

IDENTIFYING PERSONALITY TRAITS IN OMAN HIGH SCHOOL STUDENTS: A TEST FOR BIG FIVE-FACTOR MODEL.

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ABSTRACT

Using data from 1720 students, a series of three studies validated measure of Big Five personality traits tailored to adolescents. The Adolescent Personal Style Inventory (APSI) (Lounsbury & Gibson, 2006; Lounsbury, Tatum, Gibson, Park, Sundstrom, Hamrick & Wilburn 2003), was used in this study. The instrument has been validated through a scientific method in order to ensure its reliability and validity. Two advanced statistical methods were used in the validation process, namely: Exploratory factor analysis (EFA) and Confirmatory factors analysis (CFA). EFA was used to identify the underlying dimensions of each construct of the instrument. CFA is used to confirm the dimension and to analyze the fitness of the data collected in the hypothesized model. The results show evidence of an accessible indicator of validity and reliability of inventory. The reliability test indicated that the instrument was reliable, given the overall value of Cronbach alpha reliability of .77. The EFA results showed that, the Big Five Personality Inventory Adolescent constructs produced five significant factors. CFA results showed a good fit to study data, where that the goodness-of-Fit indices for the received model were as follows: $\chi^2 = 38.903$, $df = 179$, $CFI = .923$, $GFI = .965$, $PCOLOSE = 1.00$ and $RMSEA = .034$, each of the indices was above the threshold values.

INTRODUCTION

The five-factor model of personality is a universal model for understanding the structure of personality. Many researchers believe that the five-factor model of personality (FFM), which consist of Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience, to be a sufficient categorization of individual differences in personal disposition (Lim & Ployhart, 2006; Costa, McCrae & Martin 2008). It has been verified in a wide range of cultures and languages, including American-English, Dutch, Flemish, Roman, Italian, German, Hungarian, Czech, Polish, Filipino, Japanese, and Russian (De Raad, 2000). There is an emerging consensus that the Big Five represents a grand unified theory for personality (Digman, 1990). It is become widely accepted as the most parsimonious and well-validated model of traits among personality researchers. It is also, continues to be a useful tool in the area of personality assessment and prediction (Costa, McCrae & Kay, 1995). While the FFM has been applied in a different area in psychology, criticism of the model has been raised (Block, 1995). The Five-Factor Model (FFM) has been criticized for being too descriptive to provide a theoretical model of personality (Denissen & Penke, 2008).

Despite all this concern during the last decade among the Big Five model of personality in a broad range of cultures and languages, there is few research on this model in Arabic culture (Abdel-Khalek & Alansari 1996; Alansari, 1997). To fill gaps in the research regarding this topic, this study tests the replicability of the original (American) Big Five, Adolescent Personal Style Inventory factor structure in the Arabic speaking population. The FFM is a variant of the Big Five model that was derived from analyses of English language trait terms (Tupes & Christal, 1961), and critics have suggested that personality structure is a result of human of language on some occasions. For those reasons, replication of the structure in unrelated languages provides important evidence of the generalizability of the model. Moreover, different studies have confirmed the predictive value of the big five across a wide range of behaviors, for example, in

the area of job performance (Mount & Barrick, 1995). In general, the FFM has applications in occupational assessment for selection and development, vocational guidance, counseling and research (Hammond, 2001). Therefore, the significance of this study lies in its novelty as well as the contribution that might be brought.

THE FIVE FACTOR MODEL

The FFM has become more generally accepted taxonomies for describing personality structure (Digman, 1990). It is based on the lexical hypothesis and proven to be the cross-cultural common denominator (John & Srivastava 2008). The importance of this model has been found in its extensive usage in personality assessment. Also, its importance has been extended through research documenting its cross-cultural relevance (McCrae & Allik 2002; Piedmont & William 2007).

