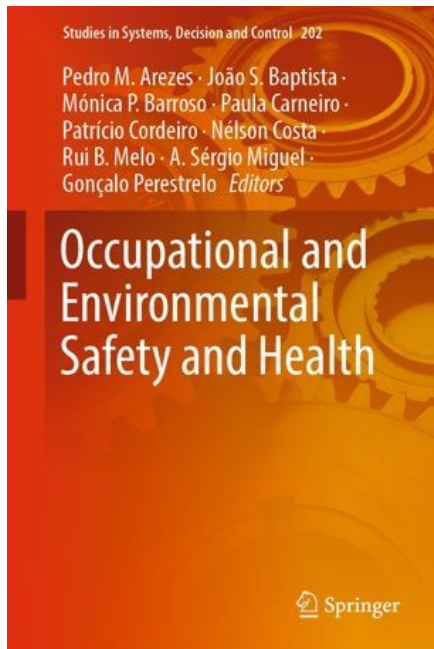


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Adaptation and Validation of the Work-Family Conflict and Family-Work Conflict Scales in Portuguese Nurses: 10-Item Version

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Abstract. This study presents the adaptation and validation of a Portuguese version of the Work-Family Conflict & Family-Work Conflict scales for nurses. Participants were 310 female hospital-based nurses, from the northern region of Portugal. The assessment protocol included the Portuguese 10-item Work-Family Conflict & Family-Work Conflict scales to measure the mutual interference of the work and home domains. The Portuguese version resulted from a multi-step adaptation strategy, involving direct-translation, back-translation and a pre-test. Construct validity was assessed by exploratory principal components factor analysis and confirmatory analysis. The internal consistency reliability was calculated using Cronbach Alpha coefficients. The Cronbach Alpha coefficients for the Work-Family Conflict and Family-Work Conflict (.91 and .85 respectively) indicate good reliability. The factor analysis produced two factors, explaining 69.3% of the variance, replicating the model proposed by the original authors. The confirmatory factor analysis showed a good model fit (NFI, TLI and CFI values >.950). The RMSEA (< 0.05) provided a good measure of the closeness of fit between the model and the data. The Portuguese version of the Work-Family Conflict & Family-Work Conflict scales shows good validity and reliability.

Keywords: Female Nurses; Work-Family Conflict; Family-Work Conflict.

1 Introduction

Research in Occupational Health Psychology has identified the mutual interference between work and family domains as one of the ten major sources of occupational stress [1]. This construct is especially important for nursing professionals, in particular for hospital-based nurses, mainly due to the extended work hours (12 hours or longer), the irregular work schedules, overtime, and the high workload demands [2].

The mutual interference concerning work and family life, has shown to be significantly associated with several health and professional outcomes [2, 3]. Specific outcomes include, reduced organizational commitment [4], poorer job performance [5], job and life dissatisfaction, lower family satisfaction, greater psychological distress [6], high levels of burnout, emotional exhaustion and cynicism [4], insufficient sleep and sleep disturbances [2], substance abuse, depression and somatic symptoms [5]. The notion of work-family and family-work conflict is based on the premise that role expectations in the areas of work and family are not always compatible, thereby producing conflict between an individuals' family and work experience [7]. Consequently, work can interfere with a person's private life, resulting in a form of "work-to-family conflict" (WFC) and/or, family life can interfere with subject's work performance, resulting in a form of "family-to-work conflict" (FWC) [8, 9]. Although related, these forms of inter-role conflict are assumed to be distinct constructs [7-9].

