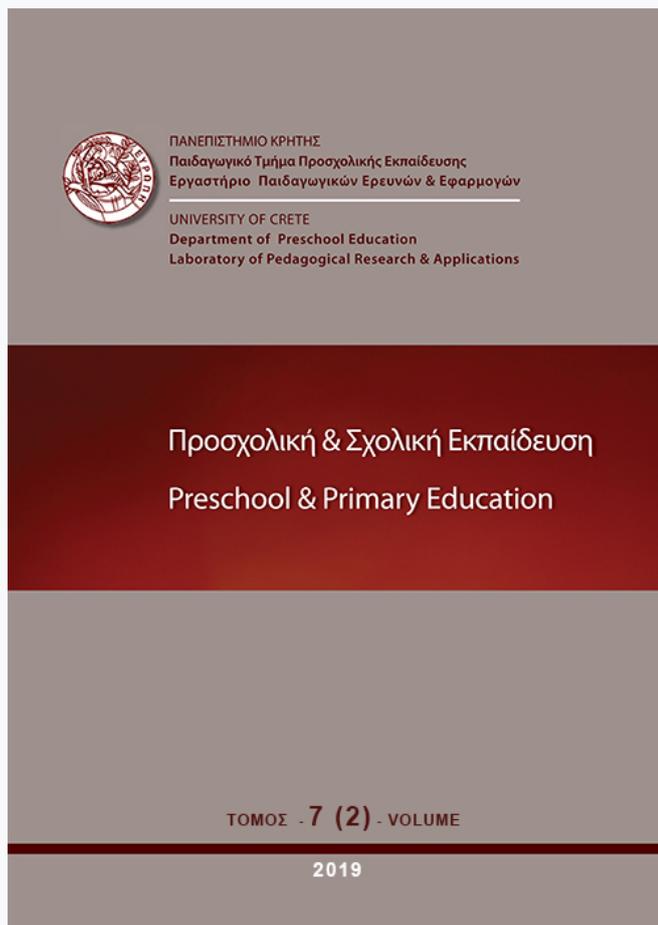


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Early view



Four Job Satisfaction's dimensions of secondary education teachers: An Exploratory Factor Analysis based on a Greek sample

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Four dimensions of secondary education teachers' job satisfaction: An exploratory factor analysis based on a Greek sample

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Abstract. Job satisfaction is a field which has been investigated over the last decades. It expresses a subject's feelings about his/her job and is associated with performance. One of the most popular instruments in the literature is the Job Satisfaction Survey (JSS) developed by Spector in 1985. This instrument has been recently adapted by several researchers in order to measure teacher job satisfaction in different contexts. Few relevant studies have been conducted in Greece, and those that exist have weaknesses in terms of reliability and validity. In this study, JSS was revalidated aiming to fit the data provided by a sample of 177 teachers of secondary education in Greece. Exploratory statistical analyses led to a four-factor model of job satisfaction among Greek secondary education teachers, consisting of Payment framework, Supervision, Nature of work and Communication. Teachers appeared rather satisfied with the Nature of work and Supervision and dissatisfied with Communication and especially with their Payment framework. The findings support that JSS could be considered an appropriate tool for investigating the job satisfaction of teachers in Greece, as well.

Keywords: Job Satisfaction Survey, Secondary Education Teachers, Exploratory factor Analysis

Introduction

Job satisfaction (JS) is a concept defined according to Meier and Spector (2015) as "a person's overall evaluation of his/her job as favourable or unfavourable". Locke's definition of JS is "pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (Locke, 1976). Robbins, Judge, and Huscham define JS as "A positive feeling about one's job, resulting from an evaluation of its characteristics" (Robbins et al., 2009). The variety of definitions is often described by researchers as lack of consensus or vagueness of the concept (Astrauskaitė, Vaitkevicius, & Perminas, 2011; Evans, 1997). Thus, JS is

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conceptualized by the specific sample in a specific work environment and context, and must be analyzed correspondingly (Abaasi, 2016).

Job satisfaction is determined by work conditions, individual traits or a combination of both work conditions and personal dispositions. Based on these features, situational, dispositional and interactional approaches of JS are distinguished in the literature (Meier & Spector, 2015). Furthermore, JS is considered an indicator of personal well-being associated with absenteeism, turnover and work performance (Gkolia, Belias, & Koustelios, 2014). Herzberg (1966) in the Motivation (two factors) Theory related JS to intrinsic and extrinsic motivation. Hackman and Oldham (1975) in Job Characteristics Theory include a worker's autonomy and feedback to core characteristics that affect satisfaction, absenteeism and retention.