The lexical approach to personality argues that the personality related characteristics of individuals become encoded into the language, and so can be systematically analyzed and classified in taxonomy. Although most personality psychologists, considered traits the basic element of personality, others have been extended to situations, to instincts and to the nonverbal domain. Rating scales and questionnaires were established as the preferred method of measurement, especially for traits (John & Srivastava 2008). According to the five factor taxonomy, there are five major personality traits, namely, Neuroticism, Extraversion, Openness to experience, Agreeableness, and Conscientiousness. Neuroticism is the first main personality trait and can be described as the tendency to experience negative emotions, notably anxiety, depression, and anger. A second factor, Extraversion, refers to be sociable, assertive, active, and talkative. This factor is associated with a tendency to be sociable, active, energetic, and cheerful by disposition. A third dimension namely, Openness to Experience, it represents the tendency to involve oneself in intellectual activities and experiences new sensation and ideas. This factor is also referred to as creativity, intellect, or culture and tender-mindedness or affection. Openness to Experience is associated with intellectual curiosity, aesthetic sensitivity, vivid imagination, behavioral flexibility, and unconventional attitudes. A Fourth factor, Agreeableness, refers to friendly, considerate, and mode behavior. This factor is associated with a tendency toward friendliness and nurturance. Finally, Conscientiousness is associated with responsibility and persistence. This personality dimension has been reported to be significantly associated with various types of performance (Chamorro-Premuzic & Furnham 2005; Costa & McCrae 1992).

PREVIOUS STUDIES ON THE FIVE FACTOR MODEL IN ARABIC CULTURES

Few studies were conducted among the five factor model in the Arabic cultures. For example, Alansari (1997) administrated the (NEO-FFI-S) in three different large samples in Kuwait. He found that eleven first order factors were extracted and three second order factors were extruded. He concludes that the NEO-FFI-S is not a valid and reliable scale to assess the Five Factor model of personality in Arabic Culture. He suggested testing the NEO-FFI-S in another Arabic culture. Another study was conducted to examine the factor structure of observer ratings of personality in Lebanon. The participants in this research were students at the American University in Beirut, and they completed the English version of the NEO-PI-R. The result showed that the factor structure of Lebanese closely resembles the American. Also, the

Tucker's congruence coefficient values range from .87 to .94, suggestion that all replicate their American counterpart (McCrae, Terracciano & Khoury, 2007).

OMAN GEOGRAPHY, HISTORY, CULTURE, NATIONAL IDENTITY AND PERSONALITY

The Sultanate of Oman occupies the southeastern part of the Arabian Peninsula with a population of about 3.4 million people. It is one of the most relaxed and open Muslim states in the Persian Gulf. Oman, with a total area of 309,500 square kilometers, consists of a wide range of topography, including mountainous upland deserts, and expansive pristine coastline (Ministry of Information, 2009). The Arab tribes in Oman adopted Islam during the lifetime of the Prophet Muhammad (c.570-632) and forced the Persian colonizers to leave (Ministry of National economic, 2008; Taylor & Francis Group & Dean, 2004). Omani culture has its roots laid firmly in the Islamic religion. Islam is the religion of the Omani people as well as the medium by which government laws and regulations are encoded. Oman national identity has evolved from its predominantly Arabic language and culture. The tribal organization of society, Islam and the geographical location also recognize as an essential component of the national identity in Oman. Islam viewed all aspects of a Muslim's life within the context of religion, from holidays to the food they eat, and to how they dress. Generosity, modesty, Socially and in religious terms, respect for others, kindness and mercy are part of the Islamic and Arabic culture which are present in both social and professional spheres of life in Oman (Al-Hinai 2007; Malink 2007). Omani culture places high importance on family and tribal connections. The family and tribe are powerful and play a role in determining a person's values and behavior (Ministry Of Information, Oman 2009).

PURPOSE

The purpose of the present article is to analyze the factor structure of the Adolescent Personal Style Inventory (APSI) (Lounsbury & Gibson, 2006; Lounsbury, Tatum, Gibson, Park, Sundstrom, Hamrick & Wilburn 2003) in high school students in sultanate of Oman to see if the five-factor model can be recovered and to determine the utility of the use of the APSI in Oman. The present study uses the etic approach because our primary purpose is to evaluate properties of the new nonverbal measure of personality, developed based on the five factor model of personality.

METHOD

Participants

The participants for this study were high school students in Sultanate of Oman from the 10th, 11th, and 12th grade. Stratified Random Sampling methods were used to select the participants. The specific sample constituted of 1720 (788 male students and 932 females), who randomly selected from the graduating class of 2008 from three regions in Sultanate of Oman. Students were aged of 14 - 18 years old, with an average age of 16.5, S.D = 1.13. They are all Muslims having Arabic as their mother tongue.

