Future-Directed Thinking in General and Clinical Samples:

Validation of the Spanish Version of the Subjective Probability Task

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Abstract

Future-directed thinking is an essential characteristic of human behavior, consisting of the

ability to project oneself into the future in order to pre-experience an event (Atance &

O'Neill, 2001). Several instruments that measure different aspects of future-directed thinking

have been developed. The Subjective Probability Task (SPT, MacLeod, Byrne & Valentine,

1996) is an instrument that assesses the tendency of holding positive and negative

expectancies for the future. The present study seeks to validate the Spanish version of the

SPT in clinical and general populations, and to test a model of two cognitive-affective

systems in Spanish-speaking clinical and general populations. The sample consisted of 321

participants, 211 participants belonging to the general population, and 110 belonging to the

clinical population. The participants completed measures of positive and negative affect,

worry, hopelessness, anxiety, depression, and future expectancies. The results of the

exploratory factor analysis yielded 2 factors that corresponded to the 2 subscales of the SPT.

Significant differences were found between the general and clinical samples regarding both

negative and positive expectancies, suggesting that both positive and negative future-thinking

are important aspects to consider in clinical populations. Overall, the psychometric properties

of the SPT have proved to be satisfactory. The two-system model was partially supported by

the results of this study. Implications of these results are discussed.

Keywords: future-directed thinking, Spanish validation, Subjective Probability Task

Resumen

El pensamiento dirigido hacia el futuro es una característica esencial de la conducta humana, que consiste en la capacidad de proyectarse en el futuro con el fin de pre-experimentar un evento (Atance y O'Neill, 2001). Varios instrumentos que miden diferentes aspectos del pensamiento dirigido hacia el futuro fueron desarrollados. La tarea de probabilidad subjetiva (SPT, MacLeod, Byrne y Valentine, 1996) es un instrumento que evalúa la tendencia de tener expectativas positivas y negativas para el futuro. El presente estudio trata de validar la versión española de la SPT en población clínica y general, y poner a prueba un modelo de dos sistemas cognitivo-afectivos en población clínica y general hispanohablante. La muestra estuvo formada por 321 participantes, 211 participantes pertenecientes a la población general, y 110 pertenecientes a la población clínica. Los participantes completaron medidas de afecto positivo y negativo, preocupación, desesperanza, ansiedad, depresión, y expectativas futuras. Los resultados del análisis factorial exploratorio arrojaron 2 factores que corresponden a las 2 subescalas de la SPT. Se encontraron diferencias significativas entre la muestra general y clínica en relación con las expectativas negativas y positivas, lo que sugiere que tanto el pensamiento dirigido hacia el futuro positivo, como el negativo son aspectos importantes a considerar en poblaciones clínicas. En general, las propiedades psicométricas de la SPT han demostrado ser satisfactorias. El modelo de dos sistemas fue parcialmente apoyado por los resultados de este estudio. Se discuten las implicaciones de estos resultados.

Palabras clave: pensamiento dirigido hacia el futuro, validación española, Tarea de Probabilidad Subjetiva.

Future-Directed Thinking in General and Clinical Samples:

Validation of the Spanish Version of the Subjective Probability Task

The Subjective Probability Task (SPT; MacLeod et al., 1996) is a scale designed to measure the tendency of holding specific positive and negative expectancies for the future. The SPT has previously been used in research linking emotional disorders to patterns of future-directed thinking (e.g., MacLeod et al., 1996). Numerous studies have shown that specific patterns of future-directed thinking are associated with distinct emotional disorders; for example, anxiety has been associated with an increased expectancy for negative future events, and depression has been associated with a decreased expectancy for positive future events (Bjärehed, Sarkohi & Andersson, 2010; Conaghan & Davidson, 2002; MacLeod et al., 1996; MacLeod, Rose & Williams, 1993). However, the relationship between emotional disorders and future-directed thinking has not been understood in its entirety. The SPT can therefore be a useful instrument in studying this relationship.

To date, the SPT has been used only with English-speaking student populations. The primary aim of this study is therefore to validate the SPT in a Spanish-speaking sample composed of both clinical and general population subsamples. Future-directed thinking, as measured by the SPT, has also been described in a broader framework of two basic cognitive-affective systems, namely a negative affect system and a positive affect system, both of which encompass biological, behavioral, and motivational factors (MacLeod et al., 1996). The secondary aim of the study is to test this two-system model in Spanish-speaking clinical and general populations.

