CONFIRMATORY FACTOR ANALYSIS OF BIG FIVE PERSONALITY FACTORS (CFA-BFPF)

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ABSTRACT: *The present study seeks to test measurement of a conceptual framework for Scale of the Big Five Personality Factors (BFPF) by adopting five appropriate dimensions of measurement: Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. The investigation reported in the study was carried out among Libyan community in Malaysia, reaching an overall number (1200), the study sample was (333) who were chosen using a random sampling technique. To achieve this goal, the confirmatory factor analysis (CFA) was used through (AMOS-24) software. Based on the results, it was found that this model is a valid and reliable model that can be used for measuring personality. Also, the model was generated showing good fit. The contributes of this study will be to the scientific production in the area of social psychology, can be also used not only in relational studies but also as an evaluation instrument to test a measurement individual and the behavior in order to identify the individuals' adaptation to the environment and predict their responses in several situations.*

KEYWORDS: Neuroticism, Extraversion, Openness, Agreeableness, Conscientiousness.

INTRODUCTION

"Personality" is considered one of the most meaningful terms that convey lots of meanings with various psychological concepts. Abdel-Qawi and Rania, 2010 shows the term of "personality" as one of the most difficult terms to be understood due to its representation of personal traits of the individuals as well as patterns of behavior, in which to identify the individuals' adaptation to the environment and predict their responses in several situations. Even though personality studied with numerous and successive efforts, the psychologists still have different views about the identifying dimensions of personality as well as the number of factors that describe and identify personality.

Reviewing the literature review, Cattle has found sixteen main factors of personality using factor analysis. Whereas Eyesenck has found four types of identifying personality using factor analysis as well which represented in (neuroticism, extroversion, psychoticism and lying). Also, Goldberg has found that there are five factors describe the personality of the individuals and Fiske (1949), supports that by indicating that the factors which measure and identify the personality are five factors and not sixteen as pointed by Cattell (Abdel-Qawi, Rania, 2010; Meheisen, Awn, 2013; Ali, Imad, 2010; Goldberg, L.R., 2005 and Jonathan, M. S., Susan M., 2011).

However, after searching for a long time, psychologists finally agreed that dimensions of personality are five factors which describe the difference between individuals in the cognitive, emotional, and social aspects of the behavior of individuals (Heinstrom, J., 2003). The five-factor model consists of five independent factors which are: (Neuroticism,

Extraversion, Openness, Agreeableness, and Conscientiousness), that contains a set of qualitative traits fall under them. Eventually, this study seeks to test measurement of a conceptual framework for Scale of the five factors of personality by adopting these five dimensions of measurement.

Definition of Big Five Personality Factors (BFPF)

Personality factors include five significant factors that have been identified through factor analysis of personality traits as previously pointed by Cattell (Abdel-Qawi, Rania, 2010; Meheisen, Awn, 2013; Ali, Imad, 2010; Goldberg, L.R., 2005 and Jonathan, M. S., Susan M., 2011) and falls under each factor a set of qualitative traits that form it, these factors are:

Neuroticism

Neuroticism is defined as a measure of effects and emotional control that consists of low levels and high levels. Low levels indicate emotional stability while high levels increase the possibility of undergoing negative emotions. People who have high levels of neuroticism react very fast and easy to be bothered by any stimuli around them. They are unstable, angry, temperamental and worried, whereas resistant people need strong stimuli to be provoked (Howard & Howard, 1995). People with high levels tend to experience and express negative emotions like depression, anxiety, self-consciousness, hostility, impulsiveness, and vulnerability (Costa, P. T., & McCae, R. R., 1992).

Extraversion

extraverts are verbally and physically active whereas introverts tend to be independent, steady, reserved, and like being alone. People in the middle of the dimension like to mix between social situations and solitude (Howard, P.J. & Howard, J. M., 1995). Extraverts are sociable, talkative, assertive. Honest, and adventurous.

Openness

Openness is related to the mind and intelligence. It reflects the openness to new and modern ideas, educational aptitude and creativity, ethnic interests, and other interests in diverse sensory and cognitive experiences (Howard, P.J. & Howard, J. M., 1995). The traits of being openness comprise being perspective, curious, creative, imaginative, intelligent, artistically sensitive and cultured as well as broad-minded. Being Openness to experience is a personality feature that characterizes the individual who is intellectually curious and intelligence who tends to seek new experiences and be open to new and creative ideas.