Work-to-family conflict (WFC) can be defined as "a form of inter-role conflict in which, the general demands of, time devoted to, and the strain created by the job, interfere with performing family-related responsibilities", while family-to-work conflict is considered to be "a form of inter-role conflict in which the general demands of, time devoted to, and the strain created by the family interfere with performing work-related responsibilities" [7, p.401]. In order to assess these two constructs, the authors developed a 10 item self-report questionnaire, consisting of two scales, the work-family conflict and family-work conflict scales (WFC & FWC scales) [7]. The scales have presented good reliability and validity properties [7, 10], and have been widely used to assess WFC and FWC in a variety of professions [e.g., 10]. In a European study on registered nurses [1], involving eight countries from the longitudinal European NEXT-Study (Belgium, Finland, France, Germany, Italy, Netherlands, Poland, and Slovakia), the WFC and FWC were studied, using the instrument developed by Netemeyer and colleagues [7]. Findings from this study indicated that the Cronbach's alpha for WFC ranged from .86 (France and Italy) to .90 (Finland), and for FWC from .73 (Belgium and Slovakia) to .87 (Netherlands) [1], showing a good internal consistency reliability for these scales [11]. Results also demonstrated a higher incidence of WFC in comparison to FWC, in all European countries, highlighting the importance of nurses' working conditions. Although the conflict between family and work, and work and family, is quite well-known in the nursing profession [1], research in this area has been scarce in Portugal and no valid instruments which focus on WFC and FWC exist to study this phenomenon in Portuguese nursing professionals. Thus, the aim of this paper is to present the validation study of the Portuguese adaptation of the Work-Family Conflict & Family-Work Conflict scales [7] in a sam-

ple of hospital-based nurses. The psychometric properties of the Portuguese version of the scales were examined in terms of reliability and construct validity. Although not a primary goal of this study, the results of this validation will also shed light on the cross-cultural generalizability of this construct in a family-oriented southern European culture, which is likely to impact the experience and level of WFC and FWC.

2 Method

2.1 Participants

A stratified random sample of 310 female hospital-based registered nurses was used for this study. Participants worked in four public central hospitals that were part of the northern Portuguese regional health administration. The mean age was 33.83 (SD = 8.70) years old. Nearly 12% ($n = 36$) of nurses had a postgraduate degree, 161 (51.9%) were married, and 71 (22.9%) had partners with shift-working jobs. In this sample, 130 nurses (41.9%) had the major household responsibilities, 135 (43.5%) were mothers and 55 (17.7%) were the main source of the family's income. Most of the nurses (78%), worked in general medicine, surgical units, emergency, cardiology, and pediatrics. The mean of years in the profession was 11.38 (SD = 8.64). The mean for daily work hours was 8.27 (SD = 2.22, range 4-19 hours) and the mean for work hours per week was 37.03 (SD = 2.90, range 25-45 hours). In this sample, 149 (48.1%) nurses had a precarious contract, 243 (78.4%) worked by shifts, and 91 (29.4%) had a second job, with an average of 14.92 (SD = 7.26) work hours per week. In this last group of nurses with a second job, the mean was 52 hours per week.

2.2 Measures

The assessment protocol included a sociodemographic questionnaire and the Portuguese versions of the following instruments: a) the Work-Family Conflict and Family-Work Conflict Scales [WFC&FWCs, 7]; b) the General Health Questionnaire-12 [GHQ-12, 12], and the Brief Personal Survey- Revised [BPS-R, 13].

The Work-Family Conflict and Family-Work Conflict Scale is a 10 item self-report questionnaire that assesses work-to-family conflict and family-to-work conflict. As in the original instrument [7], the Portuguese version developed by the authors, consists of 10 items, which are intended to measure the degree of interference between work and family domains, and vice versa. Participants are requested to indicate on a 7-point Likert scale (1 = strongly disagree, to 7 = strongly agree), to what extent they agree or disagree with each statement presented (e.g., "the demands of my work interfere with my home life"). According to Netemeyer and colleagues [7], the degree of the mutual interference between work and family lives results from the sum of the scores obtained in each of the 10 items, ranging between 10 and 70, in such a way that higher values signify a substantial amount of perceived mutual interference between the two domains. However, in emphasizing the multidimensionality of the instrument, it is possible to calculate separately the perceived interference of one's own work in family life (WFC), and the degree of negative intrusion of the family domain to the work setting (FWC). This calculation corresponds to the two scales proposed by the authors, respectively, resulting from the sum of the scores in the first five items, for the WFC scale, and the sum of the scores in the last five items, to scale the FWC. Thus,

the score of each scale ranges from five to 35, with higher values pointing to a greater awareness of interference from one area to another [7].