Teachers are not typical employees in organizations. Their job consists of several levels of responsibilities, values, interactions with colleagues, principals, government supervisors and consultants, parents and mostly students. Although inconsistencies occur, student/teacher relationships often affect teachers' JS, and more satisfied teachers are likely to be better performers (Veldman Admiraal, van Tartwijk, Mainhard & Wubbels, 2016). Teachers' effectiveness is a matter of constant assessment which subsequently affects students' performance and attainment. This link is reported at all levels of education (Anastasiou & Papakonstantinou, 2014; Dimitriadou, 2018). In addition, low recognition by the community and other extrinsic factors with respect to governmental policies and the system are negatively associated with teachers' JS. High demands, workload and role ambiguity critically impact JS and tend to lead to low levels of JS, whereas high control leads to increased JS (Biggerstaff, 2012). Teaching is a job often characterized by high levels of emotional exhaustion and burnout, especially for K-12 teachers. According to Biggerstaff (2012), teachers of special subject areas, such as computer teachers, rated intrinsic JS higher compared to generalist teachers, while other motivators such as autonomy and participation in decision making play a critical role in the JS of teachers. The findings of a study conducted among vocational education teachers in Indonesia highlighted the importance of aligning job assignment with teachers' competences (Daryanto, 2014). In addition, the fact that vocational education schools are underrated in some countries means that teachers need more strength to maintain their students' success (Daryanto, 2014). It is worth noting that few relevant studies have been conducted in Greece. Besides Koustelios and Tsigilis (2005), who examined burnout and JS of a specific category of teachers (i.e. physical education teachers), other researchers have mainly focused on teachers' burnout (Panagopoulos, Anastasiou, & Goloni, 2014; Tsigilis, Zachopoulou, & Grammatikopoulos, 2006). Although both job dissatisfaction and burnout lead to lower quality teaching, burnout is a construct mostly connected to emotional exhaustion along with decreased personal achievement and depersonalization (Koustelios & Tsigilis, 2005), and is thus often addressed as an emotional disorder. JS is a wider concept ranging from full dissatisfaction to full satisfaction in the working environment, whereas burnout instruments reflect the level of burnout experienced by a subject, ranging from absence of burnout to full burnout.

Job Satisfaction Survey

There has been a wide range of instruments designed to explore the factors determining JS during the past decades (Brayfield & Rothe, 1951; Everard & Morris as cited in Anastasiou & Papakonstantinou, 2014; Hackman & Oldham, 1975; Spector, 1985; Sutherland & Cooper, 1992; Whisenant & Smucker, 2007). To date, Spector's Job Satisfaction Survey (JSS) is one of the most popular and trustworthy instruments translated into numerous languages and effectively adapted to different cultures and contexts (Abaasi,

2016; Al-Mahdy, Al-Harhi, & Salah El-Din, 2016; Astrauskaitė et al., 2011; Batura Skordis-Worrall, Thapa, Basnyat & Morrison, 2016; Ofei-Dodoo, Scriptor, & Kellerman, 2018; Tsounis & Sarafis, 2018; Yelboğa, 2009). The reliability and validity of the tool is acknowledged by numerous researchers worldwide. However, there are researchers that have pointed out that Spector's JSS model is not capable of depicting subjects' JS without modification of several dimensions (Abaasi, 2016; Al-Mahdy et al., 2016; Astrauskaitė et al., 2011; Batura et al., 2016; Ofei-Dodoo et al., 2018). Thus, the original JSS model must be validated to the specific samples under examination for several reasons. Firstly, the original scale was constructed to address the health service and medical centre employees. Working conditions have changed since 1997 when the original scale was developed. With this in mind Ofei-Dodoo et al., (2018) revalidated the original scale, although they applied it to employees of medical education centres in Kansas USA, developing a 4-dimension model (supervision, co-workers, contingency rewards, nature of work). Spector's original JSS tool was used in the medical services in Greece when Tsounis and Sarafis (2018) conducted a study among employees of the Greek Therapy Centre for Dependent Individuals.

Being a secondary education teacher is undoubtedly a profession that differs greatly not only from health sector workers, but also from typical organization employees. Astrauskaitė et al. (2011) validated JSS to their sample of teachers and proved that only three dimensions out of nine effectively depicted JS among Lithuanian teachers and thus concluded with the 3-facet JSS model (promotion, supervision, nature of work). This model was adopted by Al-Mahdy et al. (2016) and applied to the Omani teacher context. The findings underlined cultural differences between western and Arabic contexts (Al-Mahdy et al., 2016). Batura et al. (2016) examined the original JSS model fit to teachers in Nepal. They found that the original model does not reflect teachers' JS dimensions and therefore needs adaptations (e.g. infrastructure and training statements should replace several administration and promotion statements), that take into account the different circumstances encountered in different contexts (Batura et al., 2016). Abaasi (2016) assessed the original JSS model fit among a sample of primary school teachers in Uganda. The analysis concluded with a 4-dimension model consisting of promotion, supervision, fringe benefits and nature of work (Abaasi, 2016). Based on this framework, the present study attempts to fit the original JSS model to the specific sample of secondary education teachers in Greece. To the authors' knowledge, no previous attempt has been reported in Greece aiming to validate Spector's JSS tool for the Greek teacher population so far. The present study intends to fill this gap and provide a reliable and valid tool for future studies in the Greek context.

