Validation of Five Dimensional Personality Inventory among Nursing Professionals

Z. Hamid[1*], S. Shah[2]

[1,2]Department of Psychology, University of Kashmir, Srinagar, J&K, India

*Corresponding Author: zainabqadri131@gmail.com

Available online at: www.isroset.org

Abstract: Assessment of personality depends not only on the adherence to sound theoretical background but also on the way this construct is operationalized. Besides, application of proper psychometric procedures is also of tremendous importance for proper validation of personality tools, in this context this study aimed to validate an indigenously developed personality tool among a specific population of nurses. The sample comprised of 300 nurses selected from 11 different hospitals/nursing homes and a standardized tool was adopted to get their responses on a seven point Likert scale. This was followed by analysis of data, descriptive analysis revealed that majority of respondents fall in average category on various dimensions of personality traits. The reliability of the adopted tool was almost found to be satisfactory as indicated by the Cronbach's alpha value beyond the threshold of 0.60 .While carrying out the confirmatory factor analysis it was found that the model fit indices of the adopted personality inventory are within the acceptable ranges.The paper contributes to theory by checking the psychometric properties of a personality tool assessing big five dimensions of personality, pertinently big five measures are increasingly getting psychometric attention in contemporary times.

Keywords—*Psychometric, Likert, Tool, Nursing, Personality*

I. INTRODUCTION

The five factor model of personality is hierarchal organization of personality traits in terms of five basic dimensions-openness to experience, conscientiousness, extraversion, agreeableness and neuroticism. For the proper assessment of personality the tools are of tremendous importance, but the thing which remains of concern is whether the tool is appropriate in expressing the different trait dimensions appropriately as there are always chances of error in doing so. The risk increases due to indiscriminate use of personality measures, be it on a sample group of nurses or any other group. To deal with this scenario, it is important to consider the psychometric properties of the tool before adopting it. In this backdrop the present study primarily highlights psychometric properties of an indigenously developed scale by Dr.Muhammad Muzamil & Dr.Shawkat Ahmad Shah on the rationale of checking its feasibility for validation [1]. To be precise the main focus of the study was to check the psychometric properties of the earlier mentioned indigenously developed scale and validate the same by confirmatory factor analysis. The paper is organized as follows, Section I- the current section includes a brief introduction, Section II pertains to related work regarding the field, Section III pertains to Methodology, Section IV pertains to Results & their Discussion, and section five portrays the Conclusion.

II. RELATED WORK

The rigorous journey of capturing personality into five main domains took a major turn when Mc Dougall (1932) for the first time mentioned that personality can be analyzed into five distinguishable but separate factors namely intellect, character, temperament, disposition and temper. Following Norman the factors were at the outset labeled as Extraversion or Surgency (talkative, assertive, energetic); Agreeableness (good- natured, cooperative, trustful); Conscientiousness (orderly, responsible, dependable); Emotional stability versus Neuroticism (calm, not neurotic, no easily upset) and Culture (intellectual, polished, independent-minded) [2]. These factors eventually became known as the "Big Five"[3]. Later on Goldberg presented his taxonomic findings in the form of various adjective lists and also gave an adjectival measure of big five personality traits using factor analysis [4]. As far as the contributions of Costa and McCrea are concerned they published the 240-item NEO personality inventory which permits differentiated measurement of each of the five dimensions in terms of six more specific facets per factor [5]. Besides this the personality investigators agree that personality is best captured by the five factor

model comprising of OCEAN (Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism), rather than by two, three or sixteen factor model [6],[7].

Studies profiling the personality of emergency [8], oncology [9] and renal nurses [10] have indicated that a larger proportion of their sample demonstrated the personality trait of introversion. Another study of intensive care nurses reported a significant negative correlation between openness and extraversion traits of personality, and stress when dealing with patients and relatives [11]. As far as Indian context is concerned, there is dearth of proper methodological procedures in exploring the construct of personality and the same has not been validated on the nursing professionals.