The General Health Questionnaire-12 has been used to conduct stress audits in occupational studies with the goal of assessing the prevalence of psychological morbidity and to differentiate clinical cases from non-clinical, namely in health professionals [14]. The GHQ-12 is a widely used and validated scale, translated into several languages, and shows good internal consistency with Cronbach's alpha values ranging between .80 and .90 [15]. In this study, we used the Portuguese version of the GHQ-12, adapted by McIntyre, McIntyre and Redondo. The instrument comprises 12 items, in which the subject is asked to express how he/she has been feeling, or how he/she has perceived his/her own health, for the last few weeks. The response format is a four categories Likert scale (1 = better than usual, to 4 = much less than usual). To score the GHQ-12, we used the dichotomous scale (0-0-1-1) and the cut-off point 2/3 (at least three symptoms reported) [14, 16]. According to the authors, a value equal or greater than 3 is an indicator of psychological morbidity representing distress levels that deserve clinical attention [14]. The higher the total value of the scale, the worse the subject's mental state [15]. In this study, the univariate solution showed good internal consistency (with Cronbach's alpha of .79).

The Brief Personal Survey [13] was specifically designed to be used in health settings, and is made up by several scales for screening health professional's stress responses and general coping resources used in confronting stressful situations [17]. The instrument has been showing good psychometric properties in terms of validity and reliability [17]. In this study, we used a revised version [BPS-R]. This is a self-report questionnaire, which includes eight scales and three "critical indexes", consisting in 57 items, formulated in the present tense. Responders were asked to indicate whether each statement applies, or not, to their situation, using a dichotomous type of response (true or false; 1 or 0), as the statement is applicable or not. The total scale score results from the sum of the respective items. We used the stress response scales denial, pressure overload and guilt. The psychometric properties of the BPS-R in this study showed Cronbach's alpha values of .61 for guilt, .62 for pressure/overload, and .50 for denial, which warrants caution in the interpretation of these results. The data confirmed the factorial structure of the original version of the instrument.

2.3 Procedure

Data were collected from several health units consisting of 10 different medical specialties, from four Portuguese Hospitals. Each participant had to have been in the hospital nursing profession for at least one year. Participation was anonymous and voluntary written consent was obtained from all participants. The research protocol was distributed to the participants by the service supervisor so as to not disturb the normal functioning of each health unit. The self-report questionnaires were returned to the supervisor in closed envelopes and were later collected by the researcher. The total response rate was 51.66% or 310 nurses of the 600 nurses recruited. This is in line with the response rate reported in the literature for female samples where non-compliance rates range between 35% and 67% [e.g., 18]. The Portuguese experimental version of the WFC&FWCs, developed specifically for this study, followed the method of direct and reverse translation from the original version into Portuguese.

A pre-test of the instrument was done on a sample of 50 hospital nurses. The nurses gave feedback on the translation of the items and adaptations were made to the items based on this feedback. This ensured that the translation is appropriate to the nursing professionals. The revised translation, based on the pre-test feedback, was subsequently reverse translated from Portuguese into English by qualified bi-lingual speakers. The translated and reverse translated versions were then compared in order to verify discrepancies and make corrections [19].

2.4 Data analysis

Exploratory data analysis showed that, for the majority of the variables, the assumptions for using parametric tests were met. Construct validity was assessed by exploratory principal components factor analysis and confirmatory factor analysis. The internal consistency reliability was calculated using Cronbach's Alpha Coefficients [11]. Statistical tests were carried out using IBM SPSS Statistics and AMOS (version 24).

