Validation study of the Spanish Version of the Work-Family Conflict Questionnaire (CCTF)

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In this study, a brief Work-Family Conflict (WFC) Questionnaire in the Spanish language is proposed that takes into account the two directions commonly reported in the literature: work interference with family (WIF), and family interference with work (FIW). The results obtained through exploratory factor analyses (EFA) and confirmatory factor analyses (CFA) with two independent samples, carried out for women and men, showed acceptable validity and reliability. A copy of the instrument in Spanish language is provided, together with the Amos 4 syntax to perform the factor invariance analysis for women and men. The suggested Work-Family Conflict Questionnaire (in Spanish, abbreviated as CCTF) may be useful in studies performed in the work setting, considering the special relevance of the concept in this line of research.

Keywords: work-family conflict, exploratory factor analyses, confirmatory factor analyses.

En este estudio se propone un cuestionario breve en lengua española para medir conflicto trabajo – familia, que tiene en cuenta las dos direcciones comúnmente informadas en la literatura: interferencia del trabajo en la familia (TF), e interferencia de la familia en el trabajo (FT). Los resultados obtenidos mediante análisis factorial exploratorio y análisis factorial confirmatorio con dos muestras independientes y llevados a cabo para mujeres y hombres, mostraron una validez y fiabilidad aceptables. Se proporciona una copia del instrumento utilizado en lengua española, así como la sintaxis en Amos 4 para llevar a cabo el análisis de invarianza factorial para mujeres y hombres. El cuestionario de conflicto trabajo – familia (CCTF) que se propone, puede ser útil en los estudios realizados en el mundo del trabajo, ya que se trata de un concepto de especial relevancia en esta línea de investigación.

Palabras clave: conflicto trabajo – familia, análisis factorial exploratorio, análisis factorial confirmatorio.

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Work-family conflict (WFC) was initially defined as a kind of inter-role conflict in which work and family pressures are mutually incompatible (Greenhaus & Beutell, 1985). Subsequent development has revealed that there are two main directions in WFC, highly correlated, depending on the source and target of the conflict or interference: workfamily (WF) and family-work (FW) (Frone, Russell, & Cooper, 1992; Mesmer-Magnus & Viswesvaran, 2005). In recent years, WFC has gained special relevance as an object of study in work psychology (Eby, Casper, Lockwood, Bordeaux, & Brinley, 2000), especially because of its close association with a large number of negative consequences for people's health and well-being (Allen, Herst, Bruck, & Sutton, 2000), and also because of its relation to diverse stressors and causal antecedents (Byron, 2005).

It is therefore necessary to have adequate measurement instruments in the Spanish language that allow us to somehow calibrate this construct in studies performed in the work setting, because, to our knowledge, there are no instruments of these characteristics that take both the interference of work in the family (WF), and the interference of the family at work (FW) into account. Martínez-Pérez and Osca (2001) proposed an 8-item scale of inter-role conflict that had satisfactory reliability (internal consistency alpha of .83) and a significant correlation with a measurement of psychological well-being (-.33, p <.001). This scale comprised 7 items formulated in the WF direction ("After work, I get home too tired to do any of the things I would like to do"), and only one FW item ("My family hates it when I worry about work when I'm at home"). In this sense, the authors suggested the development of a scale to assess the influence of family on work, applicable to the Spanish population, in addition to analyzing the possible sex differences (Gutek, Searle, & Klepa, 1991).

The purpose of this study is to propose a valid and reliable scale of work-family conflict that takes into account both directions of WFC: the interference of work in the family (WF) and the interference of the family at work (FW). We also wish to analyze the factor structure of the instrument both in women and in men.

Method

Participants and Procedure

The study of the questionnaire was carried out with two differentiated samples. The first sample was made up of 212 women and 156 men (N = 368), with a mean age of 38 years (SD = 9.40) and 41 years (SD = 8.80), respectively. The second sample was made up of 200 women and 126 men (N = 326), with a mean age of 37 years (SD = 9.30) and 41 years (SD = 9.75), respectively.

