Job demands and resources scale for physical education teachers: Is it valid in Turkish culture?

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Abstract

The aim of the study was to adapt job demands and resources scale for Physical Education (PE) teachers into Turkish language. Two hundered and nineteen PE teachers participated in this study. In the scope of validity analyses of the scale, different techniques were used and expert opinion was obtained for the language content validity, while exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed for construct validity. Results of EFA showed that two main factors explained 34.91% of variance. CFA results revealed that the indices examined in terms of construct were at a good level with regards to data fit. In reliability analyses, internal consistency coefficient was calculated as 0.74 for the whole, 0.81 for job demands and 0.74 for job resources from the main factors. Results reveal that job demands-resources scale for PE teachers is reliable and valid for Turkish population.

Keywords: Physical education teacher, job demands, job resources, validity, reliability.

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1. Introduction

The job demands and resources model is a relational model, which is mainly based on casual diversity, and explains the reasons behind the burnout of workers and work-engagement states with the tools provided by the organisations in their professional environment and the tasks they require. Within the scope of this model, while the decline in job resources triggers burnout, an increase in job resources supports professional participation and motivation in a positive way. This reveals a reverse relationship between burnout and job participation (Bakker, Demerouti, Taris, Schaufeli & Schreurs, 2003; Schaufeli & Bakker, 2004; Schaufeli, Bakker & Van Rhenen, 2009).

The concept of job demands explains the tasks for which an organisation necessitates the workers to fulfil, and the workers put in individual effort to meet their responsibilities (Bakker et al., 2003; Jones & Fletcher, 1996). Increased job demands combined with capacity insufficiencies may damage workers' emotional integrity due to stress (Meijman & Mulder, 1998; Schaufeli & Bakker, 2004). The states such as burnout, sleep disorders, stress and depression that can be considered as emotional disorders come up as the results of interactions such as the little time allowed to the employee within the organisation, excess workload, unfavourable physical and emotional environments, inadequate organisational support and emotional conflicts among individuals (Bakker & Demerouti, 2007; Halbesleben & Buckley, 2004). From this point of view, dimensions forming job demands can be classified as physical, psychological, emotional, cognitive, organisational and social demands (Bakker, Demerouti & Verbeke, 2004; Demerouti, Bakker, Nachreiner & Schaufeli, 2001; Schaufeli & Bakker, 2004).

The concept of job resources, another aspect of the model, is defined as all concrete and abstract mechanisms that encourage the participation of employees in the work to carry them through in order to meet the demands made by the organisation (Schaufeli & Bakker, 2004; de Lange, de Witte & Notelaers, 2008). In other words, job resources, including different aspects such as physical, psychological, social and organisational ones, consist of possibilities provided to employees by the organisation so as to provide them with opportunities for professional skills and career development and to reduce the intensity and stress of job demands (Bakker, Hakanen, Demerouti & Xanthopoulou, 2007; de Lange et al., 2008). High-quality arrangement of job resources increases production by mainly promoting employee motivation as well as individual desire for learning and development, while it decreases negative psychological effects created by job demands (Demerouti et al, 2001; Schaufeli & Bakker, 2004).

Studies have been conducted to reveal the profession-specific psychological states of teachers that play a critical role in the implementation of education and instruction activities, the most important organisation of today. These studies have associated low motivation and job satisfaction, which are reported to cause increased burnout as well as negatively affecting productivity due to the factors such as the stress in the school environment, unfavourable student behaviour, lack of resources, excess job demands, negative organisational relationships and limited employee personal rights (Hong, 2012; Marvel, Lyter, Peltola, Strizek & Morton, 2006; Richardson & Watt, 2010; Skaalvik & Skaalvik, 2016). These factors, negatively affecting teachers attitudes and behaviours in their professional and social environments, also have adverse effects on their personal health status and professional activity levels (Schonfeld, 2001), which in turn, causes the academic achievement of students to decline (Hughes, 2001; Pas, Bradshaw, Hershfeldt & Leaf, 2010). Similar studies on the topic show that, in addition to their low motivations towards the job environment, teachers move away from teaching activities and have lower tendency to continue teaching when their professional expectations are not met (Hanushek, Kain & Rivkin, 2001; Hong, 2012; Ingersoll & Smith, 2004). This result brings about a quantitative need for teachers as well as increases the need of societies for teachers who are motivationally strong and professionally qualified (Ingersoll, 2001). The reports published by UNESCO (2014; 2015) indicate that it is possible to promote the professional motivation states of teachers, which are the leading factors in increasing education quality and achievements, through a series of improvements mainly in economic, psychological and social opportunities.