3 Results

3.1 Psychometric properties of the Portuguese version of WFC&FWC Scales

Construct validity of the exploratory version. The conceptual structure of the Portuguese version of the scales was achieved by replicating the proceedings described in the original study [7]. A principal components factor analysis of items was done, without previous definition of the number of factors, using varimax rotation and eigenvalue ≥ 1 . The Kaiser-Meyer-Olkin index ($KMO \geq .6$) and the Bartlett's test ($p < .05$) indicated the sample's adequacy for this procedure [11] ($KMO = .842$; $TEB = 1849.70$, $p < .001$), meaning that correlation matrix was not an identity one and factor analysis was able to be carried out. The exploratory factor analysis demonstrated that the items of the instrument, are organized by two dimensions, in agreement with the original model [7]. Together, the two factors explain 69.3% of the total variance found in this study. After rotation, factor I, was composed of the first five items (1, 2, 3, 4, 5), concerning work-to-family conflict matters, and justifies 37.6% of the overall founded variance. Factor II, was comprised of the last five items of the instrument (items: 6, 7, 8, 9, 10) related to family-to-work conflict issues, contributing with 31.7% of the total explained variance. All the items revealed factorial weights above .50 and were grouped in only one factor, with the exception of item 6, that despite weighing in both factors, revealed a higher weight in relation to factor II, as shown in Table 1. These data give support to the bi-dimensionality of this construct and the mutual interference of the work-family domains. Results for the construct validity of the WFC&FWCs are in Table 1.

Construct validity of the confirmatory version. In order to achieve the final version of the WFC&FWC scales, confirmatory factor analysis was carried out, and attested the factor structure of the two large factors, obtained through the exploratory factor analysis (e.g., WFC and FWC), such as established in the original model [7]. Regarding the latent structure, the CFA showed that the model tested fit the data well. Specifically, the following tests of significance and goodness-of-fit measures were obtained: $\chi^2(28df) = 32.60$, $p = .251$, $\chi^2/df = 1.164$; $RMSEA = .023$, 90% CI [.001, .052], $p (RMSA \leq .05) = .930$; $CFI = .997$, $NFI = .983$, $TLI = .996$. As such, the prob-

ability level of χ^2 statistics was higher than 0.05, indicating a suitable fit. In terms of other goodness of fit indicators, the NFI, TLI and CFI, presented values superior to .95 showing a good model fit. Additionally the RMSEA being smaller than 0.05 provided a good measure of the closeness of fit between the model and the data. Therefore, the model can be considered adequate and valid [20].

Table 1. Construct Validity and Reliability Results for the WFC&FWCs (N = 310)

Items	Factor Load		Item-Total Correlation	α if Item Deleted
	FI	FII		
1. The demands of my work interfere with my home and family life.	.833		.60	.87
2. The amount of time my job takes up makes it difficult to fulfil family responsibilities.	.881		.72	.86
3. Things I want to do at home, are not done because of the demands my job puts on me.	.855		.69	.86
4. My job produces strain that makes it difficult to fulfil family duties.	.858		.71	.86
5. Due to work-related duties, I have to make changes to my plans for family activities.	.762		.60	.87
6. The demands of my family or spouse/partner interfere with work-related activities.	.417	.594	.61	.87
7. I have to put off doing things at work because of demands on my time at home.		.822	.56	.87
8. Things I want to do at work are not done because of the demands of my family or spouse/partner.		.827	.53	.87
9. My home life interferes with my responsibilities at work such as getting to work on time, accomplishing daily tasks, and working overtime.		.809	.47	.88
10. Family-related strain interferes with my ability to perform job-related duties.		.822	.51	.87
<i>Eigenvalues</i>	3.76	3.17		
Total Explained Variance	69.3%			

Note.* Orthogonal Rotation, Varimax Method.

Reliability for the WFC&FWC scales. The reliability for the instrument showed that the Cronbach's Alpha Coefficients for the WFC component was .91, and for the FWC was .85. This indicates a good internal consistency reliability of these scales [11]. For the total scale (WFC&FWC-total), which measures the global amount of work-family mutual interference, the Cronbach's Alpha was .88. These values are indicative of the good internal consistency reliability of the instrument, similarly to findings by the authors for the original version [7]. Table 1 also shows the item-total correlations and the Cronbach's Alpha Coefficient if item removed. The correlations of each item range between .47 and .72, showing that all items contribute significantly to the total measure. The findings replicate the alpha values found by the original authors of the instrument [7], and in a European study [1].

