Testing the Five Factor Personality Model in Oman

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Abstract: The study aimed at testing Five Factor Personality Model (FFM) in Oman using Adolescent Personal Style Inventory [16], a FFM measure for adolescent. In a survey study data was collected from randomly selected sample (1720 subjects) from high school students. A series of three studies on Arabic version of Adolescent Personal Style Inventory (APSI) were conducted to standardize the measure for Oman school children. Cronbach alpha was used to test its reliability, and two advanced statistical methods were also used, i.e. Exploratory Factor Analysis (EFA) - to identify the underlying dimensions of each construct of the instrument, and Confirmatory Factors Analysis (CFA) - to confirm the dimension and to analysis the fitness of the data collected in hypothesized model. The reliability test indicated that the instrument was reliable, given the overall value of Cronbach alpha reliability was .77, while EFA produced five significant factors. Confirmatory Factors Analysis results showed a good fit to the data, where that the goodness-of-Fit indices for the revised model were: $\chi^2 (df = 179) = 387.903$, $CFI = .923$; $GFI = .965$, $PCLOSE = 1.00$ and $RMSEA = .034$, each of the indices was above the threshold. The results imply that the FFM is fit for describing the personality structure of high school students in Oman and an Arabic version of ASPI could be used by school counselors to identify students’ personality factors. However, their usefulness for the Omanis and the whole of Arab speaking youth and other subsection of population may require further studies with larger and wider samples.

Key-Words: Adolescent, Oman, Big Five, Personality, Inventory, Students.

1 Introduction

Many researchers believe that the Five-Factor Model of Personality (FFM), is a sufficient categorization of individual differences in personal disposition since it has been verified in a wide range of cultures and languages (De Raad, 2000). Five-Factor Model of Personality has been widely considered as a well-validated model of traits among personality researchers, and it continues to be a useful tool in the area of personality assessment and prediction (Costa, McCrae & Kay, 1995). Despite some critics (Jaap J.A. Denissen a, Lars Penke, 2008), there is an emerging consensus that the Big Five represents a grand unified theory for personality (Digman, 1990) As FFM has been widely accepted, researchers have begun to examine whether the five factors could predict other behaviors both productive and counter productive behaviors. Sung, S.Y., & Choi, J (2009), for example has examined the FFM’s relationship with creativity and, Bakker (2006) had earlier explored if FFM could predict burnout among Dutch volunteers
(counselors), while Bo Ekehamma et al (2004) has established a relation between some of FFM factors with general prejudiced. The five factor model was also found to be related to academic performance and behavior problems among school children and other counterproductive behavior among workers such as absenteeism and deviant behavior (Lounsbury et al. 2004; Lounsbury et al. 2003 a, 2003 b, 2003c; Jesus F. Salgado, 20020).

In spite of its popularity and empirically widely accepted, studies conducted on the five factor model in Arabic cultures demonstrated mixed results. For example, a study by Alansari (1997) using NEO-FFI-S in three different large samples in Kuwait concluded that the NEO-FFI-S failed to identify the Five –Factor model of personality in general. Responding to his suggestion of conducting further studies in other Arabic Cultures, McCrae et al (2007) carried out a study to examine the factor structure of the NEO-FFI in Lebanon. Using English version of the NEO-PI-R, data from students at the American University in Beirut showed that the factor structure of Lebanese closely resembles the American ‘s. Tucker's congruence coefficient values range from .87 to .94, replicated their American counterpart's finding.

The Five-Factor Model (FFM) of personality is a trait approach to the conceptualization of Personality. The labels for the five bipolar domains are (I) Extraversion versus Introversion, (II) Agreeableness versus Hostility, (III) Conscientiousness versus Lack of Conscientiousness, (IV) Emotional Stability versus Neuroticism, and (V) Intellect/Autonomy or Openness to Experience versus Lack of Intellect/ Autonomy or Closedness to Experience (Arnold B. Bakker et al, 2006).

The summery of each domain is as follow: Agreeableness refers to being agreeable, participative, helpful, cooperative, and inclined to interact with others in a harmonious manner. Conscientiousness refers to being reliable, trustworthy, orderly, and rule-following. Emotional Stability/Resilience (reverse of Neuroticism) reflects overall level of adjustment, resilience, and emotional stability. While extraversion indicates being sociable, outgoing, affiliative, lively, and warmhearted, openness means being receptive to new learning, change, and novel experience (Lounsbury & Gibson, 2006). Psychologists believe that the FFM is a necessary and sufficient model to describe the personality structure across languages of different theoretical perspectives, and the across different rating sources. The domains and their definitions as defined by the Personal Style Inventory manual.