The participants worked in diverse occupations in the sector of services (administration and management, technical personnel, and education). Of the participants, 70% were

married and 50% had at least two children before the study was carried out. More than 70% had technical training from the professional training level, a diploma, a university licentiate or doctorate degree. The hypothesis of equal means was tested and revealed no significant differences between the samples in age, civil status, number of children at home, or training.

Participants completed the "Cuestionario de Conflicto Trabajo-Familia" [CCTF; Blanch & Aluja, this issue; in English, the Work-Family Conflict Questionnaire] as part of a more extensive study carried out in the city of Lleida (Spain) during the years 2003 and 2004. The questionnaires were handed out individually and in groups at a series of public and private companies by an interviewer with specific training, and were collected one week later by the same person.

Instruments

El Work-Family Conflict (CCTF; Blanch & Aluja, this issue). The instrument has two 4-item scales defined from the works carried out in English (Carlson & Perrewé, 1999; Frone et al, 1992; Gutek et al., 1991) and in Spanish (Martínez-Pérez & Osca, 2001) (see Annex 1). The first scale measures the degree of WF interference (Items 1, 2, 3, and 4), the second scale measures the degree of FW interference (Items 5, 4, 7, and 8). Both scales are rated on a 7-point Likert-type scale, ranging from 1 (completely disagree) to 7 (completely agree), and a WF and a FW value is obtained from the sum of the scores of the corresponding items. Higher values indicate a higher level of interference or conflict in one of the directions.

Emotional Exhaustion and Personal Accomplishment. These two indicators of the burnout syndrome were assessed by means of the Burnout Inventory of Maslach (Maslach & Jackson, 1986/1997). Emotional Exhaustion (9 items) measures feelings of emotional weariness due to work, whereas Personal Accomplishment (8 items) assesses feelings of professional competence. Both instruments are rated on a 7-point Likert-type frequency scale ranging from 0 (never) to 6 (daily). High levels of burnout are determined by high scores in Emotional Exhaustion and low scores in Personal Accomplishment.

Physical Symptoms. This variable was assessed by means of the Physical Symptoms Inventory (Spector & Jex, 1998). Participants reported whether they had experienced one or more of 18 physical symptoms such as insomnia, headaches, fever, or digestion problems, among others, in the last 30 days. On the three indexes of the instrument, we only considered the sum of the number of symptoms that did not require a visit to the doctor because they reflect experiences of psychosomatic stress to a greater extent.

Job Satisfaction. This 5-item scale assesses the degree of satisfaction with one's work. High scores indicate a higher level of job satisfaction (Karasek, 1985).

Statistical Analyses

The factor structure of the CCTF was analyzed by means of exploratory factor analysis with the first sample (EFA, N = 368) and confirmatory factor analysis with the second sample (CFA, N = 326). This way, the problems deriving from performing EFA and CFA on the same set of data can be avoided (Browne, 2000; Pérez-Gil, Chacón Moscoso, & Moreno Rodríguez, 2000). All the analyses were performed on the total of each sample, and were differentiated by sex by means of the computer programs SPSS and AMOS 4 (Arbuckle, 1999).

EFA was carried out to verify the bifactorial structure of the CCTF, and to assess the adequacy of the items regarding factor loadings on a single factor. The factors were extracted by means of the maximum likelihood (ML) method, entering the correlation matrix as the data (available upon request to the authors). In order to extract the factors, three criteria were taken into account: (a) Eigenvalue > 1, (b) scree test, and (c) Velicer's minimum average partial test (MAP; O'Connor, 2000; Velicer, 1976). We expected two factors: the interference of work in the family (WF) and the interference of the family in work (FW). Considering that both factors are usually significantly correlated, we applied an oblique rotation method (Oblimin) with the parameter $\delta = 0$, establishing the most oblique solution possible (Fabrigar, Wegener, MacCallum, & Strahan, 1999).

