Dimensions, magnitude and personal antecedents of Job Satisfaction among a slice of health professionals in an Egyptian context

Basem Farouk Abdel-Aziz

Alexandria University

ABSTRACT

Job Satisfaction (JS) is becoming a focus of universal extensive research. Twenty itemed Minnesota Satisfaction Questionnaire-short form (MSQ-S) has been used to explore the dimensions, magnitude and personal antecedents of JS among a slice of health professionals in an Egyptian context. The study was conducted on healthcare professionals performing their postgraduate studies at High Institute of Public Health, Alexandria University, Egypt. Four consecutive samples (S1, S2, S3, & S4) were collected one month apart. Preliminary screening revealed that all twenty items were suitable for factor analysis. Confirmatory factor analysis in an exploratory mode (ECFA) was performed on S1, S2, & S3 to explore the dimensionality of MSQ-S. The uni-, bi-, tri-, and tetra-dimensional structures showed ample internal consistency reliability (AICR), adequate global and local fit indices (AGLFI), and sufficient discriminant validity when applicable (SDVWA). However, an index of convergent validity [average variance extracted (AVE)] was suboptimal. Based on substantive and empirical reasons four "problematic" items were removed from the measuring instrument. Datasets S1, S2, & S3 were employed to explore the dimensionality of the 16-itemed refined instrument. The refined uni-, bi-, tri-, and tetra-dimensional models showed AICR, AGLFI, and SDVWA. However, AVE was suboptimal for the refined uni-, tri-, and tetra-dimensional and marginally tolerable for the refined bidimensional model (M2R). Confirmatory factor analysis was employed on S4 to confirm M2R which displayed acceptable reliability and construct validity. M2R was utilized to measure JS in S1 revealing that more than 70% were moderately satisfied with overall JS and its two dimensions. Analysis of 16 facets of MSQ-S showed that payment and work conditions were the most problematic aspects. No association has been displayed between overall JS and participants' personal characteristics, except gender as males displayed higher level of JS than females.

Recommendations, managerial implications, future research directions, and limitations have been underscored.

Keywords: Job Satisfaction; Minnesota Satisfaction Questionnaire- short from, Confirmatory factor analysis in an exploratory mode; Confirmatory factor analysis; Measurement invariance; Personal antecedents; Healthcare professionals; Egypt

INTRODUCTION

Job satisfaction (JS) is one of the most widely researched attitudinal variables in the field of organizational behavior (Blau, 1999; Krishnan, Omar, & Ismail, 2010; Lumley, Coetzee, Tladinyae, & Ferreira, 2011; Spector, 1997). JS has been defined as an employee gratifying affect and positive attitude towards one's job (Locke, 1976; Muller & McCloaskey, 1990). JS ensues from an employee's agreeable appraisal and contentedness with his/her job and job experiences (Spector, 1997). JS is a fairly stable evaluation of how the job fulfills the employee's needs, wants, or expectations (Fisher, 2003).

JS is important for employees and managers alike (Locke, 1976). JS has its impact on employees' well-being, life satisfaction and productivity (Judge & Hulin, 1993; Judge & Watanabe, 1993; Wilkinson & Wagner, 1993). JS was also found to be related to organizational effectiveness, competitiveness and contextual performance (Karl & Sutton, 1998; Kleiman; 1997; Murphy, Athanasou, & King, 2002; Spector, 1997). Low JS levels are associated with turnover intentions, absenteeism, turnover and low organizational commitment (Berman & Nevo, 1994; Karl & Sutton, 1998; Soler, 2000). Due to its importance in organizational life, JS and its underlying dimensions are of keen interest to management in various industries including healthcare (Gkliati & Saiti, 2016; Luthans, 1992; Martins & Proença, 2012; Mueller & McCloskey, 1990). JS of healthcare providers is of decided importance when aiming to improve service quality and customer satisfaction (Gkliati & Saiti, 2016; Martins & Proença, 2012).

Several approaches have been considered in assessing JS which has been conceptualized and operationalized as both a global construct and a multifaceted construct (Fisher, 2003). Commonly global measures assess overall JS through a single-item measure (Nakata, Irie, & Takahashi, 2013).

Single-question measures typically ask a question such as: 'On the whole, would you say you are satisfied or dissatisfied with your job?' (Quinn, Staines, & McCullough, 1974; Wanous, Reichers, & Hudy, 1997).Yet, one of the perennial difficulties with the global approach is that it is exclusively a macro-perspective that shelves disparate job aspects when it is possible for an employee to be satisfied with some facets of a job and at the same time be dissatisfied with others (Spagnoli, Caetano, & Santos, 2012). On the other hand, the multifaceted approach accentuates various aspects of the job that determine facet specific as well as overall JS through a facet-sum approach (Martins & Proença, 2012). Moreover, a multiple-item measure enables the investigator to envisage the complex and interrelated facets of the construct of JS (Spector, 1997). Another presumable advantage of multidimensional measures of JS is that various components may relate differently to variables of interest in a manner that advances the science and practice of industrial-organizational psychology (Hirschfeld, 2000). A JS facet is described as an aspect of a job that engenders satisfaction or dissatisfaction. JS facets include pay, benefits, job security, work conditions, coworker relations, career progression, responsibility, autonomy, training opportunities, supervision recognition, organizational policies, and the nature of work itself (Bloom, 2010; Fisher, 2003).

For research on JS to be useful, it is imperative for JS scales to have adequate psychometric properties (Spector, 1997; Stone-Romero, 1994).Numerous multi-item scales have been developed including:- Job Descriptive Index (Balzer, et al., 1997), Physicians' Job Satisfaction Questionnaire (Zhang & Feng, 2011), Satisfaction of Employees in Health Care survey (Chang, Cohen, Koethe, Smith, & Bir, (2017), Job Satisfaction Survey (Spector, 1985), Job In General Scale (Ironson, Smith, Brannick, & Paul, 1989), and Minnesota Satisfaction Questionnaire [MSQ] (Weiss, Dawis, England, & Lofquist ,1967).

MSQ is a widely used self-report questionnaire that has been produced by the Vocational Psychology Research, at the University of Minnesota (Fields, 2002). MSQ is based on the person-environment fit theory contending that JS is consequent upon the correspondence and adjustment

between the individual and the reinforcements received from his/her work environment (Rounds, Dawis, & Lofquist, 1987; Weiss et al., 1967).

MSQ was particularly chosen for this study for its manifold advantages: (i) MSQ is one the most popular and extensively studied multi-item measures of JS since 1967, (ii) MSQ is gender neutral and can be easily understood and used by a person with a fifth grade education, (iii) MSQ is a generic tool applicable to any organization including healthcare organizations, (iii) MSQ is applicable to all hierarchical levels as well as various job categories including managers, supervisors, and employees, (iv) MSQ makes it feasible to obtain an individualized as well as collectivized picture of employee JS, (v) MSQ is well-known for its high reliability (coefficient α values ranging from .85 to .91); outstanding content and construct validity; as well as excellent stability over time (Fields, 2002; Martins & Proença, 2012; Weiss, et al., 1967).

MSQ has two forms a 100-item long form [MSQ-L] and a 20-item short form [MSQ-S]. MSQ-L measures JS across twenty different dimensions, with five items on each dimension. According to Weiss, et al. (1967), the 20 dimensions are: • ACTIVITY: – being able to stay busy on the job [D1]; • INDEPENDENCE: - the opportunity to work alone [D2]; • VARIETY: – the chance to do different things occasionally [D3]; • SOCIAL STATUS: – the opportunity to be "somebody" [D4]; • SUPERVISION (Human Resource):– way the boss handles employees [D5];

• SUPERVISION (Technical):- competence of supervisor [D6]; • MORAL VALUES:– not having violate conscience at work[D7]; • SECURITY:–steady employment of the job [D8]; • SOCIAL SERVICE:– the chance to do things for others [D9]; • AUTHORITY:– the chance to direct others [D10]; • ABILITY UTILIZATION:– the chance to use one's abilities [D11]; • COMPANY:– satisfaction with company policies [D12]; • COMPENSATION:– pay for the work done [D13];

• ADVANCEMENT: – the opportunity to advance [D14]; • RESPONSIBILITY: – freedom to use own judgment [D15]; • CREATIVITY: – the chance to try own work methods [D16];

• WORKINGCONDITIONS:–all facets of the work environment [D17]; • Co-WORKERS:–relationships with co-workers [D18]; • RECOGNITION: - praise received from work done [D19]; • ACHIEVEMENT: –feelings of accomplishment [D20].

MSQ manual recommends using MSQ-L whenever possible to obtain more complete description of different aspects of JS; however, it takes about twenty minutes to complete (Weiss, et al., 1967).Then again, MSQ-S is a parsimonious popular multi-item scale that takes about five minutes to complete (Spector, 1997; Weiss, et al. 1967). MSQ-S measures JS utilizing only 20 manifest variables of the 100 items comprising MSQ-L, specifically, the indicators that best represent each of the aforementioned twenty dimensions (Ahmadi & Kolivand, 2007, Fields, 2002).

Evidence exists supporting the tri-dimensionality of MSQ-S with three subscales, namely, Intrinsic Job Satisfaction (IJS), Extrinsic Job Satisfaction (EJS), and General Job Satisfaction (GJS) (Schriesheim, Powers, Scandura, Gardiner, & Lankau, 1993; Weiss et al., 1967). IJS is how people feel about the nature of the job tasks themselves; EJS is how people feel about aspects of the work situation that are external to the job tasks or work; and GJS is about working conditions and coworkers' relationships (Spector, 1997).Twelve indicators of IJS include satisfaction with activity; independence; variety; social status; moral values; security; social service; authority; ability utilization; responsibility; creativity; and achievement (Schriesheim et al., 1993;Weiss et al., 1967). Manifest variables of EJS include six indicator, namely, the extent to which an employee is satisfied with supervision (human resources); the extent to which an employee is satisfied with supervision (technical); institutional policies; compensation; advancement; and recognition (Schriesheim et al., 1993;Weiss et al., 1967). Two indicators of GJS include working conditions; and co-workers (Schriesheim et al., 1993; Weiss et al., 1967). According to MSQ manual alphas for the intrinsic factor ranged from 0.84-0.91, median 0.86; for extrinsic satisfaction from 0.77-0.82, median 0.80 and for the general factor 0.87-0.92, median 0.90 (Weiss, et al.,1967).

Alternatively, evidence exists supporting the bi-dimensionality of MSQ-S with only two subscales, namely, IJS and EJS (Arvey, Bouchard, Segal, & Abraham, 1989; Arvey, McCall, Bouchard, Taubman, & Cavanaugh, 1994; Day &Bedeian, 1991; Fields, 2002; Hirschfeld, 2000; Martins & Proença, 2012; Ramadhani & Marwa, 2016). There are various allocations of the indicators among the two subscales, though; a common allocation is that of an IJS comprised of twelve items identical to the intrinsic subscale in the tri-dimensional model and an EJS embracing the remaining eight indicators (Nerison, 1999). Among healthcare workers (including physicians, pharmacists and nurses) the reliability and validity of the bi-dimensional model have been demonstrated (Martins & Proença, 2012; Sousa, Cruz, & Martins, 2011, cit. in Martins& Proença, 2012). According to Martins and Proença (2012) alpha reliabilities of .88, .87, and .77 have been reported for the overall scale (OS), IJS and EJS in turn (Martins & Proença, 2012). Likewise, Sousa et al.,2011, as cited in Martins & Proença, 2012 registered α reliabilities of .91, .87, .88 for the OS and IJS and EJS respectively.

Some authors have exposed a tetra-dimensional structure for the concept of JS. For instance Hancer & George (2004) disclosed four JS subscales, namely; Intrinsic Satisfaction (Factor 1), Extrinsic Satisfaction (Factor 2), Satisfaction Derived from the Nature of the Job (Factor 3), and Autonomous Job Satisfaction (Factor 4). Factor 1 [F1] contained ten items (ability utilization, social status, achievement, variety, social service, advancement, authority, activity, security, and independence). Factor 2 [F2] contained five items (recognition, working conditions, company policies and practices, compensation, and coworkers). Factor 3 [F3] consisted of three items (supervision-technical, supervision-human relations, and moral values). Finally, Factor 4 [F4] consisted of two items, responsibility and creativity. In a similar vein, Igalens and Roussel (1999, cit. in Fields, 2002) showed that a four factor solution fit the data best and nominated four factors specifically, intrinsic satisfaction, extrinsic satisfaction, recognition and authority/social utility. Also Mathieu (1991, cit. in Fields, 2013), maintained that MSQ-S yielded four factors, namely; satisfaction with working conditions, leadership, responsibility and extrinsic rewards.

In spite of the fact that JS is mostly considered as a multifactorial construct (Hancer & George, 2004); Hirschfeld, 2000 contends that a unidimensional model is not out of the question although the fit of the two-factor model is sounder.

Granting a plethora of studies in the developed world that examined JS of employees in healthcare settings; comparatively little is shepherded in the developing world, especially, in the healthcare sector (Gkliati & Saiti, 2016). Moreover, in spite of renowned reliability and validity of MSQ-S, it is recommended that researchers should conduct factor analysis (FA) to assure its dimensionality and psychometric properties in their particular settings (Hancer & George, 2004). It is also counseled that future research should focus on verifying the external cross-cultural construct validity of MSQ-S expressly among healthcare workers (Martins & Proença, 2012).

It is argued that organizations become more successful as more personnel display higher levels of JS (Fisher, 2003; Petty, McGee, & Cavender, 1984; Sarker, Crossman & Chinmeteepituck, 2003). Possibly some employees will be more disposed towards an attitude of JS than others (Buitendach & Rothmann, 2009; Rothmann, 2008). JS has to do with an individual's perceptions and evaluation of one's job, and this perception could be related to employee's personal characteristics (Buitendach & Rothmann, 2009; Oshagbemi, 2003). Personal correlates of JS have become a recent focus of a number of researches (Abugre, 2014, Hickson & Oshagbemi, 1999).Oshagbemi (2003) underscores the need to investigate, in a single study, personal correlates of JS specifically age, gender and tenure (length of service).Petty, Brewer and Brown (2005) maintain that it is important to study how demographic variables are related to JS so that a complete understanding of the concept can be gained. A number of researches have shown that demographic factors can affect JS (Heslop, Smith, Metcalfe & Macleod, 2002; Locke, 1976; Ting, 1997). Some research has investigated differences in JS levels according to age (Moyes, Williams, & Koch, 2006); Hickson & Oshagbemi, 1999; Luthans & Thomas, 1989; Oshagbemi, 1999;

Ramadhani & Marwa, 2016);gender (Moyes, Williams, & Koch, 2006; Ramadhani & Marwa, 2016), tenure (Oshagbemi, 2000); qualifications (Gardner &Oswald,2002; Ramadhani & Marwa, 2016); and job category (Gardner &Oswald,2002).