Instruments

The Adolescent Personal Style Inventory (APSI) (Lounsbury & Gibson, 2006; Lounsbury, Tatum, Gibson, Park, Sundstrom, Hamrick & Wilburn 2003), a measure of the Big Five Personality traits designed particularly for use with adolescents, ranging from ages 11 to 18 years of age. It is a self-report, reliable, and accurate measure of the five major domains of personality: Neuroticism (N), Extraversion (E), Openness to New Experience (O), Agreeableness (A), and Conscientiousness (C), which have been shown to be highly related to other Big Five personality measures and to be related to academic performance, absences, and behavior problems (Lounsbury, Steel, Loveland & Gibson, 2004). Each APSI sub scale consists of 9 to 11 items consisting of statements with which respondents are asked to express agreement or disagreement by selecting one of five labeled choices (strongly disagree, disagree, neutral/undecided, agree, strongly agree). The coefficient alpha for each APSI sub scale was at least .80 or greater, ranging from .80 for Openness, to .82 for Agreeableness, .84 for Conscientiousness, and .85 for Neuroticism and Extraversion.

PROCEDURES

Cross- Cultural Adaptation

According to Guillemin, Bombardier and Beaton (1993) a cross-cultural adaptation consists of two components: translation and adaptation. The first involves a change from one language to another to obtain a literal meaning. Two main methods of translation used in educational and psychological literature, namely forward translation and backward translation. These methods are recommended as the best known and most popular (Brislin, 1970). Adaptation phase is a process in which the words of the first language have to match the semantic, idiomatic, cultural context, and lifestyle of the target population (Gullemin, Bombardier & Beaton 1993). The same procedure for the cross-cultural adaptation and translation were used in this study. An outline of the adaptation processes is presented in figure 1.

Figure (1): An Outline of the Adaptation Processes of the APSI Instrument

<p>Phase (1): Translation of English Instrument into Arabic.</p> <ol style="list-style-type: none"> forward-translations by native Arabic - speaking translator. Synthesis of first English version by four bilingual individuals. Back-translation by native English speaker. Comparison of original and back-translated version. Expert individual resolve discrepancies.
<p>Phase (2): Establish the Conceptual Equivalence by Comparing the English and Arabic Version.</p> <ol style="list-style-type: none"> Bilingual review with five professionals. Evaluate for semantic, idiomatic, and conceptual equivalence. Lay group review, to edit direction, items and answer choices. Principal investigator and Lay group edit and identify problematic items
<p>Phase (3): Readability, Content & Cultural Acceptability Review by the psychology expert panel.</p> <ol style="list-style-type: none"> five-member of the psychology expert group determine the content and cultural acceptability.

- b. Problematic items were revised.
- c. Summarize the findings and report level of agreement.
- d. Determine the reading level with two psychology experts
- e. Revise instrument as necessary with Lay Panel Expert.

Phase (4): Pretest of Arabic Instrument in Oman.

- a. Pretest instrument with Omani adolescents from two groups of 160 students. Using probing technique to check for understanding, interpretation, ambiguous items, and cultural relevance.
- c. Edit final instrument with the assistance of the Lay Panel expert.

Phase (5): Administration of Instrument in Oman.

- a. Randomly select 100 public high schools. Randomly select classrooms to obtain a representative sample of students in grades 10, 11, and 12.
- b. Provide permission slips to 1600 students from five regions in Oman.
- c. Randomly select 50 students for the test-retest reliability study.
- d. Descriptive statistics.
- e. EFA and CFA statistic.
- f. Determine convergent validity with relation to the NEO-FFI.

Pilot study 1: The first pilot study was aimed at identifying problematic items of the Adolescent Personal Style Inventory (APSI) by administering the initial version to 30 students (10 males, 20 females) aged 14-19 years old. The students were instructed to mark any item that was too difficult or not clear in meaning to them. Such terms did not have to be used for self-ratings. An item was considered problematic if marked as such by more than five school students. Pursuant to this pilot study, 2 items were marked as problematic. These items were analyzed to explore the reasons for the difficulties, reformulated, and then prepared for administration in the second pilot study.

