RELIABILITY AND VALIDITY OF A MODIFIED JOB DIAGNOSTIC SURVEY FOR FRESH GRADUATES' RETENTION

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ABSTRACT

Fresh graduates' retention is a key ingredient of labor market effectiveness and well-built instruments are necessary to identify its determinants. This study develops an extended version of the widely used Hackman and Oldham's "Job Diagnostic Survey", identifying and aiming to bridge its theoretical gaps. The new, 135-item "Modified Job Diagnostic Survey for Retention" implements an integrated framework, with additional "core job dimensions", "experienced psychological states" and "individual differences", while incorporating a new scale on "labor market conditions", to assess the effect of "personal/work outcomes" on retention. Its psychometric properties are tested, using a sample of 630 respondents. Construct validity is evaluated using exploratory factor analysis (EFA) with Promax rotation. Face validity is examined through reviews by a panel of experts. Reliability of the instrument is estimated with Cronbach's alpha coefficients. The significance of the new instrument is highlighted by filling the void in research involving redesigning jobs while taking into consideration, for the first time, the effect of labor market conditions on fresh graduates' affective and personal work outcomes. The construct validity shows that it has a five-factor structure where all items are reliable indicators of their corresponding factors. The reliability of the five scales is satisfactory, with acceptable values of Cronbach's alpha (ranging from 0.656 to 0.901). Thus, the new instrument is a strong, valid and reliable tool for studies on the retention of fresh graduates.

Keywords: Fresh Graduates, Job Retention, Core Job Dimensions, Personal/work Outcomes, Instrument Reliability and Validity.

INTRODUCTION

Relationships between core job dimensions and employee's motivation, job satisfaction and retention, have been studied for many decades now (Herzberg, 1964; McClelland, 1975; Abraham, 1999; Forgacs, 2009). In today's challenging labor markets, organizations make relentless efforts to explore new ways of maximizing retention. One of the key effects of the present age of globalization and technological progress has been to recognize the importance of fresh graduates' roles in confronting labor market challenges and increasing organizational efficiency and effectiveness.

Hackman & Oldham's Job Characteristics Model (JCM) has identified the role of job enrichment and has stressed the importance of increasing employees' motivation and satisfaction to increase employment retention (Hackman & Oldham, 1975; 1976; 1980). JCM has been recognized as one of the most influential theories on organizational behavior and has facilitated the development of a large body of research into the meaning of work (Fried & Fems, 1987; Taber & Taylor, 1990; Rungtusanatham & Anderson, 1996; Behson, 2010).

However, JCM and its testing instrument, the Job Diagnostic Survey (JDS), are not without limitations. First, the JDS scales do not necessarily exhaust the range of possible job characteristics and dimensions that affect retention. A need for expanding JDS by identifying and including characteristics that are not assessed has been indicated (e.g., Taber & Taylor, 1990). Second, studies testing JCM were mostly conducted in western countries and the need to test the model in other regions has been emphasized (e.g., Abu Elanain, 2009). Finally, not much work has been done on the special group of *"fresh"* graduates, with respect to their job satisfaction and its relationship with the labor market conditions (e.g., Shierholz et al., 2012).

In view of the above, the development of a reliable tool to assess the job satisfaction and retention of fresh graduates is deemed necessary, with the aim to increase the stay of fresh graduates in their local labor markets. This should help filling the gap in research involving redesigning jobs, while taking into consideration, for the first time, the effect of labor market conditions on fresh graduates' affective and personal work outcomes. In the current paper, a modified and extended version of JDS has been created. Overall, the paper has the following objectives:

(1) To modify the Job Diagnostic Survey by synthesizing additional core job dimensions, psychological states and individual differences, as well as integrating labor market conditions to assess the effect of personal/work outcomes on the retention of fresh graduates.

(2) To test the psychometric properties of the newly developed comprehensive instrument named the Modified Job Diagnostic Survey-for retention (MJDS-R) in order to ensure the use of a reliable and valid tool.

THEORETICAL DEVELOPMENT

The Job Characteristics Model (JCM) (Hackman & Oldham, 1975; 1976; 1980) focuses on the linkages among three main parts: core job dimensions, psychological states of employees that are affected by these core job dimensions, and the resulting personal and work outcomes. Moreover, JCM includes moderating variables, observing how individual differences among people moderate their work outcomes. In order to test the JCM theory and to assess its constructs, the Job Diagnostic Survey (JDS) was developed (Hackman & Oldham, 1975 & 1980; Oldham et al., 2005). JDS has been used in hundreds of studies and is still one of the most frequently cited instruments in the *"Social Sciences Citation Index"* for assessing worker perceptions of job characteristics.

However, despite its wide use, the JCM framework has limitations and theoretical gaps. First, its comprehensiveness could be expanded, to assess a broader array of job dimensions. The core job dimensions considered in JCM are mainly recognized as internal to the job itself. Thus, the model does not take into consideration the importance of extrinsic motivation which comes mainly as a result of extrinsic rewards and the social environment of the job (e.g. Need-based Theories). It omits various job dimensions that have been shown to have a significant effect on job satisfaction and retention regardless of job type, such as participation in the setting of goals, growth prospects, working conditions, job security, financial rewards, promotion, work load, physical effort and technology use (e.g., Booth et al., 2002; Limbu et al., 2014; Card et al., 2012; Barr-Anderson et.al., 2011; Dugguh & Dennis, 2014; Laurenza et al., 2018; Thrassou et al., 2018; Vrontis & Christofi, 2019). In addition, the JCM model limits psychological states to experienced meaningfulness of the work, experienced responsibility for the outcomes of the work and knowledge of the actual results of the work activities and does not emphasize on the importance of self-confidence/self-esteem and the prestige inside-outside of employees, which

have been found to positively affect job satisfaction (Abraham, 1999; Judge et al., 1998; Alavi & Askaripur, 2003; Shams et al., 2018; Vassou et al., 2019).