A number of authors (e.g., Claes & van de Ven, 2008; Lahoud, 2006; Tandon & Dhawan, 1981; Van de Velde, Feij, & Taris (1995) observed that older employees tend to be more satisfied with their jobs. Some authors (Buitendach & Rothmann, 2009; Clark, Oswald & Warr, 1996; Yucel & Cetin, 2012) suggest that JS is has a U-shaped relation with age, wherein young employees present higher levels of JS, that tend to decline as the novelty of employment wears off and boredom with the job sets in. Yet, JS rises again as the employee grows older whence the worker becomes accustomed to their role. Nonetheless, Saner and Serife (2012) found that overall JS increases with age and starts to decrease at the age group of (50-60). A number of studies found that females exhibit higher levels of JS (Martin & Coetzee, 2007; Santhapparaj & Alam, 2005). Lahoud (2006) and Oshagbemi (2000), found a positive correlation between JS and tenure. Some authors (e.g., Boxwden & Marton, 1999; Lahoud, 2006; Ritter & Anker, 2002) found a linear relation between JS and education. However, some studies found the relationship between JS and education to be inconclusive (Kamarulzaman & Nordin, 2012).

For purposes of the present study, the following two hypotheses are formulated: - (1) a hypothesized reliable and valid multidimensional JS construct as measured by MSQ-S; (2) a hypothesized relationship between level of JS and some personal characteristics of the study population. Accordingly, the study has the following three objectives, (1) to determine the dimensionality and psychometric properties of MSQ-S for the study population, (2) to measure the level of overall JS and its various facets among the study participants, (3) to determine whether the levels of overall JS of study population differ in relation to personal characteristics including gender, educational level, marital status, undergraduate merit, age, work sector, tenure, profession.

Consequently, the present study gratifies a research lacuna about JS among a slice of healthcare professionals in an Egyptian context. To the extent of the researcher's knowledge no similar research has been carried out on such a workforce segment in Egypt. Besides, the present study contributes to augmenting the cross-cultural meaningfulness and applicability of MSQ-S and the concept of JS and aims at deepening knowledge regarding relationship between employees' personal characteristics and level of JS.

METHODS

An observational analytical cross-sectional study was performed among diploma and master health professionals conducting their postgraduate studies at the High Institute of Public Health (HIPH), Alexandria University, Egypt. Permission was secured from authorities and Ethics Committee of HIPH on 24/9/2019 and data collection was carried out in the period from 29/9/2019 till 16/1/2020. Participation was voluntary and informed verbal consent was obtained from study participants. The purpose of the study was explained and participants were assured about the confidentiality and anonymity of the collected data. The researcher complied with the International Guidelines for Research Ethics and Academy of Management Code of Ethics. A specifically designed self-administered questionnaire was delivered in English to all health workers studying in diploma and master programs at HIPH. English proficiency is a prerequisite to enroll as a student in HIPH.

Four samples were collected one month apart and were designated S1, S2, S3, and S4 respectively. Number of participants in initial sample (i.e. S1) was 242 embracing all available health professionals who consented to participate in the study, comprising a response rate of 242/242 i.e., 100%. Number of participants in the second sample (i.e., S2) was 211 giving a response rate of 211/242, i.e. 87.19%. Number of participants in the third sample (i.e., S3) was 191 giving a response rate of 191/242, i.e. 78.93%. Then the number of participants in the fourth sample (i.e., S4) was 174 contributing a response rate of 174/242, i.e. 71.90%. Participation rate of 70% is considered remarkably acceptable (Galea & Tracy, 2007). S4 was conserved for

confirmatory purposes, while the other three samples were allotted for exploratory reasons. S1, S2, & S3 were randomly assigned (with replacement) to explored models, whence no sample is allotted twice till the rest are undertaken at least once.

The study questionnaire covered three sections. The first section introduced the researcher to the participants, informed them of the purpose of the study and offered instructions about how to respond to the questionnaire. The second section incorporated items pertaining to selected personal characteristics of participants including:- gender; age; marital status; year of under-graduation; attained undergraduate merit (excellent, very good, good, and satisfactory); postgraduate study program (diploma or master); work sector [Ministry of Health (MOH), University, Private, and others]; professional category (physician, dentist, pharmacist , nursing, nutritionist, others); tenure (years of experience); and scholar identification number. The third section encompassed the 20 items of MSQ-S, which is used to measure and assess the dimensionality of JS. MSQ-S has documented reliability and validity (Weiss et al., 1967).

Twenty MSQ-S items (observed variables/indicators) are given with their codes as used in the present study:- :**{**MSQ1} (being able to stay busy on the job); **{** MSQ2} (the opportunity to work alone); **{**MSQ3}(the chance to do different things occasionally), **{**MSQ4}(the opportunity to be "somebody"); **{**MSQ5} (way the boss handles employees); **{**MSQ6}(competence of supervisor); **{**MSQ7}(not having to violate conscience at work); **{**MSQ8}(steady employment of the job); **{**MSQ 9}(the chance to do things for others); **{**MSQ10}(the chance to direct others); **{**MSQ11} (the chance to use one's abilities); **{**MSQ12}(satisfaction with company policies); **{**MSQ13}(pay for the work done); **{**MSQ14}(the opportunity to advance); **{**MSQ15} (freedom to use own judgment); **{**MSQ16} (the chance to try own work methods); **{**MSQ17}(all facets of the work environment); **{**MSQ18}(relationships with co-workers); **{**MSQ19}(praise received from work done); and **{**MSQ20}(feelings of accomplishment). Each MSQ-S item corresponds to its respective dimension on MSQ-L, e.g.

MSQ1 represents D1, MSQ2 represents D2, etc. On a five-point Likert scale, respondents were asked to indicate the extent to which they were satisfied/dissatisfied with each of the MSQ-S twenty items. Responses were sorted into five ranks as- "very satisfied", "satisfied", "neither satisfied nor dissatisfied", "dissatisfied", and "very dissatisfied". Respectively, these categories were accorded a score from five to one, where higher item score indicates a higher (i.e. better) level of JS. On this basis the level of measurement is considered an interval scale suitable for correlational analyses.

Preliminary screening (including, recognition of quantity and pattern of missing data, item analysis, internal consistency, detection of multicollinearity and sampling adequacy analysis of the 20-indicator four datasets was carried out to assure suitability of the four samples (i.e., S1, S2, S3, & S4) for conducting FA. Cases with more than 10% missing data were excluded; otherwise missing data showing a random pattern were treated by replacement with imputed variable mean technique. Results obtained with imputed variable mean technique were compared with listwise deletion technique.

A subjects-to-indicator ratio ≥ 5 is a clue of sufficient sample size (Bryant & Yarnold, 1995). Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy > .7 is deemed adequate (Cerny & Kaiser, 1977). KMO for individual items i.e. measures of sample adequacy (MSA) > 0.5, are considered up to standard (Field, 2009). A variance inflation factor (VIF) < 10 indicates no multicollinearity problem with the indicator dataset (Allison, 1998). Significant Bartlett's test of sphericity indicates that correlations between scale indicators are adequately sizeable for FA (Sharma, 1996). A determinant > 0.00001 indicates that the interitem correlation matrix is not an identity matrix and that there are no multicollinearity or singularity problems with the datasets (Morgan, & Griego, 1998). A Chronbach's alpha (α) > .7 denotes scale's internal consistency reliability (Nunnally, 1976), nonetheless, α value of ≥.5 is considered legitimate and acceptable with a short scale (Dall'Oglio et al., 2010).

An indicator would be removed from the scale if one of the following provisions were furnished:- α if-item-deleted > α for the 20-item dataset; item having < .3 correlation with all other items; item having corrected item-total correlation (CITC) < .3 (Nunnally & Bernstein, 1994); skewness parameter > 1 (Hair, Black, Babin, Anderson, & Tatham,2006; Huck, 2008); kurtosis parameter > 2 (Kline, 2005); or extraction communalities (EC) -using principle components analysis- score < 0.2 (Child, 2006). Such items diminish scale's homogeneity, do not benefit extraction of shared variance and did not effectively contribute to measuring the concept (Ferketich, 1991). Mean interitem correlation (MIC) in the range .15 to .5 is acceptable for FA (Clarke & Watson, 1995). Bivariate linearity assumption was assured through examining inter correlation coefficients amongst manifest variables in addition to visual inspection of all bivariate scatterplots. Multivariate outlying cases were detected and excluded using Mahalanobis distance for a case at .001level of significance. Mardia's coefficient standardized value > 5.00 is suggestive of multivariate nonnormality (Bentler, 2005).

Confirmatory factor analysis in an exploratory mode (ECFA) was executed on S1, S2 and S3 to explore M3, M2 & M1 respectively. S1 was also employed to explore M4. Indicators measuring a hypothesized tridimensional model (M3) and its three subscales, IJS, EJS and GJS are specified as depicted in figure 1.Indicators measuring a hypothesized bidimensional model (M2) and its two subscales IJS and EJS are specified as depicted in figure 2. Indicators measuring a hypothesized tetra-dimensional (M4) model and its four subscales [F1, F2, F3, & F4] are specified as depicted in figure 3. A conjectured unidimensional model (M1) is shown in figure 4. All specified models were identified by fixing factor variances and regression weights of error terms to one each while all other parameters were freely estimated using Unweighted Least Squares (ULS) and a minimum was achieved. ULS was selected because of multivariate non-normality of the items used to measure the latent variable (Blunch, 2008). ULS may be asymptotically inefficient relative to Maximal Likelihood Estimator (MLE); nevertheless - compared to MLE - ULS does not compel the assumption multivariate normality and ULS is more consistent and abler

to recover a known factor structure with relatively weak factors using relatively small samples (Blunch, 2008; Briggs & MacCallum, 2003; la Du, 1989; Ximenez, 2006; Ximenez, 2009).

Overall adequacy of a model fit was assessed using six fit indices, explicitly:- Minimum Discrepancy per Degree of Freedom (CMIN/df) < 5; Standardized Root Mean Square Residual (SRMR < .08); Goodness of Fit Index (GFI ≥ .90), Adjusted Goodness of Fit Index (AGFI ≥ .90); Normed Fit Index (NFI ≥ .90), Relative Fit Index (RFI > .90).Three parsimony-adjusted fit indices (PAFIs), namely, parsimony-adjusted GFI (PGFI), parsimony-adjusted NFI (PNFI), and parsimony ratio (PRATIO), were used to compare models. Standardized covariance residuals (SCRs) < |4.0| denote an adequate local model fit [LMF] (Groenland & Stalpers, 2012). Merely one SCR >|4.0| does not detract from adequacy of LMF (Kline, 2011). Additionally the normal Q-Q plot of the SCRs was carried out to assess adequacy of LMF (Groenland & Stalpers, 2012). Convergent validity (CV) was appraised using Cronbach's $\alpha > .5$ for OS and subscales, factor loadings (λs) > .35, average variance extracted (AVE) $\geq \approx .5$ and composite reliability (ρc) > .7. Discriminant validity (DV) was appraised using interfactor correlation < |.95| and (ρc) > (AVE) values of each factor.

Based on substantive as well as empirical reasons coming into view during the exploratory phase, problematic items were removed to improve construct validity of explored models. Refined model with most suitable reliability, validity and theoretical backup was deliberated as the final model (MF).

Selected MF was confirmed on S4 using confirmatory factor analysis (CFA) via structural equation modeling (SEM). MF was tested for the conditions of tau-equivalence (i.e. equal λs) and parallelism (i.e. equal error variances).Temporal stability of MF was checked through using multigroup CFA (MG-CFA) to determine MF invariance across S1, S2, S3 & S4. MF invariance across participants' personal characteristics was tested through applying MG-CFA on S5, where S5 is an aggregate sample of S1, S2, and S3& S4. Invariance would be tested

through four progressive levels, namely, configural [i.e. equivalent item-factor structures between groups], metric [i.e. equivalent (λs) between groups], full residual [i.e. equivalent error term variances between groups], and structural covariance [i.e. equivalent factor covariance]. These hierarchically nested models were compared using GFI where ΔGFI < .02 was considered statistically insignificant (*ns*).

MF test-retest reliability(r_{tt}) was determined through assessing stability of JS scores among four administrations:- (r_{tt}) between S1 and S2 [$(r_{tt})_{S1-S2}$]; (r_{tt}) between S1 and S3[$(r_{tt})_{S1-S3}$]; (r_{tt}) between S1 and S4[$(r_{tt})_{S1-S4}$], (r_{tt}) between S2 and S3[$(r_{tt})_{S2-S3}$]; (r_{tt}) between S2 and S4[$(r_{tt})_{S2-S4}$]; and (r_{tt}) between S3 and S4[$(r_{tt})_{S3-S4}$]whereby (r_{tt}) > .60 is considered adequate and (r_{tt}) > .70 is pondered plenteous.

The FM was adopted for measuring JS among S1 participants. Total participant overall JS score was calculated as the sum of weighted scores of all retained indicators. Average participant overall JS score was calculated by dividing participant overall JS score by the number of retained indicators in MF. Participant's average overall JS score < 1 was reckoned as very low level of JS; ≥ 1 to 2 was considered as low level of JS; > 2 to 4 was contemplated as a moderate level of JS, and > 4 to 5 was pondered as a high level of JS. Similarly, the validated measurement model was used to determine the level of JS dimensions. Total participant dimension score was calculated as the sum of weighted scores of the items reflecting the dimension. Average participant's dimension score was calculated by dividing total participant's dimension score by the number of subscale indictors. The same cutoff points for OS were used to determine the level of each dimension. Student t-test and Pearson's correlation coefficients were used on S1 to test the statistical significance of differential JS level corresponding to specified participants' personal characteristics. Data analysis was conducted using Statistical Package of Social Sciences- Version 25 (SPSS.25) and Excel 2010. SEM was conducted using the Analysis of Moment Structures- Version 25(AMOS.25).