Literature Review

Future-directed thinking has been defined as the ability to project oneself into the future in order to pre-experience an event (Atance & O'Neill, 2001). Future-directed thinking represents a key characteristic of human behavior, motivating and driving people through virtually all the actions in the pursuit of their goals. Anticipation, planning, self-regulation, and so forth are indispensable processes for the attainment of desired goals and thus for the wellbeing of an individual. Research has shown that patterns of positive future-directed thinking (e.g., hope, optimism) are linked to positive behavioral outcomes and higher overall wellbeing (Carver, Scheier & Segerstrom, 2010; Snyder, 2002), while patterns of negative future-directed thinking (e.g., hopelessness, pessimism) are associated with negative behavioral outcomes and poorer health (Carver et al., 2010; Snyder, Irving & Anderson, 1991).

Future-directed thinking has been described within a broader framework of human behavior and experience that is comprised of two basic systems represented at the cognitive, affective, biological, and behavioral levels. The underlying systems integrate dimensions of affect (positive and negative), motivational systems (appetitive and aversive), orientations to the future (hope and worry), and future expectancies for positive and negative outcomes. This framework has been used by MacLeod and colleagues to conceptualize depression and anxiety (MacLeod et al., 1996).

Affect is a bidimensional construct, with positive affect (PA) and negative affect (NA) being two separate and distinct dimensions (Watson, Clark & Tellegen, 1988). PA refers to the extent to which someone feels enthusiastic, active or alert, while NA refers to states such as anger, fear, and disgust. PA and NA can be used in conceptualizing anxiety and depression, with both anxiety and depression consisting of high NA, and only depression consisting of low PA (MacLeod et al., 1996).

Researchers have described two motivational systems, namely a reward-driven, appetitive motivational system and a punishment-driven, aversive motivational system (Fowles, 1988; Gray, 1982; MacLeod et al., 1996). These two systems have been referred to as the behavioral activation system (or behavioral approach system) (BAS) and the behavioral inhibition system (BIS), respectively. Anxiety and depression are thought to reflect an activation of the BIS, and only depression is thought to reflect a disruption of the BAS.

The BAS and BIS are anticipatory systems, that is, "behavior is activated or inhibited not through the occurrence of a positive or negative event but through the anticipation that such an event will occur" (MacLeod et al., 1996, p. 71). Several authors have found that specific self-reported orientations to the future seem to be linked to emotional disturbances. For example, hopelessness is the characteristic orientation to the future in depression (Beck, Riskind, Brown & Steer, 1988), while worry is characteristic of anxiety (Barlow, 1988). Also, multiple studies have shown that future-directed thinking plays an important role in emotional disorders, and moreover that specific patterns of future-directed thinking are linked to particular emotional disturbances. While anxiety disorders have been associated with an increased expectancy for negative future events, depression has been associated with a decreased expectancy for positive future events, compared to controls (Bjärehed et al., 2010; Conaghan & Davidson, 2002; MacLeod, Tata, Kentish & Jacobsen, 1997). However, some studies have found depressed individuals to have both a decreased expectancy for positive future events and an increased expectancy for negative future events (MacLeod & Byrne, 1996; MacLeod et al., 1996; MacLeod, Rose & Williams, 1993; Miranda, Fontes & Marroquín, 2008; Miranda & Mennin, 2007). The latter can be seen as an effect of the overlapping anxious symptoms in depression (Bjärehed et al., 2010).

To conclude, it appears that behavior can be interpreted in terms of two cognitive-affective systems. The first one, a negative affect (NA) factor, mediates negative affect, avoidance behavior, worry, and expectancies for negative outcomes. The second one, a positive affect (PA) factor, mediates positive affect, approach behavior, hope, and expectancies for positive outcomes. Anxiety and depression are both thought to be related to elevated activity of the first system, and only depression to reduced activity of the second system (MacLeod et al., 1996).

Future-directed thinking has been also studied in relation to wellbeing and other positive outcomes. Optimism, defined as the tendency to have "generalized expectancies for good outcomes" (Scheier & Carver, 1985, p. 243), has been linked to positive outcomes such as higher subjective wellbeing, higher levels of engagement coping and lower levels of avoidance coping, health-protective behaviors, better physical health, socioeconomical benefits, more persistence in educational efforts, higher income, and better social relationships (Carver et al., 2010). The most widely used instrument to assess levels of optimism is the Life Orientation Test (LOT-R; Scheier, Carver & Bridges, 1994). The LOT-R assesses through 10 items the tendency of holding generalized expectancies of good versus bad outcomes in life. The LOT-R items consist of three positively worded items, three negatively worded items, and four filler items, and are scored on a 5-point Likert scale.