Agreeableness

It reflects the way people interact with each other and openness to their feelings and experiences as well as emotional habits. these people can be described as gentle, sympathetic, kind and altruistic (Costa, P. T., & McCrae, R. R., 1992)

Conscientiousness

This factor refers to the individual's degree of organization, persistence, hard work, and motivation in the pursuit of goal accomplishment. It is known as a measure of goal-directed behavior and amount of control over impulses. It is related to educational achievements

especially to the ability and will to accomplish and achieve the goals. "The focused person focuses on some goals and strives hard to reach and achieve them, whereas the flexible person is more impulsive and easier to persuade from one task to another (Howard, P.J. & Howard, J. M., 1995). "The more conscientious a person is, the more competent, dutiful, orderly, responsible and thorough" (Costa, P. T., & McCrae, R. R., 1992).

As in Introduction sections, the importance of Factors of personality can recognize easily as; Neuroticism, Extraversion, Openness, Agreeableness, and the Conscientiousness. These factors are the scale of personality. Figure (1) shows the Factors of personality as it suggested in this study.
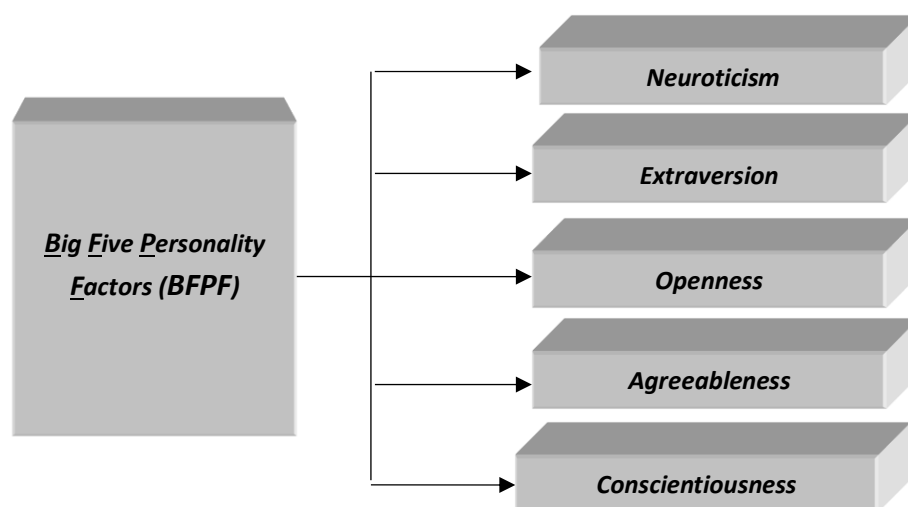
Figure 1: A Conceptual model of Big Five Personality Factors (BFPF)

Source: Author's design, depending on previous studies

Objectives

The current study aims to examine the validity of the Factors of personality model scale as a latent factor by testing the convergent validity known as the average variance extracted (**AVE**) for each dimension of the main scale, which are the Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness as well as the items representing them. It also aims to examine the divergent validity which is known as shared variance (**SV**) among the investigated dimensions in order to be relying upon them in carrying out tests of correlations and effects or impact with other underlying factors, to achieve this goal, we used a confirmatory factor analysis (**CFA**) through (**AMOS-24**) software.

METHOD

Population and Sampling Design

This study is concerned with testing a measurement of a conceptual framework for Scale of the Big Five Personality Factors **(BFPF)**. Therefore, the population of the current study consists of Libyan community in Malaysia. The researcher got the information about the

Libyan community in Malaysia like their names and locations from the (Embassy of Libya in Kuala Lumpur). Reaching an overall number (1200), and the study sample was (333) who were chosen using a random sampling technique.

Model fit of Confirmatory Factor Analysis (CFA).

