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Research Article

Factor Structure, Validity and Reliability of Job Behavior Assessment Scale (JBAS) of Physical Education Graduates

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Abstract: This present study describes the structure factors and examines the validity and reliability of a scale on the assessment of the job behaviour of Physical Education graduates who work for Fitness Clubs and Municipal Sports Organizations. The questionnaire structure is based on the basic characteristics of the contextual performance theory. This framework describes the professional behaviours which assist, strengthen and promote individuals, teams and corporate performance. The questionnaire is constituted by eleven (11) questions on three factors: Interpersonal relationships, Communication and Professionalism. The questionnaire was distributed to the managers of fitness clubs and to the directors of Municipal Sports Organizations, who assess the job behaviour of 481 Physical Education graduates. The exploratory factor analysis was carried out (n=161), which supported the existence of three factors that interpret the 75.636% of the total variance. The confirmatory analysis was conducted (n=320) and the internal consistency was checked with the *Cronbach alpha* index which gave: a=.90 for relationships, a=.87 for communication and a=.78 for professionalism. The questionnaire adaptation indicators [$\chi 2$ = 147.609, p<.001, Satorra-Bentlerχ^2 = 112.306, p<.001, df 40, χ^2 /dfratio = 2.808, NNFI = .927, CFI = .947, RCFI = .936, IFI = .947, SRMR = .060, RMSEA = .092 (90% CIofRMSEA = .076 - .108)] exceeded the limits of good adaptation and supported the existence of three correlated factors. In conclusion, the findings suggest that the specific questionnaire is reliable and valid. It is a sufficient tool that can be used in the assessment of job behavior, and in the management of job performance employees in fitness clubs and athletic organizations.
Keywords: professional behavior, questionnaire, physical education graduates

INTRODUCTION

According to Motowidlo, Borman & Schmit [1], job performance is a multidimensional behavioural procedure, in which the behaviour of each employee significantly affects the team and the overall team spirit. In addition Gladstein [2] suggests that three theories explain the influence of behaviour on job performance: a) The humanistic school which studies interpersonal relationships and communications, b) The decision theory which deals with the decision making process and c) The open system theory which studies the behaviour of interacted team members. Consequently, Witt *et al*. [3] suggest that the models should focus and evaluate behaviours that lead to such results.

Motowidlo *et al*. [1] distinguishes two dimensions concerning employee's performance: a) task performance which is referred to behaviors directly related to work including basic responsibilities (training, cognitive ability, experience) and b) contextual performance which describes actions and behaviors that are not directly related to work but assist, promote team and cooperate performance. Framework contextual performance describes informal rules of conduct (enthusiasm, cooperation, dedication, solidarity) which are beyond their formal assigned roles and derive from personality, positive thinking, creating an ideal performance environment [3-6].

Framework contextual performance is distinguished into two subcategories: a) dedication to job and b) interpersonal facilitation. Being dedicated to job refers to activities that employees do voluntarily and tasks that do not belong to the employee's responsibility sector, enthusiasm and persistence and conscientiousness for task completion and high motivation. Interpersonal facilitation refers to the development of an affiliate climate amongst colleagues, to a noble and selfless assistance, to support actions towards colleagues etc. In conclusion, framework performance influences the group's function since the members develop supporting and backing-up behaviors, leading the organization to its maximum efficiency [5, 7].

The "European Code of Good Administrative Behavior" [8], was counted in the complete construction of the professional conduct questionnaire. The guide presents on how the public servants should behave complying with the principles to achieve a better, more flexible and administration of quality. Small organizations, such as gyms and athletic organizations which tend to value executive's professional behavior, adapt better the environment with its competitiveness and demands have prospects in the long run and increase their organization's functionality and effectiveness. The professional behavior evaluation increases the employee's motivation, focuses on the customers' satisfaction and needs, and lastly promotes entrepreneurship [3].

The aim of this survey is to construct a questionnaire which about the evaluation of Greek Physical graduates job behavior who work at private fitness clubs and at Municipal Athletic Organizations. In addition the goal of the present study is to audit the questionnaire's factors structure and reliability, through two methods, exploratory and confirmatory factor analysis.

