based not only on the results of our structural analysis for the Spanish version of the scale, but also due to the fact that a different structure has been obtained each time that the structure has been analyzed (Aarnio & Lindeman, 2004; Abdullatif & Hamadah, 2005; Gebhardt & Brosschot, 2002; McCutheon, 2000; Myers, 2000). Furthermore, these doubts are also present after a thorough conceptual review.

The results show that this scale could be improved, although it is the only one currently available to accurately measure the desire for control. While the basic dimension is stable and well defined, its measurement is far from perfect. Given the importance of this construct in social research, we consider urgent to report the results while issuing warnings about the potential misuse, and to prevent lack of accuracy that can be obtained using the current instrument. Having used a second independent sample for estimating test/retest reliability can be considered a restriction present in our study.

Our proposal to improve the scale is to include a measurement to assess motivation dimensions related to the basic need for control (which is not affected by individual decisions) and volitional processes (referring to the effort made to achieve desires). The next steps will involve improvement of the cultural adaptation of the items. While the general items have acceptable standardized weights, specific weights have proven to be less acceptable and match up with those that have a high contextual value (e.g. political participation or driving cars).

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