The related literature includes a great many studies revealing one way relationships of teachers' professional motivation and burnout states with several variables (Davis & Wilson, 2000; Fiorilli, Albanese, Gabola & Pepe, 2017; Hughes, 2001; Kaja, Golonka & Marek , 2015; Mertler, 2002; Richards, Hemphill & Templin, 2018; Skaalvik & Skaalvik, 2017; Thoonen, Sleegers, Oort, Peetsma & Geijsel, 2011; Yu, Wang, Zhai, Dai & Yang, 2015); however, the number of studies investigating these relationships together with the reasons behind them in a multi-dimensional way within a theoretical framework is only limited (Fernet, Chanal & Guay, 2017; Hakanen, Bakker & Schaufeli, 2006; Roslan, Ho, Imm & Sambasivan, 2015; Simbula, 2010). Moreover, a change in the practicing conditions and teaching climates of teachers in relation to their branches may diversify psychological states in the job environment depending on branches (Cevik & Kose, 2017; Telef, 2011; Yilmaz & Ceylan, 2011).

Factors such as the low number and short duration of classes per hour (Hardman & Marshall, 2000; Ross & Hargreaves, 1995), lack of equipment, facilities and budget (Fejgin, Ephraty & Ben-Sira, 1995; McKenzie & Lounsbery, 2009; Ugur, 2006) and the fact that the attitudes and expectations of students are not parallel with the course structure (Ozcan, Mirzeoglu & Coknaz, 2016) may negatively affect the quality of physical education (PE) classes, which differ from others in terms of motivational climate and the area of practice. In addition to these problems, some other factors, such as the low social status attributed to PE teachers (Hardman & Marshall, 2000; Macdonald, 2014; McKenzie & Lounsbery, 2009), extracurricular tasks assigned by the school administration (Richards, Templin, Levesque-Bristol & Blankenship, 2014), insufficient organisational and social support in terms of profession (Ugur, 2006) and unfavourable student behaviour (Fejgin et al., 1995; Jimenez, Valero-Valenzuela, Anguera & Suarez, 2016) play a critical role in the negatively shaping the motivational and burnout states of teachers.

The Job demands and resources scale for PE teachers was developed by Zhang and Chen (2017) based on the Demand-Induced Strain Compensation questionnaire (de Jong & Dormann, 2003) in order to determine attitudes and opinions of the teachers performing the implementation of PE and sports classes, which are different from other courses in terms of resources and demands at schools as stated beforehand. The scope of the scale includes two dimensions (physical resources and organisational resources) concerning job resources and three dimensions (physical demands, emotional demands and cognitive demands) concerning job demands (Zhang & Chen, 2017). Physical resources address the materials, facilities and economic sources, while organisational resources represent institutional and organisational support. Within the scope of the other dimensions, physical demands refer to the actual effort corresponding to the physical fatigue or musculoskeletal workload the teacher is responsible for; emotional demands refer to experiences, such as unfavourable student behaviour, in the working environment when teachers are supposed to control their emotions; and cognitive demands refer to the information processing and job concentration processes of teachers in the working environment (Bakker & Demerouti, 2007; Demerouti et al., 2001; Zhang & Chen, 2017).

Within this theoretical framework, the aim of the present study was the adaptation into Turkish language of the Job demands and resources scale for PE teachers, which allows for the examination of the professional psychological climate specific to PE and sports teaching and is different from other branches in its area of practice, and is perceived differently both by the society and the organisation in relation to the demands and resources provided.