Today we face the problem of big competition and in the environment that it constantly changes human resources are considered as an important source and competitive advantage to companies and organizations. An organization's well-being, effectiveness and competition depend mostly on the knowledge, abilities, behaviors talents and ideas of people who staff these organizations. Especially, in places that provide services, such as fitness clubs and sport organizations, where the quality of services is considered a prerequisite for their success, if not for their survival, the organizations recognize that the human factor and human behavior is crucial [9, 10]. Therefore, the employees' behavior valuation contributes towards this direction and offers competitive advantage to organizations.

MATERIAL AND METHODS

Participants

In the present study four hundred and eighty one physical education graduates (224 male, 257 female) were assessed. The age of the individuals ranged 22-52 years (M=33.1 SD=7.22) and their job experience ranged 1-20 years (M=8.84 SD=5.91). During the exploratory factor analysis was conducted one hundred and sixty one (n_1=161) employees and in the confirmatory factor analysis the sample involved three hundred and twenty (n_2=320) assessed.

Procedure

The questionnaire used for the present study is part of multidimensional and multifactor evaluation model for job performance. The other parts are about personality traits, leadership, job performance and cognitive development according to Kaprinis *et al*. [11]. The purpose of this questionnaire is to record and valuate employee's job behavior, based on the contextual performance theory of Motowidlo, Borman & Schmit [1]. The questionnaire is consisted by eleven (11) questions and each question is answered based on Likert's five-point scale, from 1 to 5, where number 1 corresponds to «Very Poor» , number 2 to «Poor», number 3 to «Average», number 4 to «Good» and number 5 to «Very Good» (View Annex).

The questionnaires were completed by evaluators who had direct contact and comprehensive view about employee such as fitness manager, supervisor or owner of fitness club.

Statistical analysis

For the verification of the scale structure and validation, two tests were used to assess the suitability, sufficiency and adequacy of the particular sample for factorial analysis. In particular the tests that were used are Kaiser-Meyer-Olkin index (KMO) and Bartlett's test of Sphericity.

Principal component analysis (PCA) was computed in order to explore the factorial structure. In order to determine the number of the dimensions, the Varimax rotation analysis was implemented. For the determination of factors interrelation also was used the Oblimin rotation (delta=0) [12].

In order to determine the factors extraction, five criteria's were used: (1) Scree Plot test (2) Eigen value > 1 rule, (3) the cumulative percent of variance extracted, (4) the interpreted rate variation of each factor, (5) the number of the factors which can theoretically and conceptually be interpreted [13, 14].

Moreover, having in mind that the measurement tool's factor structure to be acceptable (a) the question loadings which shouldn't be rated more than .40 [15] and (b) each question's communality should be rated more than .30 [16] were also used.

Cronbach alpha, inter - item correlation and corrected item – total correlations, were computed to measure the internal consistency and reliability of the scale, The three methods were used having the mind homogeneity of the answers from the measurement instruments questions in order to estimate the contribution of each question.

Confirmatory Factor Analysis

Prior to implementation confirmatory factor analysis and in order to verify the distribution of the variables the univariate skewness and kurtosis and also Mardia univariate kurtosis [17] which specifies the multivariate normality limits were computed. The univariate kurtosis procedure is defined by the formula $p\ (p+2)$, where p is the total of the questions. Mardia univariate kurtosis index must value fewer than the

above equation. Besides, the specific indexes should be acceptable on condition that, the value of the univariate skewness shouldn't be higher than 2.0 and the value of the univariate kurtosis shouldn't be higher than 7.0 respectively as the higher limits of univariate normality [18]. Univariate normality was examined to check if any questions of the measurement tool from factor analysis should de conserved or eliminated. Multivariate normality was implemented to identify the suitable factor data analysis method [19, 18].

In confirmatory factor analysis in order to check the model fit we use the following indexes: (i) χ^2 chi square, freedom degrees *df,* χ^2/df ratio, (ii) Satorra – Bentler chi- square index χ^2 (iii) Non-normed fit index [NNFI], (iv) Comparative Fit Index [CFI], (v) Robust Comparative Fit index [RCFI], (vi) Incremental Fit index [IFI], (vii) Standardized Root Mean Squared Residual [SRMR], (viii) Root Mean Squared Error of Approximation [RMSEA] and (ix) the 90% of RMSEA confidence Interval [15, 19-24].