As 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, therefore, replication of the structure in unrelated languages provides important evidence of the generalizability of the model.

2 Purpose

Three main purposes of the present study are, i) to examine if FFM could explain the personality structure of school students in Oman, ii) to analyze the factor structure of The Adolescent Personal Style Inventory (APSI) (Lounsbury & Gibson, 2006; Lounsbury et al., 2003) in high school students in sultanate of Oman, and iii) to determine the usability of the APSI in Oman.

3 Method

The study was conducted using survey method. The participants for this study were a sample from 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 624 male students and 932 females (N=1720), who randomly selected from the graduating class of 2008 from three region in Sultanate of Oman. Students came from the middle-lower and middle-upper classes and belong to the age of group of 14 - 18 years old, with an average age of 16.5 and S.D = 1.13 (Table 1). They are all Muslims having Arabic as their mother tongue.

<table>
<thead>
<tr>
<th>Region</th>
<th>Gender</th>
<th>Grades</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Muscat</td>
<td>Female</td>
<td>79</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120</td>
<td>126</td>
</tr>
<tr>
<td>Al-Dakhilyah</td>
<td>Male</td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>110</td>
<td>110</td>
</tr>
<tr>
<td>Al-Dhahira</td>
<td>Male</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>539</td>
<td>526</td>
</tr>
</tbody>
</table>

Table 1: Distribution of Participants by Gender and Grade across Educational Regions in Sultanate of Oman (n=1720)
4 Instruments
The Adolescent Personal Style Inventory (APSI) (Lounsbury & Gibson, 2006; Lounsbury et al., 2003), a measure of the "Big Five" Personality traits was designed for adolescents (11 to 18 years). It is a self-report measure of the five major domains of personality: Emotional Stability (reverse of Neuroticism) (N), Extroversion (E), Openness to New Experience (O), Agreeableness (A), and Conscientiousness (C), which was found to be highly related to other Big Five personality measures (Lounsbury et al. 2004). Each APSI subscale consists of 9 to 11 items comprising 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).

5 Procedures
The procedure involved three main stages; cross-cultural adaptation, pilot testing and data collection.

5.1 Cross- Cultural Adaptation
APSI require a cross- cultural adaptation. The adaptation process consists of two components: translation and adaptation (Guillemin et al. 1993). The first involves a change from a source language to a target language to obtain a literal meaning (Amla Salleh, 2001). In order to achieve a higher quality of translation, two main methods of translation used in educational and psychological literature, namely forward translation and backward translation (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.

Two forward-translations were carried out by native Arabic - speaking translators followed by synthesizing the first English version by four bilingual individuals. The first Arabic version was then back-translated by native English speaker. The adapted version was compared to the original and discrepancies were resolved by a group of expert.

The second task in this stage was to establish idiomatic, semantic and Conceptual Equivalence by comparing the English and Arabic Version which was carried out by five bilingual professional reviewers. This, followed by lay group review, to edit direction, items, answers choices, identifying and rectifying problematic items. Finally the readability, content, and cultural acceptability review was carried by an expert panel consist of ten-member of expert in psychology.

5.2 Pilot testing
The first pilot study was aimed at identifying problematic items of APSI by administering the initial Arabic version of the inventory to 30 participants (10 male, 20 female) aged 14-19 years old. The participants were instructed to mark any item that was too difficult for them. All 48 items of the original inventory were presented to the participants. The pilot study resulted in two items marked as problematic. These items were analyzed to explore the reasons for the difficulties, reformulated and then prepared for the second pilot study. In the second pilot study APSI was administrated to 130 participants (35 male, 95 female) aged 14-19 years old, with an average age of 16.76. The 48 items inventory which included the two reformulated items were presented to the respondents to identify the comprehension difficulties. Subjects were asked to respond to items which they were very certain of the meaning and fully understood the wording. At this stage there was no new original item rejected as all the items were fully understood by the subjects. The ASPI items were then, refined, retried, analyzed and refined.

Following the adaptation and the translation procedures, a series of three studies were conducted to standardize the Arabic version of APSI.

5.3. Data Collection
5.3.1 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 and of the APSI scores. Confirmatory Factor Analysis was used to confirm and validate the identified factors produced by EFA. The APSI was administered to 1440 participants (544 male, 896 female) aged 14-19, years old, with an average age of 16.35, and S.D = 1.099. Analyses were conducted in four stages. The analytic strategies employed in the current study are described below.

