

Job Satisfaction Survey: A Confirmatory Factor Analysis Based on Secondary School Teachers' Sample

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Abstract

Despite a number of studies in the field of job satisfaction, there are still some problematic areas left. A question, which still lacks explanation, is whether specific sample may be evaluated using instruments which were primarily developed based on a different type of a sample than the one under research. With regard to the problematic area, we generated the purpose for our research.

The purpose of the present study is to examine Job Satisfaction Survey's (JSS) relevance for estimation of job satisfaction in teacher population.

Results of the standard Confirmatory Factor Analysis of the teachers' sample did not support the existence of 9 facets, suggesting that some of the JSS's scales do not reflect teachers' job satisfaction. The best model in the present study was determined to be a three facet model, including promotion, supervision and nature of work. The obtained research results, limitations and recommendations are discussed.

Keywords: Job Satisfaction Survey, Confirmatory factor analysis, Teachers

1. Introduction

1.1 Three Problematic Areas in the Field of Job Satisfaction

For the last few decades job satisfaction has been one of the most popular interests' among scientists, researchers and practitioners (Blood, Ridenour, Thomas, Qualls & Hammer, 2002; Klassen & Chiu, 2010b; Malik, Nawab, Naeem, & Danish, 2010; Platsidou & Agaliotis, 2008; Perrachione, Rosser & Petersen, 2008). According to Paul Spector "[job satisfaction] is the most frequently studied variable in organizational research" (Spector, 1997). Job satisfaction was proved to be an important construct in emotional and psychological employees' well-being (Klassen, Usher & Bong, 2010a). It is a significant element related to good organizational functioning as well

(Murphy, Athanasou & King, 2002).

Although the phenomenon of job satisfaction has been broadly researched, still there are several problematic areas.

First of all, the concept of job satisfaction has been described in various ways by a number of researchers. Lawler states that "Overall job satisfaction is determined by the difference between all those things a person feels he should receive from his job and all those things he actually does receive" (Lawler, 1973). Locke defines job satisfaction as "the pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating the achievement of one's job values" (Locke, 1969). Paul Spector describes job satisfaction as "the extent to which people like (satisfaction) or dislike (dissatisfaction) their jobs" (Spector, 1985; Spector, 1997).

Apart of those few definitions indicated above, there are many others that aim to explain the concept of job satisfaction. The lack of consensus which appears in defining the concept may lead to misunderstandings among researchers and researches' participants and may influence the construct validity of its measurement (Evans, 1998).

The second problem which appears in the research field of job satisfaction is a great number of various instruments that measure the phenomenon. Some of the examples are: the Job Descriptive Index (JDI) (Roznowski, 1989; Smith, Kendall & Hulin, 1969); the Minnesota Satisfaction Questionnaire (MSQ) (Weiss, Dawis, England & Lofquist, 1967); the Job Diagnostic Survey (JDS) (Hackman, Oldham, 1974); the Job in General Scale (JIG) (Ironson, Smith, Brannick, Gibson & Paul, 1989); the Global Job Satisfaction (GJS) (Quin & Shepard, 1974; Pond & Geyer, 1991; Rice, Gentile & McFarlin, 1991); the Job Satisfaction Survey (JSS) (Spector, 1985), etc.

Job satisfaction instruments are designed in a diverse manner and may be chosen to be used depending on different purposes of the research. Some surveys aim to assess global job satisfaction without reference to any specific facets (e.g. JIG; GJS). Some others refer to the facet approach (e.g. JDI) or may examine both: global job satisfaction as well as its dimensions (e.g. JSS; MSQ) (Spector, 1997; Fields, 2002). There are also instruments that measure one specific job satisfaction dimension, e.g. Satisfaction with the Work Schedule Flexibility Scale (Rothausen, 1994) or the Pay Satisfaction Questionnaire (Heneman & Schwab, 1985).

