



## Factor analysis of Persian version of diagnostic assessment of personality pathology-basic questionnaire

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### Abstract

As personality traits play an important role in the determination of individuals' behaviors and their readiness for special abnormal behaviors, it seems necessary to assess the various levels of personality traits in different cultures. The present research was performed by the purpose of assessing psychometric characteristics and factor analysis of Diagnostic Assessment of Personality Pathology-Basic Questionnaire (DAP-BQ) Persian version. 415 participants (253 male and 162 female) were selected voluntarily by available sampling from university students, Eram Park's personnel and pedestrians. The study sample completed DAP-BQ and the short form of Neuroticism-extraversion and openness Personality Inventory Revised (NEO-PI-R). Findings showed a high-order solution with four-factors including emotional dysregulation, dissocial behavior, inhibition and compulsivity obsession which explained 72.57% of total variance. Also, Cronbach alpha coefficients (ranging from 0.73 to 0.93 range) and test-retest coefficients (ranging from 0.51 to 0.92 range) were in an acceptable range. Results showed that the Persian version of DAP-BQ had a proper validity and reliability. Furthermore, result revealed that the characteristic structure of DAP-BQ was the same across various languages and cultures and supported the four-factor essence of DAP-BQ.

**Keywords:** Diagnostic Assessment, Questionnaire, Personality, Psychometry

### Introduction

Nowadays, the field of personality traits has been the center of lots of studies' attention; because these characteristics have various behavioral and clinical consequences as risk taking behaviors [1], treatment successes [2] and psychosocial

[3]. Among personality traits, researches have especially studied Broad personality trait, a category of characteristics which considered to be the highest level of personality organization. These traits determine the readiness level of

individuals to psychiatry disorders. For example it is possible that broad characteristics of neuroticism, anxiety and aggression be related to both psychological pathology internalization and externalization [4].

Due to the importance of personality traits, it seems to be necessary to study their generality and describe them across cultures. However, the transformation of personality inherent trends to personality traits is such a complicated process which is affected by social-cultural contexts [5] as well as gene-environment interaction [6]. Mc Crae and Costa [7] believe that although different cultures have unique traits, but in a more general level, they include traits which are similar to each other and lead to cross-cultural characteristics and are the same in lots of cultures. However, some studies [8,9] express that each culture has its unique characteristics. So, the universality of personality structure is not acceptable; but as Diagnostic Assessment of Personality Pathology-Basic Questionnaire (DAP-BQ) is rendered from English and Western researchers, we wonder if, in general, this model is a Canada-based structure or is applicable to other cultures too. This belief exists that multi-factor models are the results of general language and culture, which has inherently linked these models to their generated language and culture [10]. So, realistic speaking, we know that various cultures and languages lead to models in which the chance of similarity of their factors with the main model is few [10].

According to the opposition between two recent viewpoints, their integration or opposition can be considered as the final answer of the expressed question: if the results of a research are the indicator of personality structure's generality or specialty in terms of culture, their subjectivity level of personality conceptualization is determinative in the research. In other words, although in the level of main and expansive characteristics, personality extracted factors are general or universal, but in a lower subjectivity level (for example, in medium level constructs as life purpose), they are more unique and culture-based [11].

In Asian countries, because of scarcity in local instruments for measuring personality basic factors, most of psychologists apply the

translated versions of Westerners' personality tests [12]. Among recent instruments which were compiled to measure personality characteristics, DAP-BQ [13] has been the most valuable and famous one. Livesley, Jung & Vernon [14] by the use of personality disorders in twins and public individuals found four expansive factors DAP-BQ: emotional Dysregulation (ED), dissocial behavior (DB), inhibition (IH), compulsive obsession (CO). Each of these four factors, has its special subscales. Seven subscales for emotional Dysregulation (affective instability, identity problems, cognitive dysregulation, insecure attachment, oppositionality, submissiveness and anxiousness), five subscales for dissocial behavior (conduct problems, narcissism, callousness, rejection and stimulus seeking), three subscales for inhibition (intimacy problems, low affiliation and restricted expression) and one subscales for compulsive obsession (compulsivity), which along with the scales of self-harm and suspiciousness generate 18 subscales. Livesley and Jackson [13] believe that some scales (self-harm and suspiciousness scales) don't have an obvious relationship with a separated category. They believe that self-harm subscale doesn't have much relationship with these four categories prototypically: but suspiciousness subscale has a weak relationship with two categories of emotional Dysregulation and dissocial behavior.