Research objectives

Our research objectives are to explore a) the factorial structure and b) the psychometric properties of the JSS when applied to Greek secondary education teachers.

Methodology

Research instrument translation and adaptation

The research instrument used is the Job Satisfaction Survey developed by Paul Spector (JSS; Spector, 1985). The instrument provides sufficient reliability and validity and is available for researchers free of charge for use for non-commercial purposes (Spector, 1997). The JSS assesses nine dimensions including pay, promotion, supervision, fringe benefits, contingent rewards, operating conditions, co-workers, nature of work and communication. Each of the dimensions consists of four items. Each item is a statement that is evaluated on a

scale from 1 (Disagree very much) to 6 (Agree very much) by marking the option that comes closest to reflecting the respondent's opinion about it. Some of the items (19 items) are negatively worded items. Negatively worded items must be reversed: score 6 must be changed to 1, 5 to 2, etc. (Spector, 1985, 1997). The overall job satisfaction score is computed by adding all 36 items.

Instruments developed abroad for different working groups need to be translated into the Greek language and adapted to the local underlying conditions to be used with a Greek sample. Although this instrument was translated by Tsounis and Sarafis (2018) to apply to a Greek sample, a new adaptation of the instrument (implemented from scratch) was deemed essential for two reasons. First, the psychometric properties of the aforementioned version were not satisfactory since some aspects had Cronbach's alpha below 0.6 (e.g. "Operating procedures" alpha was 0.48) (Tsounis & Sarafis, 2018). Second, the population of the research were medical centre' employees, not teachers. Teachers, as elaborated in the introduction, have distinctive differences compared to other groups of professionals, and thus need a tailored adaptation of the instrument.

Within this context the JSS was translated into Greek using the translation/back-translation technique. Four independent translators were involved in the process. All translators are post-graduate degree holders and all of them are fluent in both English and Greek.

Firstly, one translator in Greece and another in England converted the scale statements from English to Greek. The remaining two translators converted the scale statements back to English. All four translators worked independently so as not to be influenced by each other. After that, the two English versions of the questionnaire were compared to the original English JSS. Modifications were made to the Greek versions as a result of the issues raised from the back-translated items and the fact that the instrument is designed and tested on different working groups in different countries. Cross-cultural adaptation proved to be of great importance.

For example, the word "promotion" was correctly back-translated to "promotion" but it does not reflect the standing procedure of professional advancement teachers are subject to. It was therefore modified to a closer term.

The phrase "benefit package" was back-translated to benefits and rewards. Since benefits are not mentioned anywhere in the Greek educational system, the translation of rewards was chosen as more suitable.

The use of the words "Supervisor" and "organization" were back-translated to director or head and organization accordingly, but their remarks about the terms being ambiguous. Because of that, "Supervisor" was substituted by "School director" and "organization" by "School". A few words were changed and phrases rephrased so as to eliminate ambiguity and ensure coherence.

Before the final administration of the tool, the JSS was given to 5 teachers who were excluded from the final sample in order to track and resolve any problems that could come up while conducting the study. Discussion with the subjects did not bring out any wording issues that had to be faced. Finally, in order to examine the consistency of the instrument over time we tested the test-retest reliability. Specifically, the JSS questionnaire was administered to 20 teachers, and then again after an intervening period of one week. These teachers were also not included in the final sample of the research. In the process of checking the similarity of answers, it was found that the "paired sample t-test" did not reveal statistically significant differences among the paired items in the two phases. Moreover, all the product moment correlation coefficients between the paired items were statistically significant and ranged from 0.60 to 0.85.

Finally, examination of each subscale's internal consistency according to the structure indicated by the creator showed that Cronbach's Alpha coefficients (See Table 1) are considered marginally satisfactory (Cronbach, 1951) and only in some cases similar to the ones calculated by the instrument's creator. We must however note that the JSS was not applied and evaluated by its creator on teachers, but on health service and medical centre employees.