The variety of the instruments provides researchers' with several options to choose the one that best fits characteristics of the sample and needs of the research on one hand. On the other hand, it makes research results incomparable and, if chosen careless, the instrument may not reflect what researchers are seeking for.

The third problematic area may be supported by P.Spector's statement. He argues that sometimes instruments and their scales do not stand for the sample we want to research. He says that many times job satisfaction instruments are general, that is, they are developed based on typical organizations, such as: white collar, business organizations. Those instruments may not be always applicable for the specific samples (Spector, 1997). There are also some instruments developed based on specific organizational sector (e.g. medical workers in human/health service sectors), those, probably, may not reflect aspects of other organizational sectors (e.g. white-collar, teachers, police officers).

1.2 Teachers and Job Satisfaction

Teachers' were often considered as a specific sample of employees, who have different operating conditions and experience higher levels of work related stress in comparison with typical organizations' employees (De Nobile & McCormick, 2005; Klassen et al., 2010a). Unlike typical organizations' employees, teachers have many various responsibilities. They are expected to educate students, insure their safety and healthy atmosphere, communicate and collaborate with parents, other teachers, specialists and administrators, develop their own skills and knowledge, administer documents, organize school trips and complete a number of other tasks provided by the government and school administration (Comber & Nixon, 2009). Many times teachers meet problematic students of various ages or difficult and imperative parents. Those interactions require communication, problem solving, and conflict managing skills. Challenges in teachers' work that require emotional and intellectual resources may sometimes lead to burnout, depression or other physical and psychological health related issues (Chang, 2009).

It is obvious that teachers differ from typical employees in various ways. Therefore, instruments that usually measure such job satisfaction dimensions as appreciation, communication, coworkers, fringe benefits, job conditions, nature of work, organization itself, organizations' policies and procedures, pay, personal growth, promotion opportunities, recognition, security, supervision may not always match with teachers' job satisfaction aspects (Spector, 1997).

Some researchers agree upon supervision, work itself, promotion and recognition being important dimensions of teachers' satisfaction with work (Rosser, 2005; Sharma & Jyoti, 2009; Tillman & Tillman, 2008). However, there are also some other aspects that significantly contribute to teachers' satisfaction and should not be excluded in the terms of understanding teachers' job satisfaction phenomenon.

"Relationships with students are largely contributing to teachers job satisfaction" – states Ramatulasamma and Bhaskara Rao (2003, p.71). Other researchers highlight such dimensions of job satisfaction as: students' characteristics and behavior, classroom control, availability of the resources, relations with students, colleagues and administrators (Rosser, 2005; Sharma et al., 2009).

Despite the arguments of various researchers, teachers' job satisfaction is still evaluated using general instruments or instruments developed based on other specific samples (Alam, Talha, Sivanand & Ahsan, 2005; Blood et al., 2002; Castillo, Conklin & Cano, 1999; Tillman et al., 2008; Wong, 2010).

1.3 The Present Study

Previous findings in the research field of job satisfaction uncovered several problematic areas. First of all, there is a lack of consensus in the description of the job satisfaction phenomenon. This may influence construct validity and create misunderstandings among researchers as well as research participants. Secondly, the number of various job satisfaction instruments used in studies creates chaos and makes research findings incomparable. Thirdly, specific samples, such as teachers are often assessed using instruments that may not always reflect properties of a specific sample. Based on the third problematic area we generated the main purpose for our study.

Although there is a hypothesis that general job satisfaction instruments or instruments which were primarily developed for specific organizational sector do not always reflect other specific sample's characteristics, there were no studies conducted to explain this issue until now. In this article, we examine Job Satisfaction Survey's (JSS), developed by Paul Spector, relevance for estimation of job satisfaction of the Lithuanian teacher population.

The JSS was developed based on the samples from community health centers, state psychiatric hospitals, state social service departments, nursing homes (Spector, 1985). However, later, the instrument was used in various studies within different organizational sectors in different cultures (Giri & Kumar, 2010; Liu, Borg & Spector, 2004; Watson, Thompson & Meade, 2007).