Although this questionnaire is made to measure prototypic characteristics of II axis disorders, but most of researches have applied it to non-clinical samples [15]. It revealed to be correlated with five factor model (FFM) [16]. Firstly Livesley, Jackson and Schroeder [17] clinically used the instruments. They showed lots of similarity between clinical samples and public population in terms of factor structure. These results which have repeated [18] in Danish [19] population showed that the traits' structure of personality disorders is the same between the clinical and non-clinical samples: and the personality disorder traits of the opposite were normal. In this research as the researches of Canada [15]

and Japan [19] only public population was used. Dimensional traits of DAP-BQ have been studied a lot, because they are applicable in clinical as well as non-clinical populations and measure of several personality traits levels [15]. In general; this questionnaire has been applied constantly across many cultures. For example, the validity of this questionnaire has been approved within the countries of Japan [20], China [21], Netherlands [22], Denmark [19], Spain [23], Germany [18], Canada [15] and other languages. These results are an indicator of relative similarity of personality factor structure across various cultures [24]. However, in some studies, due to low reliability and affirmation, some special questions and subscales have been removed [15,19,21]. To our knowledge, no Iranian research has investigated the factor structure of this questionnaire. As the consequence of an instrument depends on its validity, reliability and capability to guide clinic-workers in order to make cure strategies decision making [8] seemed necessary to investigate DAP-BQ validity and reliability.

### Method

The present research was a correlation and psychometrics study. It was conducted by the use of Pearson correlational method and exploratory factor analysis through factor structure and psychometrics' specification of DAP-BQ Persian version.

For the assessment of factor structure and psychometrics' specification of DAP-BQ Persian version, a non-clinical heterogeneous sample of 415 participants, by the age mean of 28.8 and standard deviation of 11.15 were selected. The participants were selected voluntary through available sampling method from three groups; 1) a volunteer sample of Eram Park's personnel, Tehran, (39 participants; age range: 31-49 years); 2) a volunteer sample of Eram Park's pedestrians (89 participants; age range: 18-34 years); and 3); an available sample of Lorestan and Allameh-Tababaei university students of Tehran (Human Sciences 139, Mathematics 121, and Veterinarian 27; age range: 19-24). Eighty three percent of them were single, and 17 percent married. The response rate of personnel, pedestrians and students were

53.21, 71.87 and 78.97 respectively. By the way, for measuring of the correlation between DAP-BQ and NEO-PI-R (convergent validity) and test-retest reliability only students with the age mean of 21.48 were used.

This study was conducted in two stage; first, to formulate DAP-BQ Persian version, binary-translation method was used. then the phrases were matched with Iranian culture. After researchers translation the questionnaire inverted to English language by English language experts. Then, after deleting inconsistencies, a Persian version was formulated. Second, to calculate face and content validity, two experts along with the study first author assessed the questionnaire. Next, based on their opinions vague items (21 items) were revised. Then, we received 31 opinions from students about the intelligibility of questionnaire items; finally 17 items which were estimated as vague items by the majority of the students, were revised again. After filling out the questionnaires by subjects and analyzing data, 3 questions (number 12, 205 and 270) were deleted because of their low factor loading, and at last 287 items were remained.

In this study, to examine exploratory factor analysis, we applied two initial tests: Sampling adequacy test of Kaiser Meyer Olkin and Bartlett's Test of Sphericity by SPSS-19. In order to measure the number of factors, Eigenvalues higher than 1 and factor loadings greater than 0.4 were considered as acceptable.