Table 1. Cronbach's Alpha of the JSS by Subscale

| Subscales | Items | Spector, 1985 | Present study* |
|----------------------|---------------|----------------------|-----------------------|
| Pay | 1,10,19,28 | 0.750 | .648 |
| Promotion | 2, 11, 20, 33 | 0.730 | .600 |
| Supervision | 3, 12, 21, 30 | 0.820 | .807 |
| Benefits | 4, 13, 22, 29 | 0.730 | .530 |
| Contingent rewards | 5, 14, 23, 32 | 0.760 | .656 |
| Operating procedures | 6, 15, 24, 31 | 0.620 | .505 |
| Co-workers | 7, 16, 25, 34 | 0.600 | .676 |
| Nature of work | 8, 17, 27, 35 | 0.780 | .809 |
| Communication | 9, 18, 26, 36 | 0.710 | .639 |
| Total Satisfaction | All items | 0.910 | .884 |

* To calculate Cronbach's Alpha coefficients, we took into consideration the creator's suggestion to reverse 19 of the statements.

Procedure and sample

A convenient sampling method was chosen to select the participants for this research. The data collection process started on 20 Jan 2018 and lasted until 20 Feb 2018. The instrument's final version was uploaded to Google Forms and the link was sent to mailing lists available to one of the members of the research team and co-author of this article who is also a teacher in Greek secondary education. Participants were informed about the purpose of the research, confidentiality issues and the dissemination of the results.

The final sample consisted of 177 secondary education teachers. Among the sample 97 (54.8%) were male and 80 (45.2%) were female. Regarding their age 5.6% were 31-35 years old, 22% were 36-40, 27.7% were between 41 and 45 years of age, 26% were 46-50, 13% were between 51-55 years of age. The remaining 5.6% were older than 55 years. Approximately half, 50.8% of the participants, held a bachelor's degree, 43% held an MSc, while 6.2% held a PhD. The sample's mean educational work experience was 17 years (SD = 5.5).

Data Analysis Strategy

During Exploratory Factor Analysis (EFA) in order to look for the factorial structure of teachers' responses, we defined the extracted number of factors based on Horn's (1965) parallel analysis. Parallel analysis is considered a better method to define the number of factors than the Kaiser-Guttman rule (eigenvalues greater than one) and scree plot (keep the number of factors before the change of the slope). The scree plot and Kaiser-Guttman rule usually overestimate the number of factors and are prone to subjective bias (Jackson, 1993). In parallel analysis, principal component analysis was carried out using a simulation with 1000 random data sets based on permutations of the actual data. We used permutations of the raw data set because 36 item distributions showed (see data screening paragraph) a slight departure from normal distribution (O'Connor, 2000). The factors' eigenvalues that

came up from the actual data were compared with the 95th percentile eigenvalues from the simulation. When the eigenvalues from the actual data exceed the 95th percentile eigenvalues from the simulation, those factors can be considered actual factors in the dataset and are therefore sustained in the final factorial structure. When the 95th percentile eigenvalues from the simulation are larger than the eigenvalues from the PCA, it is possible that those factors are spurious (Wood, Akloubou, Gnonhosou & Bowling, 2015). To extract the factorial structure of the total variation of teachers' answers to the 36 items of the JSS, parallel analysis was followed by factorial analysis using the principal axis factoring method. Details about this method will be discussed in the Results section. Exploratory factor analysis was run in R (R core Team, 2018) with package "psych" (Revelle, 2018). Finally, the final factorial structure was checked regarding its construct validity as well as its reliability. Details on the aforementioned psychometric properties are discussed in the Results section.

Results

Data screening

Table 2 presents descriptive statistics, as well as measures of Skewness and Kurtosis for the distribution of the answers teachers provided to the 36 items of the JSS after the inversion of the 19 items, according to the creator's suggestion (Spector, 1985). Coefficients of Skewness ($|\text{skewness}| < 2.195$) and Kurtosis ($|\text{Kurtosis}| < 5.990$) show departure from normal distribution (Bulmer, 1979), as well as departure from multivariate normal distribution (Mardia's coefficient=11.89) (Byrne, 2010; Mardia, 1970). Principal axis factoring was deployed in the factor analysis implemented. The former appears low sensitivity when departure from multivariate normality occurs (Costello & Osborne, 2005).