Job Satisfaction Survey is one of the most frequently used job satisfaction instruments (Giri et al., 2010; Liu, et al., 2004; Watson et al., 2007; Yelboga, 2009). Yet, we hypothesize that some of the Job Satisfaction Survey's facets do not correspond teachers' job satisfaction dimensions well. The generated purpose of the present study is to examine Job Satisfaction Survey's relevance for estimation of job satisfaction of teacher population.

To analyze the data and to create a model that best fits our Lithuanian teachers' sample, we use a confirmatory factor analysis (CFA) which is one of the techniques of structural equation modeling. The goals of the present study are a) to examine JSS primary model's adequacy to the secondary school teachers' sample and b) to determine JSS's facet model that best fits our secondary school teachers' sample.

Findings, limitations and recommendations are discussed further in the article.

2. Method

2.1 Sample

The schools for the study were chosen using a convenient sampling method. The data collection process started in November 2008 and was completed in February 2009. Each school administrator was contacted and informed about the purpose of the research, confidentiality issues, and the reporting of the results.

The sample of 351 teachers, 310 (88.3%) women, 31 (8.8%) men and 10 (2.8%) individuals who failed to identify their gender was obtained from 8 secondary schools in Kaunas which can be considered as a rather typical Lithuanian city.

The data were gathered in two ways:

142 questionnaires were administered to teachers from 4 secondary schools and collected on the same day. Researchers were present during the administration process. Respondents were informed about the goals of the research and data confidentiality. All of 142 respondents agreed to participate in the research. Assessment time averaged 30 minutes per group.

Two hundred thirty two respondents from the remaining 4 schools received the questionnaires in unsealed envelopes and were asked to return the filled in questionnaires in sealed envelopes within a week. Two hundred

nine respondents returned the completed materials (90% response rate).

However, in case of confirmatory factor analysis (as with almost all other multivariate statistical techniques) it is better to have data without missing values (Tabachnick & Fidell, 2007). After exclusion of only five respondents with missing answers, the final data set consisted of 346 respondents.

The mean age of respondents was 45.2 (standard deviation = 10.1) years. Average teachers' work experience was 22.5 years (SD = 10.6). The average number of lessons per week (workload) was 21.5 (SD = 5.10). Further demographic and work profile characteristics of a sample are presented in Table 1.

2.2 Measuring Job Satisfaction

The respondents were requested to complete the Job Satisfaction Survey developed by Paul Spector (JSS; Spector, 1985). The instrument provides sufficient reliability, validity and normative data measurements (internal consistency reliability and total norms of JSS are presented in Table 2). Besides, JSS is available for researchers free of charge for use for non-commercial purposes (Spector, 1997).

The JSS can yield 10 scores. It assesses 9 facets including pay, promotion, supervision, fringe benefits, contingent rewards, operating conditions, coworkers, nature of work and communication. Each of the subscales consists of four items. The overall job satisfaction score is computed by summing all 36 items.

The items are presented as statements and are evaluated by marking the alternative that seems closest to one's experience on a scale from 1 to 6. Some of the items are stated in a positive and some in a negative direction. Positively directed items indicate job satisfaction and negatively directed items indicate job dissatisfaction. Negatively worded items must be reversed: score 6 is changed to 1, 5 to 2, etc. (Spector, 1985; Spector, 1997).

The JSS was translated to Lithuanian language using back-forward translation. The translated version was later reviewed by specialists to eliminate inconsistencies. Translation process was carried out by two Lithuanian scientists, working in an organizational psychology field and a professor from United States of America, whose native language is English.

Assessment of the facets' internal consistency indicated that Cronbach α coefficient for each dimension of the survey ranged from .45 to .74 (which means that internal consistency of some JSS scales was probably unsatisfactory in our case; usually 0.7 and above is acceptable, e.g., see Nunnally, 1978). More detailed information on the internal consistency reliability of JSS scales in our study and those indicated by P.Spector is provided in Table 2.