2. Method

2.1. Research model and study sample

In the present study, a survey research design was employed, which aims to provide information about the nature and intensity of a given number of variables in a certain population (Heppner, Wampold & Kivlighan, 2008). Sample size was determined considering the criterion that requires reaching a number which is at least 10 times the number of items within the scale (Joreskog & Sorbom, 1996; MacCallum & Widaman, 1999). The data used in the present study were collected

considering the principles of random sampling method and consisted of 219 PE teachers, 147 (67%) males and 72 (33%) females, working in 41 different cities in Turkey. Of the participating PE and sports teachers, 184 (84%) work at public schools, while 35 (16%) work at private schools. Ages of participants range between 23 and 63 years, and the mean age of the sample was 37.13 ± 9.09 years.

2.2. Data collection instrument

As the data collection instrument, the study employed the job demands and resources scale for PE teachers, which was originally developed by Zhang and Chen (2017). The scale was developed with the aim of investigating the reasons behind psychological factors, such as motivation, burnout and job participation, in the professional lives of PE and sports teachers within a theoretical framework. The measurement instrument, consisting of two main dimensions, namely, job demands and resources, has a hierarchical structure made up of 21 items and five subscales. The job demands main dimension, which explains the effort put or energy spent by teachers to fulfil their professional duties, consists of three subscales: physical demands (four items), emotional demands (four items) and cognitive demands (four items). On the other hand, the job resources dimension, which is defined as the tools supporting teachers in fulfilling the tasks and reaching goals in the working environment, consists of two subscales: physical resources (three items) and organisational resources (six items). The statements are evaluated on a five-Likert type scale from 1 = totally agree to 5 = totally disagree. Considering the psychometric findings of the original scale, internal consistency coefficients for the subscales range between 0.68 and 0.83 (Zhang & Chen, 2017).

2.3. Data analysis

First of all, the results of Bartlett's test of sphericity and Kaiser–Meyer–Olkin (KMO) values were taken into consideration in order to verify that the sufficient sample size was attained before carrying out factor analysis. In the evaluation stage performed for the construct validity of the scale, exploratory factor analysis (EFA) was conducted first so as to test the theory about the nature of the process and to define the construct underlying the process (Tabachnick & Fidell, 2013). In the next step, confirmatory factor analysis (CFA) was implemented to test the fit between the variables playing a role in determining the factors of the main construct that is formed theoretically and those making up the factors specified by EFA (Ozdamar, 2013). Within the scope of CFA, particularly values of chi-square statistics (chi-square/degree of freedom), root mean square error of approximation (RMSEA) and standardised root mean square residual (SRMR), as well as those of the comparative fit index (CFI), goodness-of-fit Index (GFI) and increased fit index (IFI) were taken into consideration. In addition, lambda, R^2 and *t* values were calculated for the items forming the construct (Schermelleh-Engel, Moosbrugger & Muller, 2003). In order to test the reliability of the scale, kurtosis and skewness values, which reveal that the data show normal distribution, were taken into consideration, and internal consistency coefficients (Cronbach's alpha) were calculated for the overall scale and subscales as well. Moreover, distinctive features of the items in the scale were tested using the lower and upper 27% groups item analysis.

3. Findings

3.1. Process and language content validity

Necessary permissions were taken from Tan Zhang via email on February 26, 2018 within the scope of the adaptation study of the job demands and resources scale for PE teachers. Adaptation of the scale items into Turkish language was performed by two instructors who are experts in the field of PE and sports teaching and proficient in the English language and one translator who has a doctorate degree in English. Statements adapted to Turkish by the three experts, independently of one another, were brought together by the researchers and the scale form was developed. In order to assess the

language content validity of the scale form obtained, the Lawshe (1975) technique using three-answer ratings and Davis (1992) technique using four-answer ratings were employed. The scale form was evaluated by 10 instructors who are experts in the field of PE and sports teaching using these techniques. The content validity ratios obtained ranged between 0.89 and 1.00 and between 0.80 and 1.00 for the Lawshe and Davis techniques, respectively. After content validity had been ensured, data collection process was conducted by online and in person. To reach PE teachers from different regions of Turkey, 76% (166 survey forms) of data were collected by online survey forms which were sent to PE teachers' e-mail addresses by researchers.

3.2. Construct validity

Within the construct validity of the study, the data obtained from the participants were tested with EFA for the main construct making up the theory and with CFA to test the hierarchical structure.

3.2.1. Exploratory factor analysis

Table 1. EFA results for job demands and resources scale for PE teachers—Tr

Item no.	Factor 1. Job demands	Factor loading
14	I experience emotional distress resulting from trying to fulfil state/district standards *[Milli egitimin, egitim-ogretim icin belirledigi standartlari karsilamaya calismanın sonucu olarak duygusal sikıntilar yasarim]*	0.716
20	I experience emotional distress resulting from teaching unmotivated students *[Egitim-ogretim faaliyetlerinde ogrencilerin motivasyon eksikligi duygusal sıkıntilar yasamama neden olur]*	0.712
3	I experience emotional distress resulting from dealing with students' disruptive behaviours *[Ogrencilerin olumsuz davranıslari duygusal sikintilar yasamama neden olur]*	0.672
18	I feel challenged to plan lessons that can meet individual's needs. *[Ogrencilerin bireysel ihtiyaclarini karsilayabilecek dersler planlarken zorlanırım]*	0.644
5	I need extra effort to cope with inadequate class preparation time *[Yetersiz ders hazirlik zamani ile basa cikmak icin fazladan fiziksel cabaya ihtiyac duyarim]*	0.589
10	I need extra effort to cope with the distraction caused by sharing teaching facilities with others *[Okulun fiziksel olanaklarini (tesisler, alan, saha vb.) digerleriyle paylasmaktan kaynakli olusan dikkat dagiticilar ile basa cikmak icin fazladan fiziksel cabaya ihtiyac duyarim]*	0.554
11	I experience emotional distress when my school administrators intervene in my way of teaching *[Okul yoneticilerinin egitim-ogretim faaliyetlerime mudahale etmesinden dolayi duygusal sikintilar yasarim]*	0.528
21	I feel challenged to plan lessons that reflect the current state/district standards *[Milli egitimin, egitim-ogretim ile ilgili yapmis oldugu guncellemeleri yansitan ders planlari yaparken zorlanirim]*	0.519
2	I need extra effort to cope with inadequate equipment *[Yetersiz arac-gerec durumuyla basa cikmak icin fazladan fiziksel cabaya ihtiyac duyarim]*	0.516
6	I feel challenged to provide immediate feedback to individual students during teaching *[Beden egitimi ve spor derslerinde birbirinden farkli ogrencilere anında donut (geribildirim) saglamada zorlanirim]*	0.474
17	It requires extra effort for me to cope with interruptions to my teaching caused by non-teaching duties (e.g. coaching, and administrative duties). *[Ders disi gorevler (yonetsel gorevler, antrenorluk vb.) sebebiyle ogretim faaliyetlerinin kesintiye ugramasi ile basa cikmak fazladan fiziksel caba gerektirir]*	0.473

12	I feel challenged to teach lessons that facilitate students' adoption of active lifestyle. *[Ogrencilerin beden egitimi ve sporu yasam tarzi olarak benimsemelerini saglamada zorlanirim]*	0.400
	Factor 2. Job resources	
16	The school administrators recognise the significance of PE. *[Okul yonetimi beden egitimi ve sporun onemini takdir eder]*	0.658
7	I have opportunities to participate in decision making at my school. *[Okulumdaki karar verme mekanizmalarına katilma firsati bulabilirim]*	0.635
19	My achievement in teaching PE is recognised by my school. *[Beden egitimi ve spor ogretimindeki performansim okuldaki diger bireyler tarafindan takdir edilmektedir]*	0.620
9	I have clearly defined job responsibilities *[Mesleki sorumluluklarım acik bir sekilde tanimlanmıstir]*	0.603
13	I have opportunities to receive teaching advice from my colleagues. *[Diger ogretmenlerden mesleki tavsiyeler alma noktasinda firsatlara sahibim]*	0.593
4	As a teaching resource, I have access to sufficient equipment for teaching PE *[Bir ogretim araci olarak beden egitimi ve spor dersi icin yeterli arac-gerece sahibim]*	.565
8	The budget for PE is sufficient for carrying out teaching activities. *[Calistigim okulda beden egitimi ve spor dersi icin ayrilan butce ogretim etkinliklerinin yurutulmesi icin yeterlidir]*	0.546
15	As a teaching resource, I have access to sufficient facilities for teaching PE *[Bir ogretim araci olarak beden egitimi ve spor dersi icin yeterli tesis olanaklarına sahibim]*	0.496
1	I have access to professional development opportunities (such as workshops and professional conferences) to improve my teaching. *[Kisisel olarak egitim-ogretim ile ilgili mesleki gelisim calismalarına (atolye calismalari, seminerler, mesleki konferanslar vb.) katilma imkanim vardir]*	0.366

As a result of the analysis, which was performed concerning the sufficiency of the sample size, the KMO coefficient was found to be 0.78. When Barlett's test results were considered, it can be seen that χ^2 = 1203.91, SD = 210 (p = 0.000). In addition, as a result of the analysis conducted, it was found that the two factor structure with the Eigen values of 4.12 and 3.20 explains 34.91% of the total variance. In the EFA carried out with this information, factor loadings of the items ranged between 0.37 and 0.72 (Table 1).

3.2.2. Confirmatory factor analysis

The results obtained from the original scale development study revealed that the structure of the scale can be evaluated as two different scales: physical, emotional and cognitive job demands and physical and organisational job resources, while it can also be used as a single scale with a hierarchical structure of five subscales (Zhang & Chen, 2017). According to the results of the EFA conducted in this respect, lambda values ranged between 0.39 and 0.75 for the items making up the job resources scale consisting of two subscales, whereas *t* values ranged between 4.10 and 8.62 at a significance level of $p < 0.01$. R^2 values of the items were calculated between 0.11 and 0.38 (Table 2). Also, fit indices in the structural models were calculated as follows: χ^2 = 105.69, SD = 51 (χ^2/SD = 2.07), RMSEA= 0.070, SRMR = 0.058, CFI = 0.90, GFI = 0.93 and IFI = 0.91.

Table 2. Confirmatory factor analysis results for job resources scale—Tr

Subscales of job resources	Items	λ	R^2	t
Physical resources	4	0.39	0.11	4.27**
	8	0.50	0.12	4.41**
	15	0.67	0.30	6.42**
Organisational resources	1	0.56	0.19	5.55**
	7	0.69	0.33	8.08**
	9	0.58	0.28	7.35**
	13	0.50	0.11	4.10**
	16	0.75	0.35	8.45**
	19	0.70	0.38	8.62**

**$p < 0.01$.

According to CFA results, factor loadings of the job demands scale items consisting of three subscales ranged between 0.43 and 0.90 and R^2 values between 0.12 and 0.54, while t values ranged between 5.46 and 10.73, which was found to be statistically significant (Table 3). Fit indices in the structural models of the job demands scale were found to be: χ^2 = 46.25, SD = 18 (χ^2/SD = 2.57), RMSEA = 0.085, SRMR = 0.049, CFI = 0.92, GFI = 0.95 and IFI = 0.92.

Table 3. Confirmatory factor analysis results for job demands scale—Tr

Subscales of job demands	Items	λ	R^2	t
Physical demands	2	0.48	0.15	5.46**
	5	0.90	0.44	9.74**
	10	0.66	0.26	7.32**
	17	0.49	0.20	6.40**
Emotional demands	3	0.59	0.21	6.42**
	11	0.68	0.24	6.96**
	14	0.43	0.12	4.81**
	20	0.89	0.54	10.73**
Cognitive demands	6	0.54	0.18	6.05**
	12	0.74	0.34	8.71**
	18	0.83	0.47	10.45**
	21	0.55	0.20	6.49**

$p < 0.01$.