### Instruments

*Diagnostic Assessment of Personality Pathology-Basic Questionnaire (DAP-BQ: Livesley & Jackson, 2009):* This questionnaire includes 290 items in 4 categories (Emotional Dysregulation, Dissocial Behavior, inhibition, compulsiveness). As there are some subscales in each category, it generally, includes 18 subscales. In addition, this questionnaire has a validity scale with 8 questions. Most of the subscales include 16 questions, except self-harm and suspiciousness scales which include 14 and 12 questions. Each questions is scored in a 5 point rating scale (very like me=5, very unlike me=1). 272 items were marked directly and 18 inversely. The questionnaire internal consistency

was from 0.85 (rejection and stimuli-seeking) to 0.94 (anxiety) for the public population, and from 0.84 (Conscientiousness) to 0.95 (Anxiousness) for clinical sample [13]. Livesley & Jackson [13] have reported Cronbach Alpha for this instrument with the mean of 0.92. They estimated the test-retest reliability in a three week time from 0.84 (rejection) to 0.93 (low affiliation) [16]. This questionnaire concurrent validity with the NEO-PI-R showed that correlational median of DAP-BQ scales with neuroticism, extraversion, agreeableness and conscientiousness was 0.48, 0.28, -0.38 and -0.31 respectively.

*Short Form of NEO-PI-R Personality Questionnaire:* its basic version was conducted by Costa and McCrea for the measuring of personality five-factor model (neuroticism, extraversion, openness, agreeableness and conscientiousness)

in 1992. The short form of NEO personality questionnaire (NEO-PI-R) includes 60 items and respondents have to rated each of 60 sentences based on a 5-point rating scale (completely agree to completely disagree). Costa and McCrea Reported reliability coefficient [25] from 0.51 to 0.82. and validity coefficient from 0.63 to 0.81. In Iran, Haghshenas [26] Garousie Farshi [27] reported reliability coefficient from 0.53 to 0.87. In addition, the reliability coefficients of neuroticism, extraversion, openness, agreeableness and conscientious was estimated as 0.86, 0.73, 0.80, 0.70, 0.87.

## Results

T-independent test was used to assess the effects of gender and marriage status on the scores which results are provided in Table 1.

**Table 1** The means, standard deviations and standard errors of the means (SE) for the DAP-BQ scales on demographic characteristics of subjects