Because of sample size, the freedom degrees and the violation of the normality assumptions also influence the index χ^2 many researchers [25, 26] suggest that when evaluating a model to consider the χ^2/df ratio as a reliable index compared to χ^2. When the χ^2/df ranges between 2.0 and 5.0 then the acceptable model can be supported. When the χ^2/df rates are less than 2.0 the model has an impressive data application [27, 28].

The statistical indexes NNFI, CFI, RCFI and IFI could range between 0 and 1.0, when the rates are more than .900 according to Bentler [20] that they show the existence of an acceptable factor structure of the tested model. Hu and Bentler [24] suggested a stricter criterion for the acceptance of indexes NNFI and CFI placing the acceptance limit rates to .950. As regarding the rates of SRMR and RMSEA indexes when the value is lower than .050 then the factor structure could be acceptable [15, 29]. Researchers [24] proposed the acceptance limit of SRMR index close to .080 and for RMSEA index is close to .060 while according to Tabachnick & Fidell, [15] the top fit limit at the rate of .050. Moreover, in order to support the existence of an acceptable factor structure for the tested model the confidence interval of RSMEA index should be valued at .050 [30]. Furthermore other researchers [31, 32] suggest that a lower rate than .50 reveal the existence of a suitable fit, while the value is between .050 and .100 remark the existence of an acceptable factor structure.

The values of the question loadings in order to be acceptable should be higher than .40 as Bentler [25] suggests this is an acceptable question loading value for social sciences. It's worth being noted that the questions were allowed to load only in their factor and the question loadings of the other factors were valued at .00 while measurement errors correlations were not permitted. The statistical software EQS version 5.7b was used for the present study to examine the measurement tool factor structure through the factor analysis.

RESULTS

Questionnaire's validation – Exploratory factor analysis

The statistically significant results of Bartlett's sphericity test (1203.887, *df 55*, p<00001) lead to reject the null hypothesis [15] that the variables are independent of each other. Similarly the value of Kaiser-Meyer-Olkin (KMO= .877) was at an absolutely satisfactory level [33] supporting the suitability and overall adequacy of the sample for factor analysis. The principal components analysis (PCA) supported the existence three factors which interprets the 75.636% of the total variance. The questions loadings and communalities ranged .489 to .979 and .648 to .855 respectively (Table 1).

Table 1: Questions Loadings and Communalities of the Job Behavior Questionnaire.

	Question Loadings			**Communalities**
Questions	1	2	3	
4	.952			.693
3	.876			.791
5	.757			.648
1	.733			.785
2	.720			.722
9	.489			
6		.979		.855
7		.845		.819
8		.741		.761
10			.911	.816
11			.857	.795
Eigenvalues	6,156	1,328	.833	
% Commun. Interpret.	55,964	12,096	7,576	

The results support the conclusion that the variables are compact, valid and reliable structures, capable and consistent to significantly contribute to the measurement of the factor to which they belong. The absolute values are fairly high and therefore the questions loadings to the factor are considered to be noteworthy [15, 16, 34].

Questionnaire's reliability

The factors' reliability rates regarding job behavior questionnaire were tested after selecting the final questions based on the Principal components analysis (PCA). The results of the questionnaire's reliability test are presented in table 2. The Cronbach's alpha coefficient, as a questionnaire's basic internal consistency index, ranged at satisfactory level [13, 35, 36]. Similarly questions' correlations with the scale, as well as the correlations of the questions of each factor between them, ranged at completely satisfactory levels.

Table 2: Job Behavior Questionnaire Reliability Index.

	Scale Questions Correlation	Scale Questions Covariance	Correlation of Questions and Scale	α Cronbach
	Mean (Min – Max)	Mean (Min – Max)	Mean (Min – Max)	
Interpersonal Relationships				
	.63 (.50 - .84)	.48 (.42 - .58)	.75 (.69 - .83)	.91
Communication				
	.69 (.65 - .71)	.54 (.52 - .55)	.75 (.73 - .78)	.87
Professionalism				
	.64 (.57 - .72)	.52	.64 (.56 - .73)	.78

Questionnaire's validation – Confirmatory factor analysis

The Job Behavior Assessment Scale questionnaire is composed of eleven (11) questions constituted of three following factors: (a) interpersonal relationships, (b) communication, and (c) professionalism. The questionnaire's questions univariate skewness rates, were rated from -1.29 to -0.42 and the univariate kurtosis rates, were rated from -0.02 to 2.17, which show that the questions have been normally distributed, because they haven't surpassed the limits. According to West *et al*. [18] the value of univariate skewness shouldn't be higher than 2.0 and the value of the univariate kurtosis shouldn't be higher than 7.0. Mardia univariate kurtosis coefficient, supported the existence of the normalized estimate [normalized estimate = 19.262<11(11+2)]. For examining the Job Behavior Assessment Questionnaire's structure, maximum likelihood method was used.