The fit of the measurement model was assessed using the following statistics and indices: Chi-square ($x2$), the ratio of the Chi-square to the degrees of freedom (**DF**), Goodness-of-fit index (**CFI**), Root-mean-square residual and Root Mean Squared Error (**RMSEA**). Chi-square/df values less than or equals 3 indicates a good model fit, and between 2.0 and 5.0 is acceptable level (Schumacker and Lomax, 2010). **CFI** values should be greater than 0.9 (Wang and Wang, 2012; Hair, et al., 2010). **RMSEA** values less than 0.10 indicate good fit (Devaraj, et al., 2002). The goodness of fit indices of the measurement model is presented in (table 1); according to these results we can infer that the measurement model was reasonably fitted to the data set. According to Hair,Black,Babin, Anderson (2010) the employment of factor loading composite reliability (CR) and average variance extracted (**AVE**) to determine the convergent validity if it equals to or greater than 0.5 (≥0.5) and the composite reliability equals to or greater than 0.6 (≥0.6) if were recommended by Sekaran and Bougie, (2010). Also, (**AVE**) reading values should be greater than 0.5 (≥0.5) (Fornel and Larker,1981).

RESULTS AND DISCUSSIONS

The Modified of Big Five Personality Factors (BFPF)

Figure (2) shows the results of the (**CFA**) for the proposed model for measuring (**BFPF**), it is evident that the model is free of the illogical correlation since it reaches or exceeds the integer (1). This also indicates that there are not any problems with the (**CFA**) used for testing the validity of this model that comprises five factors. As seen in Figure (2) and Table (1), the indicators of agreement between the model and the data exceeded the T-value, thus, implying that there is disagreement between (**BFPF**), and the data of the sample since the value of the **Chi-Square** was (1265.070) and the degree of freedom was (425), and the level of significance was (**P**=0.000).

In addition, we can see that the normative Chi-Square (**Chi-Square /degrees of freedom**) was (2.977) being below than (5), and the value of relative strength index (**CFI**) was (0.877) below than (0.90). The results also show that the value of the index (**Rmsea**) error square was (0.077) less than (0.080). Due to this contradiction between the model and the data, it was necessary to modify the (**BFPF**), model in this paper.
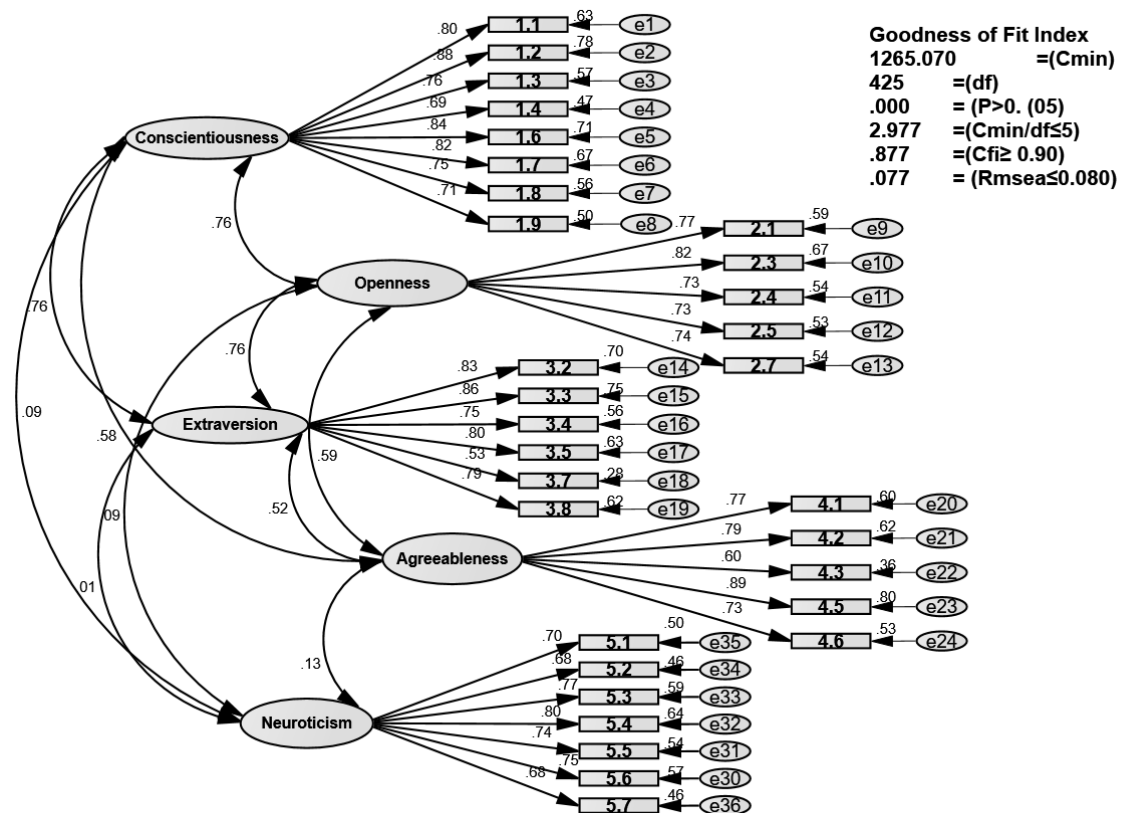
Figure 2: Big Five Personality Factors (BFPF) before the modification