Another approach to studying future-directed thinking that resembles optimism was developed by MacLeod, Rose and Williams (1993). The authors developed the Future Thinking Task (FTT), an instrument based on a verbal fluency paradigm. The FTT consists of asking the participants to generate positive and negative events that they think will happen in the future, at three different points in time (1 week, 1 year, and 5-10 years). The Subjective Probability Task (SPT; MacLeod et al., 1996), an instrument designed to measure the tendency of having specific positive and negative future expectancies, was developed a few

years later. The SPT consists of 30 items, 20 of them referring to negative outcomes and 10

referring to positive outcomes. The authors also developed a different version of the SPT by

increasing the number of positive items from 10 to 14 and reducing the number of negative

items from 20 to 16, but the results obtained using this version did not support this change.

The original version of the SPT, consisting of 20 negative items and 10 positive items, is

currently being employed in research. This version of the instrument will be described in the

method section of this paper.

Since the development of the SPT, different variations and adaptations of this

instrument have been used in research (e.g., Boselie, Vancleef, Smeets & Peters, 2014;

Hanssen, Peters, Vlaeyen, Meevissen & Vancleef, 2013; Holmes, Lang, Moulds & Steele,

2008; Stöber, 2000). The SPT has also been used to measure the change following a positive

activity intervention aimed at increasing positive expectancies for the future by imagining

one's best possible self, and has proved to be sensible to this manipulation (Meevissen, Peters

& Alberts, 2011; Peters, Flink, Boersma & Linton, 2010).

However, the SPT has been validated only in English-speaking samples so far, and to

the author's knowledge, has not been validated yet in a Spanish-speaking sample. Also, the

SPT has been used only with student populations (MacLeod et al., 1996; Meevissen et al.,

2011; Peters et al., 2010), which limits the generalizability of the results. The present study

presents the results of the validation of a Spanish version of the SPT in a Spanish-speaking

population consisting of a clinical subsample and general population subsample. Also, the

model proposed by MacLeod et al. (1996) consisting of an NA factor and a PA factor is

tested in these populations. The aims of the present study are (1) to examine the factorial

structure and the psychometric properties of the Spanish SPT in clinical and general

populations, and (2) to test the model of the two underlying cognitive-affective systems in a

Spanish-speaking population. This study hypothesized that the SPT will yield the same factor

structure as the original version, and that the instrument will show good internal consistency. Based on previous results (MacLeod et al., 1996), the study also hypothesized that the two subscales of the SPT would correlate strongly with measures of positive and negative affect, worry, hopelessness, anxiety, and depression, such that negative expectancies would correlate with negative affect, worry, anxiety and depression, and positive expectancies will be related to positive affect, hopelessness (low levels), and depression (low levels).

Method

Participants

A total of 321 participants participated in the present study (242 women, 75 men, and 4 participants who did not indicate their gender). The general population subsample consisted of 211 participants (145 women and 66 men) who volunteered to participate in the study. The clinical subsample consisted of 110 participants (97 women and 9 men) who were attending two clinical centers (the Psychological Assistance Service at Universitat Jaume I – SAP, and the Previ Clinical Psychology Center). The individuals in the clinical subsample were seeking treatment for psychological disorders (anxiety disorders = 25, eating disorders = 18, mood disorders = 15, personality disorders = 14, and other psychological disorders = 10) or medical conditions (fibromyalgia = 28). Within the clinical subsample 19% (n = 21) of the participants had been diagnosed with a second psychological disorder, and 3.6% (n = 4) had been diagnosed with more than two disorders. All participants were native Spanish speakers, with 16.8% (n = 54) of the sample having Argentinean nationality, and 83.2% (n = 267) having Spanish nationality. The age of the participants ranged from 16 to 71 years, with a mean age of 29.4 years (mean age for the general population subsample was 26.5 years, and for the clinical subsample 35.3 years). Among the participants 11.2% (n = 36) had completed elementary studies, 21.2% (n = 68) had completed high school, 63.2% (n = 203) had completed university studies, and 4.4% (n = 14) did not indicate their educational level.

Translation of the SPT

Permission to translate and validate the SPT was granted by the authors of the instrument (MacLeod et al., 1996). First, a native Spanish speaker who was aware of the purpose of the SPT translated the items from English to Spanish. Second, a Spanish-English bilingual speaker who was not familiar with the SPT performed a back-translation from Spanish to English. Any discrepancies between the Spanish and English translations were solved by agreement. The Spanish version of the SPT (see Appendix A) was judged to be an accurate translation of the English version and was approved by the original authors.

Measures

Positive and negative affect. Affect was measured using the Spanish version of the Positive and Negative Affect Schedule (PANAS; Spanish version: Sandín, Chorot, Lostao, Joiner, Santed & Valiente, 1999; Watson, Clark & Tellegen, 1988). The PANAS consists of two subscales, one measuring positive affect and one measuring negative affect. Each subscale consists of 10 items, which are scored on a 5-point Likert scale ranging from 1 (very slightly or not at all) to 5 (extremely). The PANAS subscales have been shown to be uncorrelated and to have good internal and test-retest reliability (Watson et al., 1988).