The Job Behavior questionnaire's adaptation indicators supported the existence of three factors since the confirmatory analysis surpassed the questionnaire's good adaptation limits. Specifically, the hypothetical model indicator rates were: χ^2 = 209.797, p<.01, Satorra-Bentlerχ^2 = 155.965, p<.001, df41, χ^2 /dfratio = 3.804, NNFI = .888, CFI = .916, RCFI = .899, IFI = .917, SRMR = .064, RMSEA = .114 (90% CIofRMSEA = .098 - .129). Particularly, the questionnaire's three factor adaptation indicators revealed that the index χ^2 was a significant statistical element and remarked the existence of sufficient statistical differences between the proposed model and the data index, while χ^2 /df ratio was fairly high (χ^2 /df ratio = 3.804). RMSEA index, one of the basic validation structure index, was not at a satisfactory level and exceeded the limit of .100, as well as the 90% RMSA Confidence Interval (.098 -.129). Nevertheless the other indexes NNFI, CFI, RCFI, IFI and SRMR index indicated that the proposed model had a proper implementation, The question loadings to the factor were acceptable and ranged from .54 to .90 (Fig. 1).

However, from the above mentioned, it was considered appropriate to examine the basic hypothetical model. For this purpose, a model was examined of which the correlated errors of questions 1 and 2 were associated. When two questions semantically have a common theme, such as the case of the specific questions of the Job Behaviour Questionnaire, which is not clearly presented in the model, a correlation may be allowed between the correlated errors of two questions, in order to determine an additional part from the variance of the examined model, with the ultimate goal and result to improve the adaptation [37, 38]. The modification index between the correlated errors of questions 1 and 2 was 68.628 ($\chi2$ *=68.628, p<.001)* supporting the review for the model's improvement and adaptation. In the second examined model, considered improvements of indexes were presented, supporting the Job Behavior Questionnaire's univariate structure. In particular, the indicators were the following: χ^2 = 147.609, p<.001, Satorra-Bentler χ^2 = 112.306, p<.001, df 40, χ^2 /df ratio = 2.808, NNFI = .927, CFI = .947, RCFI = .936, IFI = .947, SRMR =

.060, RMSEA = .092 (90% CI of RMSEA = .076 - .108) (Table 3). The question loadings to the factor, in the final recommended model, were particularly high and were rated from .54 to .90, while the question errors were rated from .49 to .85 (Fig. 1).

Beyond the hypothetical model structure and in order to determine the three factors suitability of the Job Behavior Questionnaire under the confirmatory factor analysis, two alternative models were examined. Specifically, the first alternative model included the selection of three non – correlated factors, while the second alternative model included the selection of only one factor, examining if the questionnaire was a single-factor model. The results, as indicated by the model's adaptation indicators, support the analysis of the three correlated factors which displayed a good adaptation, an element which is supported from the existing theory (Table 3).

Table 3: Job Behavior Questionnaire Confirmatory Factor Analysis: Fit Index of Three Alternative Factor Structure Model

Fit Index	TCF_3 Three Correlated Factors	$TNCF_3$ Three Non-correlated factors	OF_1 One Factor
χ^2	112.306	243.595	272.466
df	40	43	43
1.1. p	.001	.001	.001
NNFI	.927	.765	.807
CFI	.947	.817	.849
RCFI	.936	.823	.798
IFI	.947	.818	.850
SRMR	.060	.292	.082
RMSEA	.092	.164	.149
90% CI of RMSEA	.076 - .108	.150 - .179	.134 - .163

Abbreviations: χ^2 = chi square index, df = freedom degrees, NNFI = non – normed fit index, CFI = comparative fit index, RCFI = robust comparative fit index, SRMR = standardized root mean square residual, RMSEA = root mean square error of approximation, 90% CI of RMSEA= 90% RMSA Confidence Interval