Table 1: index value of (BFPF) Big Five Personality Factors model before and after modification

| Indicators Consistency	index value before modification	index value after modification	Function value on the quality of conformity
Cmin	1265.070	1023.315	---
df	425	421	---
P	0.000	0.000	Non
Cmin/Df	2.977	2.431	Less than (5)
CFI	0.877	0.912	More (0.90)
Rmsea	0.077	0.066	Less than (0.08)

Source: Author's Estimation

In order to amend this model, we followed was linking (**1.4-1.3**), (**2.3-2.4**), (**3.4-3.5**), and also link some of the items of Neuroticism accordingly as follow: (**5.3-5.4**). The following figure (3) shows the (**BFPF**) Factors of personality model with five- Dimension after the modification.

Assessing the Research Model fit with sample Data (the Modified Model).

After modifying or amending the main measurement model by linking some items, It has been found that the value of the model fits index as shown in table (1) and Figure (3) in which there is a perfect fit between the hypothesized model (**FP- personality model with five- Dimension**) and the data collected. The value of the Chi-Square was (1023.315), and the degree of freedom was (421), as well as the level of significance was (**P**=0.000). The normative Chi-Square (**CMIN/DF**) was (2.431) which was lower than (5), and the value of the relative strength index (**CFI**) was (0.912), which is higher than (0.90). Such results indicate that there are correlations between the models of (**BFPF** - **Big Five Personality Factors**). That is because it is far from the value of zero, hence, suggesting such corrections between the personality model and its Dimensions.

Construct Validity for (BFPF) Big Five Personality Factors model with five-Dimensions
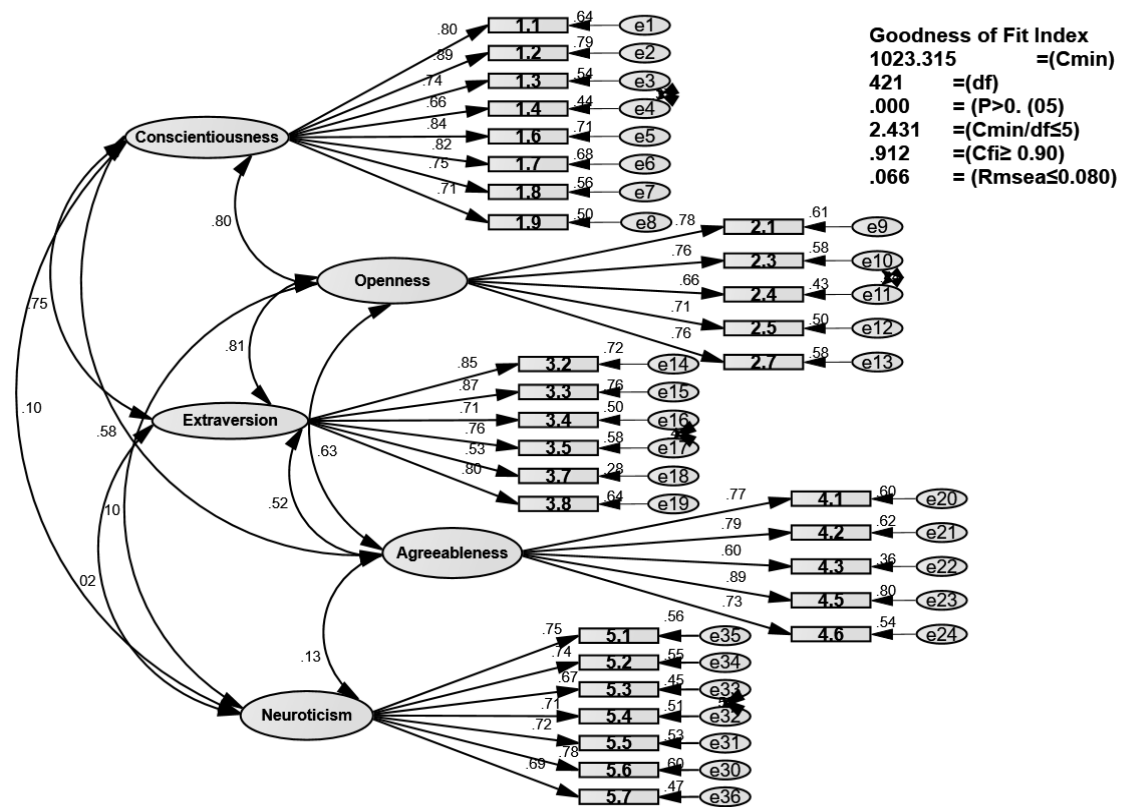
Figure 3: Big Five Personality Factors (BFPF) after the modification