CFA was carried out to verify the construct validity of the CCTF, and to determine possible sex differences. We specified a model as a vector with eight observable variables (x), as a function of a vector with two latent variables (ξ) , which are correlated (Φ_{12}) , and a vector with eight exogenous errors (δ) : $x = \Lambda_x \xi + \delta$, where Λ_x is the matrix of structural coefficients (Bollen, 1989). The covariance matrix was used as input data, the parameters were estimated by means of the maximum likelihood method (ML). Factor structure invariance test by sex was performed by comparing a model with equal parameters for men and women with a model in which the parameters were free (multigroup analysis). In Annex 2 is displayed the AMOS 4 syntax used, with the a-j parameters

specified as equal for both sexes (Byrne, 2001). The assessment of invariance across sex was carried out with a chi-square difference test ($\Delta \chi^2$). A nonsignificant difference would indicate equivalence of the models for women and men. The assessment of the fit of all the models was performed by means of the chi-square test, along with the following fit indexes: goodness of fit index (GFI), Tucker-Lewis index (TLI), comparative fit index (CFI) ~ .90, .95; root mean square error of approximation (RMSEA) ~ .06, .08, which indicated a good fit to the data (Browne & Cudeck, 1993; Hu, & Bentler, 1999). Moreover, the dimensions assessed by means of the CCTF— WF, and FW— were correlated with two variables of stress (Emotional Exhaustion and Physical Symptoms) and wellbeing (Personal Accomplishment and Job Satisfaction), which have had significant associations with WF and FW in previous investigations (Allen, et al., 2000). Thus, it is possible to contribute evidence of the construct validity more extensively (Messick, 1994).

Results

In Table 1 are presented the descriptive statistics and the alpha reliability of the WF and FW scales in the samples of this study. The hypothesis tests of equal means between WF and FW for men and women indicate that there were no significant differences ($t_{\rm TF} = -.95$, .66; $t_{\rm FT} = -.15$, -.90), and the d index was low (Cohen, 1988). At the same time, no significant differences were observed between the samples (EFA and CFA) in either of the two scales, $t_{\rm TF} = .54$, $t_{\rm FT} = 1.25$, respectively. The indexes of internal consistency were acceptable, although slightly lower in the FW scale in the subgroup of women (N = 212) and in the total EFA sample (N = 368).

The results of the EFA are shown in Table 2 for the entire sample (N = 368), the women (N = 212), and the men (N = 156). The explained variance in the three groups was 45% for the entire sample (WF, 30%, FW 15%, respectively), 42% for the women (WF 28%, FW 14%, respectively) and 52% for the men (WF 34%, FW 18%,

Table 1
Descriptive Statistics and Alpha Reliability for the two Samples

	EFA Sample						CFA Sample					
	Total $N = 368$	Women $N = 212$	Men N = 156	t	d	Total $N = 326$	Women $N = 200$	Men N = 126	t	d		
	M (SD)	M (SD)	M (SD)			M (SD)	M (SD)	M (SD)				
WF α	14.70 (6.23) .82	14.44 (5.97) .80	15.06 (6.57) .84	95	10	14.44 (6.43) .83	14.62 (6.46) .84	14.14 (6.41) .82	.66	.08		
$_{\alpha}^{\mathrm{FW}}$	6.76 (3.28) .64	6.74 (3.23) .60	6.79 (3.35) .72	15	02	6.44 (3.46) .75	6.30 (3.26) .72	6.66 (3.75) .80	90	10		