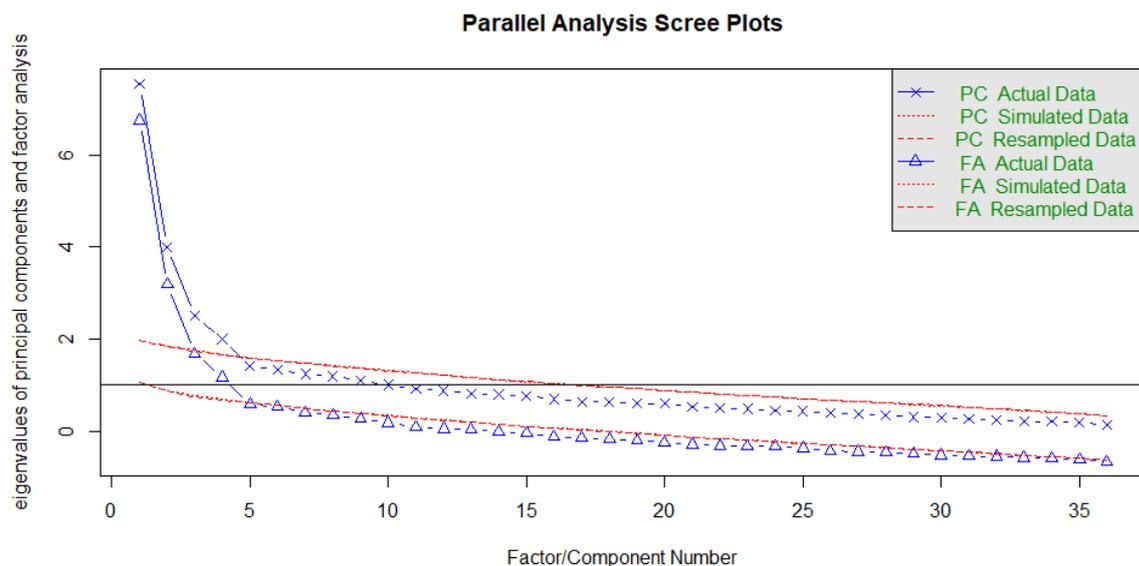


Figure 1 Scree plots of Parallel analysis with 1000 random sample from actual data

Factorial structure of JSS

A thousand datasets were generated based on permutations of the raw data, using a principal component analysis method and the script produced eigenvalues from the actual data, mean eigenvalues and 95th percentile eigenvalues based on the random data sets. For the four first factors, eigenvalues (7.56, 3.98, 2.50, 2.10) from the raw data were above the corresponding 95th percentile estimates created by the simulation. Similarly, the slope of the generated scree plot (Figure 1) indicated the cut-off for the number of four factors to extract from the factor analysis.

Table 2 Descriptive statistics for each item

| Items | Mean | Std. Dev | Skewness | Std. Error of Skewness | Kurtosis | Std. Error of Kurtosis |
|-------|-------|----------|----------|------------------------|----------|------------------------|
| JS1 | 2.384 | 1.369 | 0.823 | 0.183 | -0.276 | 0.366 |
| JS2 | 2.288 | 1.235 | 1.101 | 0.183 | 0.650 | 0.366 |
| JS3 | 4.525 | 1.361 | -0.987 | 0.183 | 0.264 | 0.366 |
| JS4 | 2.175 | 1.313 | 1.114 | 0.183 | 0.578 | 0.366 |
| JS5 | 3.395 | 1.489 | -0.199 | 0.183 | -0.943 | 0.366 |
| JS6 | 2.424 | 1.176 | 0.662 | 0.183 | -0.063 | 0.366 |
| JS7 | 4.785 | 1.033 | -1.349 | 0.183 | 2.781 | 0.366 |
| JS8 | 3.492 | 1.497 | 0.163 | 0.183 | -0.972 | 0.366 |
| JS9 | 4.384 | 1.118 | -1.106 | 0.183 | 1.169 | 0.366 |
| JS10 | 1.588 | 0.932 | 2.195 | 0.183 | 5.990 | 0.366 |
| JS11 | 2.249 | 1.342 | 1.114 | 0.183 | 0.551 | 0.366 |
| JS12 | 4.870 | 1.314 | -1.180 | 0.183 | 0.624 | 0.366 |
| JS13 | 2.136 | 1.249 | 1.048 | 0.183 | 0.430 | 0.366 |
| JS14 | 2.621 | 1.352 | 0.649 | 0.183 | -0.536 | 0.366 |
| JS15 | 3.017 | 1.463 | 0.317 | 0.183 | -0.984 | 0.366 |
| JS16 | 3.508 | 1.399 | 0.020 | 0.183 | -0.849 | 0.366 |
| JS17 | 4.689 | 1.097 | -0.933 | 0.183 | 0.887 | 0.366 |
| JS18 | 2.729 | 1.259 | 0.602 | 0.183 | -0.080 | 0.366 |
| JS19 | 2.085 | 1.167 | 1.222 | 0.183 | 1.257 | 0.366 |
| JS20 | 2.508 | 1.319 | 0.713 | 0.183 | -0.298 | 0.366 |
| JS21 | 4.254 | 1.421 | -0.651 | 0.183 | -0.573 | 0.366 |
| JS22 | 3.249 | 1.126 | -0.210 | 0.183 | -0.005 | 0.366 |
| JS23 | 2.203 | 1.165 | 1.191 | 0.183 | 0.943 | 0.366 |
| JS24 | 2.695 | 0.845 | 0.055 | 0.183 | 0.794 | 0.366 |
| JS25 | 4.497 | 1.114 | -0.889 | 0.183 | 0.922 | 0.366 |
| JS26 | 3.243 | 1.280 | 0.383 | 0.183 | -0.457 | 0.366 |
| JS27 | 4.565 | 1.330 | -0.888 | 0.183 | 0.162 | 0.366 |
| JS28 | 2.316 | 1.386 | 1.131 | 0.183 | 0.603 | 0.366 |
| JS29 | 2.181 | 1.353 | 1.287 | 0.183 | 0.966 | 0.366 |
| JS30 | 4.802 | 1.192 | -1.298 | 0.183 | 1.730 | 0.366 |
| JS31 | 2.847 | 1.416 | 0.472 | 0.183 | -0.728 | 0.366 |
| JS32 | 2.232 | 1.287 | 1.045 | 0.183 | 0.553 | 0.366 |
| JS33 | 2.277 | 1.228 | 1.076 | 0.183 | 0.709 | 0.366 |
| JS34 | 3.949 | 1.375 | -0.288 | 0.183 | -0.872 | 0.366 |
| JS35 | 3.972 | 1.359 | -0.422 | 0.183 | -0.608 | 0.366 |
| JS36 | 3.503 | 1.302 | 0.217 | 0.183 | -0.692 | 0.366 |