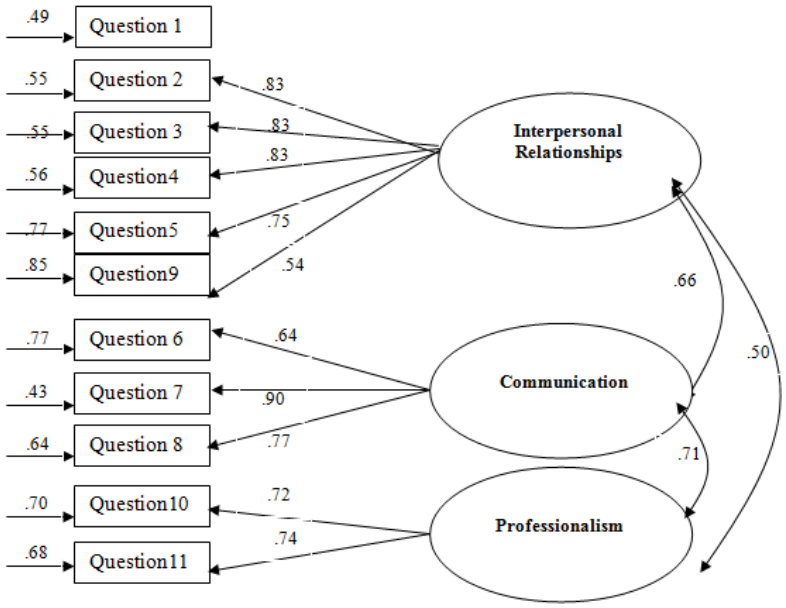

Fig. 1: Loadings and question errors of Job Behavior Questionnaire

DISCUSSION

The present research aims to study the factor structure, reliability and validity of a questionnaire to measure the Job Behavior of physical education graduates. The questionnaire examines the human resources' behavior under the contextual performance. The findings reported that the internal consistency coefficients were adequate and reliable while the questionnaires' structure was multidimensional and multifactor. The three factor selection, interpreted satisfactorily the questionnaire's total variance, which was easily interpreted, and confirmed the multifactorial

structure. The results, from the factor analysis (exploratory and confirmatory) indicated the existence of high question loadings to their factor, noting the accepted reliability and validity of the specific questionnaire for further research. The results of the reliability (questions correlation scale, correlation of question with the factor, Cronbach *alpha*) indicated that the questionnaire is reliable, as the factor rates were at completely satisfactory levels.

The questionnaire's statistical analysis indicated the existence of three factors. Particularly, the first factor "Interpersonal Relationships», consisted of six (6) questions, referred to the quality of the employee's interpersonal relationships with the team and the customers, the second factor «Communication», consisted of three (3) questions, referred to the tendency of the assessed to open communication and participation to the strategic planning and the organization structure, while the third factor « Professionalism», consisted of two (2) questions, referred to the basic principles of the employee's behavior, and complying with the principles to achieve a better, more flexible and qualitative effective behavior.

The interrelation of the factors supported the existence of positive and significant statistical correlations. The positive correlation provides better support to the questionnaire's validity factors indicating that the three factors investigate the spectrum of the Physical education graduates' administrative and job behavior. This gives the opportunity to the researcher to interpret the assessed job performance.

CONCLUSION

In conclusion, the results suggest that the under examined questionnaire is reliable, valid and is quite stable over time. The Job Behavior Assessment Scale (JBAS) may be useful in HRM at fitness clubs and sports organizations.

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ANNEX: Physical Education Graduates Job Behavior Questionnaire

Sl. No.	*Questions*	5 Very Good	4 Good	3 Average	2 Poor	1 Very Poor
	A Physical Education Graduate…					
1	…behaves with dignity, courteous manner and goodwill.					
2	…develops positive relationships with customers.					
3	…cooperates well with his/hers colleagues, and has a team spirit.					
4	…reacts with a positive and creative way to the guidance of his/her supervisor.					
5	…maintains his/her composure and temper in the workplace.					
6	…express his/her opinion.					
7	…poses sensible and clearly his/her views.					
8	…identifies the problems and proposes realistic solutions.					
9	…handles with attention and discrepancy issues that are characterized as confidential, such as customer's medical files					
10	…is consisted on the arrival time at his/her work.					
11	…cares for his/her appearance in the workplace.					