

## Psychometric properties of the Leisure Time Satisfaction Scale in family caregivers

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### Abstract

**Background:** Despite evidence of the numerous benefits of leisure to health and well-being appropriate tools to assess this construct are lacking. The purpose of this work was to analyse the psychometric properties of the Spanish version of the Leisure Time Satisfaction (LTS). **Method:** The sample was made up of 1048 primary family caregivers of dependent people. Scale structure was subjected to exploratory and confirmatory factor analysis. Concurrent and convergent validity were assessed by correlation with validated questionnaires for measuring burden (Zarit Burden Inventory - ZBI) and health (SF-36 Health Survey). **Results:** The results show a high level of internal consistency (Cronbach's alpha = .938) suitable fit of the dimensional model tested via confirmatory factor analysis (GFI = .925, BBNNFI= .996; IFI= .998, RMSEA= .043), and appropriate convergent validity with similar constructs ( $r = -.44$  with ZBI; and  $r$ -values between .226 and .440 with SF-36 dimensions). **Conclusion:** Psychometric results obtained from the LTS are promising and the results enable us to draw the conclusion that it is a suitable tool for assessing caregivers' leisure time satisfaction.

**Keywords:** Leisure, family caregiving, burden.

### Resumen

**Propiedades psicométricas de la Escala de Satisfacción con el Ocio en familiares cuidadores.** **Antecedentes:** a pesar de las evidencias sobre los beneficios del ocio para la salud y el bienestar, apenas existen instrumentos para medir este constructo. El objetivo de este trabajo es analizar las propiedades psicométricas de la versión española de la Escala de Satisfacción con el Ocio. **Método:** la muestra ha estado formada por 1.048 familiares cuidadores. La estructura de la escala ha sido analizada a través de análisis factoriales (exploratorio y confirmatorio) y para evaluar la validez concurrente y discriminante se han utilizado escalas validadas de sobrecarga (Zarit Burden Inventory - ZBI) y salud (SF-36 Health Survey). **Resultados:** los resultados muestran una buena consistencia interna (Alpha de Cronbach = .938), un buen ajuste al modelo (GFI = .925, BBNNFI= .996; IFI= .998, RMSEA= .043) y una adecuada validez convergente con constructos similares ( $r = -.44$  con ZBI y valores  $r$  entre .226 y .440 con SF-36). **Conclusión:** las propiedades psicométricas de la versión española de la Leisure Time Satisfaction Scale (LTS) son prometedoras y los resultados obtenidos permiten concluir que es un instrumento adecuado para evaluar la satisfacción con el ocio de familiares cuidadores de personas dependientes.

**Palabras clave:** ocio, cuidadores familiares, sobrecarga.

It is widely accepted that caring for an elderly dependent person is a burdensome and stressful task (Makizako et al., 2010) that impacts on the physical and mental health of family members (Bialon & Coke, 2012; Hoffman, Lee, & Méndez-Luck, 2012; Pinquart & Sorensen, 2007). Taking care of a dependent relative can seriously affect the caregiver's daily life, making active participation in social and leisure activities difficult (Gahagan, Loppie, Rehman, Maclellan, & Side, 2007; Stevens et al., 2004). On another hand, research has proved that leisure can act as a "buffer" in stressful life events (Iwasaki, 2006) by exercising a

beneficial effect on health, which has been studied in different groups including family caregivers (von Känel et al., 2014; Romero-Moreno, Márquez-González, Mausbauch, & Losada, 2012). Leisure is known to contribute to positive emotions (Shannon, 2015; Qian, Yarnal, & Almeida, 2014), self-preservation, meaning-making and purpose (Iwasaki & Schneider, 2003), and a sense of subjective well-being (Brown, MacDonall, & Mitchell, 2015).

Although not explicitly, relationships between leisure and caregivers' well-being can be seen throughout the most outstanding stress models. These models emphasize the protective role of mediating variables such as social activities with family and friends or social support (Pearlin, Mullan, Semple, & Skaff, 1990) and the negative impact of caregiving on the available time to carry out other personal roles different from caregiving or just to enjoy some time for oneself.