Worry. The Spanish version of the Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger & Borkovec, 1990; Spanish version: Sandín, Chorot, Valiente & Lostao, 2009) was used to measure worry. The PSWQ assesses self-reported trait worry through 16 items scored on a 5-point Likert scale ranging from 1 (not at all typical of me) to 5 (very typical of me). Of the 16 items composing the scale, 11 of them are negatively phrased and 5 are positively phrased. The PSWQ has been shown to have good psychometric properties (Meyer et al., 1990).

Hopelessness. The Spanish version of the Beck Hopelessness Scale (BHS; Beck, Weissman, Lester & Trexler, 1974; Spanish version: Aguilar, Hidalgo, Cano, López,

Campillo & Hernández, 1995) was used to assess levels of hopelessness of the participants. The BHS consists of 20 true-false items that measure generalized negative expectancies about the future. Of the 20 items, eleven are negatively phrased and 9 are positively phrased. The BHS has also been shown to have good psychometric properties (Beck et al., 1974).

Anxiety. Anxiety was measured with a Spanish version adapted by the research group at Universitat Jaume I of the Overall Anxiety Severity and Impairment Scale (OASIS; Norman, Hami Cissell, Means-Christensen & Stein, 2006; Spanish version: work in progress). OASIS is a brief instrument consisting of 5 items that measure the frequency and severity of anxiety, as well as the level of avoidance and work/school/home and social interference that anxiety produces. OASIS has likewise been found to have good psychometric properties (Norman et al., 2006).

Depression. Depression was measured with a Spanish version adapted by the research group at Universitat Jaume I of the Overall Depression Severity and Impairment Scale (ODSIS; Bentley, Gallagher, Carl & Barlow, 2014; Spanish version: work in progress). Like OASIS, ODSIS is a brief instrument consisting of 5 items that measure the frequency and severity of depression, as well as the level of avoidance and work/school/home and social interference that depression produces. ODSIS has been found to have good psychometric properties (Bentley et al., 2014).

Future expectancies. The Subjective Probability Task (SPT; MacLeod et al., 1996) was used as a measure of positive and negative future expectancies. The SPT consists of 30 items rated on a 7-point Likert scale on which participants have to estimate the probability of each item happening to them in the future, from 1 (not at all likely to occur) to 7 (extremely likely to occur). The SPT is divided into two subscales: one consists of 20 items referring to negative outcomes and another one consists of 10 items referring to positive outcomes. Each of these subscales produces an independent score, with the score for the negative

expectancies subscale varying from a minimum of 20 to a maximum of 140, and the score for

the positive expectancies subscale varying from a minimum of 10 to a maximum of 70. The

SPT has been shown to have good internal consistency, with the authors reporting

coefficients of .90 for the negative items and .86 for the positive items. The two subscales

also showed good discriminant validity (MacLeod et al., 1996). The internal consistency

coefficients found for the SPT subscales in the present study were .93 for negative

expectancies and .88 for positive expectancies.

Procedure

Participants in this study included volunteers willing to complete the measures and

patients seeking help at one of the two psychological assistance services mentioned earlier.

The participants who agreed to be part of this study signed an informed consent form and

completed the measures either in paper and pencil format or else online. The participants

were not offered any incentive for their participation in the study and there were no other

inclusion or exclusion criteria.

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Results

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Exploratory Factor Analysis

Initially, the factorability of the SPT items was examined. The results obtained from

the Kaiser-Meyer-Olkin test of sampling adequacy (KMO) revealed that the factor model was

appropriate (0.929). Bartlett's test of sphericity was significant (x^2 (435) = 5124.97, $p < .00$),

indicating that the data were suitable for an exploratory factor analysis (EFA). The normal

distribution of data was determined by the asymmetry (range from -1.233 to 1.427) and

kurtosis (range from -1.114 to 1.582) values. In order to determine the number of factors to

retain in the EFA, a parallel analysis test (Horn, 1965) was conducted, confirmed by a visual

inspection of the scree plot. Both methods suggested the extraction of two factors. A

maximum likelihood factor analysis using an oblimin rotation yielded two factors that

accounted for 48.71% of the total variance (see Table 1).