In the second pilot study, the Adolescent Personal Style Inventory (APSI) was administrated to 130 students (35 males, 95 females) aged 14-19 years old, with an average age of 16.76, S.D = 0.99. The inventory contained 48 items with the new adapted one, the students were again introduced to reply when they were sure about the meaning of the items and fully understood the wording. The second pilot study was also used to identify the comprehension difficulties, but no additional original items were rejected and the new item formulations were all well understood. Moreover, the scale items were analyzed for an item total correlation, alpha internal consistency. Based on the result of the pilot test, the test was refined, retried, analyzed and refined. A series of four studies validated The Adolescent Personal Style Inventory (APSI).

Study 1

The purpose of this study was to conduct an exploratory factor analysis (EFA) to assess the factor structure of the scale items and to examine initial estimates of internal consistency of the APSI scores. Confirmatory factor analysis (CFA) was also used to confirm and validate the identified factors produced by EFA.

Participant: the APSI was administrated to 1440 students (544 males, 896 females) aged 14-19, years old, with an average age of 16.35, S.D = 1.099.

Data analysis: Analyses were conducted in four stages. The analytic strategies as employed in the current study are described in detail below.

Internal consistency, reliability for each of the Big Five dimensions was assessed by Cronbach's alpha. The output was examined by analyzing the results of these two tests: first, the Corrected item-total correlation: based on the test, if an item's corrected item-total correlation score is below .3, the item should be removed or reworded. Second, Alpha if the item deleted: based on the test, if an item's alpha if the item deleted value is greater than the standardized item alpha score, the item should be deleted immediately (Field, 2005). Based on the results of two tests, eight items were removed from the instrument, the total item remains in the instrument was only 40 items. The overall standardized Alpha score was ranged from (.59 - .74). The overall reliability showed a significant improvement after the removal of these items, the overall standardized Alpha score was ranged from (.61- .74).

Table (1): Cronbach's alpha Results after Revisions

	No of Items	Alpha	Standardized Item Alpha
Agreeableness	7	.638	.647
Conscientiousness	8	.708	.713
Neuroticism	8	.709	.711
Extraversion	7	.599	.611
Openness	10	.739	.743
Overall Cronbach's Alpha for the instrument = .769			

Exploratory Factor Analysis, in the second stage, an EFA was conducted to identify a viable factor structure based on a randomized split of the data in the sample. A sample of 406 participants was randomly selected using the randomization function on SPSS 16.0. An EFA was conducted on this subset of participants to determine the factor structure of the 40 items of the APSI. A Varimax with Kaiser Normalization rotation was selected due to the goal of the researcher to reduce a larger number of variables to a smaller set of uncorrelated variables (Hair, Black, Babin, Anderson & Tatham, 2006). Prior to conducting exploratory factor analysis, the data were examined using two indicators to determine whether the sample was appropriate for such an analysis. The Kaiser-Meyer-Olkin measure of sampling adequacy index was .85, and Bartlett's test of sphericity was significant, χ^2 (df = 254) = 1677.593, $p < .0001$, indicating that the sample and correlation matrix was appropriate for the analysis. The results of EFA analysis are shown in table 2.

Table (2): Rotated Component Matrix for APSI Inventory

	Factor1	Factor2	Factor3	Factor4	Factor5
C1	.737	-.001	.078	.042	.010
C5	.674	.241	.159	.041	.120
C3	.611	.221	-.146	-.200	.029
C2	.609	.059	.085	-.146	.008
C4	.468	.267	.129	-.040	.022
O3	.416	.235	.069	.026	.165
O9	.027	.745	.131	.123	-.105
O10	.166	.630	.004	-.034	.124

O4	.217	.613	-.203	-.272	-.002
O8	.161	.544	.127	.035	.241
O1	.296	.510	.141	-.005	.165
O7	.109	.433	.035	-.029	.400
A6	.135	.124	.694	-.052	.060
A10	.058	.194	.638	-.250	.043
A2	.360	-.049	.592	-.098	.108
A4	.108	-.038	.559	-.084	-.239
N4	-.184	-.039	-.077	.690	.072
N5	-.084	-.012	-.074	.686	-.047
N7	.084	-.112	-.326	.556	-.026
N2	.386	.212	-.154	.437	-.056
EX6	.051	.187	-.023	-.026	.777
EX8	.333	.133	.062	.062	.594
EX9	.111	.145	.071	.074	.588
EX4	.167	.402	-.093	-.093	.536