RESULTS

Personal characteristics of participants in four samples (S1, S2, S3, & S4) are shown in table 1. In all samples females composed more than 70%; age category 22 to < 40 constituted more than nine-tenth; more than half were married; more than three-fifths subscribed to the diploma program; at least 46% had a merit of "Very good" at the undergraduate period; more than three-fifths worked for MOH; at least half were physicians; more than two-thirds had tenure < ten years; more than three-fifths graduated in the period from 2010 to 2019. Chi-square test and t-test for independent sample means disclosed no statistically significant differences among four samples as regards participants' personal characteristics.

For the 20-item MSQ-S, the degree and pattern of missing data were observed for each variable and case of four study samples. For S1, the amount of missing data per scale item varied from 0.4 to 2.5 % with an average of .915%. Missing data per case ranged between 0 to 15% with a mean of .005281±.018554. Three cases were removed from further analysis as they omitted three (i.e. 15 %) scale items, thus the number of cases in S_1 was reduced to 239 cases. For the remaining 239 cases missing values per case ranged between 0 to 10% with a mean of .000879 ± .0031191. For S2, the amount of missing data per scale item varied from 0.0 to1.9 % with an average of .765%. For S2, two cases were removed from further analysis because of missing 40% and 20% of scale items. For the remaining 209 cases missing values per case ranged between 0 to 10% with a mean of .004785±.017707. So far the number of cases in S2 was reduced to 209 cases. For S3, the amount of missing data per scale item varied from 0.0 to1.1 % with an average of .23%. For S3, two cases were removed from further analysis because of respectively missing 20 and 15% of scale items. For the remaining 189 cases, missing values per case ranged between 0 and 10% with a mean of .0052646±.012351. So far the number of cases in S3 was reduced to 189 cases for FA. For S4, the amount of missing data per scale item varied from 0.0 to1.1 % with an average of .21%.Up till now, no cases were removed from S4 since missing values per case ranged from 0 to 5 % with a mean of .002299±.010502. Sample

sizes of 239, 209, 189, 174 represents a subject-to-indicator ratio of (239/20 = 11.95), (209/20= 10.45), (189/20= 9.45), and (174/20 = 8.7) which are considered sufficient for FA. For four samples, it was determined that data were missing randomly and missing data were replaced by imputed variable mean.

For the 20-item datasets, KMOs of sampling adequacy were .890; .898; .919; and .922 for S1, S2, S3 and S4 respectively. MSA values ranged between (.809 and .932); (.810 and .953); (.818 and .955); and (.881 and .960) for S1, S2, S3 and S4 respectively. Bartlett's tests of sphericity were significant (Approximate χ^2 = 1746.598, df= 190, p= .000); (Approximate χ^2 = 1758.320, df= 190, p= .000) ;(Approximate χ^2 = 1761.562, df= 190, p= .000);and (Approximate χ^2 = 1992.379, df= 190, p= .000) for S1, S2, S3, and S4 respectively.

For datasets S1, S2, S3, and S4, the assumption of univariate normality is maintained since all indicators have skewness and kurtosis parameters <|1|, except indicator MSQ9 which has a kurtosis parameter of -1.005 in dataset S1. Respectively, S1, S2, S3, and S4 have αs of .893; .911; .871; and .939. For each sample, α-if-item-deleted was < α. No item has CITC < .3. For the four datasets, all items have EC > .42.

For the four datasets, scatterplots of the indicators showed an oval shape indicative of central tendency with linear homoscedastic relations signaling the absence of bivariate outliers among these indicators. MIC was .293, .339, .367 & .435 for S1, S2, S3, and S4 respectively. No item has a correlation < .3 with all other items. The assumption of bivariate normality is sustained for the four samples. No indicator was removed from the four datasets in the preliminary screening phase.

For S1, the highest Mahalanobis distance for a case was (67.304). Mahalanobis distances of five cases exceeded the critical $\chi 2$ value ($\chi 2$=46.797; df =20, p<0.001), signifying five multivariate outlying cases that were removed from further analysis and analysis proceeded with

retained 234 cases of S1. A sample of 234 represents a subject-to-indicator ratio of 234/20≈ 12 which is considered sufficient for FA. For S2, the highest Mahalanobis distance for a case was (50.577). Mahalanobis distances of three cases exceeded the critical $\chi 2$ value ($\chi 2$=46.797; df =20, p<0.001), signifying three multivariate outlying cases that were removed from further analysis and analysis proceeded with retained 207 cases of S2. A sample of 207 represents a subject-to-indicator ratio of 207/20≈ 10 which is considered sufficient for FA. For S3, the highest Mahalanobis distance for a case was (181.121). Mahalanobis distances of seven cases exceeded the critical $\chi 2$ value ($\chi 2$=46.797; df =20, p<0.001), signifying seven multivariate outlying cases that were removed from further analysis and analysis proceeded with retained 182 cases of S3. A sample of 182 represents a subject-to-indicator ratio of 182/20≈ 9 which is considered sufficient for FA. For S4, the highest Mahalanobis distance for a case was (57.325). Mahalanobis distances of five cases exceeded the critical $\chi 2$ value ($\chi 2$=46.797; df =20, p<0.001), signifying five multivariate outlying cases that were removed from further analysis and analysis proceeded with retained 169 cases of S4.A sample of 169 represents a subject-to-indicator ratio of 169/20≈ 8 which is considered sufficient for FA.

For S1, S2, S3, and S4, Mardia's kurtosis critical ratios were 12.535, 11.801, 13.050, and 9.673 respectively raising some concerns about multivariate nonnormality for the four datasets; nevertheless, deviation from multivariate normality is not severe. Hallow (1985, cit. in Gao, Mokhtarian & Johnston, 2008) tested the impacts of non-normality that was measured by univariate skewness (-1.25 < skewness < 2.0) and kurtosis (-1.0 < kurtosis < 8.0), and Mardia's kurtosis (-4.9 < Mardia's kurtosis < 49.1); and his results flashed that the parameter estimates were still unbiased compared to the parameter estimates of the base condition with multivariate normal distribution. The again ULS was employed for CFA.

S1, S2, S1 & S3 were subjected to ECFA to explore M3, M2, M4, & M1 respectively. Global; and local fit indices; and measures of internal consistency reliability, DV and CV of various models are shown in tables 2, 3 and 4 consecutively. It is noticeable that M3, M2, M4, &

M 1 have fully realized the conditions of adequate fit (global and local), internal consistency reliability, and DV (where applicable). Nonetheless, the conditions of CV is not fully satisfied where the condition of ρc is well-satisfied while AVE is suboptimal. As AVE of M1, M2, M3, & M4 was not satisfactory analysis proceeded to finding out problematic items and exploring the payback of their elimination on AVE of refined models.

Some researchers have suggested that assigning MSQ-S to IJS & EJS as specified by the Weiss et al.'s , (1967) MSQ manual results in a lower-than-optimal level of construct validity due to some mislaid items (e.g., Arvey, Dewhirst, & Brown, 1978; Cook, Hepworth, Wall, & Warr, 1981; Schriesheim et al.,1993; Spector, 1997). In a Portuguese industrial context Martin 2008, as cited in Martins & Proença, 2012 dropped six items from MSQ-S due to low communalities and multiple factor loadings. Also in a Portuguese healthcare context, Sousa et al., 2011, as cited in Martins & Proença, 2012 and Martins & Proença, 2012 dropped nine items due to low communalities and multiple λs. Though Schriesheim et al. (1993) concluded that Items 1, 2, and 10 are correctly assigned to IJS by the MSQ manual (Weiss et al., 1967), these items may be problematic nonetheless; (v) Cook et al. (1981) suggested that some of the MSQ-S items may not represent universally valued aspects of a job and recommended their removal; (vi) Hirschfeld (2000) obliterated items MSQ1, MSQ2, and MSQ10, from IJS.

Based on the above empirical and substantive arguments the researcher decided to remove MSQ1, MSQ2, and MSQ10 from the scale. Additionally, the researcher decided to remove MSQ7 since it has the next lowest factor loading (only next to MSQ2) in M1.

Removal of four items from M3; M2; M4; & M1 resulted in refined M3 (M3R); refined M2 (M2R); refined M4 (M4R); refined M1 (M1R) successively. The analysis progressed to explore the reliability and construct validity of four refined models.

S2, S3, S2, & S1 were subjected to ECFA to explore M3R, M2R, M4R, & M1R respectively. Global; and local fit indices; and measures of internal consistency reliability, DV and CV of various

models are shown in tables 2, 3 and 4 consecutively. It is noticeable that M3R, M2R, M4R, & M 1R have fully realized the conditions of adequate fit (global and local), internal consistency reliability, and DV (where applicable). Nonetheless, the conditions of CV is not fully satisfied where the condition of ρc is well-satisfied while AVE is suboptimal except for M2R as AVE values of scale and all subscales can be readily approximated to .5.

The M2R (figure 5) was given preference M3R, M4R, & M1R not only due relatively enhanced AVE, but also owing to substantive reasons including:- (i) M1 is less preferred since JS is generally a multidimensional construct (Hancer & George, 2004), (ii) there exists ample empirical evidence involving MSQ-S subscales that it is consistent with the theoretical distinction between IJS and EJS (e.g. Arvey et al.,1994) (iii) research asserting that MSQ-S can be treated as either a unidimensional or bidimensional model instructed that the two-factor model offers superior fit (Hirschfeld, 2000), a finding that is largely supported by fit indices flashed in the present study; (iv) M2R is more parsimonious than M3R or M4R, an intuitive judgment supported quantitatively by higher PAFIs for the M2R as evidenced in the present study; (v) Schriesheim et al. (1993)'s results indicated that two GJS items theoretically measure EJS; (vi) Cook et al. (1981) also commented on the troublesome disparity in the number of items allocated to the original intrinsic subscale (12 items) and to the original extrinsic subscale (6 items), and they had the contention that merging GJS items into EJS decreases this disparity; (vii) The bidimensional model underlying MSQ-S has gathered empirical support in several studies and is today a widely reputed and referenced model (Fields, 2002; Martins &Proença, 2012; Martins, 2008, cit. in Martins & Proença, 2012; Sousa et al., 2011, cit. in Martins &Proença, 2012). According to Hancer & George (2004) the two-factor structure is the original one ; (viii) M4 R is neither generic nor commonplace, has scant supporting literature and it can be irreplicable in future studies (Hirschfeld, 2000).

S4 was subjected to CFA to confirm M2R and results of its global; and local fit indices; and measures of internal consistency reliability, DV and CV are all satisfactory as shown in tables 2, 3 and 4 consecutively. M2R does not meet the condition of tau-equivalence since the model with equalized λs has plainly inferior fit with the following fit indices:- CMIN/df (297.612/117= 2.5437); SRMR = .1187; GFI = .956; AGFI = .949; NFI = .944; &RFI = .943. It is notable that ΔGFI = .035. Non-fulfillment of the tau- equivalence condition justifies the use of weighted indicator scores.

M2R expounded (r_{tt}) through revealing that $(r_{tt})_{S1-S2}$ = .673;$(r_{tt})_{S1-S3}$; = .736; $(r_{tt})_{S1-S4}$; = .698; $(r_{tt})_{S2-S3}$; = .819; $(r_{tt})_{S2-S4}$ = .767; $(r_{tt})_{S3-S4}$ = .847 ; where all(r_{tt}) were significant at p = .000, two-tailed. Temporal stability supported by M2R configural invariance through four administrations S1, S2, S3, & S4 (table 5). Additionally M2R presented configural invariance across participants' personal characteristics (explicitly, gender, postgraduate program, marital status, merit, age, work sector, tenure and professional category) in sample S5 (table2). Invariance across sociodemographic characteristics justifies carrying out mean comparisons among categories of participants' personal characteristics. Identical FA results were obtained by treating missed data by means of listwise deletion technique.

M2R was utilized to calculate the level of overall JS and its two dimensions among participants in S1. Total participant overall JS scores ranged between 55.30 to 18.63 with a median of 37.957, a mode of 34.39, a mean of 37.6771 ± 7.9272, skewness of -.147 and kurtosis of -.497. The average participant overall JS scores ranged between 3.46 and 1.16, with a mean of 2.3548 ± .49545,a median of 2.3723, a mode of 2.15, skewness of -.147 and kurtosis of -.497. About one fourth of participants (exactly, 26.0%) flaunted low level of overall JS (i.e., average overall JS score ≥ 1 to 2). The remaining cases (i.e. 74.0 %) showed moderate level of overall JS (i.e., average overall JS score > 2 to 4).

Participant total IJS scores ranged between 27.86 and 9.36, with a mean of 19.6285±3.93212, median of 19.7290, mode of 16.84, skewness of -.283 and kurtosis -.414. The average participant IJS scores ranged between1.17 and 3.48, with a mean of 2.4536 ± .49152, a median of 2.4661, a mode of 2.06, skewness of -.283 and kurtosis -.414. As regards IJS dimension less than one fifth (17.9%)

trumpeted low level (i.e. average IJS score ≥ 1 to 2), whereas more than four fifths (82.1%) disclosed moderate level of IJS (i.e. average IJS score 2 to 4).

Participant total EJS scores ranged between 28.72 and 7.88, with a mean of 18.0487 ±4.3715, median of 17.9970, mode of 17.23, skewness of -.081 and kurtosis -.510. The average participant EJS scores ranged between 3.59 and 0.99, with a mean of 2.2561± .54644, a median of 2.2496, a mode of 2.52, skewness of -.081 and kurtosis -.510. As regards EJS dimension, only one case (i.e. .4%) revealed very low levels of EJS (i.e. average EJS score < 1); more than one fourth (28.5%) trumpeted low level (i.e. average EJS score ≥ 1 to 2),whereas about seven-tenth (exactly, 71.1%) divulged moderate level of EJS (i.e. average EJS score 2 to 4).

