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İŞ DOYUMU ÖLÇEĞİNİN FAKTÖR YAPISINA İLİŞKİN DFA, AYEM VE İKİ FAKTÖR MODELİ ÇERÇEVESİNDE KANITLAR

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ÖZ

Tek boyutlu modellerde puanların bir boyutun göstergeleri olduğu varsayılır, ancak verilerde tek boyutluluğu sağlamak her zaman mümkün değildir. Bu nedenle ölçme araçlarının faktör yapısı ilişkili faktör modelleri, bifactor (iki faktör) ve ileri düzey faktör modelleri olmak üzere farklı alternatiflerle incelenebilir. Bu çalışmanın amacı Hackman ve Oldham (1980) tarafından geliştirilmiş ve Gödelek (1988) ve Güler (1990) tarafından Türkçe'ye uyarlanmış iş doyumu ölçeğinin faktör yapısını öğretmenler üzerinde incelemektir. Ölçeğin uyarlanan biçimine ait sonuçlar faktör analizine dayalı değildir. Ayrıca ölçeğin güncel çalışmalarda halen bu paylaşılan ilk sonuçlara dayalı olarak kullanıldığı görülmektedir. Ölçeğin orijinali ve uyarlanmış formu yarım bırakılmış ifadelere yanıt vermeyi gerektirmektedir. Bu çalışmada yarım bırakılmış ifadeler soru şeklinde sorularak ölçek maddeleri uygulanmıştır. Bu nedenle ölçeğin faktör yapısını incelemek ve revize edilebilmesi noktasında ek bilgiler elde etmek amacıyla ölçek Burdur merkezde görev yapan 318 öğretmene uygulanmıştır. Uygulanan ölçme aracı 14 maddeden oluşan 5'li Likert tipindedir. Ölçeğin faktör yapısına ilişkin farklı görüşler bildirildiğinden bu çalışmada tek faktör, iki ve üç faktörlü DFA (Doğrulayıcı Faktör Analizi) ile iki ve üç faktörlü Bifactor DFA (B-DFA), iki ve üç faktörlü AYEM (Açımlayıcı Yapısal Eşitlik Modeli) ve Bifactor AYEM (B-AYEM) modelleri test edilmiştir. Analiz sonuçlarına göre tüm modeller karşılaştırıldığında a üç faktör B-AYEM ile elde edilen uyum indesklerinin kabul edilebilir düzeyde kaldığı görülmüştür. Tek ve iki faktörlü modellerde model veri uyumu sağlanmamıştır. Ayrıca ölçekte yer alan bazı maddelerin kendi faktörü dışında faktör yükü gösterdiği gözlenmiştir. Ölçekten daha geçerli ve güvenilir puanlar puanlar elde edebilmek amacıyla ölçeğin tek boyutlu kullanılabileceği önerilmiştir.

Anahtar kelimeler: İki-faktör model, çapraz yüklenme, açımlayıcı yapısal eşitlik modeli, iş doyumu, doğrulayıcı faktör analizi.

EVIDENCE FOR FACTOR STRUCTURE OF THE JOB SATISFACTION SCALE FROM CFA, ESEM AND BIFACTOR MODEL FRAMEWORK

ABSTRACT

In unidimensional models, scores are assumed to be indicators of a single dimension, but it is not always possible to provide unidimensionality in the data. For this reason, the factor structure of the measurement tools can be examined with different alternatives such related factor models, bifactor and higher order factor models. The purpose of the current study is to investigatethe factor structure of the job satisfaction scale developed by Hackman and Oldham (1980) and adapted into Turkish by Gödelek (1988) and Güler (1990). The adapted version of the scale was not based on factor analysis results. And it was seen that this scale is using usually based on old results. The original and adapted form of the scale require responding to incomplete items. In this study incomplate items were turned into questions sentences. To examine and obtain additional information for revision of the factor structure of the scale it was administered to 318 teachers in the city of Burdur in Turkey. The scale is a 5-point Likert type consisting of 14 items. In the current study the factor structure of the scale wastested with one-factor, two-factor and three-factor CFA (Confirmatory Factor Analysis) and two-factor and three-factor Bifactor CFA (B-CFA), two-factor, and three-factor ESEM (Exploratory Structural Equation Modelling) and Bifactor ESEM (B-ESEM) models. The results of the analysis showed that among all the models, the fit indices obtained with the three-factor B-ESEM remained at an acceptable level. Model data fit could not be achieved in one and two factor models. In addition, some items in the scale were found to exhibit cross-loading. In order to obtain more valid and reliable scores, it has been suggested to use the scale unidimensional.

Keywords: Bifactor model, cross loading, exploratory structural equation modelling, job satisfaction, confirmatory factor analysis.

INTRODUCTION

Job satisfaction is an essential factor in beeing successful in any profession because business process or management is related to the psychology and well-being of the individual. The individual's job satisfaction is to some extent a reflection of good treatment by the workplace. In addition, the satisfaction of an individual from their job can be considered as an indicator of emotional well-being or psychological health (Locke, 1976; Spector, 1997). Job satisfaction is defined as the pleasure people get from their work (Izgar, 2000), all of the positive effects or feelings people have towards their jobs (Arnold & Feldman, 1986), the degree to which employees feel positive or negative about their job (Schermerhorn, 1993) and the individual's perception that his / her work-related values are met and the compatibility of these values with his / her own needs (Evans, 1997; Telman & Ünsal, 2004). Job satisfaction, which focuses on meeting the physical and psychological needs of the employees by the job, is considered as an attitudinal feature (Spector, 1997).

It is thought that besides the personal characteristics of the individual such as age, gender, education level, marital status, institutional or environmental factors have an effect on job satisfaction (Musa, Elçin and Ergin, 1995). High salary, sufficient promotion opportunities, self-confidence of the person, the opportunity to establish relationships with colleagues, variety of duties, appropriate rewarding opportunities, the social appearance of the enterprise, strict control of the working method and speed are stated as the main motivating factors for job satisfaction (Erdoğan, 1999; Locke,1976; Sabuncuoğlu & Tüz, 1998). Soutar & Weaver (1982) stated that job satisfaction is a multidimensional construct. According to previous studies this multidimensional construct is defined different sub-dimensions. For example job satisfaction is considered in five dimensions: pay, job content, supervision, working conditions and general management style (Baysal and Tekarslan, 1996). Tosun (1979) stated that these five dimensions could be gathered in three dimensions: the job itself, the external value of the job (pay and dignity) and the conditions in the work environment (working group, organizational environment, physical environment, manager) (as cited in Gödelek, 1988).

Spector (1997) discussed job satisfaction in nine sub-dimensions: pay, promotion, management, fringe benefits, awards, working conditions, colleagues, the job itself, and communication. Smith, Kendall, and Hulin (1969) evaluated job satisfaction in terms of job itself, pay, supervision, colleagues, and promotion opportunities. There are also studies dealing with job satisfaction in two dimensions: internal and external satisfaction (Kalleberg, 1977; Weiss, Dawis & England, 1967). Weiss et al. (1967) stated that components of the internal satisfaction dimension include the job itself, autonomy, diversity, status, moral values, security, social services, authority, ability, responsibility, colleagues and success variables while the components of external satisfaction dimension include working conditions, company policies, managers, pay, efficiency, promotion opportunities, human relations and reward variables. Hackman and Oldham (1975) created the job characteristics model by combining the theories of motivation and job satisfaction. The model is defined in the following five dimensions; skills variety, task identity, task significance, autonomy and feedback. These basic characteristics under consideration lead to three psychological situations in individuals (feeling for the meaningfulness of the job, sense of responsibility and awareness of the results) and create important results in terms of individuals' job satisfaction, performance and motivation (Sun, 2002). Based on this model, a job description scale built on the effect of a job on the motivation of employees has been developed (Hackman & Oldham, 1980). A sub-section of the job description scale consists of the job satisfaction scale.

It was observed that the job satisfaction scale was used in Turkish by Gödelek (1988), Güler (1990) and Silah (2002), and they shared the first information about the validity and reliability of the scale. Using this form, different studies have investigated the validity of the scale on different business groups and presented its unidimensional (Çevik Taşdemir, 2019; Taşdan, 2008), bidimensional (Gençer Çelik, 2020) and tridimensional (Dilsiz, 2006) structures. The opportunities offered by each profession to its employees are different from each other. In the teaching profession, elements such as relationships with students, teachers and administrators, the opportunity of teachers to practice and realize their thoughts and interests, holidays, economic security, pay, working conditions, working hours, the nature of the job, the possibility of promotion, supervision, organization and management, job security, personality and appreciation constitute the sources of job satisfaction (Vural, 2004). Since students' performance, behaviours and disciplinary problems can affect job dissatisfaction, teachers' job satisfaction expresses their emotional relationship with the teaching role (Thompson, McNamara and Hoyle, 1997; Zembylas and Papanastasiou, 2005). For this reason, it became necessary to examine the compatibility of the factor structure of the job satisfaction scale developed by Hackman and Oldham (1980) with the factors of job satisfaction in the teaching profession. Since different results were observed in different sectors regarding the factor structure of the scale, the construct validity on teachers was neededto be examined with the ESEM and Bifactor models within the framework of structural equation models.

Bifactor, Higher-Order and ESEM Models

Many psychological constructs consist of more than one related but different sub-domains. Particularly personality traits, motivation, depression, well-being can be shown as examples of these structures (Chen et al., 2018). In unidimensional models, scores are assumed to be indicators of a single dimension, but it is not always possible to provide unidimensionality in the data. For this reason, the factor structure of the measurement tools can be examined with different alternatives such as related factor models, bifactor (two-factor model) and higher-order factor models (for example, second order Confirmatory Factor Analysis-CFA) (Perera, 2015). In related factor models, scores are assumed to measure two or more related dimensions. In this model, it is thought that the pattern between indicators and factors forms the more straightforward structure (Thurstone, 1935).

Bifactor model is called general-specific model or clustered model. This model includes a general factor (global) associated with all observed variables and sub-factors not associated with the general factor (orthogonal) (DeMars, 2013; Gibbons & Hedeker, 1992; Reise, 2012; Wiesner & Schanding, 2013). Although the variables (indicators) observed in the Bifactor model are reflections of the general factor, they are also an indicator of a narrower specific structure that is not related to the general factor. In the Bifactor model, all of the items have non-zero factor loading values on the general factor and on the sub-factors; the factors are not related to each other and to the general factor. Through this feature, the common variance between items can be divided into one general factor and two or more sub-factors. Thus, the variance of each observed variable is decomposed into a larger number of components compared to the standard CFA model (Chen et al., 2012). This model can be considered as a main model in which second-level and unidimensional structures are embedded. However, second-order models seem to be a need when there are inflated correlations between factors (van Dierendonck, 2004). The inflated correlation between the factors is due to the fact that it does not take into account the overlap in the items (Asparouhov & Muthén, 2009). Bifactor models are suitable models when there is only one general structure and also when multiple homogeneous sets are obtained between the items (Reise, Bonifay & Haviland, 2018).

Higher-order models assume that, in a construct of interest, items are affected by a more general dimension. Higher-order models are created by taking into account the covariance of multiple sub-factors (Wiesner & Schanding, 2013). In the second-order model, the general factor causes variation in the primary factor, which causes change in the items. That is, the general factor has no direct effect on the items. In the bifactor model, it can be said that both the general factor and the sub-factors are directly effective on the items, and both are in competition to explain the item response variance. This conception is useful in revealing how much of the variance of an item is explained by general factors and sub-factors, in revealing the effect of forcing the multidimensional structure into a unidimensional model that is incorrectly defined, and in better understanding the interpretability and applicability of general and sub-factor scores (Reise et al., 2018; Mansolf & Reise, 2016).

The use of confirmatory factor analysis has become widespread in testing many psychological constructs. However, the nature of CFA includes the independent cluster model (ICM) restriction, which is expressed as items' not showing cross-loading with each other and with factors other than the target. This makes it difficult for scales to meet acceptable criteria under CFA (Morin, Arens & Marsch, 2015). Due to this limitation in CFA, a priori information obtained with Exploratory Factor Analysis (EFA) is essential in testing CFA models. EFA allows for cross-loadings in predicting multidimensionality, but EFA is based on exploration. Exploratory Structural Equation Modelling (ESEM) allows combining CFA, EFA and structural equation models on a single model. Thus, while the advantages of the models are collected in a single model, the independent clustering model and the cross-loading feature of EFA can be combined (Howard et al., 2016). The Bifactor ESEM (B-ESEM) model, on the other hand, consists of a combination of a bifactor model with a combination of general and specific factors and an ESEM model that allows items to load on target and non-target factors (Gu, Wen & Fan, 2017). The structures of these models are shown in Figure 1 (Morin et al., 2015).

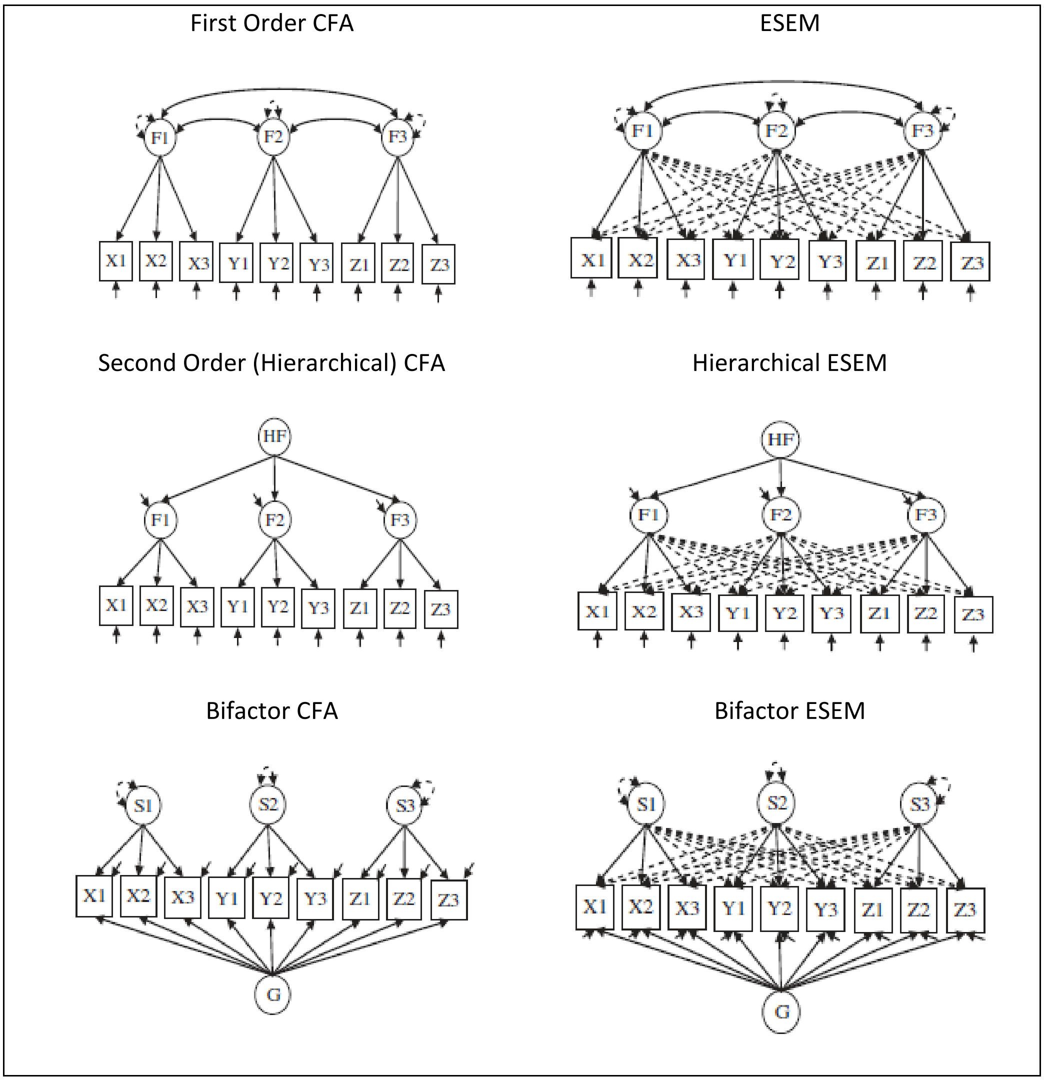

Figure 1. CFA, ESEM and Bifactor models

In the illustrations in Figure 1, circular shapes represent latent variables while angular shapes represent observed variables. The one-way arrows between the latent variables and the observed variables show the main factor loadings and the dashed arrows show the cross-loadings. Through the figures, it is seen that in CFA models, items are only allowed to show factor loading with their own factors, while in ESEM models, items are allowed to show cross-loading in the factor loadings other than their own. In Bifactor models, there is a general factor directly related to the items, except for sub-factors. In bifactor models, latent variables are denoted as S because they are named as specific factors, while sub-factors are symbolized with F in first-order CFA, second-level CFA or ESEM models other than this model (Howard et al., 2016; Morin et al., 2015).