Despite evidence of the numerous benefits of leisure to health and well-being, appropriate tools to assess this construct are

lacking (Stevens et al., 2004). One of the most important limitations of the existing scales revolves around their conceptualization of leisure, which focuses on the frequency of participation in leisure activities rather than on the meaning and satisfaction that they lend. This is particularly the case of the *Victoria Longitudinal Study Activity Questionnaire*, a Likert-type scale ranging from 0 (*never*) to 8 (*daily*) - which, in the adaptation by Jopp and Hertzog (2010), comprised 57 items relating to eleven different sorts of activities (physical, crafts, games, TV, social-private, social-public, religious, developmental, experiential, technology and travel). In spite of its acceptable psychometric properties, the *Victoria Longitudinal Study Activity Questionnaire* only provides information on the type of leisure activity and the amount of time that the person spends doing it. Taking into account that leisure is a subjective experience (Iso-Ahola, 1980; Neulinger, 1981) which can involve different meanings, and the fact that the farther away the leisure activity is from the routine or the amount of time spent doing it are precisely the meanings that make it a potentially positive influence (Carbonneau, Martineau, Andre, & Dawson, 2011), it could be posited that this instrument is limited from a conceptual perspective. According to Wakui, Saito, Agree, and Kai (2012), while accepting that different activities could bring about different and specific effects or benefits, we must not overlook the different meanings that caregivers attribute to those leisure activities.

The second problem to date is the length of the available scales. This is the case of the scale we have just mentioned and also that of the *Leisure Satisfaction Scale*, developed by Beard and Ragheb (1980) to measure satisfaction with the time devoted to various leisure activities that were grouped into six thematic subscales. As a whole, the scale consists of 51 items and requires a response time of 20 minutes—according to the authors—which makes application difficult in certain groups. Stevens et al. (2004) point out that the properties of this instrument have not been studied in older people or with caregivers. On another hand, the only attempt to adapt this scale to Spanish did not result in the statistical features needed to make it acceptable (Gorbeña & Larrínaga, 1999).

This study focuses on analysis of the psychometric properties of the Spanish version of the *Leisure Time Satisfaction (LTS)*, which was designed within the framework of the research project Resources for Enhancing Alzheimer's Caregivers Health (REACH; Stevens et al., 2004). REACH was begun in 1995 to check the impact of possible interventions that would help to improve the well-being of persons caring for family members with Alzheimer's or similar diseases. The LTS is short, which means it can be conducted in little time and it has been proven to be sensitive to change (Burgio, Stevens, Guy, Roth, & Haley, 2003). Furthermore, it is appropriate from the conceptual point of view, as the items include not only types of leisure activities ("visit friends or family" or "take part in hobbies") but also formulations that cover the subjectivity of leisure and possible perceptions related to enjoying it. One of the items was kept specifically for conceptual reasons—"engage in activities that you enjoy"—which was eliminated in the final version of the scale by Stevens et al. (2004). Given that leisure has been defined as a subjective experience of enjoyment, including this expression may therefore make the tool more sensitive to capturing that subjectivity.

## Method

### Participants

The sample is made up of 1048 primary family caregivers of dependent people from the province of Biscay (Spain) who had requested financial provision for family caregivers under the protection of the Spanish Act of "Promotion of the Personal Autonomy and Care for Dependent Persons" approved by the Spanish Congress in 2006 and managed in Biscay by the provincial government. Family caregivers therefore attend individuals who, according to the above-mentioned regulation, have a severe level of dependence and, as stated in the law, need another person's help to perform some or all their daily activities, that is, persons who show a low to very low level of personal autonomy.

The average age of the participants is 61.04 years ( $SD = 11.9$ ; range: 20–92 years); 21.4% are male and 78.6% female. Of the total caregivers, 61.7% care for their mother or father or their mother-in-law or father-in-law, 30% for their spouse, and 8.4% for their grandmother, grandfather, or other family members.