Participants' levels of satisfaction with 16 aspects of their jobs are presented in table 6.

Mean overall JS score comparison uncovered the following (i) level of JS among diploma students ($\bar{x}$ ± SD = 37.4559 ±8.22806) is not statistically different from JS among master students degree ($\bar{x}$ ± SD =38.0128 ±7.48758) [t = -.520, p = .604, two-tailed, df =232]; (ii) level of JS among those employed in MOH ($\bar{x}$± SD =37.2162 ±7.94320) is not statistically different JS of those employed elsewhere ($\bar{x}$± SD =38.4740 ±7.92541); [t = -1.163, p = .246, two-tailed, df =232]; (iii) level of JS among those with undergraduate merit excellent or very good **(**$\bar{x}$± SD =37.9729 ±7.59810) is not statistically different from those with a good or satisfactory merits **(**$\bar{x}$± SD =37.2050 ±8.45978) [t =.723, p = .470, two-tailed, df=232]; (iv) level of JS among the married **(**$\bar{x}$± s =37.8496 ±7.94496) is not statistically different from the unmarried ($\bar{x}$± SD =37.4324 ±7.97311) [t = -.398, p = .691, two-tailed, df=232]; (v) level of JS among physicians **(**$\bar{x}$± SD =37.0643 ±8.44277) is not statistically different from non-physicians ($\bar{x}$± SD =38.4221 ±7.23930) [t = -1.301, p = .194, two-tailed, df =232]; (vi) level of JS among males is $\bar{x}$± SD =39.6019 ±7.62087) higher than among females **(**$\bar{x}$± SD =36.9857 ±7.96297); [t = 2.231, p = .027, two-tailed, df = 232]. Besides there is no correlation between overall JS score and age (r = -.007, p= .918), nor between overall JS score and tenure (r = .022, p= .739).

DISCUSSION

JS has been playing a protagonist role in management research (Fisher, 2003; Petty et al., 1984). JS research in healthcare industry has been predominantly conducted upon disparate professions, i.e. studying physicians, nurses, etc. separately and there seems to be lack an inclusive approach investigating all professional categories of the healthcare service in a single study (Martins & Proença, 2012).There are few studies on JS of healthcare providers in developing countries (Gkliati & Saiti, 2016) and it is appealing to explore the dimensions, magnitude and personal antecedents of JS among a slice of health professionals in an Egyptian context. Erstwhile studies (e.g. Martins & Proença, 2012) recommended that research activities should explore the structure of MSQ-S scale and subscales and their stability across various categories of healthcare workers. The current paper explored and confirmed the psychometric properties of MSQ-S as applied to study participants. Construct validity of the M2R has been verified through adequate global and LMF indices together with convincing evidence of CV and DV. Marginal levels of AVE could be attributed to ample variety healthcare workers participating in the study including physicians, pharmacists, dentists, nurses, and nutritionists with diverse ages, subspecialties, affiliations, views, needs, requirements, scholastic aspirations and motivational profiles.

Since its origination MSQ-S is well-known for its excellent coefficient alphas (Weiss et al, 1967). In the present study, internal consistency reliability of the M2R has been substantiated through finding that α for the OS and its subscales were .942, .910, and .889 respectively. This high reliability is similar to previous studies. For instance, Martin and Proença (2012) realized that the two-factor structure presented α values of 0.91, .88 and .86 for the MSQ-S global scale, IJS and EJS respectively. Similarly, Martins (2008) as cited in Martins and Proença (2012) demonstrated alpha reliabilities of .91, .86, and .88 for the global, intrinsic and extrinsic satisfactions respectively.

In the present study, construct validity of the M2R has been championed by excellent global and local fit indices, DV, CV, configural invariance through all probed participants' personal characteristics, test-retest reliability and temporal stability. O'er MSQ-S is well-known for its outstanding stability over time (Weiss et al, 1967).

Additionally, the present study has substantiated the external validity and cross-cultural transversality of MSQ-S. Based on empirical psychometric testing, Martins & Proença (2012) contend that MSQ-S is a valid instrument for measuring JS of healthcare workers on a global level. The benefit of using a standard questionnaire such as MSQ-S is the fact that is has been tested and used over decades. If one were to create one's own questionnaire, one would not have the historic data backing the tool and one would have to start from scratch (Martins & Proença, 2012). Deservedly MSQ-S has been in long use since 1967, yet results of this study -in sync with earlier studies- suggest that there is room for improvement in the measurement model. For example, Schriesheim and colleagues (1993) alluded that items' attribution to specific subscales is negotiable and recommended that appropriate revisions could be made to the subscales' composition, replacing some of the items differently from the prototype allocations and apportioning them to another subscale, i.e. reallocating some items from IJS to EJS and vice-versa. In spite of this, a study by Hirschfeld (2000) concluded that revising MSQ-S form did not significantly change the factor structure. Hirschfeld's conclusion is line with results of this study as basic bidimensional structure did not change in spite of removing four items form IJS.

Locke (1976) maintained that JS dimensions are complex and interrelated. Albeit, a number of researchers have claimed that MSQ-S subscales are confounded (Schriesheim et al., 1993). JS is a widely researched and complex concept, which entails that it could have numerous definitions (Lumley et al., 2011). Diverse MSQ-S factor structures have been obtained for various occupational groups (Tan & Hawkins, 2000; Weiss, *et al.*, 1967). Notwithstanding, this study in line with other studies (e.g. Hirschfeld, 2000) supported not only the strong correlation ($r > .9$) between IJS & EJS but its DV as well. Construct validity estimates the ability of an

instrument to measure the underlying construct of interest (Ellenbecker & Byleckie, 2005) and reliability measures the consistency of measurement (Heale & Twycross, 2015). The present study proved MSQ-S to be a valid and reliable instrument for measuring JS among study participants.

Present-day literature turned up on considering JS as a result of an employee's evaluation of his/her work (Testa, 2001; Weiss, 2002). JS manifests affective and cognitive evaluations of employees regarding their expectations and how well they have been met (Choudhary, Kumar, & Philip, 2013; Luthans, 1992). Approximately three fourths of study participants flaunted moderate level of overall JS and the remaining portion divulged low level. As regards IJS less than one fifth ventilated low level while the remaining fraction trumpeted moderate IJS. Merely one case unveiled very low level of EJS. Slightly more than one fourth disclosed low EJS and the remaining cases revealed moderate EJS level. It is alarming that no participant vented high or very high levels of overall JS, IJS or EJS. It is comparably disquieting that not less than 15% of participants have low levels of overall JS, IJS and EJS. In a healthcare milieu level of JS has a particular import. Healthcare managers are challenged to seek exact origins behind low JS so as to take apt measures to maintain the morale of their workforce and keep their employees well-motivated.

The present study portrayed participants' level of satisfaction with 16 job aspects. An agreeable point is that a negligible share (merely 2.6 %) was dissatisfied or very dissatisfied with MSQ9. This finding is not unexpected given that a healthcare career presages serving others (World Health Organization, 2006).

However, all other facets present a rather disagreeable portrait where the amount of dissatisfaction or very dissatisfaction ranges from 15.8% (MSQ4) to > 1/3 (MSQ13 & MSQ17). Levels of satisfaction with specific job facets are relevant to researchers, managers and employees alike. JS has been conceptualized as the difference between what a worker

experiences on the job and what he or she expects to find and draw conclusions depending on their anticipations and relative personal position (Lichtenstein, 1984; Mora, Aracil and Vila (2007).

According to WHO (2006), healthcare administrators have to work determinedly to ensure access to a motivated and supported heath worker. The present study illustrated that efforts need be directed to improve almost all JS aspects of health professionals with special emphasis on compensation and work conditions. This finding is compatible with previous research since whenever employees are asked what they want most from their jobs, typical answers focus on pay and work conditions (Kleiman, 1997). Healthcare employees should be continuously screened for person-organization fit so as to monitor their emotional-cognitive responses to work and work environment and assure that a variety of needs are fulfilled and gratified for various organizational positions in the workplace (Autry & Daugherty, 2003; Hopkins, 1983). The importance of valid, reliable and precise JS scale cannot be overemphasized for formulating effectual managerial policies and strategies. Indeed the present study improves academic and managerial understanding of the nature and assessment of JS and its dimensions in an Egyptian healthcare context and bestows a platform for a more explored arena of theoretical as well as practical future pursuits in the field of JS among healthcare professionals.

The current study did not hit upon any significant association between overall JS and participants' age, marital status, merit, tenure, or professional category. However, overall JS was significantly higher for males than females. Tandon and Dhawan (1981) found that the level of JS varies with age, seeing that employees tend to develop different experiences and expectations as they grow older, which were reflected in higher JS level. Another study (Buitendach & Rothmann, 2009) indicated that younger employees experience lower levels of JS. Correspondingly, Armentor and Forsyth (1995) found that older workers were more satisfied with their jobs as compared their younger counterparts. Buitendach & Rothmann (2009) indicated that employees older than 55 years, experience higher levels of JS compared to younger

employees. Contrarily Saner and Eyüpoğlu (2012) underscored that overall JS increases with age and starts to decline at the age group of (50-60). Non association between age and JS in this study could be attributed to the fact that more than 98% of participants were below fifty years. In a study conducted by Higgs, Higgs and Wolhuter (2004) in the academic profession, no differences were found between males and females in terms of their experience of job satisfaction. Another study (Buitendach & Rothmann, 2009) also confirmed that male employees do not experience practically significant higher levels of JS compared to female employees and reasoned that both males and females work under the same circumstances and there is no discrimination in terms of salary or benefits. Kamarulzaman and Nordin (2012) argue that it is not clear that higher educational levels would lead to higher JS. Conversely, Ritter and Anker (2002) and Bowden and Marton (1999) contend that employees with higher educational levels are more likely to report high job satisfaction level.

A key strength of this study is its robustness in terms of good data founded on adequate sized four samples and close consideration of an appropriate method of FA. This permitted typical MSQ-S factor structure to transpire, construct validated and replicated on more than one sample. Another major strength is the establishment of test-retest reliability and temporal stability of MSQ-S across four consecutive administrations. A third strength is that the study was carried out on various categories of health professionals employed in both governmental and non-governmental sectors. On the other hand, a limitation of the current study is its relatively constrained sample that is confined to a specific population (postgraduate students) in a specific locality (HIPH) that may not be reflective of JS among the universe of health professionals in Egypt. Future research activity may endeavor to enhance study generalizability by extending sampling design to include health professionals from various localities so as to be representative of the entire universe of health professionals in Egypt. Exclusive reliance of the study on self-report measures cannot be considered as a limitation since JS – by definition- is a subjective state

of mind. Despite its limitation, the present study offers a contribution to the ever expanding knowledge on JS among healthcare professionals.

REFERENCES

Abugre, B. J. (2014). Job satisfaction of public sector employees in Sub-Saharan Africa: Testing the Minnesota Satisfaction Questionnaire in Ghana. *International Journal of Public Administration. 37* (10), 655-665. Doi: 10.1080/01900692.2014.903268

Ahmadi, K., & Kolivand, K. (2007). Stress and job satisfaction among Air Force Military Pilots. *Journal of Social Sciences*, *3*(3), 159-63.Doi: 10.3844/jssp.2007.159.163

Allison, P.D. (1998). *Multiple Regression: A Primer.* (1st ed.). Thousand Oaks, CA, Pine Forge Press.

Armentor, J. & Forsyth, C. J. (1995).Determinants of job satisfaction among social workers. *International Review of Modern Sociology*, *25*(2), 51-63.Doi: 10.3923/ibm.2011.436.440

Arvey, R. D., Bouchard, T. J., Segal, N. L., & Abraham, L. M. (1989). Job satisfaction: Environmental and genetic components. *Journal of Applied Psychology, 74*(2), 187-192. Doi:10.1037/0021-

Arvey, R. D., Dewhirst, H. D., & Brown, E. M. (1978). A longitudinal study of the impact of changes in goal setting on employee satisfaction. *Personnel Psychology, 31*, 595-608.10.1111/j.1744-6570.1978.tb00465.x

Arvey, R. D., McCall, B. P., Bouchard, T. J., Taubman, P., & Cavanaugh, M. A. (1994). Genetic influences on job satisfaction and work values. *Personality and Individual Differences*, *17*, 21-33.Doi:10.1016/0191-8869(94)90258-5

Autry, C. W., & Daugherty, P. J. (2003). Warehouse operations employees: Linking person organization fit, job satisfaction, and coping responses. *Journal of Business Logistics, 24*(1), 171-197.https://doi.org/10.1002/j.2158-1592.2003.tb00036.x

Balzer, W.K., Kihm, J.A., Smith, P.C., Irwin, J.L., Bachiochi, P.D., Robie, C., …, & Parra, L.F. (1997). *Users' manual for the job descriptive index (JDI; 1997 Revision) and the job in general (JIG) scales*. Bowling Green, OH: Bowling Green State University.

Bentler, P.M. (2005). *EQS 6 structural equations program manual.* Encino, CA: Multivariate Software, Inc.

Blunch, N. J. (2008). Introduction to structural equation modeling using SPSS and AMOS. London: Sage.

Blau, G. (1999).Testing the longitudinal impact of work variables and performance appraisal satisfaction on subsequent overall job satisfaction. *Human Relations,52*(8), 1099-1113. Doi: 10.1023/A:1016987725663

Bloom, P. J. (2010). *Measuring work attitudes in the early childhood setting. Technical manual for the Early Childhood Job Satisfaction Survey and the Early Childhood Work Environment Survey.* Lake Forest, IL: New Horizons.

Bowden, J., & Marton, F. (1999).Graduates "not afraid of hard work". *Education and Training, 41*(5), 260-265. Doi: 10.1108/et.1999.00441eab.001.