Confirmatory Factor Analysis, using Analysis of Moment Structures (AMOS) Version 16.0, a CFA was then conducted on the remaining 1034 participants of the larger overall sample to confirm the exploratory model. CFA is a structural equation modeling technique used to determine the goodness of fit between the hypothesized model and the sample data (Kline, 2005). The following goodness-of-fit indices were used to assess the degree of fit between the model and the sample: The Minimum Fit Function Chi-Square ², the Comparative Fit Index (CFI: >.90 Acceptable, >.95 Excellent), and Root Mean Square error of approximation (RMSEA; <.08 Acceptable, <.05 Excellent), the adjusted goodness-of-fit index (AGFI: >.90 Acceptable, >.95 Excellent) and P-values (PCLOSE). Results of CFA are shown in figure 2.

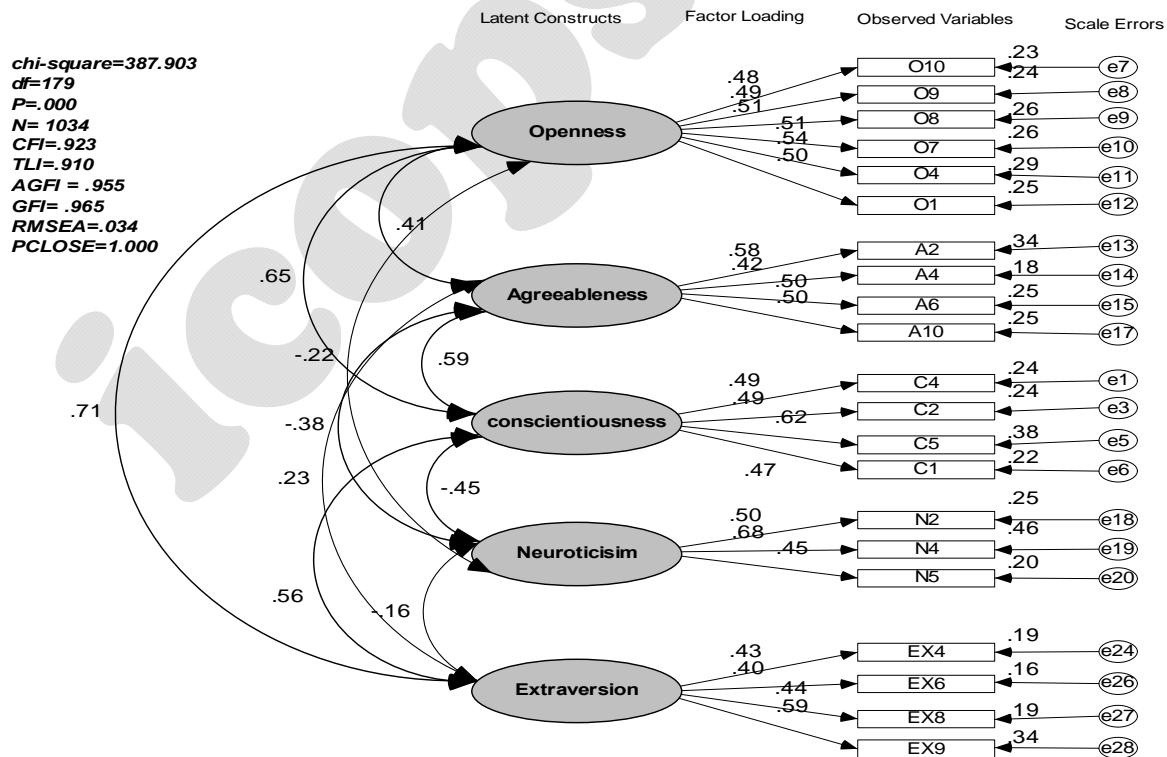


Figure (2): The Measurement Model for APSI

Higher-order factor analysis is a statistical method which consists of repeating steps of factor analysis. Using confirmatory factor analytic procedures, this research test the hypothesis that general factor of personality (GFP) underlies diverse individual differences including the Big Five factors of Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. The concern of personality structure was recently brought to theoretical center stage by Muek (2007) who displayed a convincing evidence for what he called ÷The Big Oneö a general factor extracted from the Big Five. Results of Higher order of CFA are shown in figure 3.