Second, JDS does not take into consideration the effect of the labor market conditions on job satisfaction and employment retention (e.g., Theory of Labor Market Segmentation; Reich et al., 1973). Many factors related to the labor market can be explored to this end, including unionization, politics, labor status, geographical location of the job, nature of the job and sector of employment (e.g. private/public) (Cassar, 2010; Serhan et al., 2016).

Third, in regards to individual differences, JDS does not take into consideration the cultural factor, though human behavior at work has been shown to be affected by the differences in values and ethics across national cultures (Hofstede et al., 2010; Komodromos et al., 2019).

Fourth, the model limits the work outcomes and does not take into consideration the commitment to the job which may also come as a result of the critical psychological states (Babin, 1996). Commitment to the job may consequently result in labor market outcomes where labor market embraces satisfied employees who are motivated, show high commitment and thus are retained (Serhan et al., 2016; Nandan et al., 2018).

Fifth, JCM focuses only on employees and does not take into consideration the key difference between a fresh graduate's attitude and an employee's attitude (Jackson & Chapman, 2012). Studies in various countries have shown that fresh graduates mainly suffer from a complexity of work integration. They have been proved to be less loyal and with higher expectations compared to employees and, unlike earlier generations, are always ready to move between jobs until their expectations are met, which makes it harder for employers to retain them (Jackson & Chapman, 2012; Nayebpour & Bokaei, 2019). In order to increase fresh graduates' job satisfaction and commitment, there is a great need for a significantly high level of motivation at various levels (Shujaat et al., 2014). What is more, in some specific fields of study, the educational curriculum of studies does not match the local labor market requirements but instead focuses more on the international labor market requirements, and this has an effect on the retention of fresh graduates (Chakrani, 2012; Leonidou et al., 2018). In fact, two major phenomena nowadays include *"Overeducation"* (graduates whose educational level exceeds the educational level required in their jobs) and *"Horizontal-mismatch"* (low fit between educational and occupational fields) (McGuinness, 2006; Mehta et al., 2011; Moore & Rosenbloom, 2016; Pereira et al., 2019).

Finally, various studies have tested and validated JDS in western countries, while many scholars and practitioners stress the need to test and validate the model in other regions and different countries of the world (e.g., Abu Elanain, 2009; Vrontis et al., 2019).

Fresh graduates' retention appears to be affected by five groups of factors: core job dimensions and related psychological states, labor market conditions, individual differences and personal/work outcomes. Therefore, in light of the aforementioned gaps and limitations, JDS is extended and modified in the current study by (1) adding questions in relation to participation, work load, working conditions, physical effort, technology use, promotion and social environment, (2) adding questions in relation to additional critical psychological states, namely self-confidence and prestige inside outside, (3) inserting questions in relation to additional personal/work outcomes (*"high commitment with work"*), (4) incorporating labor market conditions (geographical location, unionization, labor status, job matching, private and public sector, foreign and national workers, formal and informal jobs, educational and labor market gap) and (5) integrating additional moderating variables related to individual differences, such as age, gender, education, social class and culture. All the above modifications will be incorporated

in the newly developed JDS, hereby called *"MJDS-R". "MJDS-R"* is then to be tested and validated.

METHOD

Measure

The original JDS consists of 83 items (Hackman & Oldham, 1974). Five items were modified in 1987, by Idaszak & Drasgow to avoid reverse-coding which appeared to have caused difficulties in factoring the original JDS (Idaszak & Drasgow, 1987; Idaszak et al., 1988).

The *"Modified Job Diagnostic Survey-for Retention"* (MJDS-R), developed in the present study, consists of 135 items, which are a combination of the 83 items of the original JDS (Hackman & Oldham, 1974; Idaszak & Drasgow, 1987) and 52 new items developed under the current, integrated modeling framework. The 135 items are classified into five scales, one of which (labor market conditions) is completely new, while the other four include additional items compared to the original JDS, to address issues that were not previously addressed, based on the theoretical gaps. The five scales are: (1) *"core job dimensions"* which refers to concepts like work conditions, skill variety and promotion, (2) *"experienced psychological states"* (e.g. prestige inside outside, experienced meaningfulness of the work etc.), (3) *"labor market conditions"*, which includes issues like geographical location, unionization, labor status and educational/labor market gap, (4) *"individual differences"* (i.e. personal characteristics, knowledge and skill) and (5) *"personal/work outcomes",* such as motivation and job satisfaction (please refer to the Appendix for the explicit description of MJDS-R).