Table 1
Factor solution by maximum likelihood factor analysis loading with oblimin rotation for the
Spanish Subjective Probability Task

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	10.34	34.46	34.46	9.80	32.69	32.69	9.12
2	4.27	14.24	48.71	3.75	12.49	45.19	5.75
3	1.55	5.18	53.89				
4	1.15	3.86	57.76				
5	1.07	3.56	61.33				
6	.94	3.15	64.48				
7	.86	2.86	67.34				
8	.80	2.69	70.04				
9	.77	2.57	72.61				
10	.75	2.52	75.13				
11	.59	1.97	77.10				
12	.56	1.87	78.97				
13	.52	1.76	80.73				
14	.50	1.66	82.40				
15	.46	1.56	83.96				
16	.45	1.53	85.49				
17	.42	1.41	86.91				
18	.40	1.35	88.26				
19	.39	1.30	89.57				
20	.36	1.22	90.80				
21	.35	1.18	91.98				
22	.32	1.09	93.08				
23	.31	1.04	94.12				
24	.30	1.02	95.14				
25	.29	.99	96.14				
26	.28	.94	97.08				
27	.24	.82	97.90				
28	.23	.77	98.68				
29	.21	.71	99.39				
30	.18	.60	100.00				

The inspection of the oblimin rotation solution showed the factors to be accurate representations of the two original subscales of the SPT: negative expectancies (F1) and positive expectancies (F2). Thus, negative items loaded on F1 (items 1, 3, 4, 5, 8, 10, 11, 12, 13, 15, 18, 20, 21, 22, 23, 24, 25, 27, 28, 30), while positive items loaded on F2 (items 2, 6, 7, 9, 14, 16, 17, 19, 26, 29) (see Table 2). The criteria used to retain an item in a factor were twofold: an item had to have a factor loading of a minimum .30, and the cross-loadings had to differ by more than .20. As Table 2 shows, all factor loadings were above .30, and no items cross-loaded into the other factor. Item 30 had a relatively small loading on F1, and its loading on F2 remained close to the minimum loading level adopted (-.27). The two factors were negatively correlated (r = -.26).

All the measures used in the study were subsequently subjected to a principal axis factoring analysis using oblimin rotation. The solution produced one large factor that explained 61.90% of the variance, and another factor with an eigenvalue greater than one. Together, these two factors explained 75.41% of the variance. The eigenvalues and the explained variance of the first five factors were 4.95 (61.90%), 1.08 (13.50%), 0.61 (7.74%), 0.49 (6.22%), and 0.26 (3.25%). Based on Kaiser's criterion for retaining factors with eigenvalues greater than 1, and based on previous results (MacLeod et al., 1996), two factors were retained (see Table 3). The first factor (NA) had high loadings from negative affect, worry, anxiety, and depression. The second factor (PA) had high loadings from positive affect, hopelessness, and positive expectancies. Negative expectancies loaded on both factors, although both loadings were relatively low. The two factors were negatively correlated ($r = -.65$).

Table 2
Means and standard deviations, alongside factor loadings of the items based on a maximum likelihood factor analysis with oblimin rotation for the Spanish Subjective Probability Task (N = 321)

	M	SD	Factor 1 (NE)	Factor 2 (PE)
Item 1	3.27	1.74	**.51**	.15
Item 2	3.73	1.57	-.06	**.58**
Item 3	3.76	1.67	**.49**	-.12
Item 4	3.78	1.70	**.76**	.05
Item 5	4.24	1.82	**.67**	-.01
Item 6	4.71	1.62	-.06	**.68**
Item 7	4.74	1.59	.00	**.79**
Item 8	3.34	1.68	**.70**	.04
Item 9	4.85	1.50	-.05	**.83**
Item 10	2.57	1.61	**.64**	.26
Item 11	3.42	1.88	**.78**	.06
Item 12	4.28	1.70	**.72**	-.06
Item 13	3.52	1.57	**.68**	-.08
Item 14	4.35	1.65	-.15	**.54**
Item 15	3.06	1.68	**.56**	-.15
Item 16	5.63	1.41	-.06	**.64**
Item 17	4.29	1.56	-.04	**.62**
Item 18	2.58	1.56	**.61**	-.24
Item 19	4.66	1.55	.22	**.44**
Item 20	2.17	1.39	**.59**	-.12
Item 21	2.92	1.57	**.69**	.18
Item 22	3.76	1.76	**.73**	-.00
Item 23	3.18	1.61	**.54**	-.16
Item 24	2.51	1.73	**.58**	-.09
Item 25	2.96	1.83	**.53**	-.29
Item 26	5.26	1.58	-.09	**.63**
Item 27	2.52	1.46	**.69**	-.13
Item 28	3.22	1.76	**.77**	.01
Item 29	4.75	1.38	-.02	**.66**
Item 30	2.63	1.57	**.35**	-.27

Note. Factor loadings of .30 or above are shown in bold.
M = mean; SD = standard deviation; NE = negative expectancies; PE = positive expectancies.