Briggs, N. E., & MacCallum, R. C. (2003). Recovery of weak common factors by maximum likelihood and ordinary least squares estimation. *Multivariate Behavioral Research, 38*(1), 25-56.Doi: 10.1207/S15327906MBR3801_2

Bryant, F. B., & Yarnold, P. R. (1995).Principal-components analysis and exploratory and confirmatory factor analysis. In L. G. Grimm & P. R. Yarnold (Eds.), *Reading and understanding multivariate statistics* (pp. 99-136). Washington, DC: American Psychological Association.

Buitendach, J.H., & Rothmann, S. (2009). The validation of the Minnesota Job Satisfaction Questionnaire in selected organisations in South Africa.*SA Journal of Human Resource Management,7*(1), 1-8 Doi: 10.4102/sajhrm.v7i1.183.

Cerny, C.A., & Kaiser, H.F. (1977). A study of a measure of sampling adequacy for factor-analytic correlation matrices. *Multivariate Behavioral Research, 12*(1), 43-47.

Chang, E., Cohen, J., Koethe, B., Smith, K., & Bir, A. (2017).Measuring job satisfaction among healthcare staff in the United States: A confirmatory factor analysis of the Satisfaction of Employees in Health Care (SEHC) survey. *Int J Qual Health Care, 29*(2):262-268. Doi: 10.1093/intqhc/mzx012

Child, D. (2006). *The Essentials of Factor Analysis*. (3rded.). New York: Continuum.

Choudhary, N., Kumar, R., &Philip, P.J. (2013). Links between organisational citizenship behaviour, organisational justice and job behaviours at the workplace. *LBS Journal of Management and Research, XI*(2), 3-11. Doi: 10.5958/j.0974-1852.11.2.002.

Claes, R., & van de Ven, B. (2008).Determinants of older and younger workers' job satisfaction and organizational commitment in the contrasting labour markets of Belgium and Sweden. *Ageing and Society, 28*(8), 1093-1112. Doi: /10.1017/S0144686X08007423

Clark, A., Oswald, A.M., & Warr, P. (1996). Is job satisfaction U-shaped in age? *Journal of Occupational and Organizational Psychology*, *8*(1), 57–81.https://doi.org/10.1111/j.2044-8325.1996.tb00600.x

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7*(3), 309–319. Doi:10.1037/1040-3590.7.3.309

Cook, J. D., Hepworth, S. J.,Wall, T. D.,& Warr, P. B. (1981). *The experience of work*. London: Academic Press.

Dall'Oglio, A.M, Rossiello, B., Coletti, M.F., Caselli, M.C., Ravà, L., di Ciommo, V, …& Pasqualetti, P. (2010). Developmental evaluation at age 4: Validity of an Italian parental questionnaire,*46*(7-8):419-26. Doi: 10.1111/j.1440-1754.2010.01748.x

Day, D. V., & Bedeian, A. G. (1991).Work climate and Type A status as predictors of job satisfaction: A test of the interactional perspective. *Journal of Vocational Behavior*, *38*(1),39-52. Doi:10.1016/0001-8791(91)90016-F

Ellenbecker, C. H., & Byleckie, J. J. (2005). Home Healthcare Nurses' Job Satisfaction Scale: Refinement and Psychometric Testing. *Journal of Advanced Nursing, 52*(1): 70–78.Doi: 10.1111/j.1365-2648.2005.03556.x

Ferketich, S. (1991). Focus on psychometrics: aspects of item analysis. *Research in Nursing & Health,14*(2), 165–168. Doi: 10.1002/Nur.4770140211

Fields, D. L. (2002).*Taking the Measure of Work: A Guide to Validated Scales for Organizational Research and Diagnosis.* Thousand Oaks, CA: Sage.

Fields, D. L. (2013).*Taking the measure of work: A guide to validated scales for organizational research and diagnosis.*USA: Information Age Publishing Inc.

Field, A. (2009).*Discovering Statistics Using SPSS*. Los Angeles, CA: Sage.

Fisher, C.D. (2003).Why do lay people believe that satisfaction and performance are correlated? Possible sources of a commonsense theory. *Journal of Organizational Behavior, 24*(6): 753-77.Doi: 10.1002/job.216

Galea, S., & Tracy, M. (2007). Participation rates in epidemiologic studies. *Ann Epidemiol*., *17*(9), 643–53. Doi: 10.1016/j.annepidem.2007.03.013

Gardner, J., & Oswald, A. (2002, June).*How does education affect mental well-being and job satisfaction?* Paper presented at the National Institute of Economic and Social Research Conference, University of Birmingham, United Kingdom.

Gao, S., Mokhtarian, P., & Johnston, R. (2008). *Non-normality of Data in Structural Equation Models.* Research Report – UCD-ITS-RR-08-47. Institute of Transportation Studies, University of California, Davis. Available at: https://escholarship.org/uc/item/11q0s48s

Gkliati, A., & Saiti, A. (2016). Job satisfaction in the Health Care Sector: Empirical evidence from medical care in Greece. *European Journal of Economics and Business Studies, 5*(2), 7-1. 4. Doi: 10.26417/ejes.v5i1.p7-14

Groenland, E., & Stalpers, J. (2012). Structural equation modeling: A verbal approach. *Nyenrode Research Paper No. 12-02*, ISSN 1872-3934. Available from: - http://www.papers.ssrn.com/sol3/papers.cfm?abstract_id=

Hair, J. F., Black, B., Babin, B., Anderson, R. E., & Tatham, R. L. (2006).*Multivariate data analysis* (6thed.). Upper Saddle River, N.J.: Pearson Prentice Hall.

Hancer, M., & George, T.R. (2004). Factor structure of the Minnesota Satisfaction Questionnaire Short Form for restaurant employees. *Psychological Reports, 94*(1), 357-362. Doi:10.2466/pr0.94.1.357-362. Doi:10.2466/pr0.94.1.357-362

Heale, R., & Twycross, A. (2015).Validity and reliability in quantitative studies. *Evidence-Based Nursing*, *18*(3), 66-67. Doi:10.1136/eb-2015-102129.

Heslop, P., Smith, G.D., Metcalfe, C., & Macleod, J. (2002). Change in job satisfaction and its association with self-reported stress, cardiovascular risk factors and mortality. *Soc Sci Med.*, *54*(10), 1589–1599.Doi: 10.1016/s0277-9536(01)00138-1

Hickson, C., & Oshagbemi, T. (1999).The effect of age on the satisfaction of academics with teaching and research. *International Journal of Social Economics*, *26*(4), 537–544. Doi: 10.1108/03068299910215960

Higgs, L.G., Higgs, P., & Wolhuter, C.C. (2004). Re-thinking gender (in) equality within the South African academic profession. *South African Journal of Higher Education*, *18* (1), 273–289.Doi: 10.4314/sajhe.v18i1.25443

Hirschfeld, R.R. (2000). Does revising the intrinsic and extrinsic subscales of the Minnesota Satisfaction Questionnaire Short Form make a difference? *Educational and Psychological Measurement*,*60*(2), 255-270. Doi:10.1177/00131640021970493

Hopkins, A. H. (1983). *Work and Job Satisfaction in the Public Sector*. Totowa, NJ: Rowman & Allanheld.

Ironson, G., Smith, B.C., Brannick, M.T., & Paul, K.B. (1989). Construction of a Job in General Scale: A Comparison of Global, Composite, and Specific Measures. Journal of Applied Psychology, *74*(2):193-200. Doi:10.1037/0021-9010.74.2.193

Judge, T. A., & Hulin, C. L. (1993). Job satisfaction as a reflection of a disposition: A multiple-source causal analysis. *Organizational Behavior and Human Decision Processes*, *56*(3), 388-421.Doi:10.1006/obhd.1993.1061

Judge, T. A., & Watanabe, S. (1993). Another look at the job satisfaction-life satisfaction relationship. *Journal of Applied Psychology*, *78*(6), 939-948. Doi:10.1037/0021-9010.78.6.939

Kamarulzaman, W., & Nordin, M.S. (2012). Job satisfaction: The comparison between school-leavers and college graduates. *Proceeding of the 2nd International Conference on Arts, Social Science & Technology Penang, Malaysia, 3rd-5th March 2012. Paper No: 12032.*

Karl, K.A., & Sutton, C.L. (1998). Job values in today's workforce: a comparison of public and private sector employees. *Public Personnel Management, 27*, 515-528. Doi: 10.1177/009102609802700406.

Kleiman, L.S. (1997). *Human resource management: A tool for competitive advantage.* New York: West Publishing.

Kline, R. (2005). *Principles and practice of structural equation modeling* (2nd ed.). NY, London: Guilford Press.

Kline, R. (2011). *Principles and practice of structural equation modeling* (3rded.). NY, London: Guilford Press.

Krishnan, R., Omar, R., & Ismail, I. R. (2010). Job satisfaction as a potential mediator between motivational job characteristics and organizational citizenship behavior: Evidence from Malaysia. *Journal of Information Technology & Economic Development*, *1*(1), 86-110.

la Du, T. J., & Tanaka, J. S. (1989). Influence of sample size, estimation method, and model specification on goodness-of-fit assessments in structural equation models. *Journal of Applied Psychology*, *74*(4), 625-635. Doi: 10.1037/0021-9010.74.4.625

Lahoud, H.A. (2006). Job satisfaction among network administrators in North Carolina: An analysis based on The Minnesota Satisfaction Questionnaire. Dissertation submitted in partial fulfillment of the requirement for the degree of Doctor of Philosophy, Capella University.

Lichtenstein, R. (1984). Measuring the job satisfaction of physicians in organized settings. *Medical Care*, *22*(1), 56-68. Doi: 10.1097/00005650-198401000-00005

Locke, E. A. (1976). *The nature and causes of job satisfaction*. Handbook of industrial and organizational psychology, M.D. Dunnette ed., Chicago: Rand-Mc Nally.

Lumley, E.J., Coetzee, M, Tladinyae, R & Ferreira, N. (2011).Exploring the job satisfaction and organizational commitment of employees in the information technology environment. *Southern Africa Business Review, 15*(1), 100-118.

Luthans, F. (1992).*Organizational Behaviour*, 6th Ed. McGraw-Hill.

Luthans, F., & Thomas, L.T. (1989). The relationship between age and job satisfaction: Curvilinear results from an empirical study: A research note. *Personnel Review, 18*(1), 23–26. Doi: 10.1108/00483488910133350

Martins, N., & Coetzee, M. (2007). Organizational culture, Employee satisfaction, perceived leader emotional competency and personality type: An exploratory study in a South African engineering company, *South African Journal of Human Resource Management, 5* (2), 20-36. Doi: 10.4102/sajhrm.v5i2.116

Martins, H & Proença, T. (2012).*Minnesota Satisfaction Questionnaire – Psychometric Properties and Validation in a Population of Portuguese Hospital Workers*.FEP Working Papers. No. 471.

Mora, J.G., Aracil, A.G., & Vila, L.E. (2007). Job satisfaction among young European higher education graduates. *Higher Education 53*, 29-59.Doi: 10.1007/s10734-005-2377-4.

Morgan, G.A., & Griego, O.V. (1998). *Easy use and interpretation of SPSS for Windows: Answering research questions with statistics.* Mahwah, New Jersy, Londom, Lawrence Erlbaum Associates Publishers.

Moyes, G., Williams, P., & Koch, B. (2006).The effects of age and gender upon the perceptions of accounting professionals concerning their job satisfaction and work-related attributes. *Managerial Auditing Journal*, 21(5), 536- 561. Doi:10.1108/02686900610667292

Murphy, G., Athanasou, J., & King, N. (2002). Job satisfaction and organizational citizenship behaviour: A study of Australian human-service professionals. *Journal of*

Managerial Psychology, *17*(4), 287-297.Doi:10.1108/02683940210428092

Mueller, C. W., & McCloskey, J, C. (1990).Nurses' job satisfaction: A proposed measure. *Nursing Research*, *39*(2): 113-17.Doi:10.1016/S0001-2092(07)67301-3

Nakata, A., Iries, M, & Takahashi, M. (2013). A single-item Global Job Satisfaction Measure is associated with quantitative blood immune indices in While-collar employees. *Ind Health*,*51*(2): 193–201. Doi: 10.2486/indhealth.2012-0059

Nerison, H.A. (1999). A descriptive study of job satisfaction among vocational rehabilitation counselors in a Midwestern state. A research paper submitted in partial fulfillment of the requirements for the master of science degree with a major in vocational rehabilitation. The graduate college university of Wisconsin-Stout. Menomonie, Wisconsin.

Nunnally, J. C. (1976). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.

Nunnally, J. C, & Bernstein, I.H. (1994).*Psychometric theory* (2nd ed.). New York: McGraw-Hill.

Oshagbemi, T. (1999). Overall job satisfaction: How good are single versus multiple-item measures? *Journal of Managerial Psychology*, *14*(5-6), 388–403.https://doi.org/10.1108/02683949910277148

Oshagbemi, T. (2000). Is length of service related to the level of job satisfaction? *International Journal of Social Economics*, *27*(3),108–123. Doi: 10.1108/03068290010286546

Oshagbemi, T. (2003). Personal correlates of job satisfaction: Empirical evidence from UK universities. *International Journal of Social Economics*, *30*(12), 1210–1232.Doi: 10.1108/03068290310500634

Petty, G.C., Brewer, E.W., & Brown, B. (2005).Job satisfaction among employees of a youth development organisation. *Child and Youth Care Forum*, *34*(1), 57-73.Doi:10.1007/s10566-004-0882-8

Petty, M. M., McGee, G, W, & Cavender, J.W. (1984).A Meta-Analysis of the relationships between individual job satisfaction and individual performance. *The Academy of Management Review, 9*(4),712-21.

Quinn, R.P., Staines, G.L., & McCullough, M.R. (1974). Job satisfaction: Is there a trend? *Manpower Research Monograph No. 30.* Washington, DC: US Department of Labour.

Ramadhani, M & Marwa, Y. (2016). The validation of the Minnesota Job Satisfaction Questionnaire (MSQ) in Tanzania: A case of Tanzania Public Service College. *International Journal of African and Asian Studies, 23,* 162-172.