The data were analyzed using statistical package SPSS 13.0 and AMOS 16.0 for CFA.

3. Results

In the present study a confirmatory factor analysis was used to answer the question whether the job satisfaction facets' model proposed by P.Spector may be confirmed using a structural equation modelling in a Lithuanian teachers' sample.

The data of 346 respondents did not satisfy the requirement of multivariate normality (multivariate kurtosis = 101.2; critical ratio = 18.0); therefore we used AMOS non-parametric bootstrap option for further analysis, mainly to estimate models' exact fit. Bootstrap method doesn't require assumption of multivariate normality, however, it cannot compensate for small or unrepresentative samples and even for severely non-normal distributions (Kline, 2010).

As the purpose of the analysis was to investigate the facets' model, hence, the overall score of job satisfaction (as a factor) was not included. The primary model consisted of 9 facets as first order factors corresponding to the JSS scales. We used only standard CFA models here and further, that is, every indicator loads only on one factor; there are no correlations between measurement errors.

The results of CFA indicated that the primary model did not fit the data well, suggesting that the model was not adequate (Bollen-Stine bootstrap p -value and selected approximate goodness of fit indices are presented in Table 3); therefore, CFA was also used to determine the other model which fits the sample best.

Our decisions to reject or retain a model were based on Bollen-Stine bootstrap p -value (which replaces the usual chi-square test of exact fit in our case), not on approximate fit indices, following the recent trend in favor of chi-square test over approximate fit indices in testing SEM models (Hayduk, Cummings, Boadu, Pazderka-Robinson & Boulianne, 2007; Barrett, 2007; Kline, 2010). Some more popular approximate fit indices are also presented in Table 3, however, only for descriptive and comparative purposes.

Our selection of indices is based primarily on Kline (2010, p. 204), however, we reject GFI because of its known

poor performance (e.g., Hu & Bentler, 1998), and we replace CFI with similar Tucker-Lewis index (TLI) because of its features that compensate for model complexity (Tucker & Lewis, 1973; Brown, 2006). We should stress that properties of our data variables (questionnaire items) which forced us to use Bollen-Stine bootstrap procedure in place of the more usual chi-square test, contribute even more to our choice of not using approximate fit indices for decisions about our models.

The second (modified) model was constructed of these facets having highest Cronbach α coefficients (using our sample). The second (modified) model consisted of 3 facets: promotion, supervision and nature of work (Cronbach $\alpha = .67, .72, \text{ and } .74$). The model with standardized estimates is presented in Figure 1. CFA showed good fit of the model to the data ($p = .18$). Goodness of fit indices also confirmed adequateness of the model (Table 3).

Several additional models were tested, however, with no success. Six supplementary models were tested in order to determine if there were any other subscale combinations that fit data well. These supplementary models did not show sufficient fit to the data according to the Bollen-Stine bootstrap p -value, however, some of the goodness of fit values were creditable. The models were designed by the principle 3+1, whereas three facets were taken from the second (confirmed) model: promotion, supervision and nature of work. The fourth facet included in a supplementary model was any other job satisfaction survey's facet. As presented in the Table 3, none of these six supplementary models demonstrated acceptable fit to the data.

The best model for the Lithuanian teachers' sample ended to be the second three facets model (p -values, chi-square test statistics and selected approximate fit indices of all of the models are presented in Table 3).

We should note that our sample is clearly too small for SEM models with such numbers of estimated parameters, however, even this not sufficiently large (according to usual SEM "standards") sample rejects the primary JSS model and all the others, except the three facet model.

4. Discussion

The primary Job Satisfaction Survey's nine facets' model was clearly not confirmed by CFA for our Lithuanian teachers' sample. Bollen-Stine bootstrap was statistically significant ($p < .001$), and the goodness of fit indices did not meet the usual criteria, e.g. our TLI (and CFI, not presented in the table) is much less than .90 (Hu & Bentler, 1999). Six supplementary models of JSS were not supported. The best model came out to be a three facet model (including promotion, supervision and nature of work). The following results show that at least some of the JSS's facets do not measure teachers' job satisfaction well in the population of Lithuanian secondary school teachers.