Table 3

Factor loadings of the measures based on a principal axis factoring analysis with oblimin rotation

Variables	NA	PA
PANAS–P	-.02	**.81**
PANAS–N	**.79**	-.10
PSWQ	**.72**	.05
BHS	-.01	**-.89**
OASIS	**.93**	.07
ODSIS	**.67**	-.20
SPT–NE	**.34**	**-.43**
SPT–PE	.02	**.87**

Note. Factor loadings of .30 or above are shown in bold.
NA = Negative Affect factor; PA = Positive Affect factor.
PANAS–P = Positive and Negative Affect Schedule–Positive Affect; PANAS–N = Positive and Negative Affect Schedule–Negative Affect; PSWQ = Penn State Worry Questionnaire; BHS = Beck Hopelessness Scale; OASIS = Overall Anxiety Severity and Impairment Scale; ODSIS = Overall Depression Severity and Impairment Scale; SPT–NE = Subjective Probability Task–Negative Expectancies; SPT–PE = Subjective Probability Task–Positive Expectancies.

Descriptive Statistics

Table 2 shows the means and standard deviations for each item of the SPT obtained for the entire sample. Table 4 shows the means and standard deviations of all the measures included in the study for each of the subsamples of the population (i.e., general and clinical). Significant differences regarding both the positive expectancies and negative expectancies subscales were found between the general population subsample and the clinical population subsample. While the effect size found for the negative expectancies subscale was small to medium, the effect size found for the positive expectancies subscale was medium to large. Significant differences were also found for all the other measures used in the study (PANAS, PSWQ, BHS, OASIS, and ODSIS), obtaining medium-to-large effect sizes.

Table 4
Descriptive statistics for all the measures for general and clinical populations

	General Population		Clinical Population		t	Cohen's d
	M	SD	M	SD		
SPT–NE	60.55	20.70	69.21	24.09	-3.316**	-0.385
SPT–PE	49.11	10.00	42.73	11.01	5.175**	0.606
PANAS–P	32.51	7.38	25.04	9.02	7.241**	0.906
PANAS–N	20.15	7.44	25.44	8.09	-5.329**	-0.680
PSWQ	52.75	13.36	61.61	10.40	-4.467**	-0.740
BHS	5.10	3.69	7.66	5.74	-2.599*	-0.530
OASIS	4.90	3.84	9.33	4.63	-8.118**	-1.041
ODSIS	3.21	3.95	6.91	5.06	-5.428**	-0.815

Note. M = mean; SD = standard deviation; **p < .00; *p < .01.
SPT–NE = Subjective Probability Task–Negative Expectancies; SPT–PE = Subjective Probability Task–Positive Expectancies; PANAS–P = Positive and Negative Affect Schedule–Positive Affect; PANAS–N = Positive and Negative Affect Schedule–Negative Affect; PSWQ = Penn State Worry Questionnaire; BHS = Beck Hopelessness Scale; OASIS = Overall Anxiety Severity and Impairment Scale; ODSIS = Overall Depression Severity and Impairment Scale.
Cohen (1988) defined d = 0.2 as a "small" effect size, d = 0.5 as "medium," and d = 0.8 as "large."

Internal Consistency

The internal consistency coefficients of the two subscales were excellent (for negative expectancies α = .93, and for positive expectancies α = .88). These results are similar to the ones reported by other authors (MacLeod et al., 1996; Meevissen et al., 2011; Peters et al., 2010).

Correlation Analyses

Correlation coefficients are presented in Table 5. All correlations were significant at $p < .01$, and all instruments correlated in the expected direction. Measures of negative affect, worry, hopelessness, anxiety, and depression correlated positively with the negative expectancies subscale, and negatively with the positive expectancies subscale, while positive affect correlated negatively with the negative expectancies subscale, and positively with the positive expectancies subscale.

Table 5

Correlations between the Spanish Subjective Probability Task and measures of affect, worry, hopelessness, anxiety, and depression

	PANAS–P	PANAS–N	PSWQ	BHS	OASIS	ODSIS	SPT–NE	SPT–PE
PANAS–P	–	-.39	-.31	-.69	-.46	-.50	-.39	.68
PANAS–N		–	.59	.59	.65	.62	.62	-.39
PSWQ			–	.33	.54	.38	.34	-.28
BHS				–	.43	.52	.69	-.73
OASIS					–	.74	.49	-.36
ODSIS						–	.54	-.46
SPT–NE							–	-.34
SPT–PE								–

Note. All correlations are significant at $p < .01$.
PANAS–P = Positive and Negative Affect Schedule–Positive Affect; PANAS–N = Positive and Negative Affect Schedule–Negative Affect; PSWQ = Penn State Worry Questionnaire; BHS = Beck Hopelessness Scale; OASIS = Overall Anxiety Severity and Impairment Scale; ODSIS = Overall Depression Severity and Impairment Scale; SPT–NE = Subjective Probability Task–Negative Expectancies; SPT–PE = Subjective Probability Task–Positive Expectancies.