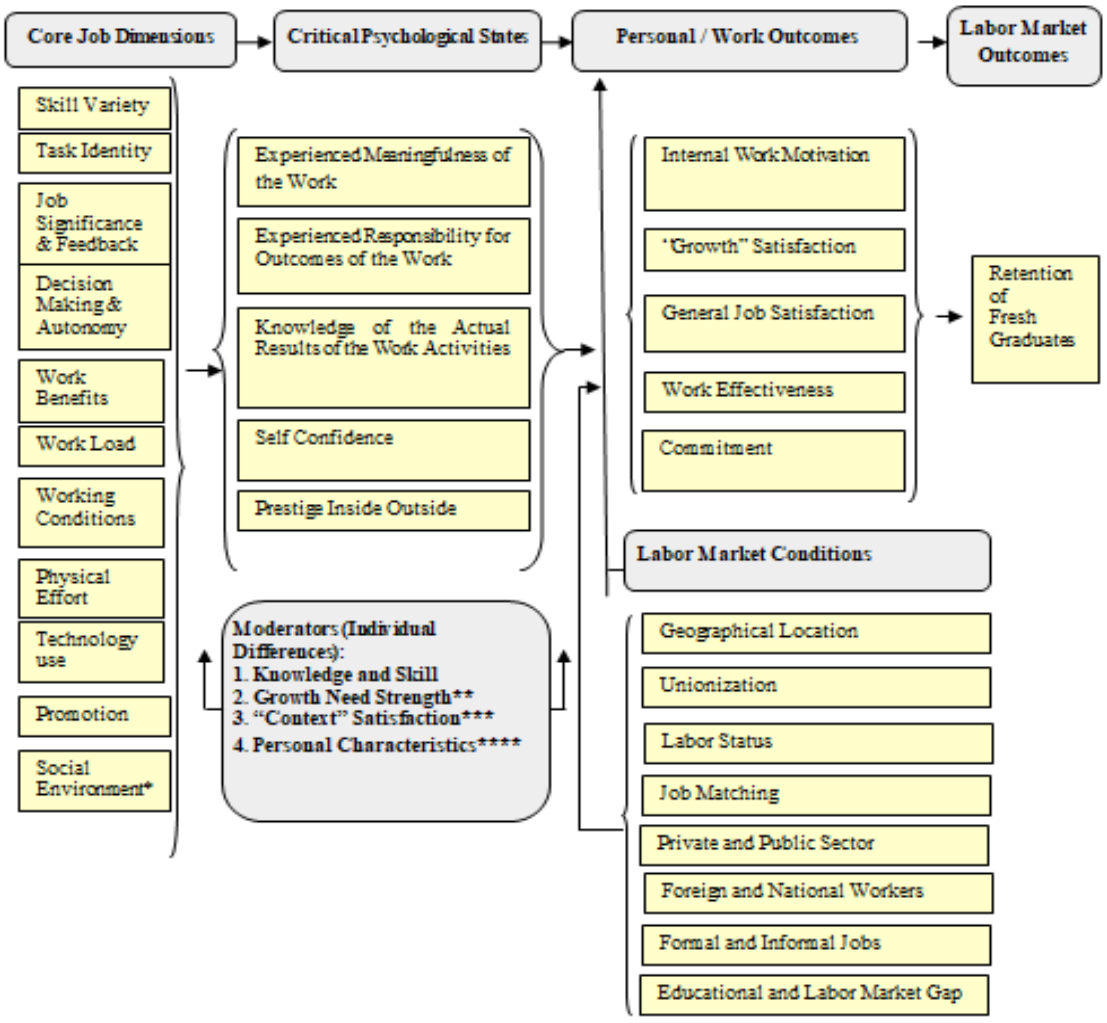
MJDS-R proposes that positive personal/work outcomes are obtained when all experienced psychological states are present. The theory proposes that all experienced psychological states are created by the presence of core job dimensions. The theory is not expected to show the same effectiveness for all individuals, thus various individual differences were introduced as moderators of the relationships between core job dimensions, experienced psychological states and personal/work outcomes. Further, the theory proposes that positive personal/work outcomes are obtained in the presence of labor market conditions and are the major determinant of the outcome (fresh graduates' retention). The modified theory, as proposed by MJDS-R, is presented in Figure 1.

Respondents were asked to score their perceptions to each item on a 7-point Likert-type scale ranging from Extremely Unsatisfied (1) to Extremely Satisfied (7) and from Strongly Disagree (1) to Strongly Agree (7). Also socio-demographic data such as gender, age, marital status, level of education, area and type of employment, years of experience and salary were collected.

Participants

For the purpose of the study *"fresh"* graduates were considered to be those who had graduated with a University degree (Bachelor's, Master's or PhD) in the past three years and whose work experience did not exceed the period of two years. To fill the research gap of mainly testing JDS in western countries, it was decided to test the modified version, MJDS-R, in a non-western population.

Lebanese fresh graduates were chosen, since they had been documented to suffer from outdated labor policies, complexity of work integration and lack of motivation and satisfaction, and are often obliged to accept available opportunities not be matching their qualifications (The World Bank, 2013).



Note:

1. Social Environment: Interdependence, feedback from others, social support, interaction outside the organization (Morgeson & Humphrey, 2006)
2. ** Growth Need Strength: The strength of a fresh graduate's need for personal achievement, learning, and development
3. *** Context Satisfaction: Satisfaction with Job Security, compensation, co-workers and supervision
4. **** Personal Characteristics: Age, Gender, Education (Level of Education, Type of Education (Subject of Study), Language of Instruction, Private or Public Sector), Social Class (Upper, middle and Lower Class), and Culture (Power Distance, Individualism versus Collectivism, Uncertainty Avoidance, Pragmatic versus Normative, Indulgence versus Restraint)

FIGURE 1
MODIFIED JOB DIAGNOSTIC SURVEY-FOR RETENTION (*"MJDS - R"*)

A stratified random sampling technique was used. Out of list of thirty one Lebanese Universities, a random sample of six Universities was selected (one public university and five private universities). Using fully retrieved lists of graduates of the last three years, 117 respondents were chosen from each University. A well-diversified sample of fresh graduates was thus created, in terms of socio-demographic characteristics. A total of 702 fresh graduates were contacted, of whom 630 subsequently completed the survey, via phone interviews, obtaining a

response rate of 89.74%. The sample size of 630 was large enough, both considering the target population of fresh graduates from the thirty two Lebanese universities as well as through determination with the sample size software, G*Power (Hemming et al., 2011).

Following ethical guidelines, written permission to use and modify the JDS was obtained by the authors of the original JDS instrument of 1974 (Hackman & Oldham, 1974) as well as by the authors of the five modified items in the revised JDS of 1987 (Idaszak & Drasgow, 1987). Permission to contact the study was obtained from the affiliated Ethics Committee and the University Management Board of the participating universities. An informed consent form was signed by the participants.

Data Analysis

To fulfill the objectives of this study, JDS was modified by synthesizing additional core job dimensions, psychological states and individual differences, as well as integrating labor market conditions so as to assess the effect of personal/work outcomes on the retention of fresh graduates. Then, the psychometric properties of MJDS-R were tested in order to ensure the use of a reliable and valid tool through checking the internal consistency and reliability and the face and construct validity of the instrument.

Knowing that the original JDS has been widely used and its content validity has been assessed by many scholars (e.g., Fried & Fems, 1987; Taber & Taylor, 1990; Lee-Ross, 1998; Morgeson & Humphrey, 2006; Rungtusanatham & Anderson, 1996; Van Saane et al., 2003; Vorster et. al., 2005), the new items in the extended version, MJDS-R, were examined and reviewed by four experts (Academics in related areas). The panel of experts consented and agreed that MJDS-R reflected the situation in the fresh graduates' labor market and the items had acceptable face validity.