The average age of the persons receiving the care was 82.36 years ( $SD = 10.2$ ; range 50–105); 31.5% of those receiving care were men and 68.5% were women. The caregivers themselves reported that 62.3% of care recipients suffered from cognitive impairment, with the most prevalent being health problems, dementia (37.9%), neurological diseases (31.6%), mobility problems (15.3%) and heart diseases (10.5%). Functional activity was highly affected (an average of 28 points out of a maximum of 33, indicative of functional impairment).

### Instruments

The Leisure Time Satisfaction scale (LTS) was developed in 1995 both in English and Spanish (Schulz et al., 2003). It is made up of 7 items with a Likert-type response option from 0 (*not at all*) to 2 (*a lot*). The scale was constructed by a team of researchers and clinicians whose expertise was family caregiving. They sought for content validity through a careful selection of the items to capture common leisure activities (frequently represented on other measures of leisure) (Stevens et al., 2004). Factor analysis and convergent validity of the scale were also examined, showing acceptable validity as a one-factor measure for several subgroups of caregivers defined by sex, background, etc. (Stevens et al., 2004). Internal consistency (Cronbach's alpha) of the scale was .835 (Stevens et al., 2004). A later version of the Leisure Time Satisfaction consisting of 6 items was developed to be used in a second stage of the REACH project (Stevens et al., 2004). Nevertheless, we found the 7-item version more suitable for our study, as it enables better measurement of the inherent subjectivity of leisure experiences.

Zarit Burden Inventory (ZBI) has been used to measure concurrent validity (the same construct). This test quantifies the degree of subjective strain evidenced by family caregivers of people with dementia, and it is one of the most commonly used scales. The scores obtained in each item are added, and the final score represents the degree of strain experienced by the caregiver. Cronbach's alpha in the study was .91.

The Short Form 36 Health survey (SF-36) is a questionnaire comprising 36 items assessing health across 8 dimensions that can be summarized into the physical component (PCS) and the mental

component summary (MCS). In the present study, Cronbach's alpha for the total scale was .88; .84 for the physical health composite (PCS) and .83 for the mental health composite (MCS).

### Procedure

In order to make sure that the scale was culturally adapted, translation and retranslation method was used to translate the English version of the LTS into Spanish. Two bilingual lecturers helped with the work. Translations were reviewed by professionals working in the area of gerontology and family caregivers. Once suggestions from both groups were included and the translation was verified, the sample group was contacted through the provincial government. A letter informing the recipient about the research and a protocol were sent by post. The caregivers answered the questionnaire on a voluntary basis and returned it to the University of Deusto. Anonymity and confidentiality of the information supplied by the respondents were respected.

### Data analysis

For the analysis of the items in the LTS, the mean, standard deviation, skewness (Sk), kurtosis (K) and the correlation coefficient between the item and the rest of the scale ( $r$ ) were measured, as well as the value of Cronbach's alpha coefficient if the item was removed.

The suitability of the correlation matrix was verified to ensure that it is factorized on the basis of the Kaiser-Meyer-Olkin test and the Bartlett sphericity test. Parallel analysis (PA) (Timmerman & Lorenzo-Seva, 2011) and minimum average partial method (MAP) (Velicer, 1976) tests were carried out as extraction criteria for the advisable number of factors according to the configuration of the correlation matrix. Also, the multivariate normality was analyzed with the Mardia test (Mardia, 1970).

To validate the instrument based on the theoretical model, a confirmatory factor analysis (CFA) with covariance structural techniques using EQS (Bentler, 1995) was conducted. Maximum-likelihood robust estimation was used to estimate the parameters. The chi-squared test ( $\chi^2$ ) was used to evaluate the goodness of fit of the corresponding model and indicated that the probability that the variation between the sampling variance and covariance matrix and the matrix resulting from the hypothesized model was random. In the event of non-compliance with the multivariate

normality, estimations would be carried out by application of robust methods (Satorra & Bentler, 1990; Satorra, 2002).

Because chi-square is sensitive to variations in sample size (Schermele-Engel et al., 2003), additional measurements of the goodness of fit of the model were used (Hu & Bentler, 1999), such as the root mean square error of approximation (RMSEA) and 90% confidence interval of RMSEA, which considers values  $<.05$  to be adequate and those  $<.08$  to be acceptable; the goodness-of-fit (GFI), Bentler-Bonnet non-normal fit index (BBNFI), and incremental fit index (IFI). From the coefficients lambda and delta, the composite reliability (CR) and the average variance extracted (AVE) were calculated

## Results

### Distribution of items

Information about the distribution of each item across the three possible responses, descriptive statistics and internal consistency can be found in Table 1. The mean value for the total score on the scale was 0.74 (SD = 0.64), which refers to an intermediate degree of agreement with the statements included on the scale (possible variance between 0 and 2) and, therefore, a medium-low level of satisfaction with leisure activity. Over 15.2% of caregivers were *not at all* satisfied with their leisure activities (in the total score they show zero points), whereas only 5.4% expressed overall satisfaction (their total score equals two). Otherwise, 54.9% of the participants presented a total score of less than 1 point, which would indicate low satisfaction with their leisure activities. None of the LTS items evidenced excessive asymmetric values ( $<-1$ ;  $>+1$ ). In all the cases, the correlation values of the items with the total for the scale were more than .75 and the elimination of any of these would reduce the reliability of the total scale (Cronbach's alpha), which was .94. Note that 9.4% of the expected responses were missing, so the scale psychometric analyses took 949 valid cases into account.

### Association of items

We used the gamma coefficients to compare them with the data from Steven's study, although it is more interesting to analyse the kappa coefficients. The gamma coefficient is a measure of the association between the variables, whereas the kappa coefficient

Table 1  
Descriptive data of each item and internal consistency of LTS measure (total sample; n= 1048)

		Distribution of Responses (%)					Descriptive Statistics			Internal consistency	
		Missing	n	Not at all	A little	A lot	Mean	SD	Sk	r	Alpha
1	Engage in activities you enjoy	5.8	987	30.7	59.0	10.3	0.79	0.60	0.13	.766	.932
2	Quiet time by yourself	6.1	986	30.9	57.8	11.3	0.80	0.62	0.15	.762	.932
3	Attend church and group activities	7.0	987	32.5	56.7	10.8	0.78	0.62	0.18	.785	.930
4	Take part in hobbies	5.9	989	34.2	56.5	9.3	0.75	0.61	0.19	.828	.926
5	Go out for meals	6.3	982	40.7	51.0	8.2	0.67	0.62	0.35	.808	.928
6	Do fun things with people	6.6	983	35.4	55.7	8.9	0.73	0.61	0.21	.828	.926
7	Visit family and friends	5.3	993	31.9	58.5	9.6	0.77	0.60	0.14	.810	.928
	Total scale	9.4	949	-	-	-	0.74	0.52	0.40	-	.938

Note. SD = Standard Deviation; Sk = Skewness, r = correlation; Alpha = Alpha if item deleted

is a measure of the concordance between levels of response of the variables (chance-adjusted level of agreement). Table 2 shows both types of coefficients, gamma (lower correlations matrix) and kappa (upper matrix). All associations between pairs of items were positive and statistically significant. The lower gamma statistic was .83, indicating a very high association between variables and our set of coefficients was very similar to the one in the original study of validation of the scale (Stevens et al., 2004). The values of the kappa coefficients ranged from .52 to .73, representative of a moderate to high concordance in the responses to the items.

*Factor analysis*

Two factor analysis procedures were carried out, for which the total sample was randomly divided into two halves. With the first half (N1= 474), an exploratory factor analysis (EFA) was conducted (Table 3, data on the lower matrix of correlations), and confirmatory analysis (CFA) (Table 3, upper matrix) with the second subsample (N2= 475). Given the type of variables (ordinal response) and that Mardia’s coefficient (39.06) indicated no multivariate normality; the decision was made to perform the factor analysis from the polychoric correlation matrix in both subsamples.