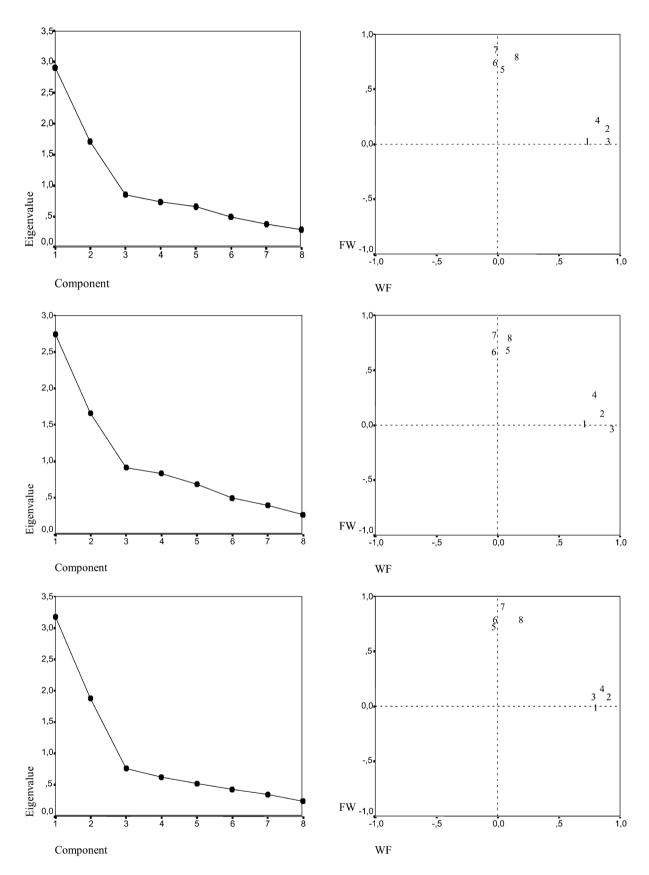


Figure 1. Charts of the eigenvalues for the criterion of the scree test and oblique rotation for the total EFA sample (N = 368), women (N = 212) and men (N = 156), respectively.

respectively). In Figure 1 are shown the charts of the eigenvalues for the scree test and the oblique rotation, indicating a clear two-factor structure of the CCTF in all three groups. Moreover, Velicer's MAP test also suggests extraction of two factors. All the factor loadings in Table 2 are higher than .37, which indicates a robust two-factor structure, with no relevant secondary loadings (< .30). The highest loadings in WF are also consistent with the results reported in other works (Mesmer-Magnus & Viswesvaran, 2005).

In Figure 2 are the results of the CFA. The loading values of each latent variable (WF and FW) on the observed variables (WF1-WF4, FW5-FW6) correspond to the structural coefficient matrixes Λ for the total sample (N = 326), the women (N = 200), and men (N = 126), respectively. All the coefficients were statistically significant (p < .001).

The results of the assessment of the model are displayed in Table 2. All the chi-square tests were significant, with the additional fit index values of GFI = .96, .96, .93; TLI = .92, .93, .92; CFI = .95, .96, .95; and RMSEA = .09, .08, .10, for the total sample, the women, and the men, respectively, indicating an acceptable fit of the model to the observed data. The chi-square differences test showed a significant value, $\Delta\chi^2(10) = 22.55$, p < .025, suggesting the hypothesis that the model differs as a function of sex. However, the fit indexes are fairly similar in the models with equal and with free parameters, so that an invariant model across sexes seems to represent the observed data adequately.

In Table 4 are shown the correlation coefficients of the WF and FW scales with Emotional Exhaustion, Physical Symptoms, Personal Accomplishment, and Job Satisfaction. There were significant correlations between WF and

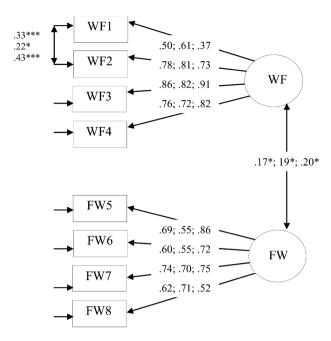


Figure 2. Confirmatory factor analysis of the "Cuestionario de Conflicto Trabajo-Familia" (CCTF).