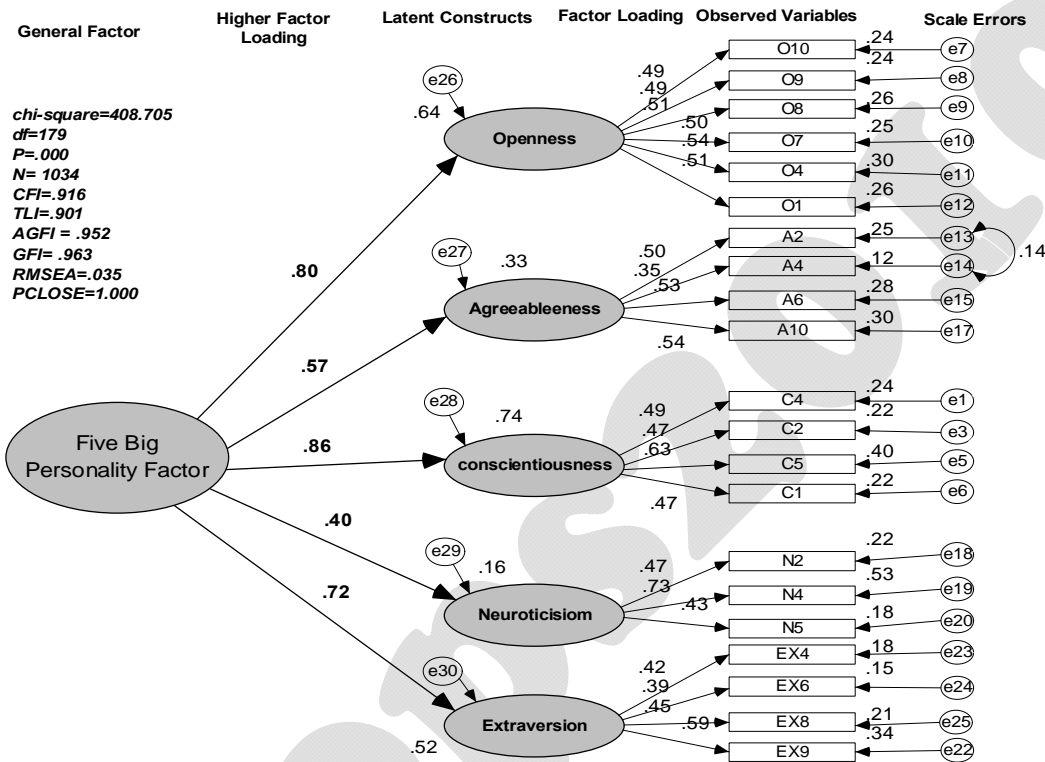


Figure (3): Higher Order of CFA for the APSI

Study 2

The aim of this study is to compute the test-retest reliability for the APSI Instrument. The reliability analysis was run based on a new set of items after the deletions for each construct of the instrument. Random samples of 50 students were asked to complete the APSI a second time after 16 weeks from the initial response. The results are shown below.

Table (3) Test-retest Correlations for the APSI

Subscale	Retest
Agreeableness	.727**
Conscientiousness	.500**
Neuroticism	.826**
Extraversion	.761**
Openness	.601**
Test- retest Reliability for the overall Scale .730	

Study 3

The purpose of this study was to examine the convergent validity by correlating measures of each of the Big Five traits from the APSI with measures of corresponding traits assessed by the NEO-FFI scale (Costa & McCrae, 1992). The APSI and the NEO-FFI were administered to a random sample of 70 students. They were asked to answer both instruments and return it to the researcher one week later. Table 4 displays the correlations for common traits from the APSI and the NEO-FFI.