For demographic data and scale items, descriptive statistics including frequencies, percentages, means and standard deviations, skewness and kurtosis were calculated as they form the basis of virtually every quantitative analysis of data. As per George & Mallery (2001), skewness and kurtosis values are considered acceptable if they are between -1.5 and +1.5.

Internal consistency and reliability of the scales and subscales was examined with a number of widely used reliability measures in related studies of psychometric properties, including Cronbach's alpha, item analysis, Cronbach's alpha if item deleted and item-to-total correlations (e.g., Cronbach, 1971; Tsangari & Petro-Nustas, 2012). Values of Cronbach's alpha close to 1 show high internal consistency, where values higher than 0.65 are considered satisfactory (George & Mallery, 2001). Corrected item-to-scale correlations should be large enough, with a rough benchmark being 0.3 (Polit & Beck, 2011), with values of about 0.2 being acceptable, when the scale studied is rather short and the item contributes to content validity or when the scale measures broad characteristics (Linley et al., 2007).

Construct validity was examined by Exploratory Factor Analysis (EFA) with Promax rotation and Principal components analysis (PCA) as the extraction method. EFA was used to uncover the fundamental structure of a pretty large set of dimensions and to identify the underlying relationships between measured dimensions. The procedure used was similar to other studies of measuring construct validity (e.g., Bergjan & Hertel, 2013; Papastavrou et al., 2011, 2016). The underlying assumptions of factor analysis were tested for each of the five scales, using Kaiser-Mayer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. The criteria for selecting subscales consisted of eigenvalues being higher than 1 as well as the percentage of variance explained by the factors (Field, 2009). Robustness tests were additionally performed.

All the statistical analyses were performed using SPSS version 23.0 (SPSS, Inc., Chicago, IL, USA).

RESULTS AND DISCUSSION

The final sample included 630 fresh graduates. The mean age of the respondents was 25.11 years (SD=5.73 years), ranging from 18 to 50 years, with 373 (59.2%) females and 257 (40.8%) males. Most of the participants (77.5%) were single and 545 respondents (86.5%) had no children. 63.5% of the respondents held a Bachelor degree and 26.7% had a Master's. Concerning their major of education, most were related to Business (41.9%), followed by Sciences, Technology and Engineering (31.8%). Time since graduation ranged from less than 6 months up to three years (mean=19.9 months, SD=1.15 months) and work experience ranged from less than 6 months up to two years (mean=20.9 months, SD=8.14 months). Regarding job position, around 34% reported clerk/office administration positions, while 22.5% held supervisor/manager positions. Around 20% of respondents were involved in Teaching/Academia. 503 participants (79.8%) worked in the private sector. Most respondents reported salaries that ranged between 500 USD and 1000 USD (42.2%), followed by 1000 USD-2000 USD (24.8%).

For individual items, descriptive statistics (mean, standard deviation, skewness and kurtosis) were calculated for examining the variability of the answers and testing for significant deviations from normality. The highest mean value was of an item on the internal motivation subscale (item 2.2 in scale 5-My opinion of myself goes up when I do this job well) with a mean of 6.10 and a low standard deviation of 1.22. Even though in many items of the 5 scales there was a slight tendency for positive attitudes *("agree/strongly agree", "satisfied/extremely satisfied"*), values of skewness and kurtosis were in the acceptable range. As a result, all 135 items of the 5 scales were included in the analysis.

The results showed that for all five scales there was high sampling adequacy, with KMO measures larger than 0.5 (0.855, 0.749, 0.741, 0.847 and 0.798 respectively). In addition, for all scales, Bartlett's test of sphericity was significant ($p<0.001$), eliminating the null hypothesis of an identity correlation matrix. Therefore the data were appropriate for factor analysis. The structure of each of the five scales was then examined.

Scale 1-Core Job Dimensions

The results of EFA showed that 11 subscales were extracted, which explained 79.2% of the variance and factor loadings higher than 0.5, ranging from 0.520 to 0.906.

Subscale *"Task Identity"* was identical to the corresponding subscale of the original JDS. Similarly, to avoid single-item factors, items Q1.1 and Q1.4 were grouped together, creating the subscale *"Skill Variety"* exactly as in the original JDS. Grouping the two items together was statistically justified, since the two items had a significant correlation and the subscale had high internal consistency (e.g., Hair et al., 2010; Hadjibalassi et al., 2012). Similarly, items Q1.13 and Q1.18 were grouped together by EFA, creating the subscale "*Work Benefits"*. Subscales *"Participation in Decision Making"* and *"Autonomy",* of the original JDS, were merged, since their items loaded on one factor (loadings from 0.716 to 0.790) and their grouping made sense meaning-wise; the new subscale was named *"Decision Making and Autonomy"* and had the highest eigenvalue (3.122) and the highest percentage of variance explained (12%).Subscales *"Task Significance"* (Q1.5 and Q1.10) and *"Feedback from Job"* (Q1.3 and Q1.8) of the original

JDS were also merged and the new subscale was named *"Job significance and feedback".* The remaining subscales were newly added, in the revised instrument MJDS-R.

Table 1
DESCRIPTIVES, RELIABILITY ANALYSIS AND FACTOR LOADINGS FOR SCALE 1, CORE JOB DIMENSIONS AND ITS 11 SUBSCALES (n= 630)

Item	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Factor Loadings
Scale 1: Core Job Dimensions, 11 sub-scales, 26 items, Cronbach's alpha 0.901					
Skill Variety, 2 items, Cronbach's alpha 0.571					
Q 1.1	5.08	1.59	0.326	0.901	0.822
Q1.4	6.04	1.54	0.404	0.901	0.906
Task Identity, 2 items, Cronbach's alpha 0.757					
Q1.2	5.07	1.78	0.498	0.897	0.719
Q1.7	5.52	1.62	0.578	0.896	0.678
Job Significance and Feedback, 4 items, Cronbach's alpha 0.836					
Q1.3	5.32	1.54	0.689	0.783	0.837
Q1.5	5.66	1.52	0.704	0.776	0.781
Q1.8	5.7	1.45	0.67	0.792	0.753
Q1.10	5.42	1.56	0.609	0.819	0.52
Decision Making and Autonomy, 4 items, Cronbach's alpha 0.868					
Q1.6	5.1	1.93	0.744	0.822	0.774
Q1.9	4.74	1.89	0.685	0.845	0.79
Q1.11	4.83	1.92	0.745	0.821	0.717
Q1.16	4.55	1.98	0.704	0.838	0.716
Work Load, 2 items, Cronbach's alpha 0.742					
Q1.12	4.83	1.92	0.479	0.898	0.752
Q1.17	4.44	1.77	0.517	0.897	0.703
Work Benefits, 2 items, Cronbach's alpha 0.478					
Q1.13	3.85	2.46	0.412	0.9	0.894
Q1.18	4.79	2.21	0.422	0.899	0.791
Physical Effort, 2 items, Cronbach's alpha 0.643					
Q1.14	3.18	1.94	0.475	0.901	0.778
Q1.20	3.34	1.81	0.415	0.899	0.815
Technology Use, 2 items, Cronbach's alpha 0.682					
Q1.15	5.6	1.91	0.4	0.899	0.778
Q1.23	4.86	1.87	0.443	0.899	0.815
Promotion, 2 items, Cronbach's alpha 0.936					
Q1.19	3.61	2.29	0.584	0.895	0.836
Q1.21	3.71	2.21	0.625	0.894	0.867
Social Environment, 2 items, Cronbach's alpha 0.691					
Q1.22	4.42	2.09	0.489	0.898	0.788
Q1.24	3.57	1.87	0.481	0.898	0.776
Working Conditions, 2 items, Cronbach's alpha 0.777					
Q1.25	5.02	1.96	0.377	0.9	0.854
Q1.26	4.41	2.13	0.321	0.901	0.882

The reliability of scale 1 (Cronbach's alpha 0.901), as well as its 11 subscales, was found to be highly satisfactory. Item analysis showed that if any item was deleted from the scale, the alpha turned to be slightly lower or approximately the same as compared to when all items were included, meaning that all items were considered reliable and were thus retained. Corrected item-

to-scale correlations varied from 0.321 to 0.745 showing that individual items were well correlated with the other items in the scale.

The results regarding EFA, the final structure and the reliability of scale 1 appear in Table 1.

Scale 2-Experienced Psychological States

EFA showed that five subscales were extracted, which explained a total of 58.8% of the variance and had satisfactory factor loadings.

Table 2
DESCRIPTIVES, RELIABILITY ANALYSIS AND FACTOR LOADINGS FOR SCALE 2, EXPERIENCED PSYCHOLOGICAL STATES AND ITS 5 SUBSCALES (n= 630)

Item	Mean	Std. Deviation	Corrected Item-Total Correlation	Deleted Cronbach's Alpha if Item	Factor Loadings
Scale 2: Experienced Psychological States, 5 sub-scales, 17 items, Cronbach's alpha 0.656					
Experienced Meaningfulness of the Work, 3 items, Cronbach's alpha 0.666					
Q2.7	5.5	1.51	0.471	0.58	0.753
Q2.16	5.5	1.5	0.552	0.509	0.689
Q2.18	4.81	1.6	0.443	0.615	0.66
Experienced Responsibility of the Work, 2 items, Cronbach's alpha 0.481					
Q2.12	5.25	1.55	0.336	0.331	0.801
Q2.15	5.75	1.31	0.346	0.311	0.764
Knowledge of Results, 5 items, Cronbach's alpha 0.584					
Q4.3	5.39	1.46	0.477	0.443	0.702
Q2.11	5.13	1.68	0.322	0.544	0.564
Q4.10	4.22	1.35	0.246	0.576	0.615
Q4.11	4.18	1.41	0.431	0.478	0.675
Q4.14	5.11	1.39	0.237	0.578	0.417
Prestige Inside Outside, 4 items, Cronbach's alpha 0.712					
Q2.17	4.67	1.53	0.388	0.4	0.492
Q2.19	5.18	1.39	0.442	0.352	0.483
Q4.12	5.03	1.28	0.383	0.413	0.793
Q4.13	4.16	1.22	0.196	0.624	0.761
Self-Confidence, 4 items, Cronbach's alpha 0.846					
Q4.4	4.91	1.55	0.796	0.753	0.886
Q4.5	4.85	1.36	0.672	0.811	0.803
Q4.6	4.82	1.49	0.61	0.834	0.755
Q4.7	4.76	1.67	0.669	0.813	0.817

Subscale 1 (self-confidence) included items 4.4, 4.5, 4.6 and 4.7 and was new, compared to the original JDS. It had high loadings (0.755 to 0.886), high reliability and fitted in terms of meaning. It also had the highest eigenvalue (2.974) and the highest percentage of variance explained (16.5%). As for subscale 2 (experienced meaningfulness of the work), item 4.6 was moved to subscale 1 since it had a low loading (0.139) and non-significant correlation with other items (r=0.011, p=0.779). Items 2.4 and 4.3 were deleted, since Cronbach's alpha was greater if deleted and had low loadings, while items 2.16 and 2.18 were added since they fitted in terms of meaning, had high loadings and Cronbach's alpha was lower if deleted. Subscale 3 *"prestige inside outside"* is a newly added subscale. Subscale 4, *"knowledge of results",* had two items (2.5 and 4.5) deleted (low loadings and reliability) and three items (4.3, 4.11 and 4.14) added due to their high reliability and loadings, and which also matched conceptually. Finally, subscale 5 (experienced responsibility for the work) included two items of the corresponding JDS subscale

(2.12 and 2.15), while items 2.1 and 2.8 were deleted (low loadings and reliability) and items 4.4 and 4.7 were moved to subscale 1. The reliability of scale 2 was found to be satisfactory (Cronbach's alpha 0.656) and ranged from 0.481 (*"Experienced responsibility of the work"*) to 0.846 (*"Self-confidence"*) for the subscales. Cronbach's alpha if any item was deleted became lower, thus all the items were retained. Finally, corrected item-to-scale correlations for scale 2 were satisfactory. The results regarding EFA, the final structure and the reliability of scale 2 appear in Table 2.