| Scales          | Single<br>N=344 |       |      | Married<br>N=71 |      |      | P     | Female<br>N=162 |      |      | Male<br>N=253 |      |      | P      |
|-----------------|-----------------|-------|------|-----------------|------|------|-------|-----------------|------|------|---------------|------|------|--------|
|                 | M               | SD    | SED  | M               | SD   | SED  |       | M               | SD   | SED  | M             | SD   | SED  |        |
| Submissiveness  | 18.32           | 6.56  | 0.35 | 18.57           | 6.16 | 0.73 | >0.05 | 20.78           | 5.21 | 0.41 | 18.73         | 5.43 | 0.34 | <0.01  |
| Cognitive Dys   | 11.81           | 5.60  | 0.30 | 11.46           | 4.72 | 0.56 | >0.05 | 11.51           | 6.02 | 0.47 | 11.46         | 5.91 | 0.37 | >0.05  |
| Identity Ps     | 11.90           | 5.45  | 0.29 | 12.06           | 5.45 | 0.63 | >0.05 | 11.89           | 5.58 | 0.46 | 12.01         | 6.46 | 0.28 | >0.05  |
| Affective Ins   | 21.26           | 7.81  | 0.42 | 19.60           | 6.74 | 0.80 | >0.05 | 20.26           | 7.81 | 0.61 | 19.60         | 6.74 | 0.30 | >0.05  |
| Stimulus Se     | 16.03           | 6.13  | 0.33 | 15.93           | 5.65 | 0.67 | >0.05 | 15.77           | 4.84 | 0.38 | 17.83         | 4.43 | 0.28 | <0.001 |
| Compulsivity    | 24.62           | 6.73  | 0.36 | 24.87           | 5.59 | 0.66 | >0.05 | 21.62           | 6.73 | 0.53 | 22.78         | 5.59 | 0.35 | >0.05  |
| Restricted Ex   | 21.12           | 6.89  | 0.37 | 21.84           | 6.24 | 0.74 | >0.05 | 20.12           | 5.55 | 0.43 | 20.84         | 5.24 | 0.33 | >0.05  |
| Callousness     | 16.91           | 5.04  | 0.27 | 15.18           | 5.09 | 0.60 | >0.05 | 15.83           | 4.67 | 0.36 | 19.88         | 5.18 | 0.32 | <0.001 |
| Oppositionality | 21.16           | 6.77  | 0.36 | 22.30           | 6.04 | 0.72 | >0.05 | 19.16           | 6.77 | 0.53 | 19.30         | 6.54 | 0.41 | >0.05  |
| Intimacy Ps     | 14.98           | 5.83  | 0.31 | 12.98           | 4.85 | 0.58 | <0.05 | 18.22           | 6.03 | 0.47 | 15.30         | 5.04 | 0.31 | >0.05  |
| Rejection       | 20.02           | 5.88  | 0.32 | 19.09           | 6.68 | 0.79 | >0.05 | 19.02           | 6.25 | 0.49 | 18.94         | 6.16 | 0.65 | >0.05  |
| Anxiousness     | 14.87           | 5.81  | 0.31 | 13.49           | 5.50 | 0.65 | >0.05 | 15.77           | 5.80 | 0.45 | 14.40         | 5.50 | 0.38 | >0.05  |
| Conduct Ps      | 12.58           | 5.53  | 0.30 | 11.95           | 5.32 | 0.63 | >0.05 | 10.30           | 3.51 | 0.27 | 12.78         | 4.11 | 0.26 | <0.001 |
| Suspiciousness  | 13.95           | 6.04  | 0.32 | 14.63           | 5.65 | 0.67 | >0.05 | 14.05           | 6.04 | 0.47 | 14.63         | 5.56 | 0.35 | >0.05  |
| Low Af          | 12.97           | 5.91  | 0.32 | 13.06           | 4.62 | 0.55 | >0.05 | 15.17           | 5.11 | 0.40 | 14.86         | 4.02 | 0.25 | >0.05  |
| Narcissism      | 17.81           | 6.18  | 0.33 | 17.24           | 5.69 | 0.67 | >0.05 | 16.20           | 5.17 | 0.40 | 17.23         | 5.70 | 0.63 | >0.05  |
| Insecure At     | 13.05           | 5.55  | 0.30 | 13.54           | 5.78 | 0.69 | >0.05 | 12.95           | 4.55 | 0.35 | 13.54         | 5.38 | 0.34 | >0.05  |
| Self-Harm       | 8.11            | 4.600 | 0.25 | 7.78            | 4.00 | 0.47 | >0.05 | 9.12            | 4.33 | 0.34 | 8.97          | 4.10 | 0.26 | >0.05  |

Note; P: 2-tailed probability levels associated with significant differences in means between females/males and singles/marrieds, Cognitive Dys; Cognitive Dysregulation, Identity Ps; Identity, Problems, Affective Ins; Affective Instability, Stimulus Seeking; Stimulus Se, Restricted Ex; Restricted Expression, Intimacy Ps; Intimacy Problems, Conduct Ps; Conduct Problems, Low Af; Low Affiliation, Insecure At; Insecure Attachment.

As Table 1 shows, there are gender differences only between five factors of Submissiveness ( $p<0.01$ ), Stimulus Seeking, Callousness, Intimacy Problems and Conduct Problems. As it is shown, female received higher score in Submissiveness and Intimacy Problems,

however male in other three. Besides, the significant difference only found in Intimacy Problems scale ( $p>0.05$ ).

Results of internal consistency (Alpha coefficient) and test-retest coefficient is shown in Table 2. As Table 2 shows, the

Cronbach alpha of the whole scales were in the acceptable range of 0.73 (rejection) to 0.90 (Anxiousness). In addition, we assessed the reliability of this questionnaire by the

use of test-retest in a 4-week period and the correlation coefficients ranged from 0.51 (suspiciousness) to 0.92 (identity problems).

**Table 2** Cronbach's alpha and test-retest correlation for each subscales of DAP-BQ

| Subscales of DAP-BQ     | $\alpha$ coefficient | Test-retest coefficient |
|-------------------------|----------------------|-------------------------|
| Affective Instability   | .86                  | .90                     |
| Anxiousness             | .90                  | .91                     |
| Callousness             | .79                  | .82                     |
| Cognitive Dysregulation | .82                  | .59                     |
| Compulsivity            | .81                  | .68                     |
| Conduct Problems        | .79                  | .89                     |
| Identity Problems       | .84                  | .92                     |
| Insecure Attachment     | .88                  | .91                     |
| Intimacy Problems       | .80                  | .88                     |
| Low Affiliation         | .86                  | .77                     |
| Narcissism              | .85                  | .81                     |
| Oppositionality         | .85                  | .84                     |
| Rejection               | .73                  | .65                     |
| Restricted Expression   | .80                  | .78                     |
| Self-Harm               | .81                  | .69                     |
| Stimulus Seeking        | .80                  | .81                     |
| Submissiveness          | .83                  | .69                     |
| Suspiciousness          | .85                  | .51                     |
| N                       | 415                  | 138                     |

All of coefficient correlation test-retest significant at  $p < 0.01$

For assessing the factor analysis of DAP-BQ, Kaiser-Meyer-Olkin Sampling Sufficiency Criteria (0.85) showed that research data are acceptable for principal component analysis (PCA). Also, Bartlett's Test of Sphericity ( $X^2 = 3225.58$ ,  $p < 0.0001$ ) showed that there is enough correlation between variables to be analysed. three items 270 (suspiciousness), 205 (Submissiveness) and 12 (rejection) were loaded on unanticipated scales. Their loading with original scales was lower than 0.40, so they were deleted from final analysis. In addition, by the use of Kaiser-Gotman Conservative Criteria, factors which their eigenvalues was more than 1, produce 4 high-order components namely emotional Dysregulation, dissocial behavior, inhibition and compulsiveness (Table 3).

Also, Table 3 shows scales with loading more than 0.40 ( $> 0.40$ ). In this table, it is obvious that 3 extracted factors explain 72.57 percent

of total variance, and the ration of all 4-four factors is as below: emotional dysregulation 38.23, dissocial behavior 14.94, inhibition 12.35, and compulsivity 7.50. Besides self-harm scale's kurtosis (12.29) and skewness (3.45) were high and we omitted it from analysis processes of this research.

According to Table 3, all the subscales that were considered as the constructs of emotional dysregulation had high loading (0.69 to 0.81) with that category. But, cognitive dysregulation and identity problems had high loading with two factors of dissocial behavior (0.46) and inhibition (0.54) which in DAP-BQ instruction [13] was not seen. Besides, each factor subscales had high loading with that category: although some of the subscales (Anxiousness, cognitive dysregulation, identity problems and suspiciousness) had common loading with several factors, but their loading

with original factor was much higher than their factor loading with unanticipated factors: this

result was more obvious in Simonsen and Simonsen [19].

**Table 3** *Obliquely rotated factor loading of the DAP-BQ (n= 415)*

| Subscales               | Emotional Dysregulation | Dissocial Behavior | Inhibition | Compulsiveness |
|-------------------------|-------------------------|--------------------|------------|----------------|
| Affective Instability   | .74                     | -                  | -          | -              |
| Anxiousness             | .78                     | -                  | -          | .59            |
| Callousness             | -                       | .63                | -          | -              |
| Cognitive Dysregulation | .75                     | .46                | -          | -              |
| Compulsivity            | -                       | -                  | -          | .72            |
| Conduct Problems        | -                       | .71                | -          | -              |
| Identity Problems       | .77                     | -                  | .54        | -              |
| Insecure Attachment     | .69                     | -                  | -          | -              |
| Intimacy Problems       | -                       | -                  | .77        | -              |
| Low Affiliation         | -                       | -                  | .65        | -              |
| Narcissism              | -                       | .54                | -          | -              |
| Oppositionality         | .70                     | .48                | -          | -              |
| Rejection               | -                       | .61                | -          | -              |
| Restricted Expression   | -                       | -                  | .56        | -              |
| Stimulus Seeking        | -                       | .62                | -          | -              |
| Submissiveness          | .81                     | -                  | -          | -              |
| Suspiciousness          | -                       | -                  | .53        | .51            |
| Eigenvalues             | 6.5                     | 2.54               | 2.10       | 1.21           |
| %Accounted Variance     | 38.23                   | 14.94              | 12.35      | 7.05           |

Values greater than 0.40 were incorporated for clarity

Additionally, in the present research the relationship between DAP-BQ scales and NEO-PI-R five-factor was measured and the results showed that except for Openness (O), other factors had significant correlations with the majority of subscales (Table 4).