In the current study, it is aimed to test different models related to the factor structure of the job satisfaction scale and to determine the most suitable model. It is thought that providing additional information about the validity of the job satisfaction scale and providing evidence regarding its dimensionality will guide researchers in the most appropriate use of this tool. The study is also important in terms of emphasizing the importance of using the appropriate method to investigate scales validity. The study is expected to contribute to the literature in terms of the use of the ESEM model, which is defined as more flexible than the CFA, and the introduction and use of the bifactor model. Therefore, the main problem addressed in the current study study is "Does the factor structure of the job satisfaction scale fit the CFA, ESEM, Bifactor CFA and Bifactor ESEM models?"

METHOD

Research Model

In the current study, since the factor structure of the job satisfaction scale was examined with the first level CFA, bifactor CFA, ESEM and Bifactor ESEM, it was designed in the survey model. In this study, since a situation is tried to be described as it exists, it is considered as a survey model (Karasar, 2001).

Study Group

The universe of this study consists of teachers working in public schools in the Burdur city center. The ethical committee approval was obtained from the Non-interventional Clinical Researches Ethics Committee at Burdur Mehmet Akif Ersoy University (GO 2021/258). There are 52 schools in the city center and with 1239 teachers working in these schools in the 2020-2021 academic year. In this study, it was tried to reach the appropriate sample size according to the 95% confidence level. If the significance level is 0.05, the sample size should be at least 278 if the population size is 1000, and the sample size should be at least 322 if the population size is 2000. (Büyüköztürk et all., 2019). Therefore this study was carried out with 318 teachers who were chosen from the universe objectively. Of the participating teachers, 60.4% (n=192) are females while 39.6% (n=126) are males. While 63.5% (n=202) of the teachers have a professional experience of less than 5 years, 36.5% (n=116) have a professional experience of more than 5 years. In addition 57,1% of teachers work in high schools, 17,8% in secondary schools, 7,5% elemantary schools and 17,6% in preschools. According to the highest percentage, the distribution of teachers according to their branches consists of professional development (15,3 %), preschool (12,9%), mathematics (9,6%), literature (7,8%), visual arts, music and physical education (7,7%), English (6,8%) and primary school education (6,1%), respectively. The remaining 33.8% includes information technologies, biology, geography, history, social studies, religious culture, philosophy, chemistry, physics, guidance and psychological counselling and Turkish education teachers.

Data Collection Tools

In the current study, a personal information form consisted of the questions prepared by the researcher and the job satisfaction scale, which is the sub-scale of the "Job Description Scale" developed by Hackman & Oldham (1980), were used. In the original of the scale, the items consist of positive incomplete statements (ex. item 2: Money and support you receive …) The scale consists of 14 items developed in the form of 5-point Likert scale (1: It does not satisfy me at all, 2: It satisfies me adequately, 3: It satisfies me moderately, 4: It satisfies me highly, 5: It satisfies me very much). The scale items assess the dimensions of pay, job security, colleagues, management and promotion.

The Turkish form of the scale was used by Gödelek (1988) and in this application, the correlation of the items with the total was found to be significant and the reliability of the scale was found to be 0.80. The translated version was used firstly by Gödelek (1988). Therefore before using this scale permission was get from the researcher. The Turkish form used by Güler (1990) and Silah (2002) was reported to be reliable. The form in which the incomplate statements were transformed into question on the basis of this adaptation was applied by Dilsiz (2006) to teachers and administrators (ex. item 2: Is the money and support you receive sufficient?). In this form, the response options included the following: “1: Highly inadequate, 2: Inadequate, 3: Undecided, 4: Adequate, 5: Highly adequate”. The scale explains 57% of the total variance in three dimensions according to the results obtained with EFA. Taşdan (2008) conducted a validity and reliability study of the scale and stated that the single dimension explained 63.83% variance as a result of EFA and reported that the scale factors varied between 0.69 and 0.86 and item-total correlations varied between 0.66 and 0.86. The reliability coefficient of the scale was found to be 0.95. Güleryüz et al. (2008) examined the scale applied on nurses with CFA as internal and external dimensions and stated that the indexes were within acceptable ranges. Gençer Çelik (2020) stated that by removing item 9 from the scale applied on teachers, the scale was collected in two factors with EFA. The reliabilities of the dimensions were found to be 0.87 and 0.80, respectively. Çevik Taşdemir (2019) stated that the scale applied to employees operating in the textile sector was collected in one factor by applying EFA and CFA (χ^2/df = 4.812; RMSEA = 0.070; TLI = 0.94, CFI = 0.96). In the study conducted by Elevli and Bayram (2019) on municipal employees, it was found that the scale was collected in a single factor according to EFA results. However, the CFI (.798) and RMSEA (.120) fit indices were found to be outside the acceptable ranges.

In a study in which the scale was used on the sample abroad, Shristava & Purang (2009) stated that the items 5, 6, 8 and 14 were deleted as a result of CFA in the form applied to 340 employees working in public and private banks because they were not significant in the factor they belonged to. After removing these items, it was stated that the scale was collected in five dimensions according to the CFI results (GFI = 0.948, CFI = 0.972, $\chi^2_{(27)}$ = 88.3). These five dimensions were named as pay, job security, social relations, administrative and development.

In the current study, the form in which all the 14 items expressed as question sentences was used to compare the results with previous studies and applied as a paper and pencil test. In line with the literature on the factor structure of the job satisfaction scale, in order to test the scale with two factors, internal satisfaction (items 4, 5, 6, 7, 8 and 14) and external satisfaction (items 1, 2, 3, 9, 10, 11, 12 and 13) dimensions were taken into account (Güleryüz et all., 2008)When tested with three factors, the job itself (pay and safety; items 1, 2, 3, 9 and 11), relationships (working group and management’s attitude; items 4, 5, 7, 8 and 14) and appreciation (items 6, 10, 12 and 13) dimensions were taken into account (Dilsiz, 2006). In line with the factor loadings obtained from the models, the values of the items in different dimensions were also interpreted.

Data Analysis

The data were first analyzed in terms of missing value, outlier and normality. All the scale items were marked by the teachers. Skewness values of the scale items were found to be ranging from -0.794 to 0.118 while kurtosis values were found to be ranging from -1.01 to 0.305. Kurtosis and skewness coefficients are between ± 1 values can be used as a measure of normal distribution (Morgan, Leech, Gloeckner & Barret, 2004) .In this analyses, no multivariate outlier was observed according to Mahalanobis distances. It was found that Mahalanobis values didn't exceed the critical chi-square value $\chi^2_{(0.001;13)} = 34.53$ (Çokluk, Şekercioğlu & Büyüköztürk, 2010). Multivariate kurtosis value indicates a normal distribution (Mardia, 1970) ($p > 0.05$). Therefore, ML estimation method was used in the analyses. All the models were estimated in Mplus 7.4 program (Muthe´n & Muthe´n, 2012). The factor structure of the scale was tested by using one-factor, two-factor, three-factor CFA, two and three-factor B-CFA, two and three-factor ESEM and B-ESEM, suggested as alternative models in the literature (Byrne, 1998) Factor loadings and correlations between factors were compared in the models where fit indices were at acceptable levels. Root Mean Squared Error of Approximation (RMSEA), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), χ^2/df (Chi Square / degree of freedom) and SRMR (Standardized Root Mean Square Residual) and Bayesian Information Criteria (BIC) were used in the evaluation of the goodness-of-fit of the model. It was decided that model fit was achieved as CFI and TLI values were 0.90, RMSEA value was smaller than 0.08 and χ^2/df < 3 (Browne & Cudeck, 1993; Hu & Bentler, 1999; Schermelleh-Engel & Moosbrugger, 2003). Although these comparison indexes are recommended for CFA, there are studies using the same indexes for the ESEM model (Howard et al., 2016; Morin et al., 2015; Sanchéz-Oliva et al., 2017; Espinoza et al., 2018); thus, these indexes were reported in the current study. When CFA and ESEM models are compared in terms of fit indices, it is predicted that the ESEM model will give higher fit indices in terms of data fit. This is because it allows cross-loading, even if it is a value close to zero. For this reason, it is thought that examining factor loadings and inter-factor correlations together with acceptable fit indices when comparing models is a more appropriate way to evaluate the fit of the model with the theoretical framework (Morin et al., 2015).

Additionally, as recommended in previous researches (Fadda et all., 2017; Arens & Morin, 2016) the composite reliability coefficient omega (ω), and omega hierarchical (ωh) were calculated for the models which fit the data (McDonald, 1970). The coefficient ω could interpret for reliability. Omega hierarchical for total score estimates the reliability of the general factor controlling for specific factor variance. Omega subscale hierarchical estimates the amount of variance in the subscale that is explained by a specific factor after controlling for the variance explained by the general factor. To calculate these coefficients the following equations were used (Reise, 2012).

$$\omega = [(\sum \tau_{Gen})^2 + (\sum \tau_{Grp})^2]/[(\sum \tau_{Gen})^2 + (\sum \tau_{Grp})^2 + \delta_{ii}]$$

$\omega h = [(\sum \tau_{Gen})^2/[(\sum \tau_{Gen})^2 + (\sum \tau_{Grp})^2 + \delta_{ii}]$; where τ_{Gen} are factor loadings for general factor, τ_{Grp} are factor loadings for spesific factor and δ_{ii} the error variances.

RESULTS

The fit indices of the job satisfaction scale obtained with one-factor, two-factor, three-factor CFA, two and three-factor B-CFA, two and three-factor ESEM and B-ESEM are shown in Table 1.