Scale 3-Labor Market Conditions

Scale 3 (labor market conditions) is a new scale, created for the revised instrument, MJDS-R. EFA results showed that eight subscales were extracted, which explained a total of 83.4% of the variance. The loadings in all the subscales were very high (all higher than 0.5).The subscale *"Educational and Labor Market Gap"* had the highest eigenvalue (2.637) and the highest percentage of variance explained (16.5%), with factor loadings ranging from 0.716 to 0.836.

Table 3
DESCRIPTIVES, RELIABILITY ANALYSIS AND FACTOR LOADINGS FOR SCALE 3, LABOR MARKET CONDITIONS AND ITS 8 SUBSCALES (n= 630)

Item	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Deleted Alpha if Item	Factor Loadings
Scale 3: Labor Market Conditions, 8 sub-scales, 16 items, Cronbach's alpha 0.782					
Geographical Location, 2 items, Cronbach's alpha 0.829					
Q7.1	5.48	1.57	0.783	0.71	0.916
Q7.5	5.43	1.62	0.242	0.708	0.919
Unionization, 2 items, Cronbach's alpha 0.603					
Q7.2	5.8	1.55	0.31	0.706	0.855
Q7.10	5.76	1.27	0.455	0.693	0.745
Labor Status, 2 items, Cronbach's alpha 0.670					
Q7.3	5.15	1.56	0.253	0.712	0.83
Q7.11	5.07	1.78	0.201	0.718	0.886
Job Matching, 2 items, Cronbach's alpha 0.778					
Q7.4	6.09	1.13	0.542	0.689	0.664
Q7.13	6.01	1.25	0.587	0.709	0.94
Private and Public Sector, 2 items, Cronbach's alpha 0.851					
Q7.6	4.93	1.58	0.19	0.714	0.752
Q7.14	4.8	1.6	0.189	0.759	0.89
Foreign and National Workers, 2 items, Cronbach's alpha 0.795					
Q7.7	4.77	1.57	0.413	0.692	0.867
Q7.15	4.66	1.47	0.417	0.692	0.848
Formal and Informal Jobs, 2 items, Cronbach's alpha 0.869					
Q7.8	5.5	1.38	0.592	0.679	0.819
Q7.12	5.29	1.48	0.581	0.678	0.83
Educational and Labor Market Gap, 2 items, Cronbach's alpha 0.708					
Q7.9	5.66	1.49	0.527	0.687	0.836
Q7.16	5.84	1.29	0.602	0.68	0.716

All items loaded significantly onto their respective subscales and the subscale structure was as follows: subscale 1-educational and labor market gap (two items: Q7.9 and Q7.16); subscale 2-formal and informal jobs (two items: Q7.8 and Q7.12); subscale 3-foreign and

national workers (two items: Q7.7 and Q7.15); subscale 4-geographical location (two items: Q7.1 and Q7.5); subscale 5-labor status (two items: Q 7.3 and Q7.11); subscale 6-Unionization (two items: Q7.2 and Q7.10); subscale 7-private and public sector (two items: Q7.6 and Q7.14) and subscale 8-job matching (two items: Q7.4 and Q7.13) with loadings ranging from 0.664 to 0.940.

The reliability of scale 3 was satisfactory (Cronbach's alpha 0.782) and ranged from 0.603 (*"Unionization"*) to 0.869 (*"Formal and Informal Jobs"*) for the subscales. Item analysis showed that all items added to the high reliability of the scale and were kept in the analysis. Corrected item-to-scale correlations for scale 3 were also generally acceptable.

The results regarding EFA, the final structure and the reliability of scale 3 appear in Table 3.

Scale 4-Individual Differences

Table 4
Descriptives, Internal Consistency, Reliability Analysis and Factor Loadings for Scale 4, Individual Differences and its 4 subscales (n= 630)

Item	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Factor Loadings
Scale 4: Individual Differences, 4 sub-scales, 31 items, Cronbach's alpha 0.766					
Skill and Knowledge, 3 items, Cronbach's alpha 0.905					
Q3.15	5.14	1.57	0.836	0.844	0.862
Q3.16	5.25	1.5	0.878	0.806	0.884
Q3.17	5.45	1.39	0.729	0.901	0.851
Context Satisfactions, 10 items, Cronbach's alpha 0.915					
Q3.1	4.52	1.76	0.648	0.902	0.606
Q3.11	4.2	1.76	0.772	0.901	0.756
Q3.2	3.82	1.82	0.669	0.901	0.829
Q3.9	3.87	1.74	0.668	0.901	0.859
Q3.4	4.68	1.79	0.731	0.901	0.68
Q3.7	4.9	1.67	0.665	0.902	0.452
Q3.12	4.93	1.67	0.611	0.901	0.395
Q3.5	5	1.72	0.725	0.9	0.666
Q3.8	4.54	1.93	0.756	0.901	0.752
Q3.14	4.66	1.65	0.602	0.902	0.57
Individual Growth Need Strength (Would Like Format), 6 items, Cronbach's alpha 0.796					
Q5.2	5.39	1.78	0.531	0.769	0.692
Q5.3	5.4	1.67	0.601	0.753	0.76
Q5.6	5.99	1.59	0.536	0.768	0.678
Q5.8	5.45	1.86	0.52	0.773	0.655
Q5.10	6.08	1.38	0.566	0.764	0.698
Q5.11	5.61	1.83	0.566	0.761	0.714
Individual Growth Need Strength (Job Choice Format), 10 items, Cronbach's alpha 0.511					
Q6.1	3.3	2.31	0.287	0.46	0.559
Q6.2	4.76	2.18	0.192	0.492	0.374
Q6.3	5.26	2.17	0.15	0.506	0.303
Q6.4	4.19	1.38	0.153	0.501	0.319
Q6.5	3.56	1.52	0.191	0.493	0.357
Q6.7	4.17	2.26	0.399	0.42	0.665
Q6.8	3.59	1.6	0.15	0.511	0.249
Q6.9	4.58	2.19	0.364	0.434	0.673
Q6.10	3.34	1.5	0.151	0.509	0.225
Q6.11	4.55	2.03	0.188	0.503	0.398