EFA, utilizing principal components extraction and weighted least squares estimation, was performed on a randomly selected sample of 50% (N1= 474) of the LTS baseline data. Both the KMO test (.911) and Bartlett’s test of sphericity ( $\chi^2(21) = 4094.3; p < .001$ ), which were conducted on the correlation matrix, indicated that the item factorization for the LTS was adequate. PA and the MAP test

conducted on the correlation matrix, and the results of the EFA showed that a single factor should be retained. Only one eigenvalue was greater than one (5.76), and this eigenvalue explained 82.3% of the variance. The remaining eigenvalues were all less than one (.814, .656, .455, .371 and .237). In the single factor model, all factor loadings were greater than .80 (ranging from .825 to .878).

The CFA solution on the remaining 50% of the sample (N2= 475) is presented in Table 3. Because no multivariate normality exists in the data (Mardia’s standardized estimator of the multivariate kurtosis equal to 40.23), maximum-likelihood robust estimators were used in order to adjust the measurement model. Satorra-Bentler Scaled Chi-square, as a measurement of overall fit, was proven to be statistically significant,  $\chi^2(14) = 25.98, p = .026$ . Nevertheless, other fit indexes show a good fit of the single-factor model, with values above .90 (GFI= .925; BBNFI= .996; IFI= .998), and an RMSEA statistic below .05 (RMSEA = .043; 95% Confidence Interval: .014 to .068). Lambda factorial weight coefficients are all over .50, considering this as the lowest recommended value to assume the substantive meaning of an item within the factor (Bentler, 1995), and were statistically significant ( $p < .001$ ). From the coefficients lambda and delta, the composite reliability (CR= .935) and the Average Variance Extracted (AVE= 64.33%), were calculated, which were very high in both cases.

The confirmatory factor analysis across sex, group of age and relationship variables was conducted for the entire sample. Table 4 presents the fit index and RMSEA across these subgroups. In all cases, the CFA results show a correct adjustment of the single factor model. The subgroups that show a better fit are female,  $\chi^2 = 11.68$ ,

*Table 2*  
Kappa coefficients (upper matrix) and Gamma correlations (lower matrix), over valid sample (n= 949)

		Kappa						
		1	2	3	4	5	6	7
1	Engage in activities you enjoy		.599	.581	.620	.525	.561	.550
2	Quiet time by yourself	.900		.582	.615	.524	.557	.559
3	Attend church and group activities	.872	.882		.651	.562	.585	.614
4	Take part in hobbies	.906	.884	.912		.635	.644	.633
5	Go out for meals	.864	.836	.875	.920		.732	.643
6	Do fun things with people	.870	.855	.889	.921	.954		.709
7	Visit family and friends	.862	.862	.909	.915	.907	.929	

*Table 3*  
Exploratory and Confirmatory Factor Analysis, and polychoric correlation matrix between discrete variables

LST Items	Exploratory Factor Analysis (N1= 474)			LST Items						Confirmatory Factor Analysis (N2= 475)	
	FL	h <sup>2</sup>		1	2	3	4	5	6	7	λ
1 Engage in activities you enjoy	.829	.687		.860	.797	.838	.797	.789	.790	.867	.499
2 Quiet time by yourself	.825	.681	.781		.826	.835	.785	.789	.788	.866	.499
3 Attend church and group activities	.844	.713	.759	.763		.891	.834	.811	.827	.904	.427
4 Take part in hobbies	.878	.771	.826	.777	.780		.935	.872	.898	.971	.328
5 Go out for meals	.863	.745	.774	.733	.758	.796		.903	.859	.947	.320
6 Do fun things with people	.878	.771	.782	.743	.797	.835	.946		.909	.923	.385
7 Visit family and friends	.865	.748	.763	.757	.821	.783	.841	.839		.926	.378

Note: <sup>2</sup> = Communality; FL = Factor Loadings; λ = Lambda coefficients; δ = Delta coefficients

$p = .631$ ) and child caregivers,  $\chi^2 = 7.50, p = .913$ ). In any case, the generally consistent fit across groups suggested that the one-factor solution was appropriate for these subgroups of the sample.