Table (4): Correlations between Scales on the APSI and the NEO-FFI-S Main Scales

APSI Scales \ NEO-FFI Scales	Conscientiousness	Openness to Experience	Neuroticism	Agreeableness	Extraversion
Neuroticism	.112	.049	.553**	.062	.237
Extraversion	.281	.410**	-.381	-.091	.589**
Openness	.204	.469**	.084	-.034	.312*
Agreeableness	.285*	.276*	-.188	.371**	.130
Conscientiousness	.496**	.258*	-.197	.369**	.032

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

RESULTS

Exploratory Factor Analysis, the analysis of the APSI instrument produced five significant factors, which accounted for 46.59 % of total variance explained. The items loaded highly ($\geq .40$) on five separate factors. These factors had eigen values of greater than 1.00. The viability of a five factor solution was assessed using two criteria: the eigenvalue rule and the scree test. According to the eigenvalue rule, factors with eigenvalues less than one should not be retained (DeVills 2003). Results from the eigenvalue suggested a five factor solution. However,

only the first accounted for more than 10 percent of the variance (20.49 %) while the second factor explained 9.80 % of the variance and the rest factors accounted for 6.1 %, 5.5 %, 4.6 % respectively. The first factor identified was the Conscientiousness scale. All items loaded on this factor with loadings ranging from .737 to .416, except for three items which were lost due to its low factor loading. One item from other dimensions was loaded highly in this scale. The second identified factor was Openness. The items loaded on this factor with loadings ranging from .745 to .433. Again, three items were lost due to its loading falling below the 0.40 threshold. The third identified factor was that of Agreeableness with its a priori items loading entirely on this scale and with factor loadings ranging from .649 to .559. Two items were lost from this scale due to low factor loadings. The fourth factor was identified as Neuroticism. The items that were kept had factor loadings ranging from .690 to .437. Four of these items were lost due to factor loadings being below 0.40. The fifth identified factor was Extraversion with only three items loaded .777, .594 and .536 respectively. Four items in this scale were lost because its loading falling below the 0.40 threshold. Thus, the exploratory factor analysis provides strong evidence of the construct validity for the APSI.

Discriminant validity was improved by removing any item whose factor loading either fell below the 0.40 threshold within its a priori assigned scale or was above .40 with and of the other four scales. Sixteen items were lost due to high loading with scales other than their a priori scales and only 24 items remained in the instrument and used in the next analysis.

Confirmatory Factor Analysis The CFA was used to confirm the exploratory model. The CFA results showed that the goodness-of-fit indices for the revised model were as follows $\chi^2 = 387.903$, $df = 179$, $CFI = .923$, $GFI = .965$, $PCLOSE = 1.00$ and $RMSEA = .034$; each of the indices was above the threshold values. Thus, the five-factor structure of the APSI is supported by both the CFA and EFA.

Higher-order factor analysis, the results of the Higher-order factor analysis indicate that the factor structure of the APSI can be described by general factor of personality (GFP), accounted for the majority of variance in the first-order factors.

DISCUSSION

The main purpose of this study was to explore the internal consistency and the factor structure of the Arabic version of the APSI in Omani sample. Results of the internal consistency and test-retest reliabilities showed that the APSI was reasonably reliable. The internal consistency reliabilities of the five APSI sub-scales ranged from .61 to .74. Test-retest reliability coefficients for the final five APSI sub-scales ranged from .50 to .83. Findings from EFA indicated that the APSI scores have produced five significant factors, which accounted for 46.59 % of total variance explained. This five factor structure of the APSI was confirmed via CFA. Multiple fit indices provided support that the hypothesized five -factor model for the APSI scores had a good fit with the data. Higher- order factoring of the APSI items yielded a five first order factor and one second order factors. First-order factors are almost exact replications of the Big Five, whereas, the second-order factor based on APSI items correlate very high with the first-order scale.

The results of this study practically support the hypothesis that a single general factor exists at the top of the hierarchy of the personality structure. The findings also, demonstrate that for all five traits substantial overlap with corresponding sub scales of the NEO-FFI. These findings were consistent with the study conducted by Costa et al. (2007) in Lebanon. Clearly, the APSI is a reliable and valid tool for measuring the big five personality traits. The pattern of results from this study offers some etic implication. This is because, the five-factor model of personality can generalize well to Arabic culture. This is further evidence that the five-factor model represents psychological structures that are fundamental to human experience. Many of the cross-culture studies using the five factor model in Asian cultures have relied on general marker scales of the dimension, for example, Costa and McCrae (1992), and some evidence was found that the NEO-FFI-S is not a valid and reliable scale to assess the five-factor model of personality in Arabic culture (Alansari, 1997). Demonstrating the appropriateness of the APSI in this culture content introduces a more sophisticated tool for capturing these constructs. Further research replicating this scale (APSI) should be conducted in the future with larger and different samples to demonstrate the replication of similar results.

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