EFA results for scale 4 showed that four subscales were extracted, which explained a total of 48.2% of the variance. The subscale *"Skill and Knowledge"* had the highest eigenvalue (4.392) and the highest percentage of variance explained (15.14%) in addition to factor loadings ranging from 0.851 to 0.884. Subscale 1 (skill and knowledge), subscale 2 (context satisfaction) and subscale 3 (growth need strength-would like format) loaded high, while subscale 4 (growth

need strength-job choice format) had all its items loading acceptably except items 6.6 and 6.12 which had very low loadings and low item-to-total correlation and thus were deleted.

The reliability of scale 4 was satisfactory. Cronbach's alpha was 0.766, ranging from 0.511 (*"Individual Growth Need Strength-Job Choice Format"*) to 0.915 (*"Context Satisfactions"*) for the subscales. Item analysis with *"Cronbach's alpha if any item was deleted"* and corrected item-to-total correlations was similarly considered satisfactory.

The results regarding EFA, the final structure and the reliability of scale 4 appear in Table 4. Subscale 3 (context satisfaction) of scale 4 additionally included four short subscales, which were identical to the corresponding subscales of the original JDS: satisfaction with supervision (items 3.5, 3.8, 3.14), satisfaction with co-workers (items 3.4, 3.7, 3.12), satisfaction with compensation (items 3.2, 3.9) and satisfaction with job security (items 3.1, 3.11). All items loaded significantly onto their respective subscales with loadings ranging from 0.578 to 0.889 and a total of 82.4% of the variance explained.

Scale 5 - Personal/Work Outcomes

Table 5
DESCRIPTIVES, INTERNAL CONSISTENCY, RELIABILITY ANALYSIS AND FACTOR LOADINGS FOR SCALE 5, PERSONAL/WORK OUTCOMES AND ITS 5 SUBSCALES (n= 630)

Item	Mean	Std. Deviation Item-Total	Corrected Alpha if Item Correlation	Cronbach's Loadings Deleted	Factor
Scale 5: Personal/Work Outcomes, 5 sub-scales, 22 items, Cronbach's alpha 0.851					
General Satisfaction, 6 items, Cronbach's alpha 0.750					
Q2.3	5.03	1.52	0.508	0.71	0.431
Q2.9	4.43	1.96	0.473	0.726	0.469
Q4.2	4.41	1.39	0.401	0.737	0.417
Q4.8	3.82	1.48	0.341	0.752	0.536
Q4.16	4.85	1.53	0.621	0.679	0.829
Q4.18	4.82	1.54	0.626	0.677	0.855
Internal Motivation, 5 items, Cronbach's alpha 0.667					
Q2.2	6.1	1.22	0.24	0.689	0.362
Q2.6	5.93	1.35	0.28	0.679	0.577
Q2.20	5.55	1.34	0.43	0.611	0.631
Q2.24	5.6	1.3	0.581	0.538	0.58
Q2.25	5.23	1.3	0.6	0.528	0.666
Growth Satisfaction, 4 items, Cronbach's alpha 0.839					
Q3.3	4.56	1.69	0.704	0.782	0.786
Q3.6	5.1	1.55	0.745	0.767	0.799
Q3.10	4.52	1.78	0.585	0.838	0.641
Q3.13	4.92	1.6	0.666	0.799	.832
High Work Effectiveness, 3 items, Cronbach's alpha 0.778					
Q2.21	5.64	1.21	0.712	0.596	0.804
Q2.22	5.62	1.19	0.67	0.645	0.847
Q2.23	5.59	1.38	0.487	0.851	0.72
High Commitment, 4 items, Cronbach's alpha 0.512					
Q2.13	5.49	1.34	0.263	0.478	0.331
Q4.1	5.31	1.33	0.312	0.433	0.755
Q4.9	5.04	1.29	0.251	0.487	0.506
Q4.15	4.8	1.12	0.403	0.363	0.623

EFA results showed that five subscales were extracted, which explained a total of around 57% of the variance. *"Growth Satisfaction"* had the highest eigenvalue (2.923) and the highest percentage of variance explained (13.3%). Its factor loadings ranged from 0.641 to 0.832.

Subscale 1 (growth satisfaction) was identical to the corresponding subscale in the original JDS. Subscale 2 (general satisfaction) included all the expected items except item 2.13 which moved to subscale 5 where it loaded better and fit best in terms of reliability. Similarly, items 4.16 and 4.18 were removed from subscale 5 and were added to subscale 2. Subscale 3 (internal motivation) had two of its original items and three new items (2.20, 2.24 and 2.25). Subscale 4 (high work effectiveness) had all its expected items except item 4.17 (which loaded on many subscales and lowered reliability and thus was deleted) and item 4.15 (which was moved to subscale 5). Subscale 5 is a new factor named *"high commitment"* which included items 2.13, 4.1, 4.9 and 4.15, with high loadings and reliability.

Scale 5 had a high reliability (Cronbach's alpha 0.851) which ranged from 0.512 (*"High Commitment"*) to 0.839 (*"Growth Satisfaction"*). Item analysis showed that all the items contributed to the high reliability of the scale since if any item was to be deleted from the scale, alpha became lower. Corrected item-to-scale correlations were also satisfactory.

The results regarding EFA, the final structure and the reliability of scale 5 appear in Table 5.

Even though item analysis did not provide evidence of significant deviations from normality, principal axing factoring was additionally applied in EFA for the 5 scales, given that it is a method with no distributional assumptions (Johansson et al., 2010). The outcomes from the two methods (principal components analysis and principal axis factoring) were the same in terms of the factor structure and grouping of items. Similarly, when conducting EFA with Varimax rotation (a non-orthogonal rotation), identical results were obtained for all the five scales. The above, indicate the robustness and consistency of the results.