Table 1. Model Fit Indices

Model	χ^2	df	RMSEA	CFI	TLI	SRMR	BIC
1. One-factor CFA	663.740	77	.155	.732	.684	.086	11650.766
2. Two-factor CFA	510.839	76	.134	.802	.762	.079	11503.627
3. Three-factor CFA	351.293	74	.109	.873	.844	.075	11355.605
4. Two-factor B-CFA	374.458	65	0.122	.859	.802	.144	11430.628
5. Three-factor B-CFA	374.404	66	.121	.859	.806	.148	11424.813
6. Two-factor ESEM	327.147	64	.114	.880	.829	.054	11389.079
7. Three-factor ESEM	194.478	52	0.093	.935	.886	.035	11325.555
8. Two-factor B-ESEM	194.478	52	0.093	.935	.886	.035	11325.555
9. Three-factor B-ESEM	122.996	41	0.079	.963	.917	.025	11317.455

As can be seen in Table 1, within the scope of CFA, in one-factor CFA, two-factor (internal-external satisfaction) CFA, three-factor CFA and B-CFA models organized as 2 sub-factors, one general factor, and 3 sub-factors and one general factor, the RMSEA (> 0.08), CFI and TLI values (<0.90) can be said to be below the acceptable ranges. From among these models, the model having the weakest fit values is one-factor CFA (χ^2/df = 8.62, CFI=0.732, TLI=0.684, RMSEA=0.155 and SRMR=0.086). Within the scope of ESEM, it can be said that the model for 2-factor ESEM is not at an acceptable level (χ^2/df = 5.11, CFI=0.880, TLI=0.829, RMSEA=0.114 and SRMR=0.054). When 3-factor ESEM and 2-factor B-ESEM models are examined, it can be said that all fit indices are equal to each other, but RMSEA (> 0.08) and TLI (<0.90) values are outside the acceptable ranges.

Although 3-factor ESEM and 2-factor B-ESEM have the same fit values, when factor loadings were examined in Table 3, it was seen that the 3-factor ESEM model was compatible with the theoretical framework. Therefore, when the 3-factor ESEM and 3-factor B-ESEM models are compared, it can be stated that the fit index of the B-ESEM model is higher (χ^2/df= 2.99, CFI=0.963, TLI=0.917, RMSEA = 0.079 and SRMR =0.025). In addition, the lowest BIC value was obtained with the 3-factor B-ESEM model (11317.455). When the differences between CFI, TLI and RMSEA in the 3-factor ESEM and 3-factor B-ESEM models (ΔCFI = 0.028; ΔTLI = 0.03), it can be stated that the model improved, but there was no difference between the models in terms of the RMSEA (RMSEA = 0.01) (Chen, 2017). It can be said that the model with the highest fit indices among the CFA models is the 3-factor CFA model, but the fit indices are outside the acceptable ranges (χ^2/df = 4.75, CFI=0.873, TLI=0.844, RMSEA=0.109 and SRMR=0.075). The correlations between factors obtained from the 3-factor CFA,3-factor ESEM and 3-factor B-ESEM models are given in Table 2.

Table 2. Factor Correlations Obtained with 3-Factor ESEM, 3-Factor CFA and 3-factor B-ESEM

	ESEM		CFA		B-ESEM	
	F2	F3	F2	F3	F2	F3
F1	0.449**	0.407**	0.587**	0.637**	0.026	-.106
F2		0.574**		0.752**		-.202

When the correlations between factors obtained from the 3-factor ESEM and 3-factor CFA models are examined in Table 2, it is seen that the correlations obtained with ESEM remain at a lower level (0.449, 0.407 and 0.574). The low level of fit indices and high factor correlations, especially the correlation value of 0.752 between F2 and F3, indicate that the data are more suitable for the ESEM model. In addition it can be seen that there isn't statistically significant correlations between factors for 3-factor B-ESEM model (0.026 -0.106 and -0,202). However, when 3-factor ESEM and 3-factor B-ESEM were compared, although B-ESEM had higher fit indices, it was deemed appropriate to compare factor loadings as well as fit indices for these models. These values are presented in Table 3.

Table 3. Standardized Factor Loadings Obtained with 3-factor ESEM and B-ESEM

	3-factor ESEM		3-factor B-ESEM		
	Target λ	Cross λ	General λ	Target λ	Cross λ
Y2	0.877*	0.013, -0.006 (F2, F3)	0.502	0.763**	0.045, 0.008 (F2, F3)
Y9	0.861**	0.025, -0.015	0.509	0.676**	-0.011, -0.022
Y3	0.527**	-0.046, **0.293****	0.530	0.369**	-0.104, 0.103
Y1	0.388**	**0.274****, 0.129	0.623	0.243**	-0.074, -0.108
Y11	0.290**	**0.304****, 0.127	0.735	0.129**	-0.084, -0.067
$I\bar{X}I$	*0,589*	*0.123*	*0.580*	*0.436*	*0.063*
ω	0.80			0.98	
ωh	-			0.06	
Y5	0.871**	-0.062, -0.006 (F1, F3)	0.663	0.638**	0.014, -0.033 (F1, F3)
Y4	0.720**	0.096, -0.138	0.650	0.068	-0.014, **-0.529****
Y14	0.765**	-0.004, 0.143**	0.745	0.394**	0.006, 0.035
y8	0.700**	0.014, 0.127	0.716	0.274**	-0.020, -0.026
Y7	0.483**	-0.032, 0.032	0.501	0.049	-0.125**, -0.315****
$I\bar{X}I$	*0.708*	*0,065*	*0,655*	*0.285*	*0,111*
ω	0.85			0.98	
ωh	-			0.03	
Y13	0.733**	0.023, -0.025 (F1, F2)	0.608	0.336**	-0.050, -0.027 (F1, F2)
Y10	0.623**	-0.032, 0.040	0.501	0.288**	0.016, -0.049
Y12	0.545**	-0.026, -0.015	0.699	0.274**	-0.050, 0.175**
Y6	0.450**	0.106, 0.145	0.583	0.162	0.009, -0.010
$I\bar{X}I$	*0.588*	*0.051*	*0.580*	*0.265*	*0.048*
	ESEM Cross loading $\bar{X}$ = 0.082		*B-ESEM Cross loading $\bar{X}$ = 0.076*		
ω	0.73		0.93	0.97	
ω h	-		0.84	0.01	