One of the explanations of the unsatisfactory fit of the primary model may be insufficient number of the "strong" (well related to the latent construct being measured) and (almost) non-overlapping items in survey's subscales. JSS subscales, consisting only of 4 items each, in some cases may not reflect the phenomenon under research well. The solution may be to use more items for a subscale, or to replace some items with other ones that are more informative and better reflect the measured construct. Kenny advocated that "Two might be fine, three is better, four is best, and anything more is gravy" (Kenny, 1979, p.143). Yang acknowledged this opinion saying that using lengthy ordinal scales can pose serious challenges for structural equation modeling (Yang, Nay & Hoyle, 2010). However, these four items must be really good, if only four.

Another important reason for the model's ill fit might be the lack of understanding or consensus on the job satisfaction concept and its dimensions among researchers, practitioners and research participants. As Linda Evans suggests, Research in this field is subject to an additional threat to construct validity, arising out of the ambiguity of the concept of job satisfaction" (Evans, 1998, p.6). Without a general agreement on what job satisfaction and its separate aspects are, misunderstandings may easily occur. Such misunderstandings may lead to unreliable and invalid results.

The best model in the present study was determined to be a three facet model, including promotion, supervision and nature of work. The three facets are among the most frequently investigated job satisfaction dimensions (Spector, 1997). Also, in the recent studies promotion, supervision and nature of work were proved to be of high importance in understanding teachers' job satisfaction (Sharma et al., 2009; Tillman et al., 2008; Rosser, 2005). Based on previous studies, we presume that the three facets in our confirmed model represent important dimensions of teachers' job satisfaction and may be used in further research among teachers.

Other six supplementary models did not demonstrate satisfactory results of the model-data fit. The following results suggest that some of the JSS subscales poorly explain teachers' job satisfaction aspects.

5. Limitations

One of the circumstances that may have negatively influenced the results is unsatisfactory number of participants in the present study. We admit that 346 teachers from one city in Lithuania may be too small a sample and may have too little of a variability which could reduce correlations between variables making explanation of these correlations by the model more difficult. A “typical” sample size in studies where SEM is used is approximately 200 cases (Shah & Goldstein, 2006). “However, such a size may be too small when analyzing a complex model, using an estimation method other than ML (Maximum Likelihood), or distributions are severely non-normal” (Kline, 2010 p.12). Usually ratio of the sample size and the number of estimated parameters of the model is recommended at least 10:1, better 20:1 (Jackson, 2003). In our situation, this means required sample size of at least 1080 participants for estimation of the primary model (108 estimated parameters). The nine facet model should be tested with a greater number of participants (however, it would be rejected with a larger sample even more probably) and using more representative sample (from various cities, towns and villages within a country).

The cultural context of the respondents should be also taken into account regarding the interpretation of the following study’s results. Researchers Byrne and van de Vijver state that “testing for equivalence of a measuring instrument in large-scale cross-cultural studies can be fraught with difficulties” (Byrne & Van De Vijver, 2010, p.128). That means that different cultures with their own values, religion, and socioeconomic status may have an impact on research findings. Spector supports those ideas and concludes that “it seems likely that job satisfaction differences across different countries are real” (Spector, 1997, p.28). Therefore, similar studies should be replicated in other cultural backgrounds in order to exclude doubts, that the cultural context may have impacted the present study results.

Regarding the limitations of the present study’s results, it is necessary to mention the most recent findings of Hopwood and Donnellan on personality inventories’ internal structure evaluation using CFA (Hopwood & Donnellan, 2010). The researchers claim that CFA may not always be an appropriate method for personality inventories’ model evaluation. In their study none of the well known personality trait inventories demonstrated good model fit. Although JSS is not a personality trait inventory, it is based on subjective employees’ feelings towards their job. Therefore using only CFA is not sufficient for the final conclusions about the test.