According to table 4, all the correlations between 18 subscales of DAP-BQ and neuroticism factor, except for cognitive dysregulation (-0.48) had been positive and in the range of 0.03 to 0.74. From these 18 subscales, 14 subscales had significant correlation with neuroticism factor, which 7 of these subscales made emotional dysregulation factor and had higher correlation with neuroticism (-0.48 to 0.74). In addition, correlation between DAP-BQ subscales and extraversion factor was from 0.01 to 0.57, and the only subscale which had significant correlation with openness factor was

stimuli-seeking ( $r=0.16$ ). The agreeableness factor has significant correlation with lots of subscales, but all the coefficients were negative and in the range of -0.02 to -0.56. Furthermore, conscientiousness factor had negative correlation (in the range of -0.08 to 0.52) with DAP-BQ subscales, except for compulsive obsession.

We also performed a varimax-rotated principal components analysis by the higher-order factors of the NEO-PI-R and DAPP-BQ, which recognized 4 factors responsible for 76.0% of the total variance (Table 5: eigenvalues= 2.54, 1.63, 1.40 and 1.06). These factors were very similar to those of the previous analysis: factor 1 is anxiety; factor 2, extraversion; factor 3, compulsivity; and factor 4, agreeableness (negative loading) and dissocial behavior.

**Table 4** The correlation between DAP-BQ's subscales and NEO-PI-R's factors.

| Subscales               | Neuroticism | Extraversion | Openness | Agreeableness | Conscientiousness |
|-------------------------|-------------|--------------|----------|---------------|-------------------|
| Affective Instability   | .64**       | -.19*        | -.03     | -.39**        | -.25**            |
| Anxiousness             | .74**       | -.39**       | -.06     | -.26**        | -.50**            |
| Callousness             | .24**       | -.12         | -.08     | -.50**        | -.24**            |
| Cognitive Dysregulation | -.48**      | -.19*        | -.04     | -.26**        | -.39*             |
| Compulsivity            | .12         | .01          | -.15     | -.03          | -.52**            |
| Conduct Problems        | .21**       | .08          | .01      | -.31**        | -.39**            |
| Identity Problems       | .73**       | -.51**       | .08      | -.31**        | -.25**            |
| Insecure Attachment     | .48**       | .03          | -.10     | -.17*         | -.20*             |
| Intimacy Problems       | .12         | -.21**       | -.04     | -.06          | -.08              |
| Low Affiliation         | -.61**      | -.75**       | -.15     | -.16*         | -.18*             |
| Narcissism              | .34**       | .15          | .13      | -.27**        | -.26**            |
| Oppositionality         | .52**       | -.18*        | .15      | -.37**        | -.67**            |
| Rejection               | .15         | .17*         | .13      | -.56**        | -.12              |
| Restricted Expression   | .27**       | -.51**       | -.06     | .14           | -.11              |
| Stimulus Seeking        | .03         | .34**        | .16*     | -.20*         | -.27**            |
| Submissiveness          | .59**       | .33**        | -.13     | -.02          | -.25**            |
| Suspiciousness          | .44**       | -.10         | -.08     | -.41**        | -.14              |
| Self-Harm               | .38**       | -.21**       | -.03     | -.19*         | -.13              |