λ: Factor loading, ω: Omega coefficient, ωh: Omega hierarchical coefficient

When looking at the factor loadings obtained by 3-factor ESEM in Table 3, it is seen that the factor loadings of the items 1, 2, 3, 9 and 11 in the first factor (the job itself) vary between 0.29 and 0.877. From among these, item 3 has a significant cross-loading on the third factor, with a value lower than its own factor (0.293). Apart from this, item 1 also showed a lower but significant cross-loading (main factor = 0.388, cross-loading = 0.274) in the second factor lower than its loading on the main factor, while item 11 exhibited a higher significant cross-loading on the second factor than loading on its own factor (main factor λ = 0.290, cross-loading λ = 0.304). The mean factor loading of the items in the first factor was found to be 0.589 while their mean cross-loading was found to be 0.123. When the loadings of the items 4, 5, 7, 8 and 14 in the second factor were examined with the ESEM model, it was seen that they ranged from 0.483 to 0.871. Only the item 14 exhibited a significant cross-loading value on the third factor (main factor λ = 0.765, cross-loading λ = 0.143). The mean loading of the items in this factor is 0.708 while mean cross-loading is 0.065. As can be seen in Table, the factor loadings obtained for the items 6, 10, 12 and 13 with ESEM vary between 0.450 and 0.733 and their mean value is 0.588. The items did not exhibit significant cross-loadings on the other factors and the mean cross-loading value was found to be 0.050. Moreover, the mean cross-loading value obtained for all the items with the 3-faktor ESEM model is 0.082.

When the values obtained with the 3-factor B-ESEM in Table 3 are examined, it can be said that the items 1, 2, 3, 9 and 11 did not exhibit significant cross-loadings on the other factors. It is seen that the factor loadings vary between 0.129 and 0.763 and the mean value is 0.436. The factor loadings of the items 4, 5, 7, 8 and 14 in the second factor vary between 0.068 and 0.638. However, while the factor loadings of the items 4 and 7 (0.0.68 and 0.049) are very low, they are not significant in this factor. These items have negative high cross-loadings on the third factor with the values of -0.529 and -0.315, respectively. The mean loading value obtained for the items in the second factor was found to be 0.285 and the mean cross-loading value was found to be 0.111. The factor loadings of the items 6, 10, 12 and 13 in the third factor were found to be varying between 0.162 and 0.336 and the item 6 was found to not exhibit a significant factor loading on any sub-factors including its own factor. The mean loading value of the items in this factor was found to be 0.265 and the mean cross-loading value was found to be 0.048. When the general factor is examined, it is seen that the items in the first factor have factor loadings ranging from 0.502 to 0.735 in the general factor, that the items in the second factor have factor loadings ranging from 0.501 to 0.745 in the general factor and that the items in the third factor have factor loadings ranging from 0.501 to 0.699 in the general factor. When the loading values in the general factor are examined, it is seen that only the items 2 and 9 have higher loading values in their own factor (0.763 and 0.676) while the other items have higher loadings values in the general factor. The mean cross-loading value obtained for the items with 3-factor B-ESEM is 0.076. When 3-factor ESEM and 3-factor B-ESEM factor loadings are compared, it can be said that the main factor loading values obtained with B-ESEM remained at a lower level in general. Similarly, the mean cross-loading value is lower in B-ESEM.

Finally, when the composite reliability coefficients (ω) for the models are examined in Table 3, it can be seen that for 3-factor ESEM ω coefficients are 0.80, 0.85 and 0.73, respectively. Regarding 3-factor B-ESEM, omega reliability coefficient obtained for the G factor was 0.93, indicating that total variance was explained by a combination of the general and specific latent factors. Omega hierarchical value (ωh) was 0.84, indicating that 84% of total scale score variance was explained by the general factor alone. For subscales, omegas (ω) were 0.98,0.98 and 0.97, respectively. These values indicate that high proportions of subscale total score variances were explained by a combination of the general factor and the respective specific factor. For the subscales the omega hierarchical subscale values were 0.06, 0.03 and 0.01.

CONCLUSION AND DISCUSSION

The purpose of the current study is to examine the factor structure of the job satisfaction scale within the context of confirmatory factor analysis, exploratory structural equation model and bifactor exploratory structural equation model. It is stated that the ESEM method is successful in providing flexibility and revealing the factor structure when cross-loadings inherent in CFA are forced to zero. Therefore, the factor structure of the scale was examined with ESEM in addition to CFA. The results obtained revealed that the data related to the job satisfaction scale have higher fit indices in all the multidimensional models tested than the one-dimensional construct. This result shows that the job satisfaction scale has a multidimensional structure, which is consistent with some studies in the literature (Dilsiz, 2006; Güleryüz et al., 2008; Shristava & Purang, 2009). When the number of dimensions was considered, higher fit indices were obtained with both CFA and ESEM in the three-factor model than the two-factor model. However, when the acceptable ranges of fit indices are considered, only the ESEM model has higher fit indices than the model CFA. In addition, correlation values between factors remained higher in the 3-factor CFA model than the 3-factor ESEM model. Although the 3-factor ESEM model is a better model than the 3-factor CFA, its TLI value is smaller than 0.90 and the RMSEA value is greater than 0.08. These values indicate that the ESEM model is not acceptable (Browne & Cudeck, 1993). In the 3-factor ESEM model, the items 1 and 11 showed high cross-loadings on the second factor (work group and management's attitude), and item 3 on the third factor (success and development). The items 1 and 11 are items related to the security provided by the job. The high factor-loadings of these items in the second factor regarding "relations with the work group and management's attitude" can be related to the literature in terms of external satisfaction (Köroğlu, 2012). The item 3 is about "the job's offering opportunities for personal development and promotion". Given that the third factor is related to success and development, it can be stated that the item 3 is expected to exhibit a significant factor loading on this factor. However, the fact that these items are also in another factor indicates that they cannot adequately represent their own factor.