Discriminant validity. In this sample, the mean value for WFC (M = 20.94, SD = 7.39, range 5-35) is superior to FWC (M = 11.47, SD = 5.87, range 5-31), representing a substantial global amount of work-family mutual interference (M = 32.43, SD =

11.15, range 10-63). These results are similar to those found in a cross-cultural study with nurses [1], suggesting that work interfering with family is more prevalent in Portuguese nurses, than family interfering with work. Additionally, as shown in table 2, there is a significant positive association between the subscales WFC and FWC, and from these with WFC&FWC-total, giving support to discriminant validity [7]. In addition, the total scale and the WFC subscale have a significant relationship with most of stress responses, measured by GHQ-12 and BPS-R, but the FWC subscale is only significantly associated with some stress responses. As such, higher FWC is associated with negative feelings of guilt and pressure overload while greater WFC is associated with less tendency to denial, but higher psychological distress and stronger feelings of guilt and pressure overload.

Table 2. Correlations for WFC&FWCs and Stress Responses (GHQ-12 & BPS-R) (N=310)

WFC&FWCs	WFC&FWCs		GHQ-12	BPS-R		
	WFCs	FWCs	Distress	Denial	Pressure-overload	Guilt
WFCs	1	.400***	.363***	-.163**	.375***	.248***
FWCs	.400***	1	ns	ns	.131*	.265***
Total-Scale	.875***	.794***	.292***	-.147*	.321***	.310***

Note. ^{ns} $p > .05$. * $p < .05$. ** $p < .01$. *** $p < .001$.

4 Discussion and Conclusions

Nursing professionals, being exposed to psychosocial as well as mechanical stressors at work, stand out as one of the occupational groups most affected by the mutual interference of work and family life. This is especially true for women that work in hospital settings [1]. However, despite the bidirectional interference of the home and the work domains being considered a relevant source of stress for female nurses, studies also reveal a greater prevalence for WFC in comparison to FWC [6]. Furthermore, the major predictors of stress indicated in these studies are job pressure and workload [3]. A WFC Model, developed in a European study with registered nurses [1], identified three main potential predictors for the WFC. First, the amount of time dedicated to work, in terms of work hours, shift schedules, and working overtime. Second, the strain created by work, explicitly by quantitative demands, emotional demands and leadership quality. Finally, individual factors, such as age and gender, showed women as more prone to experience WFC, than men.

Although WFC and FWC represent a relevant stressor in the workplace, especially for female nurses, only a few studies investigating work-home interference in nursing have been done. To our knowledge, there are no valid measures of the work-home interference for Portuguese nursing professionals. Thus, because of the lack of validated instruments in Portuguese, the decision was made to adapt and validate the Work-Family Conflict & Family-Work Conflict scales [7] into Portuguese, with a focus on hospital nurses. Findings from this study showed a mean value for WFC superior to that found for FWC, which is comparable to that reported in a European study with nurses, involving several countries using the same scales [1]. These results support the relevance of studying work-family interference in Portuguese nurses and developing appropriate measures for this context. Results from this study, indicate that the Portuguese version of the instrument has good psychometric characteristics in

this sample of nurses, allowing measuring the conflict experienced between work and family life. The assessment methodologies reflected the factorial structure of the original instrument, replicating in Portugal the two-dimensionality of the construct, work-to-family conflict and family-to-work conflict. The reliability of the scales was high, with Cronbach's Alpha Coefficients assuming values indicating a good internal consistency. Discriminant validity, as projected [3], indicated that WFC is strongly correlated to psychological distress, and with nurses stress responses (pressure-overload and guilt). These findings show that the Portuguese version of the instrument has the psychometric properties to be reliably used with hospital nurses.

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