Finally, some of the subscales of MJDS-R were identical or almost identical to the corresponding subscales in the original JDS. Other subscales were completely new, due to the additional items in MJDS-R, whereas some subscales differed, by deleting or moving some items of the original subscale or merging two subscales of the original JDS. It was not expected that the full structure of the original JDS would be found, even for the scales where exactly the same items were included in MJDS-R or even if the scales of MJDS-R are valid and can be discriminated from one another. When only a few heterogeneous items are used in a scale, as in the JDS (and consequently in the MJDS-R), they could have such low intercorrelations that they might not discriminate from the background *"noise"* of intercorrelations among independent scales. In fact, Idaszak et al. (1988) estimated that sample sizes of about 1,000 would be needed to obtain stable factor structures. But even with large samples, mixed results have been reported in related literature, where sometimes the full factor structure appeared and sometimes it did not (Taber & Taylor, 1990). Inconsistent factor structures could also arise in literature because the JDS is sometimes used to assess individual differences in perceptions within a single type of job, sometimes between different types of jobs and sometimes both.

Although the subscales are not directly comparable or identical to the corresponding subscales of the original JDS, an informal comparison with previous studies can be attempted. In Taber & Taylor (1990), results from a meta-analysis on about 30 studies, with around 9000 respondents, showed weighted average Cronbach's alphas for the subscales of Core Job Dimensions. These were 0.693 for *"Autonomy"*, 0.705 for *"Variety",* 0.677 for *"Task Identity",* 0.652 *for "Significance"* and 0.702 for *"Feedback".* In the current study, the results on internal

consistency compare favorably with the aforementioned values, as they were 0.868 for *"Decision Making and Autonomy"*, 0.571 for *"Skill Variety",* 0.757 for *"Task Identity"* and 0.836 for *"Job Significance and Feedback"*. It should finally be mentioned that scale 3 of MJDS-R, *"Labor market conditions",* was a new scale, developed for this extended version of JDS. It showed high factor loadings for its subscales and high reliability (0.782 for the total scale; 0.603 to 0.869 for its subscales).

CONCLUSION

The development of MJDS-R was motivated by the need to (1) link the tool to a theory which examines the characteristics of the job, the labor market conditions and the reactions of fresh graduates to these characteristics and conditions, and (2) hold a clear distinction between the description of the characteristics of the job, the conditions regulating the labor market and the fresh graduates' reactions to these characteristics and conditions. The tool attempts to fill the research gaps of a widely used model, developed more than 40 years ago, JDS. The intention was to make the instrument as objective as possible while allowing fresh graduates to express their feelings at the same time. Knowing that fresh graduates worldwide have been suffering from work complexity and lack of integration, a great need for such empirical data is evident, in order to provide for international and national comparisons and increase the pressures on legal authorities.

MJDS-R creates better awareness about the factors that should be particularly given great attention to in order to retain fresh graduates in their local labor markets. It could thus be a useful tool for managers to wisely plan and carry out their offered job designs, help legal authorities reconsider the extant labor laws and facilitate behavioral researchers to understand how job enrichment works. It is an extended version of JDS, aiming to identify its research gaps and specifically designed to examine, for the first time in related literature, the joint effect of core job dimensions and labor market conditions on fresh graduates' retention, and by this answers the first research objective.

The psychometric properties of the new instrument were hereby tested, using a sample of 630 fresh graduates. Results demonstrated the internal consistency and reliability of the total scales, and their subscales. Two validation processes were applied: face and construct validity, indicating the degree to which scores measure what they claim to measure, and thus answers the second research objective of this study.

The construct validity of MJDS-R was examined with an exploratory factor analysis (EFA). It has a five-factor structure (*"Core Job Dimensions", "Experienced Psychological States", "Labor Market Conditions", "Individual Differences" and "Personal/Work Outcomes"*), with corresponding subscales. All items had moderate to large standardized loadings, suggesting that they were reliable indicators of their corresponding factors. EFA for scale 1 (Core Job Dimensions) showed that 11 subscales were extracted (skill variety, task identity, job significance and feedback, decision making and autonomy, work load, work benefits, physical effort, technology use, promotion, social environment and working conditions). EFA for scale 2 (Experienced Psychological States) extracted 5 subscales (self-confidence, experienced meaningfulness of the work, prestige inside outside, knowledge of results and experienced responsibility for the work). EFA for scale 3 (Labor Market Conditions), which is a new scale compared to the original JDS, showed that 8 subscales (educational and labor market gap, formal and informal sector, foreign and national workers, geographical location, labor status, unionization, private and public sector and job matching) were extracted.

EFA for scale 4 (Individual Differences) extracted 4 subscales (skill and knowledge, context satisfaction, growth need strength - would like format and growth need strength - job choice format). EFA for scale 5 (Personal/Work Outcomes) showed 5 extracted subscales (growth satisfaction, general satisfaction, internal motivation, high work effectiveness and high commitment).

The reliability of the five scales of MJDS-R was satisfactory, with acceptable values of Cronbach's alpha, both for the scales (ranging from 0.656 to 0.901) and subscales.

In conclusion, this study has shown that MJDS-R is a comprehensive, valid and reliable instrument, which can be used in studies to simultaneously test the simultaneous role of core job dimensions, experienced psychological states, individual differences, labor market conditions and personal/work outcomes on the retention of fresh graduates. It enables researchers to use a methodological tool to assess the process of retaining fresh graduates in their local labor markets. Indeed, the new scale has potential to advance labor market conditions and managerial practices toward fresh graduates' retention. Implications of the scale for managers are its use to examine and support positive core job dimensions and cultivate positive psychological states among fresh graduates. Understanding and identifying what influences fresh graduates to be motivated and satisfied at work, and to increase their stay in their local labor markets, are challenging aspects of labor market practice.

The tool framework is not limited to a single country or culture. The instrument was currently tested and validated in a sample of Lebanese fresh graduates. Future research should test the psychometric properties of MJDS-R in different contexts and cultures.

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