Ritter, J.A., & Anker, R., (2002). Good jobs, bad jobs: Workers' evaluation in five countries. *International Labour Review. 141*(4), 331-358. https://doi.org/10.1111/j.1564-913X.2002.tb00244.x

Rothmann, S. (2008). Occupational stress, job satisfaction, burnout and work engagement as components of work-related well-being. *South African Journal of Industrial Psychology*, *34*(3), 11–16.Doi: 10.4102/sajip.v34i3.424

Rounds, J., Dawis, R.V., & Lofquist, L.H. (1987). Measurement of person-environment fit and prediction of satisfaction in the Theory of Work Adjustment. *Journal of Vocational Behavior,31*(3):297-318. Doi: 10.1016/0001-8791(87)90045-5

Saner, T., & Eyüpoğlu, S., Z. (2012).The age and job satisfaction relationship in higher education. *Procedia-Social and Behavioral Sciences, 55,* 1020-1026.Doi: 10.1016/j.sbspro.2012.09.593

Santhapparaj, A.S., & Alam, S.S. (2005). Job Satisfaction among academic staff in private universities in Malaysia. *Journal of Social Sciences,1*(2),72-76. Doi: 10.3844/jssp.2005.72.76

Sarker, S.J., Crossman, A., & Chinmeteepituck, P. (2003). The relationships of age and length of service with job satisfaction: An examination of hotel employees in Thailand. *Journal of Managerial Psychology*, *18*(7), 745–758. Doi: 10.1108/02683940310502421

Schriesheim, C. A., Powers, K. J., Scandura, T. A., Gardiner, C. C., & Lankau, M. J. (1993). Improving construct measurement in management research: Comments and a quantitative approach for assessing the theoretical content adequacy of paper-and-pencil survey-type instruments. *Journal of Management, 19*, 385-417.Doi: 10.1177/014920639301900208

Sharma, S. (1996), *Applied Multivariate Techniques*. New York: J. Wiley.

Soler, C.H. (2000).The relationship of organizational structure and job characteristics to teacher's satisfaction and commitment. *Dissertation Abstracts International Section A: Humanities and Social Sciences, 60*(12-A), 4273.

Spagnoli, P., Caetano, A., & Santos, S. C. (2012). Satisfaction with Job Aspects: Do Patterns Change over Time? *Journal of Business Research, 65*(5), 609-16.Doi: 10.1016/j.jbusres.2011.02.048

Spector, P. E. (1985). Measurement of human service staff satisfaction: Development of the Job Satisfaction Survey. *American Journal of Community Psychology*, *13*(6), 693-713.Doi:10.1007/bf00929796

Spector, P. E. (1997). *Job satisfaction: Application, assessment, causes, and consequences*. Thousand Oaks, CA: Sage.

Stone-Romero, E. F. (1994). Construct validity issues in organizational behavior research. In J. Greenberg (Ed.), *Organizational behavior: The state of the science* (pp. 155-179). Hillsdale, NJ: Lawrence Erlbaum.

Tan, P. P., & Hawkins, E. (2000).The factor structure of the Minnesota Satisfaction Questionnaire and participants of vocational rehabilitation. *Psychological Reports*, *87*(1), 34-36.Doi: 10.2466/pr0.2000.87.1.34.

Tandon, R.;& Dhawan, S. K. (1981). Variations in job satisfaction with age among blue- and white-collar Indian workers. *Indian Journal of Industrial Relations*, *16*(4), 615-622.

Testa, M. (2001).Organizational commitment, job satisfaction, and efforts in the service environment. *The Journal of Psychology, 135*(2), 226–236. Doi: 10.1080/00223980109603693

Ting, Y. (1997). Determinants of job satisfaction of federal government employees. *Public Personnel Management, 26*(3), 313-334. Doi:10.1177/009102609702600302

Van de Velde, M.E.G., Feij, J.A., & Taris, T.W. (1995). Stability and change of person characteristics among young adults: The effect of the transition from school to work. *Person Individual Different, 18*(1), 89-99.Doi: 10.1016/0191-8869(94)00111-5

Wanous, J. P., Reichers, A. E., & Hudy, M, J. (1997). Overall job satisfaction: How good are single-item measures? *Journal of Applied Psychology, 82*(2): 247-52. Doi:10.1037/0021-9010.82.2.247

World Health Organization. (2006). *World Health Report 2006*. WHO, Geneva.

Weiss, H. (2002). Deconstructing job satisfaction: Separating evaluations, beliefs and affective experiences. *Human Resource Management Review, 12*(2), 173–194.Doi**:** 10.1016/S1053-4822(02)00045-1.

Weiss, D. J. , Dawis, R. V., England, G. W., & Lofquist, L. H. (1967), *Manual for the Minnesota Satisfaction Questionnaire.*Vol. 22, Minnesota Studies in Vocational Rehabilitation, Minneapolis: University of Minnesota, Industrial Relations Center.

Wilkinson & Wagner (1993). Supervisory leadership styles and state vocational rehabilitation counselor job satisfaction and productivity. *Rehabilitation Counseling Bulletin,37*(1), 15-24.

Ximenez, C. (2006). A Monte Carlo study of recovery of weak factor loadings in confirmatory factor analysis. *Structural Equation Modeling*, *13*(4), 587-614.Doi: 10.1207/s15328007sem1304_5

Ximenez, C. (2009). Recovery of weak factor loadings in confirmatory factor analysis under conditions of model misspecification. *Behavior Research Methods 2009, 41* (4), 1038-1052 doi:10.3758/BRM.41.4.1038

Yucel, I., & Cetin, B. (2012). Job satisfaction, organizational commitment and demographic characteristics among teachers in Turkey: The younger is better? *Procedia- Social and Behavioral Sciences*, *46*, 1598-1608.

Zhang, Y.M., & Feng, X.S. (2011). Confirmatory factor analysis of job satisfaction structure of physicians from public medical institutions. *Chinese Journal of Health Statistics*, *28*(1): 29–32. Doi:10.1093/intqhc/mzx012

TABLES

Table 1. Personal characteristics of participants in four samples (S1= 242), (S2 = 211), (S3 = 191), and (S4 = 174)

	S1	%	S2	%	S3	%	S4	%
Gender								
Females	177	73.1	156	73.9	137	71.7	123	70.7
Males	65	26.9	55	26.1	54	28.3	51	29.3
Age (Years)								
22-	116	47.9	94	44.5	91	47.6	83	47.7
30-	107	44.2	98	46.4	84	44.0	76	43.7
40-	16	6.6	16	7.6	14	7.3	14	8.0
50-60	3	1.2	3	1.5	2	1.0	1	.6
Mean ± S.D.	30.913 ± 6.008		31.376 ± 6.113		31.126 ± 5.963		30.914 ± 5.793	
Marital Status								
Unmarried	106	43.8	87	41.2	76	39.8	80	46.0
Married	136	56.2	124	58.8	115	60.2	94	54.0
Program								
Diploma	153	63.2	134	63.5	121	63.4	111	63.8
Master	89	36.8	77	36.5	70	36.6	63	36.2
Undergraduate merit								
Excellent	30	12.4	23	10.9	23	12.2	21	12.1
Very Good	117	48.3	106	50.2	90	47.1	80	46.0
Good	71	29.3	63	29.9	61	31.9	58	33.3
Satisfactory	21	8.7	17	8.1	14	7.3	11	6.3
Not mentioned	3	1.2	2	0.90	3	1.6	4	2.3
Work Sector								
Ministry of Health	154	63.6	146	69.2	123	64.4	108	62.1
Private	44	18.2	36	17.1	38	19.9	36	20.7
University	36	14.9	21	10.0	22	11.5	25	14.4
Others	8	3.3	8	3.8	8	4.2	5	2.9
Profession								
Physician	137	56.6	119	56.4	104	54.5	87	50.0
Pharmacist	50	20.7	47	22.3	42	22.0	45	25.9
Dentist	11	4.5	10	4.7	8	4.2	9	5.2
Nursing	13	5.4	9	4.3	9	4.7	9	5.2
Nutritionist	11	4.5	12	5.7	11	5.8	9	5.2
Others	20	8.3	14	6.6	17	8.9	15	8.6
Tenure (Years)								
.33-	96	39.7	75	35.5	71	37.2	64	36.8
5-	74	30.6	70	33.2	62	32.5	60	34.5
10-	63	26.0	56	26.5	51	26.7	44	25.3
20-31	9	3.7	10	4.7	7	3.7	6	3.4
Mean ± S.D.	7.077 ± 5.819		7.519 ± 5.893		7.279 ± 5.665		7.038 ± 5.522	
Graduation Year								
1984-	4	1.7	4	1.9	3	1.5	4	2.3
1995-	76	31.4	72	34.1	64	33.5	55	31.6
2010-2019	162	66.9	135	64.0	124	64.9	117	67.2

Table 2: Global fit indices for competing job satisfaction models

M	f	S	CMIN/df	SRMR	GFI	AGFI	NFI	RFI	PGFI	PNFI	PRATIO
M3	f1	S1	335.074/167 = 2.01	.0694	.969	.960	.953	.946	.770	.838	.879
M2	f2	S2	226.046/169 = 1.33	.0681	.973	.966	.962	.957	.783	.855	.889
M4	f3	S1	259.476/164 = 1.58	.0619	.976	.969	.964	.958	.762	.832	.863
M1	f4	S3	214.288/170 = 1.26	.0714	.975	.970	.968	.964	.790	.866	.895
M3R	----	S2	107.855/101 = 1.07	.0569	.983	.977	.976	.971	.730	.821	.842
M2R	----	S3	83.573/103 =.0811	.0579	.987	.983	.983	.980	.748	.844	.858
M4R	----	S2	79.043/98 = 0.807	.0512	.987	.983	.982	.978	.712	.802	.817
M1R	----	S1	196.802/104 = 1.89	.0678	.977	.969	.965	.960	.747	.836	.867
MF	f5	S4	60.406/103 = 0.586	.0509	.991	.988	.989	.987	.751	.849	.858

M: Model; M3: Tridimensional model; M2: Bidimensional model; M4: Tetradimensional model; M1: Unidimensional model; M3R: Refined tridimensional model; M2R: Refined bidimensional model; M4R: Refined tetradimensional model; M1R: Refined unidimensional model; MF: selected final model which is equivalent to M2R, f: figure; f1: figure1; f2: figure2; f3: figure3; f4: figure4; f5: figure5; S: sample; S1: sample 1; S2:sample 2; S3: sample 3, S4: sample 4.
NB. All models were subjected to confirmatory factor analysis in an exploratory mode except MF which was subjected to conventional confirmatory factor analysis

Table 3: Local fit indices for competing job satisfaction models

M	f	S	λs	r	MSCR	MASCR	|XSCR|	|MiSCR|	SCR > |4|	Q-Q
M3	f1	S1	$\geq .37$	.71-.92	0.0004	|0.055|	|3.887|	.000	0	Discernable
M2	f2	S2	$\geq .40$	.87	-0.0187	|0.640|	|4.060|	.000	1	Discernable
M4	f3	S1	$\geq .38$	.88-.52	0.0342	|0.631|	|3.951|	.000	0	Discernable
M1	f4	S3	$\geq .45$	----	0.0128	|0.630|	|4.455|	.000	1	Discernable
M3R	----	S2	$\geq .46$	.72-.83	0.0098	|0.533|	|4.462|	.000	1	Discernable
M2R	----	S3	$\geq .55$	.88	0.0073	|0.508|	|4.200|	.000	1	Discernable
M4R	----	S2	$\geq .46$	.58-.88	- 0.0049	|0.481|	|2.066|	.000	0	Discernable
M1R	----	S1	$\geq .34$	----	0.0211	|0.676|	|5.131|	.000	1	Discernable
MF	f5	S4	$\geq .60$	.92	0.0082	|0.421|	|2.754|	.000	0	Discernable

M: Model; M3: Tridimensional model; M2: Bidimensional model; M4: Tetradimensional model; M1: Unidimensional model; M3R: Refined tridimensional model; M2R: Refined bidimensional model; M4R: Refined tetradimensional model; M1R: Refined unidimensional model; MF: selected final model which is equivalent to M2R, f: figure; f1: figure1; f2: figure2; f3: figure3; f4: figure4; f5: figure5; S: sample; S1: sample 1; S2:sample 2; S3: sample 3, S4: sample 4; λs: Standardized regression paths; r: Interfactor correlations; MSCR: Mean standardized covariance residuals; MASCR: Mean absolute standardized covariance residual; XSCR: Maximal standardized covariance residual; MiSCR: Minimal standardized covariance residual; SCR > |4|: Number of SCR > |4|, Q-Q: normal Q-Q plot of the SCRs generated a roughly straight line denoting residuals coming from a normal distribution with a mean approximating zero.
NB. All models were subjected to confirmatory factor analysis in an exploratory mode except MF which was subjected to conventional confirmatory factor analysis

Table 4: Measures of internal consistency reliability, discriminant validity and convergent validity of competing job satisfaction models

M	α	ρc	AVE	r_{IE}	r_{IG}	r_{EG}	r_{F1F2}	r_{F1F3}	r_{F1F4}	r_{F2F3}	r_{F2F4}	r_{F3F4}
M3OS	.896	.909	.347	.92	.71	.83	----	----	----	----	----	----
M3IJS	.816	.818	.286	----	----	----	----	----	----	----	----	----
M3EJS	.811	.823	.442	----	----	----	----	----	----	----	----	----
M3GJS	.611	.656	.501	----	----	----	----	----	----	----	----	----
M2OS	.914	.924	.385	.87	----	----	----	----	----	----	----	----
M2IJS	.859	.862	.350	----	----	----	----	----	----	----	----	----
M2EJS	.857	.860	.438	----	----	----	----	----	----	----	----	----
M4OS	.896	.992	.385	----	----	----	.87	.57	.88	.65	.84	.52
M4F1	.797	.797	.296	----	----	----	----	----	----	----	----	----
M4F2	.789	.789	. 433	----	----	----	----	----	----	----	----	----
M4F3	.699	.718	.465	----	----	----	----	----	----	----	----	----
M4F4	.735	.736	.583	----	----	----	----	----	----	----	----	----
M1	.932	.934	.419	----	----	----	----	----	----	----	----	----
M3ROS	.910	.924	.440	.89	.72	.83	----	----	----	----	----	----
M3RIJS	.853	.841	.404	----	----	----	----	----	----	----	----	----
M3REJS	.839	.829	.468	----	----	----	----	----	----	----	----	----
M3RGJS	.601	.508	.499	----	----	----	----	----	----	----	----	----
M2ROS	.824	.938	.487	.92	----	----	----	----	----	----	----	----
M2RIS	.883	.883	.488	----	----	----	----	----	----	----	----	----
M2RES	.822	.822	.486	----	----	----	----	----	----	----	----	----
M4ROS	.910	.935	.475	----	----	----	.868	.611	.887	.656	.832	.561
M4RF1	.818	.817	.398	----	----	----	----	----	----	----	----	----
M4RF2	.807	.811	.469	----	----	----	----	----	----	----	----	----
M4RF3	.819	.819	.694	----	----	----	----	----	----	----	----	----
M4RF4	.732	.732	.578	----	----	----	----	----	----	----	----	----
M1R	.894	.894	.357	----	----	----	----	----	----	----	----	----