\*p&lt;0.05, \*\*p&lt;0.01

**Table 5** Varimax rotated principal component analysis of the NEO-PI-R facet scales and the DAPP-BQ dimensions.

| Measures                | Factors |       |       |       |
|-------------------------|---------|-------|-------|-------|
|                         | 1       | 2     | 3     | 4     |
| NEO-PI-R factors        |         |       |       |       |
| Neuroticism             | 0.83    | -0.04 | -0.11 | 0.09  |
| Extraversion            | -0.17   | 0.75  | 0.14  | -0.26 |
| Openness                | 0.25    | 0.61  | 0.10  | 0.25  |
| Agreeableness           | -0.06   | 0.11  | 0.12  | 0.82  |
| Conscientiousness       | -0.47   | 0.07  | 0.74  | 0.13  |
| DAP-BQ dimensions       |         |       |       |       |
| Emotional Dysregulation | 0.90    | -0.16 | 0.19  | -0.17 |
| Dissocial Behavior      | 0.54    | 0.17  | 0.24  | -0.65 |
| Inhibition              | 0.33    | -0.73 | 0.12  | -0.07 |
| Compulsivity            | 0.28    | -0.04 | 0.83  | -0.05 |
| Eigenvalues             | 2.54    | 1.63  | 1.40  | 1.06  |
| %Accounted variance     | 28.22   | 18.11 | 15.55 | 11.77 |

Values greater than 0.40 are boldfaced for clarity.

## Discussion

This research was designed with the purpose of factor structure analysis and the assessment of psychometrics specifications of DAP-BQ Persian version. The study results support the Universal view about personality, in which social and cultural variables have no effect on humans' underlying psychological structure making [28]. It is the the first time that this

research is performed in Iran. Our finding suggested four-factor solution e(motional dysregulation, dissocial behavior, inhibition and Compulsivity). These 4 high-ordered factors have been recognized within heterogeneous samples in lots of cultures and languages [19,23,25,29]. So, it can be said that the structure of these 4 factors in different

cultures are alike. In a Chinese research [21], although 4 factors were extracted, but subscale of intimacy problems showed a low internal consistency and lacked high loading with these 4 factors. Translation difficulties and disparate items with Chinese culture may be the reason of this problem.

Moreover, some prior researches rendered a 5-factor solution by testing the latent principal structure of DAP-BQ [30,31] and divided dissocial behavior to two-separated field. For example, Goldner, Srikaneswaran, Schroeder, Livesley, & Birmingham [32] reported two factors for dissocial behavior: them related to the high level of extraversion, and other to the low agreeableness. In the present research, reminded 4 factors, may explain 72.57 of the general variance, which is similar to described variance's amount of general population (68.68) in original DAP-BQ [14] and Japanese study (76%) [20]. In the Danish study [19] these 4 factors could only describe %54 of the variance which is lower than our variance amount. It may be due to their small sample size (168 individuals) which is not enough for factor analysis in Danish study. However, it seems that emotional dysregulation is an important aspect of personality organization, as Livesley, Yung and Vernon [14] introduce it as a general factor of personality, which is coordinated with personality organized essence. In addition, they believe that these 4 factors act as a system in which the confusion of a construct will affect the whole system. In other word, the special values of this compared with special values of the public population (7.47, 2.34, 1.49 and 1.27) in the original study [14], few differences which may be due to the special characteristics of Iranian sample.

A basic difference between present research and the original one, is that two subscales of Anxiousness and suspiciousness had relatively high loading with compulsivity factor in the current research (0.59 to 0.51). while Livesley, Yung and Vernon [14] estimated, loading of these two factors below than 0.40 with compulsion factor. Our research isn't coordinated with Berzo et al [15] research

either. So, it seems that compulsivity factor must be investigated more in Iranian samples. Although, Livesley [33] argues that the subscale of suspiciousness is not prominent in each of the factors, but suspiciousness in a homogeneous sample with few variability has a cross-loading with compulsivity. So, it is not much curious that suspiciousness subscale be correlated with this category, and in some studies [18,19,22] this correlation is observed. For example, Purkrop et al [18] consist the present study, obtained 0.51 loading between suspiciousness and compulsivity category. Perhaps, the correlation between Anxiousness and compulsivity helps to understand their coincidence. Trull and Dagg [34] believe that Anxiousness scale includes special traits of readiness for guilt and skepticism which are the common characteristics of individuals with compulsivity. So, high loading of Anxiousness with compulsivity category is not unusual and curious. Additionally, somehow the present research is incongruent with the original published DAP-BQ [14]. The subscales of suspiciousness and affective instability had a relatively high loading with inhibition category, and so did the subscales of Oppositionality and cognitive dysregulation with dissocial behavior category. These incongruities due to the the problems of language, translation and sampling. In other way, Markon Krueger and Watson [35] express that higher-ordered constructs, due to their higher subjectivity level, probably repeat more than lower-ordered constructs. As two factors of inhibition and compulsivity are in the lower level and explain a few amount of variance (19.4), then they probably repeat lesser.