*Convergent validity*

Convergent validity assessments were conducted using Spearman correlation coefficients. Table 5 shows the Spearman correlation coefficients for all LTS items and summary score with other constructs. The highest and negative relationships were found with the Zarit Burden Inventory. The LTS also showed a negative association with the care recipient's functional activity although it was much lower. As per the SF-36 dimensions, the LTS showed positive moderate-high associations in all cases, with the ones related to the emotional construct being more remarkable than the physical. The correlation coefficients indicated the predicted theoretical direction that we expected in every case.

*Leisure Time Satisfaction summary scores*

The observed scores for the LTS are presented in Table 6 for the entire sample and for subgroups. The possible range of scores

for the measurement was zero to 2. For the entire sample of 949 caregivers, the minimum score observed was zero, the twenty-fifth percentile was 0.28, the median was 0.85, the seventy-fifth percentile was 1 and the maximum was 2. Table 6 also provides the descriptive statistics within subgroups. No mean difference was found between men and women's scores on the LTS, Welch Test  $F(1, 354.7) = 1.179, p = .278$ , but it was found for age,  $F(2, 931) = 3.58, p < .001$ , and type of family relationship,  $F(1, 849) = 1.29, p = .029$ . In this regard, the three age groups differ from each other, with the older age group ( $M = 0.64$ ) showing less satisfaction, followed by the group aged between 50 and 65 ( $M = 0.77$ ), and finally the youngest group ( $M = 0.89$ ).

Discussion

The aim of this study was to analyse the psychometric properties of the Spanish version of the Leisure Time Satisfaction Scale (LTS) in a broad sample of caregivers of dependent persons in Spain. The results obtained by applying the Spanish version of the LTS are very similar to those of Stevens et al. (2004). The adequate psychometric characteristics and good fit indexes in the measurement model are remarkable, in addition to the fact that the

Table 4  
Confirmatory Factor Analysis of LTS in subcategories of the total population (n= 949)

	$\chi^2_{SB}$	d.f.	p	AIC	BBNNFI	IFI	RMSEA	95% Confidence Interval	
Overall	28.41	14	.012	5.59	.97	.98	.043	(.014	.068)
Sex									
Male	37.04	14	<.001	7.29	.95	.97	.049	(.000	.090)
Female	11.68	14	.631	2.30	.97	.98	.033	(.011	.054)
Age									
< 50				-					
50-64	21.29	14	.094	4.19	.97	.97	.039	(.003	.065)
>65	19.10	14	.161	3.76	.96	.97	.047	(.008	.078)
Relationship									
Spouse				-					
Child	7.5	14	.913	1.34	.98	.99	.036	(.014	.057)

$\chi^2_{SB}$ : Satorra-Bentler Scaled Chi-square; d.f.: degree of freedom; p: probability; AIC: Akaike Information Criterion; BBNNFI: Bentler-Bonett Non-Normed Fit Index; IFI: Incremental Fit Index; RMSEA: Rot Mean Squared Error of Approximation

Table 5  
Measure of association with other constructs (Convergent validity)

	LTS-Total	LTS-1	LTS-2	LTS-3	LTS-4	LTS-5	LTS-6	LTS-7
Zarit (ZBI)	-.441	-.415	-.409	-.367	-.400	-.355	-.351	-.429
Social Function	.440	.407	.392	.373	.370	.352	.381	.397
Vitality	.430	.426	.406	.350	.380	.316	.351	.366
Mental Health	.429	.428	.417	.359	.384	.323	.354	.372
SMC – SF36	.397	.397	.376	.347	.352	.297	.331	.351
General Health	.357	.324	.345	.279	.304	.286	.306	.319
Body Pain	.291	.289	.291	.224	.257	.209	.224	.250
Roll Emotion	.288	.295	.280	.256	.246	.203	.238	.249
Physical Function	.277	.264	.245	.213	.236	.223	.228	.237
Roll Physic	.226	.217	.233	.212	.174	.153	.189	.232
SPC – SF36	.222	.201	.203	.167	.178	.171	.190	.203
Functional Activity (FAQ)	-.108	-.103	-.046	-.090	-.080	-.086	-.082	-.093
Cognitive impairment	.063	.058	.042	.063	.079	.028	.042	.082

scale is short and easy to apply. This enables us to consider the LTS a useful tool for leisure studies.

Unlike the final version of the LTS developed by Stevens et al. (2004), which consisted of six items, the version used in this study included the seven items that made up the original version of the scale that was used in the REACH project in 1995 (Schulz et al., 2003). As mentioned above, the reason for this is that leisure has been conceptually defined as a subjective type experience linked to enjoyment, which is accurately covered in the item (“engage in activities that you enjoy”). Keeping the seventh item can be justified by its behaviour at the psychometric level, which was similar to the rest of the scale, and its substantial contribution to the internal consistency of the whole scale. As per the items as a whole, the responses are uniformly distributed and do not show ceiling or floor effects. Internal consistency is high (Cronbach’s  $\alpha = .94$ ) and a high concordance was assessed through the kappa and gamma coefficients. These results indicate that the LTS items as a whole uniformly gather information on the construct of satisfaction with leisure. The confirmatory structure analysis indicates a solution with a factor showing high contribution of all the items (lambda coefficient values over .85). Both in the total sample and the subgroups by sex, age and type of family relationship, the unifactorial structure of the LTS shows a good fit. These results confirm the model’s consistency and invariance, contributing to its construct validity.

The convergent validity of the LTS with other similar constructs was also analysed. The association coefficients between leisure and overload are particularly high and reveal the relationship between a greater perception of overload and lower satisfaction with leisure. This result is not surprising if we take into account that caring for a dependent family member seriously limits the free time available for oneself and for leisure (Stevens et al., 2004). High association coefficients are also obtained with perception of

health, especially mental health. As shown in different studies, long-term care of dependent family members (particularly those suffering from dementia) has substantial effects on psychological health (Joling et al., 2010); the stress associated with caring is related to emotional problems such as anxiety and depression, and is more common in caregivers than in the general population who do not perform these tasks (Fernández de Larrinoa et al., 2011). There is also a great deal of evidence showing that enjoyment of leisure is related to better physical and psychological health and protects against stress and overload. Enjoyment of leisure may then have a moderating effect on overload. However, new longitudinal type studies in which leisure acted as an independent variable would be needed to demonstrate this hypothesis.

More solid findings on the health-protecting effects of leisure would form a good base for new intervention strategies targeting caregivers through leisure. In fact, the design and implementation of leisure-based strategies to help family caregivers handle stress has aroused interest among researchers and practitioners for some time now (Coon, Thompson, Steffen, Sorocco, & Gallagher-Thompson, 2003; Huthinson, Doble, Warner, & MacPhee, 2011).

In any case, whether the aim is to confirm the possible effects of leisure time on health, its potential to protect from stress or the impact of leisure-based intervention programmes, an appropriate measuring instrument is essential. In this respect, the purpose of this work was to gain a better knowledge of the Leisure Time Satisfaction scale developed by Stevens and his team. Although the psychometric results obtained from the LTS are promising, we should continue to be cautious and consider the limitations inherent in the survey. Firstly, the use of a transversal design does not enable us to assess the psychometric behavior of the scale in its entirety. Its measuring stability still needs to be analyzed as does its sensitivity to change. All these tasks need to be carried out in successive longitudinal surveys.

Table 6  
LTS summary statistics

	n	Min	5	25	50	75	95	Max	Mean	SD
Overall	949	0.00	0.00	0.28	0.85	1.00	2.00	2.00	0.74	0.52
Sex										
Male	201	0.00	0.00	0.42	0.85	1.00	1.71	2.00	0.78	0.46
Female	746	0.00	0.00	0.28	0.85	1.00	2.00	2.00	0.73	0.53
Age										
< 50	148	0.00	0.00	0.57	1.00	1.00	2.00	2.00	0.89	0.51
50-64	458	0.00	0.00	0.28	0.85	1.00	2.00	2.00	0.77	0.51
>65	328	0.00	0.00	0.14	0.57	1.00	2.00	2.00	0.64	0.51
Relationship										
Spouse	170	0.00	0.00	0.28	1.00	1.00	2.00	2.00	0.81	0.56
Child	681	0.00	0.00	0.28	0.85	1.00	1.71	2.00	0.71	0.50

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