M: Model; M3: Tridimensional model; M2: Bidimensional model; M4: Tetradimensional model; M1: Unidimensional model; M3R: Refined tridimensional model; M2R: Refined bidimensional model (selected final model); M4R: Refined tetradimensional model; M1R: Refined unidimensional model; f: figure; f1: figure1; f2: figure2; f3: figure3; f4: figure4; f5: figure5; S: sample; S1: sample 1; S2:sample 2; S3: sample 3, S4: sample 4; M3OS: Tridimensional model overall satisfaction scale; M3IJS: Tridimensional model intrinsic satisfaction subscale; M3EJS: Tridimensional model extrinsic satisfaction subscale; Tridimensional model general satisfaction subscale; M2OS: Bidimensional model overall satisfaction scale; M2IJS: Bidimensional model intrinsic satisfaction subscale; M2EJS: Bidimensional model extrinsic satisfaction subscale; M4OS: Tetradimensional model overall satisfaction scale; M4F1: Factor 1 of the tetradimensional model; M4F2: Factor 2 of the tetradimensional model; M4F3: Factor 3 of the tetradimensional model; M4F4: Factor 4 of the tetradimensional model, M1: Unidimensional model; M3ROS: Refined tridimensional model overall scale; M3RIJS: Refined tridimensional model intrinsic satisfaction subscale; M3REJS: Refined tridimensional model extrinsic satisfaction subscale; M3RGJS: Refined tridimensional model general satisfaction subscale; M2ROS: Refined bidimensional model overall scale; M2RIS: Refined bidimensional model intrinsic satisfaction subscale; M2RES: Refined bidimensional model extrinsic satisfaction subscale; M4ROS: Refined tetradimensional model overall scale; M4RF1: Factor 1 of the modified tetradimensional model; M4RF2: Factor 2 of the modified tetradimensional model; M4RF3: Factor 3 of the modified tetradimensional model; M4RF4: Factor 4 of the modified tetradimensional model, M1R: Refined unidimensional model; α: Chronbach's alpha; r: Interfactor correlations; ρc: composite reliability; AVE: Average variance extracted; r_{IE}: Correlation between intrinsic and extrinsic subscales; r_{IG}: Correlation between intrinsic and general subscales; $r_{EG:}$ Correlation between extrinsic and general subscales; $r_{F1F2:}$ Correlation between factor 1 (F1) and factor 2 (F2); $r_{F1F3:}$ Correlation between factor 1 (F1) and factor 3 (F3); $r_{F1F4:}$ Correlation between factor 1 (F1) and factor 4 (F4); r_{F2F3}: Correlation between factor 2 (F2) and factor 3 (F3); r_{F2F4}: Correlation between factor 2 (F2) and factor 4 (F4); $r_{F3F4:}$ Correlation between factor 3 (F3) and factor 4 (F4).
NB. All models were subjected to confirmatory factor analysis in an exploratory mode except MF which was subjected to conventional confirmatory factor analysis

Table 5. Job satisfaction refined bidimensional model invariance across four administrations and across participants' personal characteristics in an aggregate sample (S5)

Type of Invariance	CMIN/df	SRMR	GFI	ΔGFI	AGFI	NFI	RFI	Sig.
Administration								
Configural	1498.510/472= 3.1748	.0656	.946	-------	.938	.927	.925	----
Full metric	2188.106/486= 4.5023	.1434	.922	.024	.912	.893	.894	(S)
Graduate Program								
Configural	369.698/220 = 1.680	.0540	.986	-------	.981	.980	.977	----
Full metric	944.120/234 = 4.2915	.1139	.966	.020	.957	.953	.948	(S)
Marital Status								
Configural	1104.301/220=5.020	.0577	.960		.951	.946	.941	
Full metric	1700.854/234 = 7.269	.1217	.939	.021	.929	.917	.915	(S)
Undergraduate Merit								
Configural	1073.099/220= 4.878	.0589	.961	-------	.952	.947	.942	-----
Full metric	1711.945/234= 7.316	.1130	.938	.023	.928	.916	.914	(S)
Age								
Configural	1039.921/220= 4.7269	.0603	.963		.954	.949	.944	
Full metric	1681.672/234= 7.1866	.1174	.940	.023	.930	.917	.915	(S)
Gender								
Configural	381.368/220 = 1.733	.0560	.986	-------	.982	.981	.978	-----
Full metric	1318.793/234= 5.636	.0560	.952	.034	.941	.934	.928	(S)
Work Sector								
Configural	702.404/220= 3.193	.0558	.973		.966	.963	959	
Full metric	1541.822/234= 6.589	.1238	.940	.033	.931	.918	.916	(S)
Tenure								
Configural	1875.323/220= 8.5242	.0509	.966	------	.958	.953	.949	-----
Full metric	3109.851/234= 13.290	.1155	.944	.022	.935	.923	.921	(S)
Profession								
Configural	776.587/220= 3.5299	.0646	.967		.959	.955	.951	
Full metric	1441.538/234= 6.160	.1313	.939	.028	.929	.916	.914	(S)

Abbreviations: CMIN/df = Minimum Discrepancy per Degree of Freedom; SRMR= Standardized Root Mean Square Residual; GFI = Goodness of Fit Index; AGFI = Adjusted; NFI= Normed Fit Index; RFI = Relative Fit Index; Sig. = Significance; (S) = significant change at .001 probability level; S5 is an aggregate sample composed of combining four samples S1, S2, S3, and S4 that were taken one month apart over a period from 29/9/2019 till 16/1/2020.

N.B. There are four administrations (S1, S2, S3, & S4) separated one month apart.

N.B. Program is either diploma or master.

N.B. Undergraduate Merit is categorized into two groups one for "excellent" or "very good" and one for the remainder.

N.B. Age is categorized into two categories one for those below 30 and one for the remainder.

N.B. Work sector is categorized into two categories one for working in Ministry of Health and one for the remainder.

N.B. Tenure is categorized into two categories one for those with less than ten years and one for the remainder.

N.B. Profession is categorized into two groups one for physicians and the other for non physicians.

Table 6. Healthcare providers' level of satisfaction with various aspects of their jobs (N = 234)

	Very satisfied		Satisfied		Neutral		Dissatisfied		Very dissatisfied	
Job aspect	No.	%	No.	%	No.	%	No.	%	No.	%
MSQ3	57	24.4	69	29.5	65	27.8	25	10.7	18	7.7
MSQ4	50	21.4	74	31.7	73	31.2	21	9.0	16	6.8
MSQ5	32	13.7	70	29.9	81	34.6	39	16.7	12	5.1
MSQ6	25	10.7	70	29.9	86	36.7	36	15.4	17	7.3
MSQ8	22	9.4	62	26.5	107	45.7	30	12.8	13	5.6
MSQ9	76	32.5	85	36.3	67	28.6	6	2.6	0	0.0
MSQ11	59	25.2	72	30.8	68	29.1	26	11.1	9	3.8
MSQ12	21	9.0	62	26.5	93	39.7	39	16.7	19	8.1
MSQ13	22	9.4	48	20.5	72	30.7	47	20.1	45	19.2
MSQ14	35	15.0	54	23.1	84	35.9	28	12.0	33	14.1
MSQ15	37	15.8	58	24.8	81	34.6	39	16.7	19	8.1
MSQ16	35	15.0	72	30.8	76	32.5	38	16.2	13	5.6
MSQ17	22	9.4	57	24.4	70	29.9	46	19.7	39	16.7
MSQ18	21	9.0	73	31.2	92	39.3	39	16.7	9	3.8
MSQ19	23	9.8	74	31.6	85	36.1	32	13.7	20	8.5
MSQ20	30	12.8	60	25.6	87	37.2	45	19.2	12	5.1

N.B. Codes of various job aspects are provided in the methodology section.
N.B. Neutral corresponds to "neither satisfied nor dissatisfied" category.

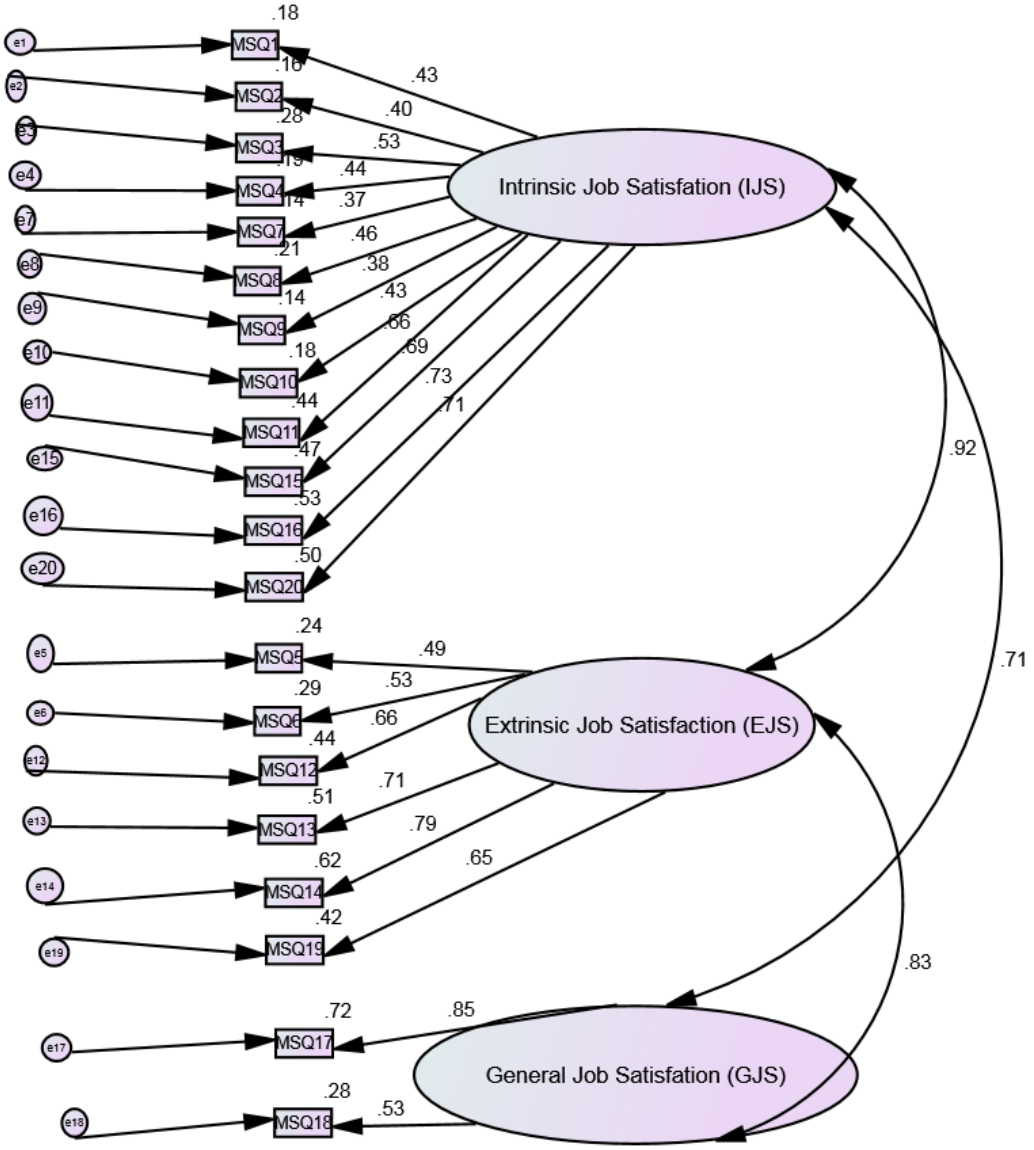

Figure 1. Three factor model of Job Satisfaction with standarised factor loadings and interfactor correlations.