The investigation of the concurrent validity of DAP-BQ with NEO-PI-R five-factor showed that all the subscales of emotional dysregulation (ED) had relatively high correlation with neuroticism; however, emotional dysregulation was completely different from neuroticism factor and included no impulsiveness. This aspect which describes with sensation-seeking and recklessness was



considered in DAP-BQ as stimuli-seeking within the dissocial behavior (DB) subscale. In fact, ED is more similar to Eysenk conception of neuroticism [36]. ED in comparison to neuroticism factor (N) was more expanded, because the characteristics of identity Problems, cognitive dysregulation, insecure attachment, Oppositionality and submissiveness had no appearance in neuroticism factor. As all the subscales of DB had negative correlation with agreeableness factor (A), they were considered as the opposite point of A factor [14]. Also, inhibition (IH) subscales had negative correlation with extraversion factor (E), which seems to be the opposite point of E factor. May be, because of this negative correlation that Livesley, Jung and Vernon [14] related inhibition factor with extraversion-introversion characteristics. Finally, compulsivity (CO) showed positive correlation with NEO-PI-R conscientiousness factor (C). However, as Livesley, Jung and Vernon [14] depicted that there is a gap between NEO-PI-R and DAP-BQ, because none of the DAP-BQ subscales had significant correlation with openness (O). Probably, the reason is that most of the DAP-BQ subscales were came from clinical samples. Also the relationship between the DAPP-BQ and the NEO-PI-R supports the four-factor model of personality disorder traits [14,19].

Finally, the assessment of gender and marriage status on the scales showed that males received high scores in three scales of Stimulus seeking, Conduct problems and Callousness; and females received high scores in Submissiveness and Intimacy problems scale which is consistent with Livesley and Jackson study [13]. In other way, singles received high scores significantly in Intimacy problems scales in comparison to married individuals.

In general, the few differences between present study and other ones may be attributed to translation, language, religion, accountability bias, self-presentational and performance method [37]. This research had some limitations; firstly, we used only non-clinical and public population in our study; and the use of clinical sample may lead to different

structures. It is necessary to say that, the DAP-BQ structure is the same for clinical and non-clinical samples and the little difference between them is quantitative kind not qualitative [20]. Secondly, we only used self-rating instruments. Based on this belief that personality disordered individuals have a few insight into themselves; these instruments show more bias [14,38]. Thirdly, response rate of the questionnaires, especially for Eram park personnels (%47) was rather low, which may cause to diagonal sample. It may due be to DAP-BQ many questions [20]. As DAP-BQ is a self-report test, the probability of response is high and these instruments have high bias-vulnerability [39]. The fifth limitation of this research relates to the generalizability matter, due to its accessible and voluntary sample.

### Conclusion

The results of this study suggest a four-factor solution termed emotional dysregulation, dissocial behavior, inhibition and Compulsivity. And these reminded four factors, could explain 72.57 of the total variance. According to this study all the subscales that are considered as constructs of emotional dysregulation had high loading with that category. However, cognitive dysregulation and identity problems had high loading with two factors of dissocial behavior and inhibition which in DAP-BQ instruction was not seen. Besides, investigation of all factor subscales showed that they had high loading with that category: although some of the subscales (Anxiousness, cognitive dysregulation, identity problems and suspiciousness) had common loading with several factors, but their loading with original factor was higher than their factor loading with unanticipated factors.

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Study design: MR, FM

Data collection and analysis: MR, TM, SH, KR

Manuscript preparation: MR, JKL.

**Conflict of Interest**

"The authors declare that they have no competing interests."

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