Finally, it was seen that the fit indices obtained with 3-factor B-ESEM, one of the alternative models, were higher than 3-factor ESEM and remained at an acceptable level. In addition, the lowest BIC value was obtained with 3-factor B-ESEM. In the current study, 3-factor B-ESEM is considered more appropriate because it allows cross-loading and reduces factor correlations, taking into account the overlap between items. The addition of a general factor to the ESEM model enabled the variance in items to be shared by this factor and the mean cross-loadings to decrease. This result is consistent with the results of other studies in the literature (Howard et al., 2016; Kula Kartal, 2020; Litalien et al., 2017). However, this result is not seen as sufficient evidence that the quality of multidimensionality regarding job satisfaction is also good (Espinoza et al., 2018). Some items appear to be indicator only of the general factor rather than the specific factor they aim to measure. In particular, the items 1, 6, 8, 10, 11 and 12 have a factor loading less than 0.30 in their own factor and cross-factors, and high factor loadings in the general factor. It is stated that these items do not reflect their factors well, so they may cause difficulties in interpreting the scale scores (Espinoza et al., 2018). Dimensions used in this way are expected to produce more or less value than they are in the relationships with other variables. The results obtained with 3-factor B-ESEM showed that the items 4 and 7 have higher cross-loadings in the third factor. Although these items are related to "the relationship with colleagues", they have higher factor loadings in the third factor including the items related to success, development, thoughts and wishes. Also, the inclusion of such items in the calculation of scale scores may cause misinterpretation of the scores and the relationships with other variables. In this case, reclassifying the items seems to be a better way than deleting them. The second factor in the scale initially consisted of items related to the management's attitude and relationships with colleagues. The third factor includes items related to being appreciated and sharing your thoughts and wishes with others. However, the 3-factor B-ESEM results suggest that the items 4 and 7 (respectively "Are you satisfied with the people you work with and have relationships with at work?" And "Are you in close contact with your colleagues at work?" can be addressed within the context of appreciation, thoughts and wishes. When these items were included in the third factor, it was seen that all of the items remaining in the second factor were related to management's attitude. This shows that the items 4 and 7 can be handled in the third factor, like the elements of internal satisfaction, which are related to colleagues and promotion, in accordance with the theoretical framework (Weiss et al., 1967). When the remaining items are addressed in relation to "pay and security" and "management", they can be classified as external satisfaction. On the other hand, Smith et al. (1969) named two of the five factors they dealt with in relation to job satisfaction as colleagues and promotion. This study however shows that items related to relationships with colleagues, thoughts and wishes, and success can also be collected in one dimension.

Regarding reliability, omega coefficients for general and spesific factors were above 0.80 for 3-factor B-ESEM. In terms of omega hierarchical for 3-factor B-ESEM spesific factors have 0.06, 0.03 ad 0.01 coefficients. This is because items tend to load higher on general factor than group factors. According to low omega hierarchical coefficients, it can be said that the majority of the reliable variance can attribute to the general factor. The spesific factors appears to represent the general factor and not a seperate dimension (Hides, 2016; Rodriguez et all., 2018).

Teachers aim to increase the welfare level of the society by training individuals who are beneficial to themselves and their communities through the education and training they provide. Due to this important position of teachers in the system, their job satisfaction levels should be raised to the highest possible level (Akbulut, 2015). In the teaching profession, which is a profession requiring teachers to spend most of their time with their students, it should not be forgotten that increasing the job satisfaction of teachers will also contribute to the quality of education (Barnabé and Burns, 1994; Michaelowa, 2002). Therefore, it can be said that the current study contributed to the verification of the job satisfaction scale on teachers. Moreover, the study is thought to bring the perspective put forward by the exploratory structural equation models (ESEM and B-ESEM) in the examination of psychological constructs to the fore. In light of the results obtained in the current study, researchers can be suggested to try more than one alternative model in the evaluation of complex constructs. In addition, it can be stated that using the job satisfaction scale unidimensional will contribute to obtaining more valid and reliable scores. Despite the presence of multidimensionality in the data, the 75% or higher variance accounted for by general factor is enough to use the total score (Reise et all., 2013).

RECOMMENDATIONS

There are some limitations to be take intoaccount in this study. First of all, the study was conducted with only one sample. If one more sample was used and the results obtained from the two were compared, the factor structure of the measurement tool could be supported more accurately. On the other hand, the study focused only on the validity for one group. Analyzes regarding the measurement invariance across different sub-groups could be included in the future studies. Despite all these, it can be said that this measurement tool will still shed light on future studies in terms of its dimensionality, since it is seen that it is still used in studies with different dimensionality.

Ethical Text

This study has been fulfilled in accordance to the journal writing rules, publication principles, ethical research standards. The ethical committee approval for this study was given by the Non-interventional Clinical Researches Ethics Committee at Burdur Mehmet Akif Ersoy University (GO 2021/258). All the responsibilities belong to the author for any violations regarding the article.

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