Total sample (N=326), women (N=200), and men (N=126), respectively. The first column represents the matrix for the entire sample: WF: .50, .78, .86, .76, and FW: .69, .60, .74, and .62, with a correlation between the two latent variables of .17 (p < .05). The next two columns correspond to the women's coefficients (WF: .61, .81, .82, .72; FW: .55, .55, .70, .71) and the men's coefficients (WF: .37, .73, .91, .82; FW: .86, .72, .75, .52), with correlations among the latent variables of .19, and .20, for women and men, respectively (p < .05). The values that appear in the correlation of the error terms $\delta_1 - \delta_2$ correspond to the correlation between these two terms in the three groups, due to their high modification index in a preliminary analysis of the model (Aluja, García, & García, 2003; Byrne, 2001).

Table 2
Factor Loading Matrixes obtained with Oblique Rotation, Measurement of Sample Adequacy (KMO), and Percentage of Explained Variance in the EFA Sample

		1					
	EFA Sample $N = 368$		Wor	nen	Men N = 156		
			N =	212			
Item	WF	FT	WF	FT	WF	FT	
1	.54	01	.46	.01	.65	04	
2	.78	.03	.71	.05	.85	.00	
3	.86	10	.94	18	.78	02	
4	.74	.12	.72	.15	.76	.08	
5	.03	.40	.10	.38	03	.55	
6	03	.48	02	.39	03	.58	
7	08	.75	09	.68	04	.82	
8	.09	.65	.05	.65	.17	.64	
KMO	.74			70		.76	
% Explained variance	30	15	28	14	34	18	

Note. EFA = Exploratory factor analysis.

Table 3
Goodness-of-Fit Indexes and Analysis of Factor Invariance across Sexes for the CFA Sample

Index	Total Sample $N = 326$	Women $N = 200$	Men N = 126	Equal parameters	Different parameters	
χ^2	60.58***	38.92**	40.08**	101.57***	79.02***	
df	18	18	18	46	36	
GFI	.96	.96	.93	.93	.95	
TLI	.92	.93	.92	.92	.93	
CFI	.95	.96	.95	.94	.95	
RMSEA	.09	.08	.10	.06	.06	

Note. CFA = confirmatory factor analysis. GFI = goodness-of-fit index, TLI = Tucker-Lewis index, CFI = comparative fit index, RMSEA = root mean square error of approximation.

Table 4

Correlations of the WF and FW Subscales with Emotional Exhaustion, Physical Symptoms, Personal Accomplishment, and Job Satisfaction in the CFA Sample

			FW					
	EE	PS	PA	JS	EE	PS	PA	JS
Total $N = 326$.47***	.28***	02	12*	.05	01	11*	12*
Women N = 200	.46***	.21***	06	10	07	05	03	03
Men N = 126	.50***	.40***	.03	16	.22*	.06	19*	21*

Note. WF = Work-family conflict scale; FW = Family-work conflict scale; CFA = confirmatory factor analysis. EE = Emotional Exhaustion, PS = Physical Symptoms, PA = Personal Accomplishment, JS = Job Satisfaction *p < .05. **p < .01. ***p < .001.

Emotional Exhaustion (.47, .46, and .50, for the total sample, women, and men, respectively, p < .001), and Physical Symptoms (.28, .21, and .40, for the total sample, women, and men, respectively, p < .001), as well as a lower association with Job Satisfaction (-.12, p < .05). With regard to the FW scale, for the men, there were significant correlations of a lower magnitude with Emotional Exhaustion (.22, p < .05), and, for the total sample and the men, respectively, with Personal Accomplishment (-.11, -.19, p < .05) and Job Satisfaction (-.12, -.21, p < .05).

Discussion

The goal of this study was to provide a valid and reliable questionnaire to measure the level of WFC for research of the work and/or family setting, two relevant dimensions in human experience. The results of the factor analyses carried out with two independent samples indicate a clear two-factor structure of the CCTF: interference of work in the family (WF) and interference of the family in work (FW).