III. METHODOLOGY

The participants of the present study comprised of 300 nurses taken from eleven different hospitals/ nursing homes of Baramulla District of Jammu and Kashmir, India. A quantitative and correlational research design was adopted and the settings included hospitals/nursing homes of J&K, India. All the Block Medical Officers of Government Hospitals in Baramulla district of J&K, and the administrators of the Nursing homes were contacted for permission to carry the present study in their respective hospitals. After taking permission from the hospital authorities, nurses were personally contacted to get their responses. The researcher provided all help to the participants to understand the item/s of the questionnaire and the purpose of the study was explained to each participant. The investigator assured the confidentiality of the responses sought and verbal consent was taken from each participant in advance. For the assessment of personality traits, Five Dimensional Personality Inventory (FDPI) (self-report form) developed by Muzamil and Shawkat (2015) was used [1]. It is a 20 item instrument having 4 items in each of the five dimensions namely openness, conscientiousness, extraversion, agreeableness and emotional stability with strongly with strongly disagree, disagree, somewhat agree, neutral, somewhat agree, agree and strongly agree options for each item. However 5 items were removed due to the low ITC (Item Total Correlation) values. The alpha coefficient in the present study for personality traits is 0.74. The data was analyzed, primarily; using SPSS (version 20).The analysis included an examination of means, standard deviations, skewness and kurtosis in order to ensure normality of the data. This was followed by reliability analysis and then a confirmatory factor analysis procedure was carried out by making use of AMOS (Version 20).

IV. RESULTS & DISCUSSION

The results and their discussion is presented in the form of tables and figures that follow.

Table 4.1 Descriptive Statistics for the understudy constructs (N=300)

Variables	Mean	5%TM	ΔMean	SD	SE	Skewness	Kurtosis
Openness	5.99	6.08	-.09	.87	.050	-2.0	7.0
Conscientiousness	6.17	6.21	- 0.04	.654	.037	-.581	.038
Extraversion	5.97	6.08	-0.11	.70	.040	-.66	.806
Agreeableness	5.97	5.99	-0.03	.755	.043	-.41	-.612
Emotional Stability	4.38	4.42	-0.04	1.67	.096	-.249	-1.02

SD (Standard deviation); SE (Standard error); TM (Trimmed Mean).

From the earlier table it can be inferred that the sample distribution of the present study is normal as no skewness value falls beyond the Garson's range of -2.00 to +2.00 and kurtosis value don't falls beyond West, Finch and Curran range of >7.1. Besides, the ΔMean (difference between mean and 5% trimmed mean) is not beyond the criteria of >0.20. The values of standard deviation and standard error are also very small as compared to mean, thereby further improving the scope of data for subsequent analysis.

Table 4.2: Showing range of scores within different levels of personality traits.

Personality traits	M	SD	LL-UL	Low	Average	High
Openness	5.9911	.87616	5.11 - 6.86	≤ 5.11	5.11 - 6.86	> 6.86
Conscientiousness	6.1789	.65446	5.52 – 6.83	≤ 5.52	5.52 – 6.83	>6.83
Extraversion	5.9711	.65446	5.26 – 6.67	≤ 5.26	5.26 – 6.67	>6.67
Agreeableness	5.9633	.75584	5.20 – 6.71	≤5.20	5.20 – 6.71	>6.71
Emotional stability	4.3856	1.67896	2.70 – 6.06	≤2.70	2.70 – 6.06	>6.06

LL=Lower limit; UL=Upper limit

4.3: Showing frequency distribution of sample group with to understudy constructs.

| Personality traits	Levels					
	Low		Average		High	
	f	*%*	*F*	*%*	*F*	*%*
Openness	35	11.67	217	72.33	48	16
Conscientiousness	44	14.67	188	62.67	68	22.66
Extraversion	36	12	190	63.34	74	24.66
Agreeableness	54	18	203	67.67	73	14.33
Emotional stability	59	19.66	196	65.34	45	15

The table indicates that 11.67% of nurses have low level of openness trait, 72.33% have average level and 16% of nurses are having high level of openness trait; likewise, 14.67% of nurses have low level of conscientiousness trait, 62.67% have average level and 22.66% of nurses are having high level of conscientiousness trait;12% of nurses have low level of extraversion trait, 63.34% have average level and 24.66% of nurses are having high level of extraversion trait;18% of nurse's have low level of agreeableness trait, 67.67 % have average level and 14.33% of nurse's are having high level of agreeableness trait and 19.66% of nurse's have low level of emotional stability, 65.34% of nurse's have average level of emotional stability, and 15% of nurse's are having high level of emotional stability.