The results of CFA, which analysed the scale construct consisting of five subscales and two main factors within the scope of the hierarchal model, showed that the factor loadings of the items ranged between 0.40 and 1.05 and R^2 values between 0.11 and 0.52, while t values pertaining to the items were calculated between 4.46 and 11.14 (Table 4). Considering the fit indices of the hierarchal model, it is seen that χ^2 = 279.87, SD = 173 (χ^2/SD = 1.62), RMSEA = 0.050, SRMR = 0.070, CFI = 0.90, GFI = 0.91 and IFI = 0.90.

Table 4. Confirmatory factor analysis results for job demands-resources scale for PE teachers—Tr

		Items	λ	R^2	t
	Physical demands	2	0.71	0.33	8.01**
		5	0.74	0.33	8.05**
		10	0.7	0.3	7.57**
		17	0.59	0.22	6.38**
	Emotional demands	3	0.91	0.46	10.31**
		11	0.67	0.23	6.86**
Demands		14	0.87	0.51	11.02**

		20	0.87	0.52	11.14**
	Cognitive demands	6	0.56	0.27	7.14**
		12	0.51	0.17	5.55**
		18	0.88	0.5	9.94**
		21	0.61	0.26	6.94**
Resources	Physical resources	4	1	0.48	9.48**
		8	0.76	0.34	8.01**
		15	1.05	0.49	9.67**
	Organisational resources	1	0.4	0.11	4.46**
		7	0.77	0.39	8.90**
		9	0.66	0.3	7.68**

**$p < 0.01$.

3.3. Internal consistency coefficient and distribution curves

Internal consistency coefficients were calculated in order to reveal the scale's reliability at the overall and subscale levels. In addition, coefficients of kurtosis and skewness were taken into consideration to determine the distribution curves of the data.

The results obtained showed that coefficients of skewness and kurtosis were under the ±2 level both for the whole scale and for subscales, and the data were distributed normally. Moreover, while the internal consistency coefficient was found to be 0.74 for the overall scale, for the two main factor scale in the hierarchical structure, internal consistency coefficients were calculated as 0.74 and 0.81, respectively. Within the five-factor structure, on the other hand, internal consistency coefficients of the subscales making up the scale ranged between 0.62 and 0.74 (Table 5).

Table 5. Descriptive statistics and alpha coefficients for job demands-resources scale and subscale

Subscales	Mean	SD	Skewness	Kurtosis	Cronbach's Alpha
Physical demands	3.52	0.87	−0.690	0.269	0.62
Emotional demands	2.85	0.96	−0.013	−0.543	0.74
Cognitive demands	2.46	0.82	0.348	−0.434	0.62
Physical resources	2.41	1.12	0.492	−0.693	0.70
Organisational resources	3.52	0.76	−0.896	0.795	0.71
Scale	Mean	SD	Skewness	Kurtosis	Cronbach's Alpha
Job demands	2.94	0.72	−0.241	−0.127	0.81
Job resources	3.15	0.73	−0.177	−0.188	0.74
Total- Job demands-Resources scale	63.67	10.62	−0.709	1.629	0.74

3.4. Item analysis

According to the results of the lower and upper 27% groups item analysis performed in order to determine the distinctive features of the items included in the Job Demands and Resources scale for PE teachers, *t* values were found to range between −2.95 and −11.59 at a significance level of $p < 0.01$ (Table 6).

4. Discussion and conclusion

In the scope of the present study, revealing the psychometric measurements of the job demands and resources scale on PE and sports teachers, the measurement instrument was tested for validity, reliability and distinctiveness of features. First, in the language content validity measurements evaluated by 10 experts in the field using two different techniques, index values were found to be a minimum of 0.89 according to the Lawshe technique and 0.80 according to the Davis technique.

In the study carried out by Lawshe (1975), it is stated that in order for the content validity ratio of the practice held with the participation of 10 experts to be acceptable, the result must be 0.62 and over, while Davis (1992) reports that validity index values are supposed to be greater than 0.80 in the four-answer rating. The findings obtained from the present study show that the language content validity of the scale is acceptable.