Table 3 Standardized loadings (pattern matrix) of items for each factor

| Items | F1 | F2 | F3 | F4 |
|---------------------|------|------|------|------|
| 32 | 0.71 | | | |
| 19 | 0.63 | | | |
| 4 | 0.63 | | | |
| 33 | 0.61 | | | |
| 1 | 0.59 | | | |
| 10 | 0.58 | | | |
| 23 | 0.52 | | | |
| 14 | 0.50 | | | |
| 24 | 0.47 | | | |
| 6 | 0.45 | | | |
| 29 | 0.45 | | | |
| 28 | 0.43 | | | |
| 11 | 0.42 | | | |
| 13 | 0.42 | | | |
| 30 | | 0.80 | | |
| 9 | | 0.69 | | |
| 12 | | 0.68 | | |
| 3 | | 0.65 | | |
| 21 | | 0.64 | | |
| 7 | | 0.58 | | |
| 25 | | 0.54 | | |
| 5 | | 0.41 | | |
| 35 | | | 0.79 | |
| 27 | | | 0.72 | |
| 17 | | | 0.67 | |
| 36 | | | | 0.74 |
| 26 | | | | 0.73 |
| 31 | | | | 0.44 |
| Proportion Variance | 0.13 | 0.11 | 0.08 | 0.06 |
| Cumulative Variance | 0.13 | 0.25 | 0.33 | 0.39 |

To extract the factorial structure of the 36 items for these four factors we deployed the method of principal axis factoring (Pett, Lackey, & Sullivan, 2003). Bartlett's Test of Sphericity ($p < 0.01$) indicated that the correlation between the items is adequate for factor analysis as well as Kaiser-Meyer-Olkin ($KMO = 0.795$) and Measure Sample Adequacy (MSA at least 0.6) revealed teachers' answers define a satisfactory factorial structure. Tabachnick and Fidell (2007, p. 649) suggest that "...loadings in excess of .71 (50% overlapping variance) are considered excellent, .63 (40% overlapping variance) very good, .55 (30% overlapping variance) good, .45 (20% overlapping variance) fair, and .32 (10% overlapping variance) poor...". After the application of oblique rotation (Pett et al., 2003) on the factorial structure, the items 2, 8, 15, 16, 18, 20, 22, and 34 displayed absolute loadings lower than 0.4. These items were designed to measure various facets of JS such as, Promotion (Items: 2, 20), Operating procedures (Item: 15), Co-workers (Items: 16, 34), Benefits (Item: 22), Communication (Item: 18) and nature of work (Item: 8). To simplify the understanding of the factorial structure we decide to keep items with at least 0.4 absolute loadings. Although

the factorial structure of four subscales explains only 38% of the total variation, it is considered satisfactory since it depicts groups of semantically similar variables. The factorial structure of four subscales differs from the factorial structure of nine the creator suggests (Spector, 1985).

Taking into consideration the descending line of loadings in each factor, the four factors we settled on are: Factor F1 includes items: 32, 19, 4, 33, 1, 10, 23, 14, 24, 6, 29, 28, 11, and 13 Factor F2 includes items: 30, 9, 12, 3, 21, 7, 25, and 5. Factor F3 includes items: 35, 27, and 17 and Factor F4 includes items: 36, 26 and 31. The final factorial structure with four factors (see Table 3) consists of factor F1 which indicates teachers' Payment framework, since it includes items about Pay and Contingent rewards, factor F2 which indicates teachers' Supervision since it mainly consists of items about supervision. Factor F3 represents only the Nature of work and factor F4 mainly indicates teachers' Communication.