This structure is observed both in the general sample and when taking the variable sex into account. Likewise, correlations are obtained that are equivalent to those reported in previous studies of WFC (Allen et al., 2000) with external criteria of the consequences of stress (Emotional Exhaustion and Physical Symptoms), and well-being (Personal Accomplishment and Job Satisfaction). Nevertheless, these correlations are mainly between WF and stress variables, whereas the correlations with FW are of a lower magnitude and they occur chiefly with the variables of well-being for the entire sample and for the group of men.

In general, these results suggest that WFC may have different connotations for men and women, especially in a Mediterranean culture such as the Spanish one, with a somewhat different contemporary history from that of the other countries from our environment (Wood & Eagly, 2002). However, future studies should attempt to replicate this structure, more specifically, to determine whether there are significant differences between men and women, because the differences found in the present study could be solely due to some statistical artifact or to sample fluctuations.

^{**}*p* < .01. ****p* < .001.

Work and family are not totally separate and perfectly compartmented dimensions, but instead there are multiple relations between them, as reported in the detailed development of diverse theoretical models (Edwards & Rothbard, 2000). However, the notion that the study of the WF relations is an issue that only affects women has been abandoned, with increasingly more studies that contemplate the men's role, or that compare the results of men and women in this interaction (Cinamon, & Rich, 2002; Jansen, Kant, Kristensen, & Nijhuis, 2003; Swanson, Power, & Simpson, 1998). In fact, women's generalized access to the working world and men's supposed progressively greater involvement in the family setting have had the effect of considerably multiplying the research that attempts to clarify the interrelations and conflicts that occur between work and the family in our socioeconomic context (i.e., Cuadrado, Morales, & Recio, 2008; de Luis Carnicer, Martínez, Pérez, & Vela, 2004; Martínez-Pérez, & Osca Segovia, 2002). Likewise, WFC has been the object of many international investigations studies, suggesting the importance of taking both directions into account, that is, interference of work in the family setting, and interference of the family at the work setting (see the recent meta-analysis of Ford, Heinen, & Langkamer, 2007).

All this evidence suggests the importance of contemplating a measurement of WFC in studies such the present one, because WFC is probably a generalized process, and has attracted the attention of numerous in investigators in all the post-industrialized societies. Unfortunately, there is no questionnaire in Spanish that we know of to measure WFC in its two facets (WF and FW) and therefore, the CCTF presented herein can be used in future works in this line of research in order to estimate this increasingly relevant process that affects many people's daily lives. In general terms, the questionnaire shows a solid two-factor structure and acceptable construct validity and reliability. In our opinion, the instrument also has the advantage of being brief, which allows an agile and quick administration, a point to consider if we take into account that it is not always feasible to collect this kind of data in the work context, or that. if other instruments are used in a broader research protocol, this can cause some feelings of strain or fatigue in the respondents.

In any case, the CCTF also has some limitations that must be taken into account. Firstly, and in general, 4 items may be insufficient to assess a psychological construct, especially taking into account the internal consistency of these scales. The reliability of the FW scale tends to be lower in women (.60) than in men (.72) in the EFA sample, although it is acceptable in the CFA sample. Likewise, it should be taken into account that the items that make up the FW factor do not follow a normal distribution, as occurs with a great diversity of constructs; therefore, its use in CFA may affect the standard errors and significance tests. Nevertheless, it has been reported that the maximum

likelihood estimation method is robust in the case of violations of the assumption of normality (Olsson, Foss, Troye, & Howell, 2000). Another limitation of the questionnaire is the high correlation between the residuals of Items 1 and 2 in the WF scale, probably due to the redundancy of these items (see Annex 1). However, all the items were obtained from previous studies performed in this investigation field (Carlson & Perrewé, 1999; Frone et al, 1992; Gutek et al., 1991; Martínez-Pérez & Osca, 2001), although future studies could contemplate the possibility of including items with less redundancy. Lastly, it could be considered that the correlation between WF and FW, although moderate, is insufficient: .17, .19, and .20, in the entire sample, and women and men, respectively, p < .05. However, the meta-analysis of Mesmer-Magnus and Viswesvaran (2005) reports that the correlations between WF and FW can vary substantially (from .10 to .59, in their study). This variation could be due to the professional origin of the samples used, their size, or to other uncontrolled factors.