The EFA and CFA methods were used to examine the construct validity, another criterion for validity. KMO coefficient, which is a priority criterion for the implementation of the EFA method, was calculated as 0.78. As stated in the related literature about this criterion, coefficients of 0.60 and over are accepted as sufficient for the sample size (Mulaik, 2010). In addition, the fact that the significance of the Bartlett sphericity test obtained from the study is smaller than 0.05 indicates that the null hypothesis is rejected and the data set is fit for the factor analysis (Dziuban & Shirkey, 1974). In the light of these criteria, minimum factor loading of the items was calculated as 0.37 as a result of the EFA analysis. As also stated in the literature, factor loadings of the items obtained in the present study are greater than 0.30 (Stevens, 2002) or 0.32 (Tabachnick & Fidell, 2013), which are accepted as criteria. These results confirm the theoretical and structural validity of the original scale form.

In order to obtain the findings concerning CFA, another evaluation for construct validity analyses was carried out separately for each of the main dimensions making up the theory and for the hierarchical model in which all subscales are assessed together. As a result of these analyses, standardised factor loadings of the items were found to be a minimum of 0.39 for all models. Many studies in the literature report that factor loadings of 0.25 and over indicate that the items have the power to explain the variable they belong to (Onen, 2009). Considering the *t* values pertaining to the items of the models, the lowest value was found to be 4.10. As also highlighted by the literature, if *t* values are greater than 1.96, they are accepted significant at the 0.05 level; if greater than 2.58, the level of significance is accepted as 0.01 (Kline, 2011). These results confirm that all *t* values are significant at the 0.01 level and no item needs to be taken out of the scope of the models (Byrne, 2010). Evaluating the results pertaining to the other fit indices to be considered, a value of over 2 for χ^2/SD statistics in the main dimensions shows acceptable fit, whereas for the five-subscale hierarchical model, 1.62 reveals good fit (Kline, 2011). In addition, the fact that RMSEA and SRMR values ranged between 0.05 and 0.08 in all analyses results is an indicator of acceptable fit (Hu & Bentler, 1999). Also, CFI, GFI and IFI fit index values ranging between 0.90 and 0.95 show that these values are within acceptable limits (Marsh, Hau, Artelt, Baumert & Peschar, 2006; Schermelleh-Engel et al., 2003). All these results reveal that the measurement instrument is structurally valid both in terms of the two separate dimensions in the scope of main factors and the five-factor hierarchical model.

Cronbach's alpha internal consistency coefficients and lower and upper 27% groups item analysis were used in order to test the reliability of the measurement instrument, whose language content validity and construct validity were confirmed. It is seen that the internal consistency coefficient obtained from the study was calculated as 0.74 for the overall scale, 0.81 for job demands main dimension, 0.74 for job resources main dimension and ranged between 0.62 and 0.74 for the five-factor structure. In the related literature, while there are studies reporting that Cronbach's alpha coefficients must be 0.70 and over for reliability (Hair, Black, Babin & Anderson, 2010), some others state that this number is expected to be 0.50 and over when the number of items is small (Nunnally, 1978). Finally, the fact that the *t* value calculated in the lower and upper 27% group comparisons to prove the reliability and distinctiveness of the scale items was significant (Brennan, 1972) can be accepted as evidence for reliability.

In the light of all these data, considering the values pertaining to the reliability coefficients, language content validity, construct validity and item distinctiveness features of the Job Demands and Resources scale, it was concluded that the scale is a valid and reliable measurement instrument. It was found that the Turkish version of the scale, which is parallel with the original form, consists of two main dimensions and five subscales representing the framework of the Job Demands and Resources theory specific to the PE and sports teaching branch. Also, the measurement instrument can perform

evaluations over two base lines at the main dimensions of job demands and resources, as well as being able to conduct measurements over the five subscales made up by these two base lines in a detailed way. In conclusion, the Job Demands and Resources scale can be used as a measurement instrument with psychometric values of good fit to evaluate professional motivation, participation and burnout states of PE and sports teachers within the scope of the job demands and resources theory in a Turkish speaking population.

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