Within- and across-scale item-total correlations were calculated for each item. The within-scale item-total correlations for the negative items ranged from .50 to .76 (mean = .66), and the within-scale item-total correlations for the positive items ranged from .50 to .82 (mean = .69). The across-scale item-total correlations for the negative items ranged from -.46 to .05 (mean = -.22), and the across-scale item-total correlations for the positive items ranged from -.34 to .06 (mean = -.24). These results prove a reasonable discriminant validity of the subscales of the SPT, with the across-scale correlation coefficients being significantly lower than the within-scale correlation coefficients.

Discussion

The present study sought to analyze the psychometric properties and factorial structure of the Spanish SPT in a Spanish-speaking sample that included clinical and general populations, and moreover to test the model of the two underlying cognitive-affective systems proposed by MacLeod et al. (1996) in a Spanish-speaking population.

The exploratory factor analysis supported the original structure proposed by MacLeod et al. (1996), revealing two factors, namely negative expectancies (F1) and positive expectancies (F2). The two factors were weakly and negatively correlated, implying that negative and positive expectancies are two separate and distinct dimensions. All items loaded clearly on their original subscale, with no cross-loadings observed. However, item 30 ("You will be unable to cope with your responsibilities") was an exception, having a weak loading on the first factor (negative expectancies) and having a low loading, albeit close to the cutoff point, on the second factor (positive expectancies). For these reasons, the elimination of this item was considered, and a reliability analysis calculating the Cronbach's α coefficient in the event of the exclusion of this item was conducted. The results showed there would be no change regarding the internal consistency coefficient should the item be excluded; therefore, the decision to retain it in its original subscale was adopted. Overall, the results of the factor analysis support the original structure of the SPT as an instrument composed of two distinct and unrelated subscales.

The model of the two underlying cognitive-affective systems proposed by MacLeod et al. (1996) was partially supported by the results obtained. The factor analysis conducted with all the measures used in the study revealed two factors, a NA factor and a PA factor. The NA factor had loadings from negative affect, worry, anxiety, depression, and negative expectancies, and the PA factor had loadings from positive affect, hopelessness, positive expectancies, and negative expectancies. These results largely resemble the ones obtained by MacLeod et al. in their study (1996), with a few differences. First, although depression was expected to load on both factors, it loaded only on the NA factor and not on the PA. The theoretical ground suggests that depression has a strong component of reduced activity of the motivational system that mediates positive affect, approach behavior, hope, and expectancies for positive outcomes. This is why a higher negative loading on the PA factor was expected

for depression. One possible explanation why this did not occur in the present study could be the instrument used to assess depression. ODSIS measures the frequency and severity of depression, as well as the levels of avoidance and interference associated with depression, but it does not address core depressive symptoms such as loss of pleasure or interest. It is possible that an instrument that addresses the low PA component of depression would have shown the expected relation to the PA factor found in the study.

Second, it was predicted that negative expectancies would load only on the NA factor; however, this subscale loaded positively on the NA factor and negatively on the PA factor. This result is very similar to the one obtained by MacLeod et al. in their second study, in which they used a different version of the SPT, one with 16 negative items and 14 positive items (the loadings of the negative expectancies subscale were .37 on the NA factor and -.45 on the PA factor). However, the result it is not consistent with the predictions made based on the results obtained by MacLeod et al. in their first study, in which the original version of the SPT was employed. In MacLeod et al.'s first study, the negative expectancies subscale had a loading of .60 on the NA factor, and a loading of -.20 on the PA factor. It is not clear why in the present study the negative expectancies subscale loaded on both the PA and NA factors, rather than on the NA factor alone, considering that the original version of the SPT, consisting of 20 negative items and 10 positive items, was used. The result could be the effect of using a clinical sample in the study.

All the other instruments loaded in the expected direction, as predicted by the theoretical body that supports the existence of two underlying systems, one that regulates approach behavior and one that regulates inhibition behavior.

The internal consistency coefficients obtained for the two subscales of the Spanish SPT were excellent, rendering the SPT subscales reliable instruments for the sample used. The internal consistency coefficients found for the Spanish SPT are very similar to the ones

reported by other authors (e.g., MacLeod et al., 1996; Meevissen et al., 2011; Peters et al., 2010).

Regarding criterion validity, significant correlations have been found in the expected directions between, on the one hand, the two subscales of the SPT (negative expectancies and positive expectancies), and on the other hand, the measures of positive and negative affect, worry, hopelessness, anxiety, and depression.

The two subscales of the Spanish SPT also showed good discriminant validity, indicating that they measure distinct and largely unrelated concepts. This pattern resembles the pattern of positive and negative affect dimensions, which are known to be two independent dimensions and not merely two poles of a unidimensional construct (Watson et al., 1988).