Psychometric properties of final factorial structure

The construct validity of a scale can be judged by convergent and discriminant validity. Average Variance Extracted (AVE) (See Table 4) indicates marginally acceptable convergent validity (Fornell & Larcker, 1981) for the Supervision and Communication factors and weak for the Payment framework factor. Discriminant validity was investigated by the Heterotrait-Monotrait Ratio (HTMT) (Henseler, Ringle, & Sarstedt, 2015). Results showed that not all ratios exceed the criterion ratio 0.85, hence, the discriminant validity of the four scales was acceptable. Reliability was assessed by the estimates of Composite Reliability (CR) values (Raykov, 1997) (See Table 4). All constructs showed a satisfactory reliability with coefficients over or close to 0.7.

Table 4 Reliability, Construct and Discriminant validity

| Factors | CR | AVE | Heterotrait-Monotrait Ratio (HTMT) | | | |
|------------------------------|------|------|------------------------------------|------|------|----|
| | | | F1 | F2 | F3 | F4 |
| <i>F1: Payment framework</i> | 0.85 | 0.29 | | | | |
| <i>F2: Supervision</i> | 0.84 | 0.40 | 0.30 | | | |
| <i>F3: Nature of work</i> | 0.77 | 0.53 | 0.22 | 0.46 | | |
| <i>F4: Communication</i> | 0.68 | 0.42 | 0.39 | 0.31 | 0.28 | |

As presented in Table 5, the Payment framework and Communication factors have the lowest means. Teachers appeared neutral or satisfied with the Nature of work and Supervision and dissatisfied with the Payment framework and Communication. Finally, these factors seem to be positively correlated to each other (0.154 to 0.380). Specifically, the highest correlation (0.380) appears between Nature of work and Supervision, a relationship which has been verified by the relevant literature in Greece and Cyprus (Anastasiou & Papakonstantinou, 2014; Gkolia et al., 2014; Koustelios & Tsigilis, 2005; Panagopoulos et al., 2014; Tsigilis et al., 2006) and is highly ranked by Greek teachers. It is noteworthy that Communication appears to correlate with all the rest of the factors, underlining that Greek teachers perceive communication of the assignments and the purposes of operational decisions as the common denominator of the factors which shape their satisfaction in the working environment. This finding is in line with Omani and Indonesian teachers, where schools are also under centralized control (Al-Mahdy et al., 2016; Daryanto, 2014). The Supervision and Payment framework correlation can be attributed to the role of the supervisor, namely the school director in Greek schools, who can enhance teachers' sense of

being appreciated for their work, as happens with payment (Biggerstaff, 2012; Koutouzis & Malliara, 2017).

Table 5 Descriptive statistics and Pearson's product-moment correlations among factors

| | <i>M</i> ^{**} (<i>SD</i>) | F1 | F2 | F3 | F4 |
|-----------------------------|--------------------------------------|--------|--------|--------|----|
| <i>F1:Payment framework</i> | 2.25 (0.71) | 1 | | | |
| <i>F2:Supervision</i> | 4.43 (0.88) | 0.234* | 1 | | |
| <i>F3:Nature of work</i> | 4.40 (1.10) | 0.154* | 0.380* | 1 | |
| <i>F4:Communication</i> | 3.21 (1.05) | 0.289* | 0.231* | 0.211* | 1 |

^{**} 6-point scale from 1 (Disagree very much) to 6 (Agree very much)

* $p < 0.001$

Discussion of results

There is a scientific consensus in the literature that the JSS instrument must be validated on the specific sample, context and occupation the research addresses (Abaasi, 2016; Astrauskaitė et al., 2011; Batura et al., 2016; Ofei-Dodoo et al., 2018). Therefore, the purpose of this study was to validate Spector's JSS instrument to the sample of Greek secondary education teachers by determining an adequate factor structure, and to do this EFA was applied. The statistical analyses led to a four-dimension model consisting of Payment framework, Supervision, Nature of work and Communication. As presented in Table 3, Payment framework (F1) is the factor which includes the items of pay, benefits, contingent rewards, operating procedures and promotion which did not appear individually. Supervision (F2) mostly incorporates the items which measure supervision and co-workers, suggesting the centralized vertical control of schools in Greece, where the main collaboration of individual teachers is with their supervisor. This functional structure of schools leaves minimal room for cooperation between co-workers. Moreover, numerous schools are understaffed. Nature of work (F3) and Communication (F4) are self-explanatory factors with no other aspects to them. The findings support that Greek teachers of secondary education appeared to be neutral or satisfied with the Nature of work and Supervision and dissatisfied with the Payment framework and Communication. These factors reflect the current context in Greece regarding the teaching occupation and are aligned with findings of previous studies in Greece and Cyprus. Cross-cultural differences can be considered a reason which affects the structure of JSS factors, hence factor variation in JSS models exists. The former could explain the four-factor structure of the JSS for the Greek sample. However, there are similar findings in the from teacher samples with cultural proximity to Greek teachers. In addition, the economic crisis in Greece, is believed to have affected teachers' JS, especially concerning the Payment framework and the organizational Communication. The latter appeared very low absolute loadings and can be interpreted in light of the upheavals of teachers' experience as civil servants, due to frequent operating-policy changes in schools.