Table 4.4: Showing Scale Characteristics and Reliability Analysis of the Personality traits and its Dimension

Measure	Items	Response Range	N	M	SD	Cronbach's alpha($\dot{a}$)
Personality Traits	15	1-7	300	85.48	9.06	.74
Openness	3	1-7	300	17.97	2.62	.620
Conscientiousness	3	1-7	300	18.53	1.96	.610
Extraversion	3	1-7	300	17.91	2.12	.602
Agreeableness	3	1-7	300	17.89	2.26	.411
Emotional stability	3	1-7	300	13.15	5.03	.764

The above table reveals a satisfactory internal consistency of the measuring instruments as indicated by the alpha coefficient scores of 0.74 in case of personality traits. As far as dimensions are considered, the alpha coefficient in case of openness is .620; in case of conscientiousness it is .610; likewise alpha coefficient for extraversion is .602; alpha coefficient in case of agreeableness is .411; and alpha coefficient for emotional stability is.764.

Diagram 4.5 showing confirmatory factor analyses of the constructs.
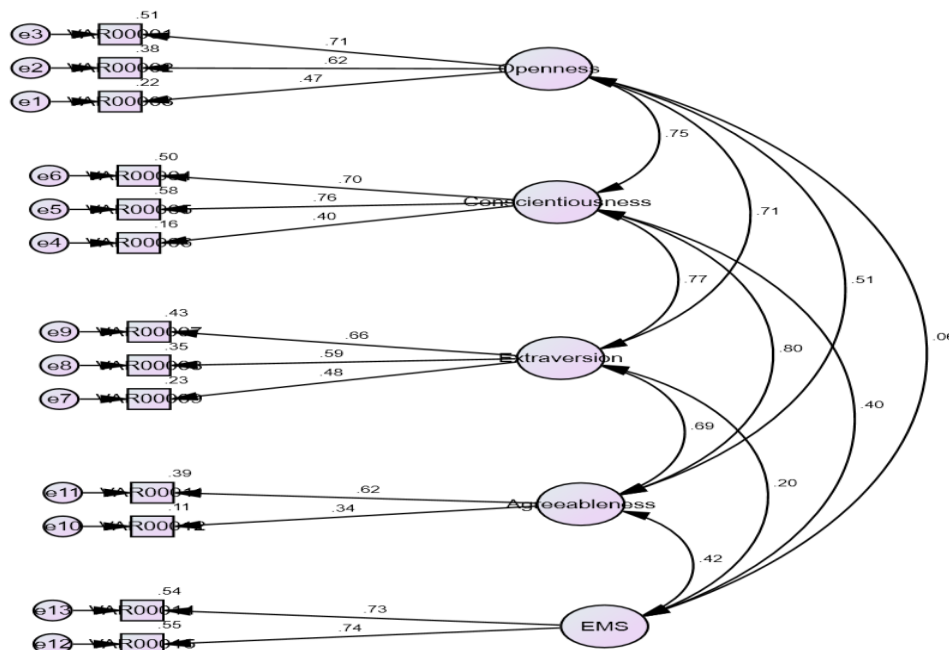
Note: EMS (Emotional Stability)

The earlier figure shows the path diagram of the measuring instrument, the circles represent the latent variables in the form of dimensions, rectangles represent the items of each dimension and double headed arrows represent the covariances. Discriminate Validity is established as the covariance coefficients are below the threshold of 0.85. Most convergent validity coefficients are also above the threshold of 0.50. However two items (item number 10 and item number) number owing to their poor loadings where excluded. Rests of the results are explained in text output that follows.

AMOS generated Model fit indices

Table 4.6.AMOS generated Model fit indices

Index	Reported Value
Chi square	117.698
df	55
Chi square divided by degree of freedom (CMIN/df)	2.140
Goodness of fit index (GFI)	.945
Root mean square error of approximation (RMSEA)	.062

As per the above table the value of CMIN/df, RMSEA and GFI is satisfactory; thereby indicating a satisfactory model fit.