Stage i; internal consistency reliability for each of the Big Five factor was assessed by Cronbach’s alpha. The output was examined by analyzing the results of the Corrected Item-Total Correlation and Alpha if item deleted (Field, 2005). Based on the results of the two tests, eight out of 48 items were removed from the instrument. The overall reliability showed a significant improvement (.611-.743) after the removal of the eight items (Table 2).
Table 2: Cronbach’s alpha Results
For study 1 after Revisions

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Alpha</th>
<th>Standardized Item Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreeableness</td>
<td>.638</td>
<td>.647</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>.708</td>
<td>.713</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.709</td>
<td>.711</td>
</tr>
<tr>
<td>Extraversion</td>
<td>.599</td>
<td>.611</td>
</tr>
<tr>
<td>Openness</td>
<td>.739</td>
<td>.743</td>
</tr>
</tbody>
</table>

Stage ii: 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 then 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 et al, 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, χ² (DF = 254) = 1677.593, p < .0001, indicating that the sample and correlation matrix were appropriate for the analysis. The results of EFA analysis are shown in Table 3. The distribution of high factor loading (0.4 and above) across factors demonstrated that five factors were identified.

Table 3: Rotated Component Matrix for APSI Inventory

<table>
<thead>
<tr>
<th>It</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>.737</td>
<td>-.001</td>
<td>.078</td>
<td>.042</td>
<td>.010</td>
</tr>
<tr>
<td>C5</td>
<td>.674</td>
<td>.241</td>
<td>.159</td>
<td>.041</td>
<td>.120</td>
</tr>
<tr>
<td>C3</td>
<td>.611</td>
<td>.221</td>
<td>-.146</td>
<td>-.200</td>
<td>.029</td>
</tr>
<tr>
<td>C2</td>
<td>.609</td>
<td>.059</td>
<td>.085</td>
<td>-.146</td>
<td>.008</td>
</tr>
<tr>
<td>C4</td>
<td>.468</td>
<td>.267</td>
<td>.129</td>
<td>-.040</td>
<td>.022</td>
</tr>
<tr>
<td>O3</td>
<td>.416</td>
<td>.235</td>
<td>.069</td>
<td>.026</td>
<td>.165</td>
</tr>
<tr>
<td>O9</td>
<td>.027</td>
<td>.745</td>
<td>.131</td>
<td>.123</td>
<td>-.105</td>
</tr>
<tr>
<td>O1</td>
<td>.166</td>
<td>.630</td>
<td>.004</td>
<td>-.034</td>
<td>.124</td>
</tr>
<tr>
<td>O4</td>
<td>.217</td>
<td>.613</td>
<td>-.203</td>
<td>-.272</td>
<td>-.002</td>
</tr>
<tr>
<td>O8</td>
<td>.161</td>
<td>.544</td>
<td>.127</td>
<td>.035</td>
<td>.241</td>
</tr>
<tr>
<td>O1</td>
<td>.296</td>
<td>.510</td>
<td>.141</td>
<td>-.005</td>
<td>.165</td>
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<tr>
<td>O7</td>
<td>.109</td>
<td>.433</td>
<td>.035</td>
<td>-.029</td>
<td>.400</td>
</tr>
<tr>
<td>A6</td>
<td>.135</td>
<td>.124</td>
<td>.694</td>
<td>-.052</td>
<td>.060</td>
</tr>
<tr>
<td>A1</td>
<td>.058</td>
<td>.194</td>
<td>.638</td>
<td>-.250</td>
<td>.043</td>
</tr>
</tbody>
</table>

Stage iii: 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 determine whether the factor structure required modification. The CFA was used to confirm the exploratory model. CFA is a structural equation modeling technique used to determine the goodness of fit between a hypothesized model and the sample data. The decision on whether to add a path to the model is based on a combination of theoretical logical and empirical indications. Empirically, examination of the modification indices suggested by AMOS which report improvement in the goodness of fit between a hypothesized model and the sample data. The addition of a path will improve the overall fit of the model, if the modification index between two items is high in relation to other modification indices. Theoretically, the content item is examined. From a theoretical point of view if such items are expected to be linked to each other, then it is additional support for the inclusion of a path. If there is no theoretical or logical reason, then the path should not be included. 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 χ², 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), which is a test of the null hypothesis that RMSEA (in the population) is less than 0.05. Results of CFA are shown in figure 2.
Stage IV: Higher-order factor analysis which consists of repeating steps of factor analysis was also conducted. Using CFA procedures, this research tested the hypothesis that general factor of personality underlies diverse individual differences including the Big Five factors (Figure 2). The concern of personality structure was brought by Musek (2007) who displayed a convincing evidence for what he called ‘The Big One’ - a general factor extracted from the Big Five (Goldberg, 1990).