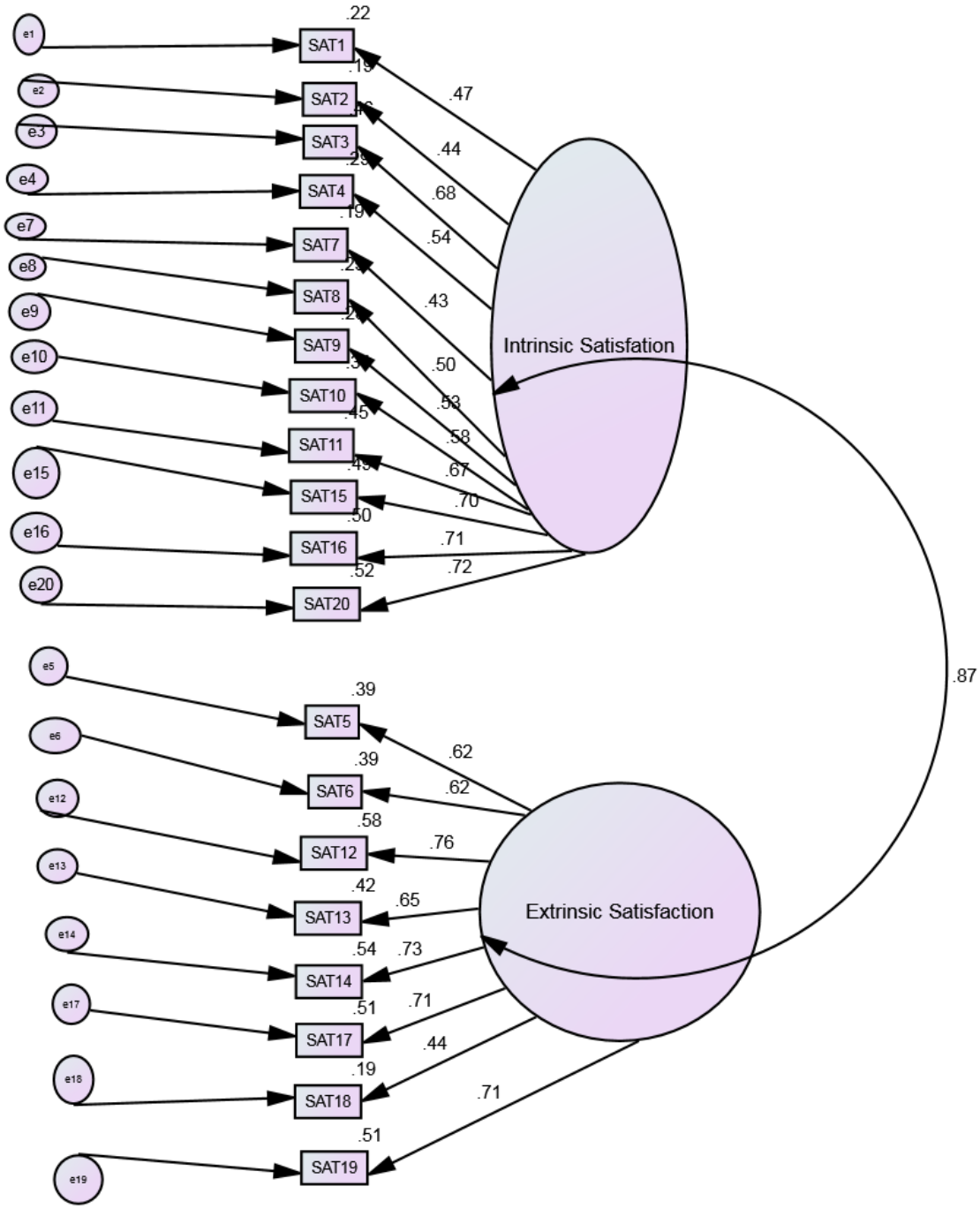

Figure 2. Two factor model of Job Satisfaction with standarised factor loadings and interfactor correlation.

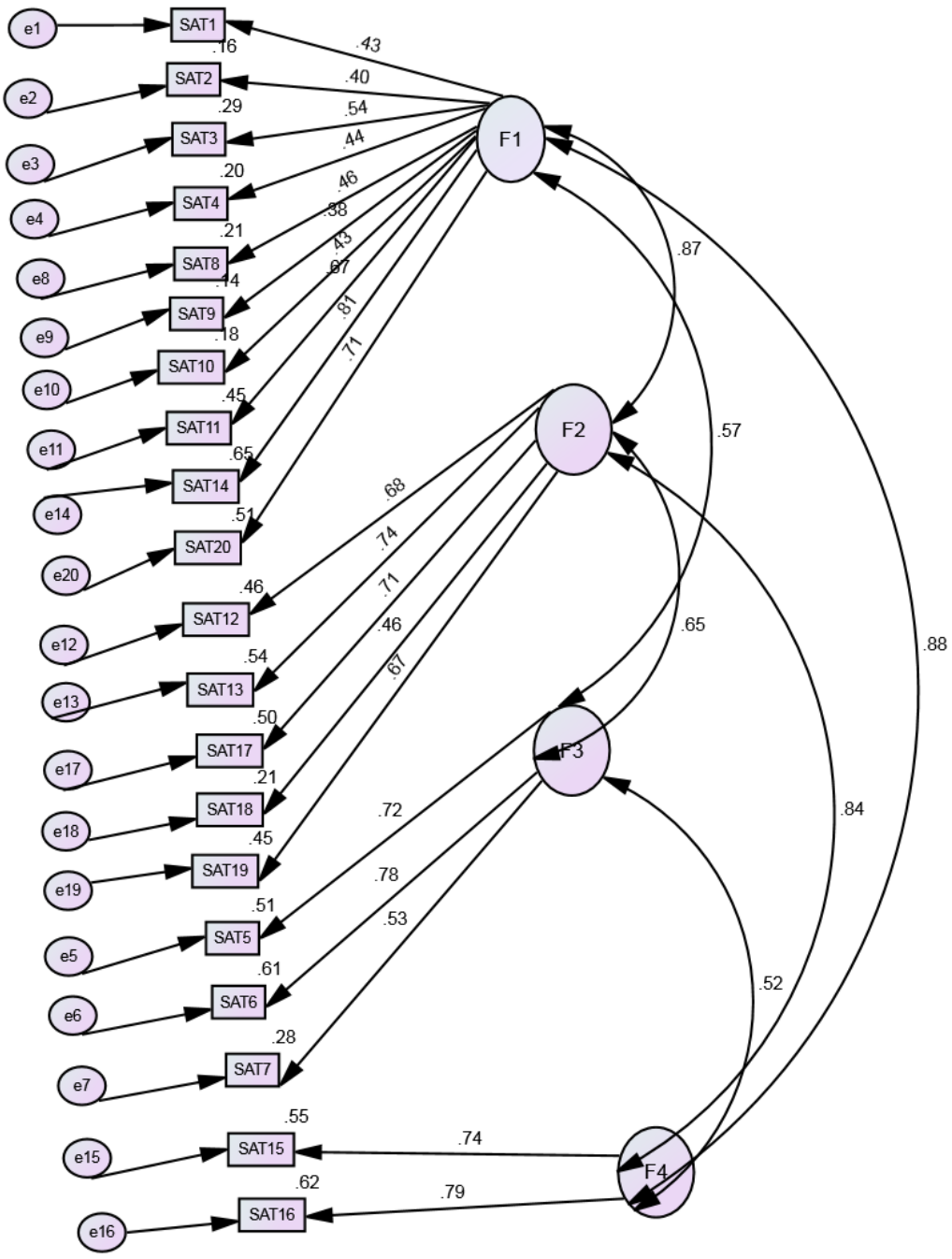

Figure 3. Four factor model of Job Satisfation with standarised factor loadings and interfactor correlations.

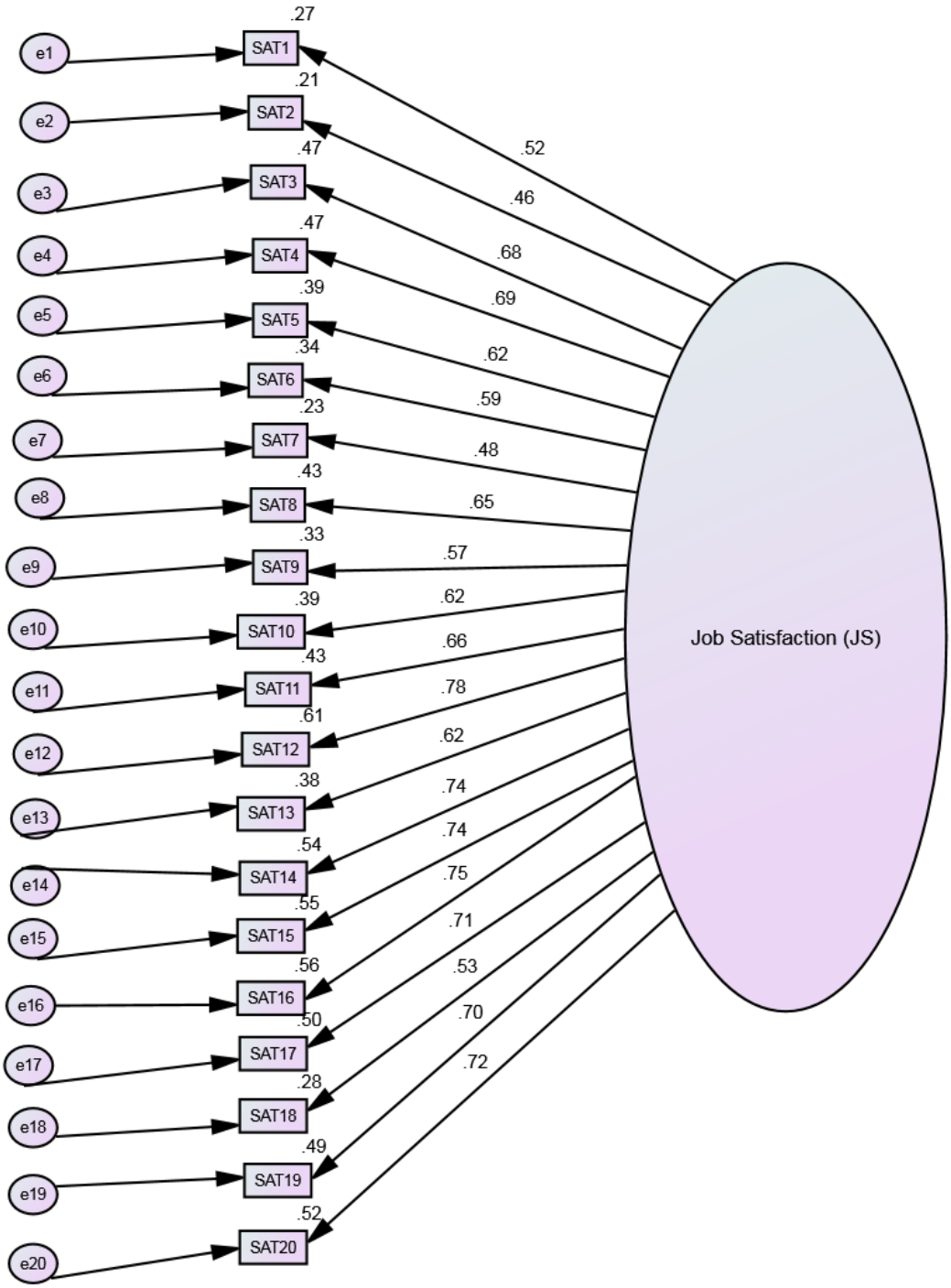

Figure 4. One factor model of Job Satisfation with standarised factor loadings.

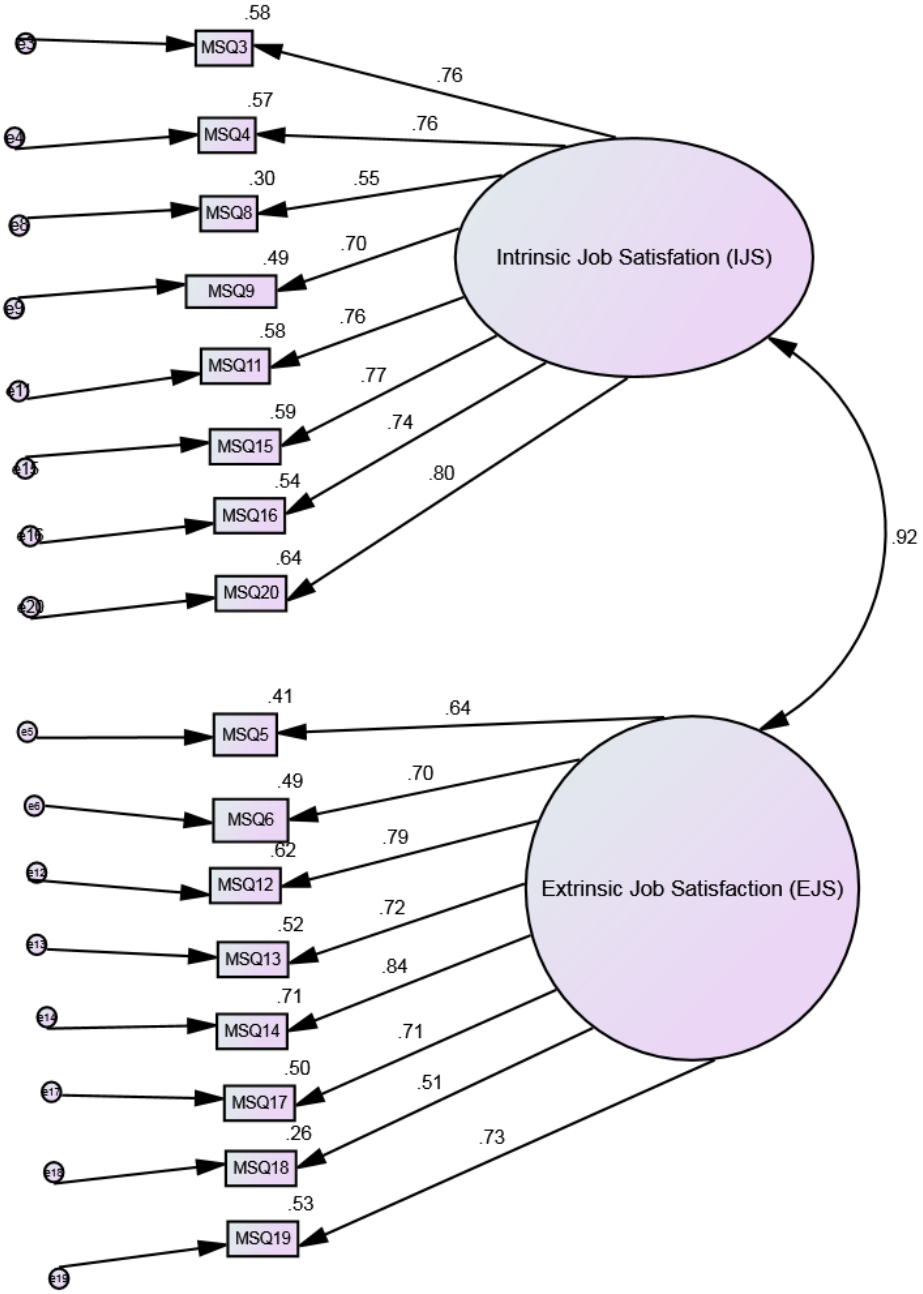

Figure 5. Final two factor model of Job Satisfaction with standarised factor loadings and interfactor correlation.