The CCTF is recommended as a useful, valid and reliable measurement of an important concept in contemporary society. Future studies could carry out additional validation analyses to confirm the factor structure, and/or the applied usefulness of this questionnaire, if possible with larger and more diverse samples, especially regarding the type of work performed and the basic training. Studies relating WFC with antecedents from work and family settings such as workload, autonomy, or social and family support could also be carried out, as well as the consequences for people's health and well-being, such as work stress, burnout, psychological well-being, or job and family satisfaction.

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ANNEX 1

Cuestionario de Conflicto Trabajo - Familia (CCTF)*

Describa sus relaciones familiares y laborales con la mayor objetividad posible escribiendo el número que mejor refleje su opinión respecto a cada aspecto que se pregunta.

Totalmente en desacuerdo	1
Bastante en desacuerdo	
Un poco en desacuerdo	
Ni de acuerdo ni en desacuerdo	4
Un poco de acuerdo	
Bastante de acuerdo	
Totalmente de acuerdo	7

- 1. Después del trabajo, llego a mi casa demasiado cansado como para hacer las cosas que me gustaría hacer.
- 2. Debido al exceso de trabajo, no puedo dedicarme a mi familia todo lo que desearía.
- 3. Mi trabajo me quita tiempo que me gustaría pasar con mis familiares y amigos.
- 4. Mi trabajo interfiere a menudo con mis responsabilidades familiares.
- 5. Mis responsabilidades familiares son tan grandes que no me queda tiempo para el trabajo.
- 6. A mis supervisores y compañeros de trabajo les disgusta lo a menudo que hablo sobre mi vida personal.
- 7. Mi vida familiar me quita tiempo que me gustaría pasar en el trabajo.
- 8. Mi vida familiar interfiere a menudo con mis responsabilidades laborales.

^{*[}Translator's note: The questionnaire was not translated because it is precisely the Spanish version of the questionnaire.]

ANNEX 2

AMOS 4 syntax for the factor invariance test by sexes.

```
Sub Main
Dim Sem As New AmosEngine
Sem.Iterations 500
Sem.Ml
Sem.Standardized
Sem.Mods 5
Sem.TextOutput
Sem.BeginGroupEx mmSPSS, "cfa women.sav"
Debug.Print
Sem.Structure "tf1 = (a) WF + (1) d1"
Sem.Structure "tf2 = (b) WF + (1) d2"
Sem.Structure "tf3 = (c) WF + (1) d3"
Sem.Structure "tf4 = (d) WF + (1) d4"
Sem.Structure "ft5 = (e) FW + (1) d5"
Sem.Structure "ft6 = (f) FW + (1) d6"
Sem.Structure "ft7 = (g) FW + (1) d7"
Sem.Structure "ft8 = (h) FW + (1) d8"
Sem.Structure "WF (1)"
Sem.Structure "FW (1)"
Sem.Structure "WF <> FW (i)"
Sem.Structure "d1 <> d2 (j)"
Sem.BeginGroupEx mmSPSS, "cfa men.sav"
Debug.Print
Sem.Structure "tf1 = (a) WF + (1) d1"
Sem.Structure "tf2 = (b) WF + (1) d2"
Sem.Structure "tf3 = (c) WF + (1) d3"
Sem.Structure "tf4 = (d) WF + (1) d4"
Sem.Structure "ft5 = (e) FW + (1) d5"
Sem.Structure "ft6 = (f) FW + (1) d6"
Sem.Structure "ft7 = (g) FW + (1) d7"
Sem.Structure "ft8 = (h) FW + (1) d8"
Sem.Structure "WF (1)"
Sem.Structure "FW (1)"
Sem.Structure "WF <> FW (i)"
Sem.Structure "d1 <> d2 (j)"
End Sub
```