To examine the predictive validity (discrimination) among the dimensions of the (**BFPF**), the researchers used Fornell -Larcker Criterion, considering that the (**AVE)** for each dimension of the main scale would be higher than the (**SV)** of all relations or links. Table (2) shows the results obtained from this test concerning the relations among the big five personality factors (**BFPF**) model.

Table 2: Covariance and the contrast between the extracted five-factor matrix (BFPF) models

Big Five Personality Factors (BFPF)	Conscientiousness	Openness	Extraversion	Agreeableness	Neuroticism
1 **Conscientiousness**	^{AVE}**0.77**	-	-	-	-
2 **Openness**	$^{S.V}$ 0.64	^{AVE}**0.73**	-	-	-
3 **Extraversion**	$^{S.V}$ 0.56	$^{S.V}$ 0.66	^{AVE}**0.75**	-	-
4 **Agreeableness**	$^{S.V}$ 0.34	$^{S.V}$ 0.40	$^{S.V}$ 0.27	^{AVE}**0.76**	-
5 **Neuroticism**	$^{S.V}$ 0.01	$^{S.V}$ 0.01	$^{S.V}$ 0.0004	$^{S.V}$0.017	^{AVE}**0.71**

Source: Author's Estimation,

As seen in table (2), the (**SV**) among the five dimensions is the result of multiplication of the correlation value by itself, and from the results in the same table regarding the (**AVE**), it is evident that the (**AVE**) for every dimension of the (**BFPF**) Factors of personality model was higher than the (**SV**) among all the dimensions. Such result suggests that (**BFPF**) model met *Fornell -Larcker* Criterion and achieved the required predictive validity among its five investigated dimensions.

CONCLUSION

This study has achieved the goal which was to test the validity of a proposed model for measuring (**BFPF**) Factors of personality model using (**CFA**) as a means to structural equation modeling (**SEM-AMOS**). It was proposed and developed based on the identified measurement dimensions of the main factor (**BFPF**) in previous studies (Abdel-Qawi, Rania, 2010; Meheisen, Awn, 2013; Ali, Imad, 2010; Goldberg, L.R., 2005 and Jonathan, M. S., Susan M., 2011). The results obtained in the present study particularly regarding the validity of the measurement indicated the constructed model in its five factors are a reliable and valid measurement tool that can be used in measuring the (**BFPF**) personality. The model achieved the required convergent validity or the (**AVE**) among its five factors which even exceeded (0.50). Further, the study proved that the model achieved the required divergent validity or (**SV**) among its five factors where the (**AVE**) was higher than the (**SV**) for all five factors, a result that was in agreement or consistent with Fornell -Larcker Criterion.

Limitations and Directions for Future Research

This study proposes some limitations and recommendations for future studies. Our proposal represents attempts to build and test a conceptual framework of (BFPF). Then, a first limitation is that the findings are indicative rather than conclusive. The researcher recommends to further assess the generalizability of the (BFPF) to other business environments such as Arab, European and Asian countries. Moreover, with more replicative and creative research, a more comprehensive conceptual framework related to measurement of personality can be developed in the future, Finally, the findings found here are not intended to be conclusive or limiting but offer a useful starting point from which further theoretical and empirical research on measurement of personality Factors can be built in other environments.

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