Hopwood and Donnellan do not claim that CFA is generally inappropriate method; however they propose to avoid global evaluations. They suggest to use multiple factor analytic methods (CFA as well as EFA) and to consider the substantive and practical implications of model modifications designed to improve fit. They acknowledge that the results of their study could motivate development in personality inventories’ measurement with a better structure definition which might improve results using CFA (Hopwood et al., 2010).

With regard to our study’s limitations indicated below we do not claim that the primary JSS model is absolutely inadequate for a teachers’ population. As a whole, it wasn’t confirmed by our data. However, some parts (subscales) of it probably can be used even for our population. In any case, we believe that developing a well-defined and data-confirmed structure of the job satisfaction concept (or several structures for different domains of jobs) should be the goal for further studies.

Although, there may be several causes for the JSS primary and supplementary models’ ill fit, we propose that the main reason could be the poor explanation of several aspects of teachers’ job satisfaction using JSS.

6. Recommendations

Based on the present results of the study, we recommend that the target of the future studies should be the development of a clear definition of job satisfaction and its dimensions. The lines should be drawn for typical organizations as well as for specific ones (e.g. teachers, medical workers, police officers, etc.). In this case, the instrument measurement validity should increase; a better understanding of the specific phenomenon and its dimensions among researchers and participants could be expected.

The target of future research should also be to narrow the number of the job satisfaction instruments. The area of job satisfaction measurement is rather chaotic. Findings of various studies may not be generalized or compared. Therefore, several instruments that show greatest construct, discriminant and possibly even predictive validity should be used in further studies.

Researchers who aim to analyze specific samples should be careful in choosing instruments and may want to use those which are developed for specific target population.

In the organization and implementation of the research it is also important to understand methodological issues and cultural background in order to identify the most adequate instrument.

Finally, researchers, who use general instruments for specific samples and vice versa, should consider possibility that the instruments' facets may not always reflect sample's properties and give contradictory results.

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Table 1. Teachers' Demographic and Work Profile Characteristics

Characteristic	N	%
Marital status		
Single	90	26
Has a partner/married	251	72.5
Qualification level		
Teacher	51	14.7
Senior teacher	115	33.2
Teacher - supervisor	155	44.8
Teacher - expert	9	2.6
Class supervision		
Supervises a class	200	57.8
Does not supervise a class	139	40.2
Classes taught		
Lower school (from 1st to 4th form)	54	15.6
Upper school (from 5th to 12th form)	288	83.2

Table 2. Internal Consistency Reliability Indices Presented by P.Spector and of the Present Study

Subscale	Internal Consistency Reliability by P.Spector ^a		Internal Consistency Reliability of the Present Study	Total Norms by P.Spector ^b		Mean Scores of the Present Study	
	Coefficient Alpha	Test-Retest Reliability		Mean	Std. Deviation	Mean	Std. Deviation
Pay	.75	.45	.61	11.8	2.6	13.8	4.5
Promotion	.73	.62	.67	12.0	1.9	14.3	4.4
Supervision	.82	.55	.72	19.2	1.5	19.3	4.1
Fringe benefits	.73	.37	.55	14.2	2.2	12.8	4.4
Contingent rewards	.76	.59	.66	13.7	2.0	14.4	4.3
Operating conditions	.62	.74	.45	13.5	2.2	10.9	3.6
Coworkers	.60	.64	.55	18.3	1.1	19.7	3.2
Nature of work	.78	.54	.74	19.2	1.3	18.4	3.9
Communication	.71	.65	.62	14.4	1.8	18.5	3.6

^a Test – retest reliability was assessed over an 18 month time span, sample size was 2870 (Spector, 1997).

^b Norms based on 8113 individuals from 52 samples (Spector, 1997).

