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Factorial Structure of the Teacher's Quality of Work Life Scale

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ABSTRACT:

The present research paper attempts to develop a valid and reliable measurement instrument that is designed to measure Quality Work Life (QWL) of elementary Algerian school teachers. This research relies on a questionnaire that includes 30 questions distributed to a sample that consists of 239 teachers. An exploratory factor analysis is applied to determine the number of factors of QWL. A confirmatory factor analysis is relied upon to verify the number of factors. To verify the validity and reliability of the device, a structural validity and a composite reliability are determined. The six significant factors are identified based on the factor analysis. Further analyses have revealed that these six factors together proved 64.55 % of the total variance.

Keywords: measurement instrument; Quality of Work Life; factorial structure.

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ملخص:

يهدف هذا البحث إلى تطوير أداة قياس صالحة وموثوقة مصممة لقياس جودة حياة العمل (QWL) لمعلمي المدارس الابتدائية الجزائرية. تكون المقياس من 30 فقرة تم تطبيقها على 239 معلما ومعلمة. تم إجراء تحليل العاملي استكشافي لتحديد عدد عوامل جودة حياة العمل. ثم إجراء تحليل العاملي التأكيدي للتحقق من عدد العوامل، للتحقق من صحة وموثوقية المقياس، تم تحديد الصلاحية الهيكلية والموثوقية المركبة، كما تم تحديد العوامل الستة الهامة بناء على تحليل العوامل. أظهر التحليل الإضافي أن هذه العوامل الستة مجتمعة أوضحت 64.55٪ من التباين الكلي.

كلمات دالة: أداة قياس؛ جودة حياة العمل؛ هيكل عاملي.

1. Introduction

Quality of Work Life as a discipline began in the United States in 1972 when the phrase was coined by Davis at a "Democratization of work" conference held at Columbia University's Arden house. Quality of Work Life is a relatively newer term for a bundle of older issues. It has long been of interest to philosophers, social scientist, workers, and employers. It is a broad term that can embrace every conceivable aspect of work ethics, working conditions, worker expressions of satisfaction and dissatisfaction, and managerial concerns on the efficiency of outputs. The QWL is a complex concept that has brought a big debate in the academic literature about its conceptualization. QWL has different meanings to different people. Some label it as a happiness program, others especially trade unions name it as a subtle employee incentive or just another productivity device.

1.1. Quality of Work Life Definition:

The term Quality of Work Life has been defined differently by different psychologists and researchers in their own respective ways to cover various aspects of this concept. According to Nedler and Lawler (1983), the first definition of the term "Quality of Work Life" came into prominence during the period between 1959 to 1972. In this first stage of the emergence of QWL, it was conceived as a variable.

Nedler and Lawler (1983) came to conclude that the definition of quality of work life underwent several changes and modifications, with regard to its conceptual understanding. In fact, they have encountered many significant definitions of the term which was modified through various developing stages based on the type of work environment.

After discussion on this concept, it is time to give some definitions. Spink (1975) defines Quality of Work Life as: "the degree of excellence in the work and working conditions which contribute to overall satisfaction of the individual and enhance individual as well as organizational effectiveness".

Carlson (1980) states that Quality of Work Life is both a goal and an ongoing process for achieving goals. As a goal, Quality of Work Life is the commitment of any organization to work for improvement, the creation of more involving, satisfying and effective jobs and work environments for people at all levels of the organization. As a process, Quality of Work Life calls for an effort to realize the goal through the active involvement of individuals in the achievement of organizational goals.

Sirgy and al. (2001), at a parallel accordance, suggest that the key factors in quality of work life are: the need for satisfaction based on: job requirements, work environment, a supervisory behavior, and Organizational Commitment. They define the quality of work life as satisfaction of these key needs through resources, activities, and outcomes that emanates from participation in the work place.

1.2. The Dimensions of Quality of Work Life:

The above-mentioned review on the definitions of QWL indicates that Quality of Work Life is a multi-dimensional construct, made up of a number of interrelated factors that need a careful consideration to be conceptualized and measured.

There are many researchers' opinions on the dimensions of quality of work life, Walton (1975) who is one of the major interpreters of Quality of Work Life movement, has suggested eight main conceptual categories for understanding the concept of Quality of Work Life. Boisvert (1977) gave fifteen different dimensions and Carlson (1978) stated sixteen dimensions of Quality of Work Life, then Sinha and Sayeed (1980) developed seventeen

dimensions of Quality of Work Life. Heizel et al. (1993) suggested four dimensions of Quality of Work Life which are: growth, mastery, involvement, and self-control. The European Foundation for the Improvement of Living and Working Condition (2002) has used a different set of dimensions in their Quality of Work Life studies. The dimensions of Quality of Work Life selected are as follows: health and well-being, job security, job satisfaction, competency development, and work and work life balance.

1.3 Objectives of the Research:

The goal of the present inquiry is to examine and evaluate the Factorial Structure of the Teacher's Quality of Work Life (TQWL).

2. Methods and Materials:

2.1 Methods:

To evaluate the factorial validity of the teachers' quality of work life scale (TQWL), it is necessary first to suggest a theoretical model to be applied/tested and measure whether it is equivalent to the data collected from the sample of this research.

2.2 Participants:

Teachers working in primary schools of the city of Relizane constitute the sample of this research. According to the direction of education of the city of Relizane, there are a total of 3752 teachers working in primary schools of the city. Based on this number, a systematic random sample of 250 teachers was assigned. After the distribution of the questionnaires, 239 teachers responded, giving a response rate of 95.6%.

2.3 Instrumentation:

A questionnaire was designed by the researcher to measure the teachers' quality of work life (TQWL), it was revised by 8 faculty members of various universities. The questionnaire consists of 30 questions that represent six dimensions that are as follows: Work-Life Balance (WLB), Nature of Work (NOW), relation (RE), Incentives (IN), school administration (SA), working conditions (WC). The teachers of the sample were asked to respond in a way that best describes their feelings using a 5-point Likert scale.

3. Results and discussion :

3.1 General Profile of Respondents:

The majority of the respondents in this research were Female representing 56.07% of the whole sample whose age is from 31 to 40 years, i.e. 131 respondents (54.80%), followed by 57 respondents (23.80%) of 41 to 51 years of age. The teaching experience of these respondents (56.07%) is of 5 to 15 years.

Table 1. Characteristics of Sample Respondents

Variable	Categories	Frequency	Percentage
Gender	Male	105	43.93
	Female	134	56.07
Age	Below 30 years	34	14.2
	31-40 years	97	40.6
	41-50 years	57	23.8
	Above 35 years	51	21.3
Teaching experience	Below 5 years	56	23.43
	5-15 years	78	32.64
	16-25 years	83	34.73
	Above 25 years	22	9.21

3.2 Internal Consistency:

Nunnally (1978) is often associated with the assertion that the instruments used in a research should have a reliability of at least 0.70 and above. Accordingly, the result of Cronbach's alpha for this research indicates that no value of coefficient α was less than 0.70, for all of the TQWL dimensions.

Table 2. scale reliability.

	WLB	NOW	RE	IN	SA	WC
α	0.881	0.925	0.795	0.886	0.850	0.881
CR	0.883	0.924	0.795	0.893	0.855	0.886

α (cronbach coefficient alpha)

CR (Composite reliability): It measures the reliability of the factors and should ideally be above 0.75.

According to the results reported in Table 1, all indicators found good composite reliability values which range from 0.79 to 0.92. Consequently, the results confirm that the variables in this research are decently reliable as they are very consistent in explaining the variances constituted in them.

3.3 Construct Validity:

3.3.1 Explorative Factor Analysis (EFA):

A solution in principal axis factoring gave six factors with eigenvalues greater than 1.0. The charges for the six factors were obtained after a Varimax rotation (orthogonal). The sorted factor loads greater than 0.50 (Fen & Sabaruddin, 2008; Hair & al, 2006) are shown in Table 2 and the eigenvalues with a percentage of total variance in Table 3.

Table 3. Factor Loading of Scale Items in the TQWL Inventory among Teachers

	F1	F2	F3	F4	F5	F6
$Item_{7}$	0.828					
$Item_{13}$	0.823					
$Item_{24}$	0.806					
$Item_{19}$	0.804					
$Item_{1}$	0.750					
$Item_{28}$	0.682					
$item_{27}$		0.876				
$Item_{18}$		0.816				
$Item_{12}$		0.772				
$Item_{23}$		0.719				
$Item_{6}$		0.709				
$Item_{30}$		0.685				
$Item_{4}$			0.889			
$Item_{10}$			0.882			
$Item_{21}$			0.809			
$Item_{26}$			0.774			
$Item_{16}$			0.763			
$Item_{29}$			0.736			
$Item_{2}$				0.871		
$Item_{8}$				0.857		
$Item_{14}$				0.742		
$Item_{20}$				0.731		
$Item_{25}$				0.696		
$Item_{5}$					0.885	
$Item_{11}$					0.790	
$Item_{17}$					0.771	
$Item_{22}$					0.730	
Item3						0.856
$Item_{9}$						0.844
$Item_{15}$						0.818

Factor 1 (19.88% of the variance, 6 items) was related to aspects of Work-Life Balance (WLB) care. Factor 2 (variance of 14%, 6 elements) refers to the Nature of Work (NOW). Factor 3 (variance of 10.85%, 6 items) includes the elements related to relation (RE). Factor 4 (variance of 8.04%, 5 elements) concerns the characteristics of the Incentives (IN). Factor 5 (variance 6.74%, 4 elements) is related to school administration (SA). Factor 6 (5% variance, 3 elements) is related to working conditions (WC). In total, the six factors account for 64.56% of the total TQWL score variance (Table 2). Examination of the adequacy of the analysis sampling has yielded a statistic of 0.79 from Keizer Mayer Olkin, confirming that the elements were correctly correlated.

Table 4. Total Variance Explained

Facteur	Total	% of Variance	Cumulative %
1	5.966	19.887	19.887
2	4.202	14.006	33.892
3	3.256	10.855	44.747
4	2.415	8.049	52.797
5	2.024	6.745	59.542
6	1.504	5.014	64.555

3.3.2 Confirmatory Factor Analysis:

Confirmatory factor analysis (CFA) was used for the assessment of measurement model fit and unidimensionality to overcome this limitation. This section covers key concerns with regard to the CFA which includes identification issues and model specification.

- **Model Identification:**

From the parameter summary in AMOS output, the sample covariance matrix comprises a total of 465 pieces of information. Out of the 124 parameters in the hypothesised model, only 88 parameters were free to be estimated; the remaining 36 parameters were fixed in the model. The present hypothesised model was over-identified with 377 (465 - 88) degrees of freedom.

- **Model Specification:**

For specification of the latent variables or constructs, the loading for one of the indicators of each variable was fixed to 1.0 in the model to generate a scale for the latent variable. This process was conducted automatically with the features in AMOS 20 software.

- **Estimation of Model Parameters:**

To estimate the parameters of the model, the file that organizes the sample data was used. In order to match the data with the global model that was designed using Amos, the maximum swing method (ML) was applied. After analysis and comparison, the results are revealed in Figure 1.

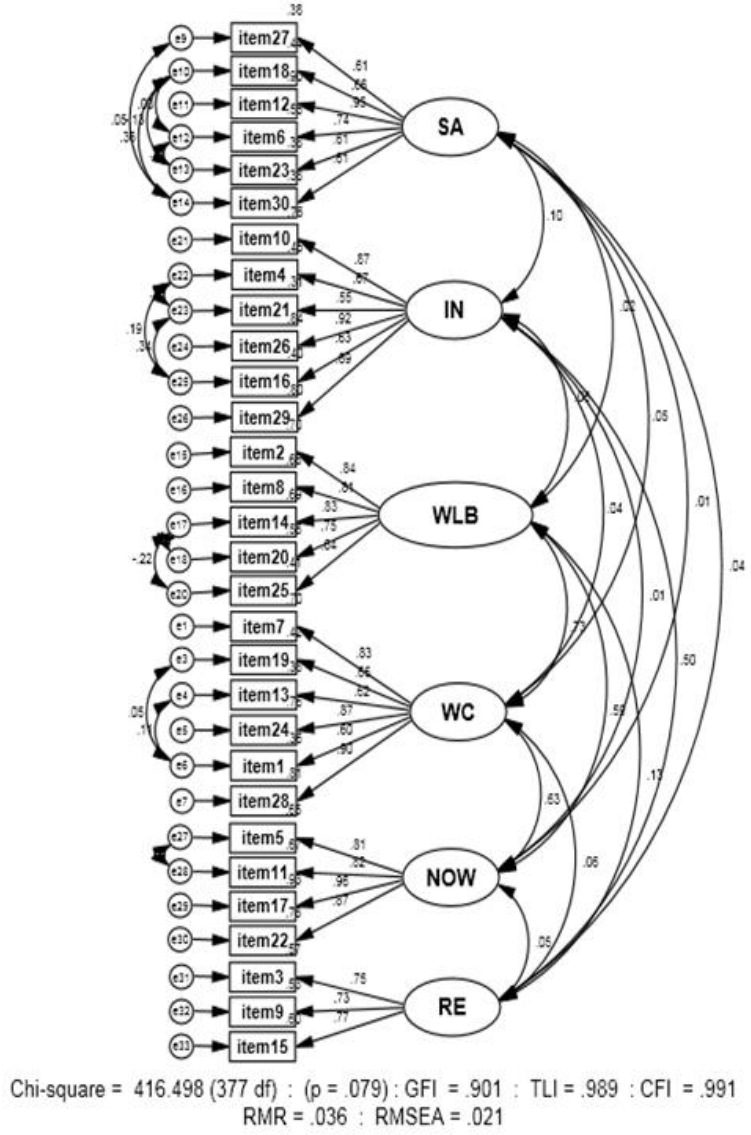

Figure 1. Final Measurement Model (source: amos.23 output)

3.4 Goodness of Fit Indices:

A substantively based modification was supplemented on the basis of empirical information from the CFA, but only when necessary to identify the offending item.

Table 5. Summary of Model Fit Indices for CFA Model

Fit Index	Recommended Value	Observed Value
χ^2		416.498
Df		377
χ^2 /df	5.00 (Kline 2011)	1.105
RMSEA	0.80 (Steiger 1990)	0.021
RMR		0.36
GFI	> 0.90 (Bollen 1990)	0.90
TLI	> 0.90 (Joreskog & Sorbom 1993)	0.98
CFI	> 0.50 (James, Mulaik & Brett 1982)	0.99

With 377 degrees of freedoms, the model of this research yields a $\chi 2$ value of 416.498. With SRMR value of 0.021, the model of this research exceeds the given cutoff point. To sum up, the results of the GOF index indicate that the measurement model fits the data relatively well ($\chi 2$/df=1.105,p=0.079, CFI=0.991, RMSEA=0.021, RMR=0.036).

Aside from the evaluation of the model's fit, the element of unidimensionality needs to be verified by investigating the items path directions and significant levels. This information will be provided from the regression weight output as revealed in Table 6. The parameters' variances compared between the groups are demonstrated in the Estimate Column. Based on the results, the value of each parameter estimate, which ranges from 0.556 to 1.673, is all positive. All critical ratios (C.R) values as seen in Table 6 are more than 1.96, showing the achievement of significance level. The highest value of C.R is of 19.757 while the lowest is of 8.063.

Table 6. Regression Weights

			Estimate	S.E.	C.R.	P	Label
item19	<---	WC	.682	.062	10.925	***	
item13	<---	WC	.661	.064	10.275	***	
item24	<---	WC	.725	.044	16.588	***	
item1	<---	WC	.649	.065	9.920	***	
item28	<---	WC	.738	.042	17.430	***	
item27	<---	SA	1.000				
item18	<---	SA	1.148	.134	8.545	***	
item12	<---	SA	1.673	.164	10.176	***	
item6	<---	SA	1.350	.144	9.341	***	
item23	<---	SA	1.166	.145	8.063	***	
item30	<---	SA	.953	.115	8.307	***	
item2	<---	WLB	1.000				
item8	<---	WLB	.706	.048	14.573	***	
item14	<---	WLB	.987	.068	14.611	***	
item20	<---	WLB	.860	.068	12.666	***	
item10	<---	IN	1.000				
item4	<---	IN	.686	.058	11.843	***	
item21	<---	IN	.556	.061	9.170	***	
item26	<---	IN	.738	.037	19.757	***	
item16	<---	IN	.653	.060	10.850	***	
item29	<---	IN	.715	.038	18.918	***	
item5	<---	NOW	1.000				
item11	<---	NOW	.786	.052	15.098	***	
item17	<---	NOW	1.235	.067	18.369	***	
item22	<---	NOW	1.176	.072	16.258	***	
item3	<---	RE	1.000				
item9	<---	RE	.988	.103	9.626	***	
item15	<---	RE	.985	.100	9.901	***	
item7	<---	WC	1.000				
item25	<---	WLB	.742	.072	10.331	***	

the values of all parameters' estimates are all significant and positive, this reveals that all items have significant associations with their respective latent variables as suggested in this research.

3.5 Convergent and Discriminant Validity:

In this research, two indicators of construct validity were investigated: convergent and discriminant validities. Convergent validity examines the degree to which the items that theoretically belong to a single construct correlate. Discriminant validity examines the degree to which items or the measures of a scale do not measure with other constructs

Table 7. Validity Testing of the Final Measurement Model.

	CR	AVE	MSV	ASV	WLB	NOW	REL	INC	SA	WC
WLB	.883	.603	.530	.181	**.777**					
NOW	.924	.753	.396	.150	.594	**.868**				
REL	.795	.564	.250	.055	.135	.050	**.751**			
INC	.893	.590	.250	.053	.062	.011	.500	**.768**		
SA	.855	.503	.010	.003	.022	.008	.041	.101	**.709**	
WC	.886	.571	.530	.187	.728	.629	.064	.040	.048	**.755**

Using the validity testing tool within the "Stats Tools Package" (Gaskin, 2012) and by imputing AMOS's correlations and Standardized Regression Weights tables into the tool, the validity testing results were calculated and the following points have been highlighted:

• **MSV** (Maximum Shared Squared Variance): The MSV between the factor and the other factors in the model indicates how well the factor is explained by items outside the factor (i.e. items of other constructs).

• **ASV** (Average shared squared variance): It is similar to MSV, but takes the average of the squared variances. It indicates how much an average is explained by items of other factors.

• **AVE** (Average variance extracted): This is a measure of convergent validity and should be above 0.5 (Hair & all, 2010). It indicates how well the items explain the factor. It is shown diagonally in bold. It should always be higher than MSV and ASV. The items belonging to the factor itself should explain it better than the items that belong to other factors (Straub & all, 2004).

As it can be seen in Table 4, the variances extracted of each variable are all above its squared correlation with other variables. Consistent with

Fornell & Larcker's (1981) guidelines, it proves that these results explain adequate evidence for discriminant validity of the measurement model.

3.6 Results:

In order to test the presupposed factorial structure of the TQWL, confirmatory factor analysis with maximum likelihood estimation was used utilizing the AMOS computer program. In this confirmatory factor-analytic approach, the fit of six factorial first order models was tested against the second order model: Model 1, a six-factor model in which the items of the six subscales were allowed to load on their respective factors (the six subscales were allowed to correlate); and Model 2, a higher-order-factor model in which the six subscales were allowed to load on one second-order factor. The evaluation of the fit model was based on the chi-square likelihood ratio, the Root Mean Square of error approximation (RMSEA), the Root Mean Square Residual (RMR), the Goodness of Fit Index (GFI), Tucker-Lewis index (TLI), and the Normed Comparative Fit Index (CFI). The results of confirmatory factor analysis showed that chi-square ratios and the others index indicated that the fit of the model was adequate (see Table 4).

4. Conclusion

The present research paper attempts to examine the structural validity of the TQWL. For this purpose, we performed a CFA on two versions of the TQWL factor structure: a version with second order factor model and a version with six-factor first order model. The second order factor model did not fit the data well. We therefore retained the six-factor first order model, which had an acceptable fit. The TQWL six-factor first order model factor structure is illustrated in Figure 1.

The fits index indicates that this TQWL six-factor first order model fits well with the observed data**;** moreover, the internal consistency of the subscales based on this model was satisfactory. In general, the six-factor first order model generated from CFA was consonant with the hypothesized underlying dimensional framework of QWL used in developing the TQWL.

The TQWL was adapted to the Algerian primary school teachers. The scale had the appropriate psychometric properties, evidenced by content validity, structural validity, and internal consistency. The TQWL can therefore be presented to the Algerian educational authorities to evaluate the QVT of primary school teachers, and can be introduced in other sectors.

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