**Table 4.7 showing correlation of understudy constructs in case of nurses.**

	OPN	CON	EXTR	AGR	EMS
OPN	1				
CON	.452**	1			
EXTR	.435**	.493**	1		
AGR	.176**	.338**	.269**	1	
EMS	.031	.279**	.132*	.311**	1

Note: OPN=Openness; CON=Conscientiousness, EXTR=Extraversion, AGR= Agreeableness,   EMS=Emotional Stability.
**= Correlation is significant at 0.01 Level

The above correlation matrix reflects that all the variables are significantly and positively correlated excluding openness and emotional stability.

Diagram 4.8 showing scatter matrix of the constructs.
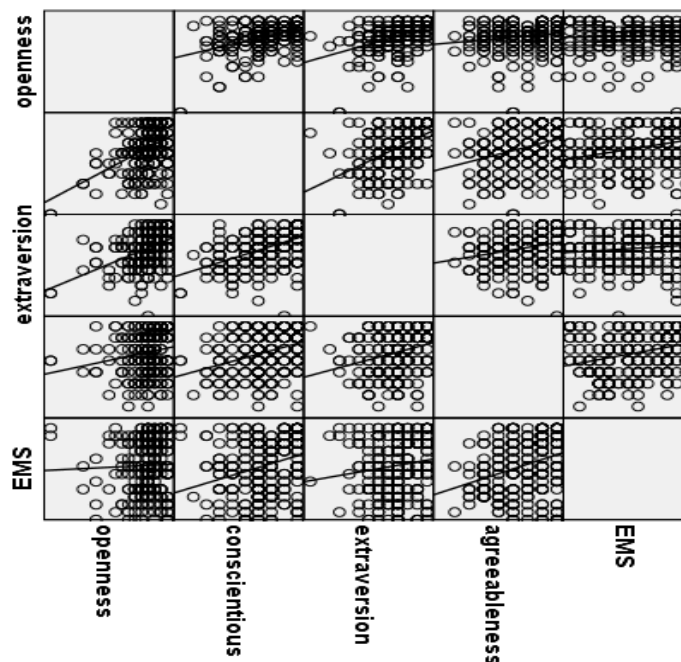
Note: EMS=Emotional Stability.

The above scatter matrix indicates the relationships between the variables graphically. The direction of fit lines indicates the nature of relationships with the upward trend indicating positive correlation and downward trend indicating negative correlation.

IV. CONCLUSION & FUTURE SCOPE

The importance of the role of health care professionals in delivering the services to the society has prompted the experts to discuss, debate, and examine the multitude of practices to make them more productive. Nurses form the largest component of the health care workforce, however their role has been regarded as stressful based upon the physical labor, human suffering, work hours, staffing and interpersonal relationships that are central to the work nurses do. In this context the present study aimed at the validation of an indigenously developed five dimensional personality inventory (Muzamil & Shawkat, 2015) on a sample of 300 nurses selected from 11 different hospitals/nursing homes. Descriptive analysis revealed that majority of respondents fall in average category on various dimensions of personality traits. The main focus was given to check the psychometric properties of the tool adopted in the study. Consequently a reliability analysis revealed that reliability of the adopted tool is almost satisfactory as indicated by the Cronbach alpha value beyond the threshold of 0.60 .While carrying out the confirmatory factor analysis it was found that the model fit indices of the adopted personality inventory are within the acceptable ranges as indicated by GFI = 0.94 and RMSEA = 0.06. Thus we can safely conclude that the tool adopted in the study has got relevance for application on the nursing professionals apart from adding to literature pertaining to psychometrics behind the assessment of personality. It is hoped that the study will serve as a base for nurturing an atmosphere of rigorous psychometric testing of tools by the research community.

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Authors Profile

Miss. Zainab Hamid is a Research Scholar, at Department of Psychology, University of Kashmir and Dr. Shawkat Ahmad Shah is the Associate Professor at the same department. Both have expertise in organizational behavior, psychometrics & allied fields.