Nature of work is a factor found in the majority of the studies worldwide as a "common denominator" of teachers' JS (Abaasi, 2016; Al-Mahdy et al., 2016; Anastasiou & Papakonstantinou, 2014; Astrauskaitė et al., 2011, Gkolia et al., 2014; Koustelios & Tsigilis, 2005; Panagopoulos et al., 2014; Tsigilis et al., 2006; Zembylas & Papanastasiou, 2004), since, according to Zembylas and Papanastasiou (2004), it depicts the sense of accomplishment, personal growth and fulfilment teachers experience through their occupation. This deduction is confirmed by Gkolia et al. (2014) in a study where the Nature of work is related

with teacher self-efficacy and performance. The latter link is also asserted by Anastasiou and Papakonstantinou (2014) for the Greek-teacher context. Teachers in Greece appeared in previous studies to be satisfied not only with the nature of their work but also with their supervisors (Anastasiou & Papakonstantinou, 2014; Gkolia et al., 2014; Koustelios & Tsigilis, 2005; Panagopoulos et al., 2014; Tsigilis et al., 2006). Supervision is a factor which is highly ranked by teachers in international contexts, and Greece is not an exception. Supervision incorporates the role of the school director as a leader. Leadership is a domain which has been interdisciplinarily investigated (Robbins et al., 2009). It has also been repeatedly examined in school contexts, since its impact on teachers' JS has been demonstrated both in Greece and abroad. According to Al-Mahdy et al. (2016), Omani teachers seem mostly satisfied with the Nature of work, followed by Supervision, despite the cultural differences among them. Moreover, Koutouzis and Malliara (2017) showed that in cases where participation in decision making was encouraged by supervisors, Greek-teachers' JS was enhanced, a relation also reported by Biggerstaff (2012) for the context of the USA. The finding of Zembylas' and Papanastasiou's (2004) research conducted in Cyprus in 2003 was that the Payment framework (i.e. salary, paid vacations) took precedence in individuals' motives for choosing a career in teaching. Since the current financial context in Greece, due to austerity, is very similar to the context of Cyprus in 2003, it was expected that payment would appear to be the dominant factor determining Greek teachers' JS. In addition, as shown by the items included in the corresponding factor, payment is regarded by teachers as the proof of appreciation of their work, thus the first factor acquires an emotional aspect as well. The Communication factor is consistent with the sense of uncertainty civil servants are currently experiencing in Greece, because of frequent alterations of administrative policies and reorganization upheavals in schools. Moreover, the requirement for clarity on assignments, emerging from the Communication factor, also reported in the Omani (Al-Mahdy et al., 2016) and Indonesian teacher contexts (Daryanto, 2014), underlines that teachers' duties and working hours are not clearly circumscribed in the context of Greek secondary education. Overall, parallel analysis followed by factor analysis led to results which support the four-factor structure. This structure is characterized by marginally convergent validity, satisfactory discriminant validity and reliability. Taking into account the fact that the analysis of the mean factorial scores appears strong, and that there are similarities to the findings of other relevant studies in Greece and Cyprus as has been already discussed, the validity and reliability of the four-factor structure is established. More research studies on Greek teacher samples to be conducted in the future are recommended so that this specific factorial structure can be further confirmed.

Implications and limitations

The four-dimension factorial structure of the JSS as derived by the analyses seems to be an appropriate tool for investigating the JS of Greek teachers. It can therefore act as a guide for the revision, elimination and/or addition of items that could enhance the validity and reliability of the JSS when applied on Greek teachers. The current research fills up the relevant research gap and helps us understand the JS of Greek secondary education teachers.

The research presented in this paper is subject to certain limitations. The derived factorial structure is characterized by weak convergent validity in the Payment framework factor. The sample used is convenient, coming mainly from teachers that live in western Greece and work in secondary education. There are no prior studies on a complex topic such as JS that could act as a stepping stone for this research which is limited to a certain amount of time. The results are therefore affected by the status quo during this particular time period in which Greece is facing an economic crisis followed by salary cuts, increase of working hours and insecurity about the upcoming evaluation. All aforementioned

limitations demand additional research that will apply the four dimensions structure extracted by this research to a wider and more representative sample of Greek teachers.

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