Significant differences have been observed between the clinical and general samples regarding both negative and positive expectancies. The effect size observed for the differences in negative expectancies between the clinical and general sample was small to medium, suggesting that the clinical sample tended to have more negative expectancies than the general sample in the present study. This finding is in line with previous research that found depressed and anxious patients to hold more negative expectancies compared to healthy control groups (MacLeod & Byrne, 1996; MacLeod, Rose & Williams, 1993; Miranda & Mennin, 2007). The effect size observed for the differences in positive expectancies was even greater than the one observed for the negative expectancies, reaching a medium-to-large value. Again, the results are consistent with those of previous research, with the clinical sample holding significantly less positive expectancies for the future than the general sample (e.g., Bjärehed et al., 2010; Conaghan & Davidson, 2002). This finding is of particular importance for clinical practice, suggesting that positive future-directed thinking has an important role to play in the psychopathology and perhaps treatment of psychological

disorders, and thus deserves as much attention, if not more, as negative future-directed thinking. However, it is important to note that the clinical sample used in the present study was mixed, consisting mainly of individuals diagnosed with anxiety, eating, personality, and mood disorders and fibromyalgia, making it hard to draw any conclusions regarding relationships between specific patterns of future-directed thinking and the psychological disorders included in the study. Additional studies focusing on specific disorders are needed in order to clarify this matter.

The present study contributes to the study of psychopathology, by being the first one that validates the SPT and the two-system model proposed by MacLeod et al. (1996) using a clinical sample and a Spanish-speaking population. Nevertheless, the study comes with several limitations. One of them is the heterogeneity of the clinical sample. A homogenous clinical sample could give more insight into the relationship between patterns of future-directed thinking and specific psychological disorders, which in turn could reveal important aspects that, if implemented in a treatment protocol, could improve the treatment response for these disorders. Another limitation of the study lies in the impossibility of conducting a test-retest reliability analysis for the Spanish version of the SPT. Additional studies are needed in order to determine if the Spanish version of the SPT is a reliable instrument over time. The choice of the depression measure could be another limitation of the study. Perhaps if a different instrument had been employed, then the results would have been even more consistent with the two-system model proposed by MacLeod et al. (1996).

Conclusions

In conclusion, this study provides evidence that the Spanish version of the SPT is a valid and reliable measure for assessing future-directed thinking in general and clinical populations. Furthermore, it provides evidence for the model proposed by MacLeod et al. (1996) consisting of two underlying cognitive-affective systems using a Spanish-speaking

sample. Future research should explore the relationship between patterns of future-directed thinking and psychological disorders. Also, a clarification needs to be made regarding the role of negative expectancies in depression. So far, the research conducted on this matter has shown different results (e.g., Bjärehed et al., 2010; Miranda & Mennin, 2007). It remains unclear whether depression is characterized by both an increase of the negative expectancies for the future and a decrease of the positive expectancies for the future, or only by the latter. Hopefully, the validation of the SPT in a Spanish-speaking population, both clinical and general, will help shed light on these matters by broadening the sample beyond the English-speaking world, providing opportunities to conduct research not only in Spain but across Latin America.

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Appendix A

List of positive and negative items of the Spanish Subjective Probability Task

(positive items in *italics*)

Instrucciones: Conteste rodeando con un círculo la alternativa que mejor refleje la probabilidad en la que cree que pueden ocurrirle las siguientes experiencias, teniendo en cuenta la siguiente gradación:

1 = Nada probable que ocurra

7 = Extremadamente probable que ocurra

1. Tendrá un serio desacuerdo serio con un buen amigo

2. Las personas le admirarán

3. Tendrá problemas de salud

4. Tomará una decisión de la que se arrepentirá

5. Se sentirá incomprendido

6. Tendrá mucha energía y entusiasmo

7. Le irá bien en las actividades que realice

8. Le culparán por cosas que han salido mal

9. Logrará las cosas que se ha propuesto

10. Será víctima de un delito

11. Alguien cercano a usted le rechazará

12. Las cosas no resultarán como había esperado

13. No le gustará a los demás

14. Estará en forma y gozará de buena salud

15. La gente pensará que es monótono y aburrido

16. Tendrá muchos buenos momentos con amigos

17. Podrá soportar fácilmente la presión

18. La gente pensará que es un fracaso

19. Su mente estará muy alerta y centrada en sus objetivos

20. Sus amigos le excluirán

21. Tendrá un accidente

22. Cometerá muchos errores

23. Irá muy atrasado en su trabajo

24. No podrá confiar en nadie

25. Se sentirá cansado y apático

26. *Hará amistades buenas y duraderas*

27. La gente se burlará de usted

28. Decepcionará a una persona cercana

29. *Le gustará a las personas que conozca*

30. No podrá sobrellevar sus responsabilidades