Table 3. Model Adequacy and Goodness of Fit Indices of Each One of the Proposed Models

Model	Bollen-Stine bootstrap p-value ^a	χ^2 (df)	RMSEA				TLI
				LO 90	HI 90	PCLOSE	
Primary Model (9 Facets)	.001	1079.6 (558)	.052	.047	.057	.230	.817
Confirmed Three Facets' Model (CTFM)	.181	68.9 (51)	.032	.003	.050	.951	.976
(CTFM) + Coworkers	.002	181.2 (98)	.050	.038	.061	.508	.922
(CTFM) + Pay	.001	215.1 (98)	.059	.048	.070	.084	.892
(CTFM) + Operating Conditions	.017	154.4 (98)	.041	.028	.053	.893	.942
(CTFM) + Communication	.048	149.8 (98)	.039	.026	.051	.928	.943
(CTFM) + Fringe Benefits	.013	153.7 (98)	.041	.030	.054	.851	.943
(CTFM) + Contingent Rewards	.011	158.6 (98)	.042	.028	.053	.899	.944

^a We used Bollen-Stine p for decisions about the model. Usual χ^2 and its df (as well as approximate fit indices) are presented for comparison.

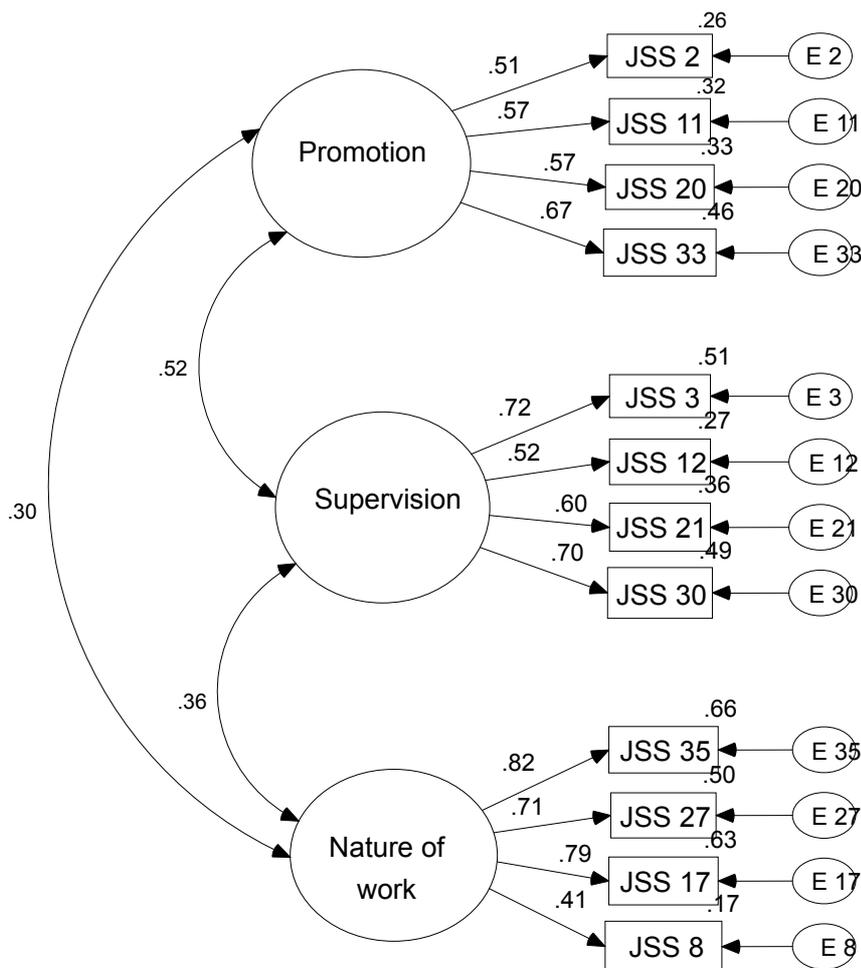


Figure 1. A Confirmed Three Facet Model