5.3.2 Study 2:
The aim of this study is to compute the test-retest Reliability of APSI. 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 participants were asked to complete the (APSI) instrument a second time after 6 week from the initial response.

5.3.3 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), which is one of the most widely used adult Big Five instruments. The APSI and the NEO-FFI were administrated to a random sample of 70 participants. They were asked to answer both of these instruments and return them to the researcher one week later.

6 Results and Discussion
The EFA of the APSI produced five significant factors which accounted for 46.59 % of total variance explained. The items loaded highly (>=.40) on five separate factors with eigen values of greater than 1.00. As displayed in Table 2, 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 was lost due to its low factor loading. The second identified factor was Openness. Two of the original items loaded greater than 0.40 within the previous factor. The remains loaded between .745 and .433. Three items was lost. The third identified factor was 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. The fourth factor was identified as Neuroticism. Items retained had factor loadings ranging from .690 to .437. Four of these items were lost due to low factor loadings. The fifth identified factor was Extraversion. Only three items loaded between .777 and .536. Discriminant validity was improved by removing items with low factor loading. Sixteen items were lost from the scale and a total of 21 items were retained. As a result the Arabic version of ASPI has 21 items, with extraversion scale has the lowest item number (3items).

Higher-order factor analysis results are shown in figure 2. The analysis supported the existence of a general factor of personality (GFP). All samples fit the model well according to fit indices, \( \chi^2 (df = 179) = 408.705, \text{CFI} = .916; \text{GFI} = .963, \text{PCLOSE} = 1.00 \) and

Fig. 1: The Measurement Model for APSI

Fig. 2: Higher Order of CFA for the APSI
RMSEA = .035. Test-retest reliability of ASPI over 16 weeks was reported to be moderate \((r = .73)\), while subscale test-retest reliability estimates represents a moderate to low level of reliability: Agreeableness \((r = .72)\), Conscientiousness \((r = .50)\), Neuroticism \((r = .83)\), Extraversion \((r = .76)\) and Openness \((r = .60)\). The average interval between administrations may have a negative impact on this coefficient. These results suggest that two of the five ASPI subscales were below the 0.7 threshold for acceptable reliability, while three of them were acceptably stable, and thus, led us to conclude that ASPI is a reliable measure of a stable construct over time.

The findings also, demonstrate that for all five traits substantial overlap with corresponding subscales of the NEO—FFI, which is one of the most widely researched adult Big Five scales including study by Jaap J.A. Denissen & Lars Penke, (2008), which further support the existence of the five personality construct of Arabic version of ASPI.

Findings from all the analyses indicate that the ASPI scores have produced five significant factors. First-order factors are almost exact replications of the Big Five and, the second-order factor based on ASPI items correlate very high with the first-order scale. The pattern of results from this study offer some emic and etic implication. From an emic perspective, it is clear that 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 as claimed by some (Tupes & Christal, 1961). Many of the cross-culture studies using the FFM in Asian cultures have relied on general marker scales of the dimension (Sung & Choi, 2009; Costa & McCrae, 1992).

The paper concludes that the present study provides evidence that FMM is fit to describe personality structure of Oman school children. Five factors analogous to the five FFM dimensions were identified from data collected using Arabic version of ASPI. Hence, the revised instrument is psychometrically sound although the items were reduced to 21. The findings also provide additional evidence of what De Raad (2000) terms the overwhelming picture of the Big Five...as a replicable structure, and lend support to the grand unified theory claim. The hypothesis of a single general factor exists at the top of the hierarchy of the personality structure (Goldberg, 1990) is also reasonably supported. The presence of one common and general highest factor in the Big Five personality space is clear of doubt.

Clearly, the ASPI is a reliable and valid tool for measuring the big five personality traits. By demonstrating its appropriateness in these cultures content, ASPI introduces a more sophisticated tool for capturing these constructs. The findings imply that ASPI could be used by school counselor in counseling process, and by researcher in developing knowledge on personality structure. However, due to limited sample type, further research replicating the present study is required in future with larger and different samples for the FFM to be generalized to youth population in Oman and for people in Arabic speaking world.

References:


