

Factor Analysis of Adult ADHD Rating Scale ASRS-v1.1 (Persian Translation) in University Students

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ABSTRACT

Background: lack of adequate screening tools for adult ADHD in Iran, we aimed to introduce factor structure of ASRS-V1.1 in Persian form. **Method:** Persian form of ASRS-V1.1 were filled in 240 university students aged 18-24 years, Cronbach's alpha coefficient and factor analysis were performed. **Results:** Cronbach's alpha coefficient was calculated 0.76 for ASRS. Factor analysis confirmed two factors: attention deficit and hyperactivity. **Conclusion:** Persian translation of ASRS-V1.1 has adequate internal consistency and two factors structure, in line with original manuscript.

Keywords: *Adult Attention Deficit/ Hyperactivity Disorder (ADHD); Internal Consistency; Factor Analysis*

Attention deficit hyper activity disorder is not restricted to childhood, therefore based on various studies 10% to 66% of childhood ADHD could be continued to adulthood, naming adult ADHD (Faraone et al., 2006). Adults aged 18 to 44 years may have symptoms of hyperactivity or attention deficit, contributes with their life events (Kessler et al., 2006). The occupation is the main affected field of adult ADHD patient's life, in form of lower function, incomplete performance, poor relationships with bosses or coworkers, and finally, poor advance in occupational skills (Kates, 2005, Weiss et al., 1979). Reduced occupational function leads to higher rate of unemployment, changing occupations, low socioeconomic status, and high suspicious to addiction, potentially (Secnik et al., 2005).

Adult ADHD is not well understood and diagnosed (Kessler et al., 2005). Developmental changes are not considered in diagnostic criteria of ADHD, because of that they are derived from validation studies in children, therefore criteria for adulthood are restricted (Riccio et al., 2005, Belendiuk et al., 2007, Heiligenstein et al., 1998). Partial improvement of

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hyperactivity in adulthood with persistent attention deficit, overlaps with other psychiatric disorders like depression and comorbid diagnoses are possible reasons for omission of the adult ADHD diagnosis. At the same time, inadequate and time consuming screening tools are overwhelming (Searight et al., 2000). Further studying of such diagnosis requires an appropriate screening tool for epidemiological studies

The only available questionnaire for adult ADHD in Iran is Conner questionnaire which contains 26 questions and requires 10 minutes to answer. ASRS with 6 questions, introduced by Kessler, has been developed from the World Health Organization's Composite International Diagnostic Interview (CIDI). ASRS has been validated in various languages (Hines et al., 2012) and used in correlational studies (El ASRS, 2009, Able et al., 2007, Gropper and Tannock, 2009, McIntyre et al., 2010). In this study we aimed to evaluate psychometric properties of Persian translation of ASRS-V1.1 to be used in screening studies.

METHODS AND MATERIALS:

Population

Present validation study was done on 240 male and female university students aged 18-24 years, in Iran University of medical sciences during 2015. Students were enrolled with consent and assurance for Confidentiality. Exclusion criteria were lack of consent or incompletely answered questionnaires.

Questionnaires

The questionnaire, ASRS-V1, 1, has 6 questions. First 4 questions emphasis on attention deficit and last two questions are about hyperactivity (DuPaul et al., 1998). English form has been had appropriate internal consistency (Cronbach's alpha coefficient: 0.72 -0.63) and reliability (Kessler et al., 2005).

Statistical analysis

Cronbach's alpha coefficient, Confirmatory factor analysis and discriminant analysis were considered to perform. Statistical analyses were done using SPSS-16 and Amos graphic-8.

RESULTS:

Total of 240 students, 65% were males and 35% females. Mean and standard deviation of ASRS were 2.2(1.6), respectively. ASRS (ranging 0 to 6) distribution were not normal (One-Sample Kolmogorov-Smirnov Test, p value<0.05)

Internal consistency

Cronbach's alpha coefficient of ASRS for attention deficit, hyperactivity and both together were 0.77, 0.73 and 0.76 respectively. Cronbach's alpha coefficients of higher than 0.7 emphasize acceptable internal consistency for Persian translation of ASRS.

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Factor analysis

In order to evaluate construct validity of ASRS, exploratory and confirmatory factor analysis were performed. Kaiser-Meyer-Olkin had acceptable coefficient (KMO; 0.69). Bartlett's test of Sphericity was significant (p value < 0.0001). Factors Extracted by varimax analysis, are summarized in table 1:

Table.1, Initial Eigen Values.

Initial Eigen Values	Factor1	Factor 2
Total	2.38	1.65
% of variance	39.7	27.55
Cumulative %	39.7	67.26

Exploratory factor analysis (varimax) determined two factors which predict 67.26% of hyperactivity and attention deficit. Factor loadings of the questions in relation to two determined factors are showed in table 2. Smallest acceptable factor loading of questions for extracted factors were considered 0.50. Indeed questions number 1 to 4 construct factor 1 and questions 5 and 6, factor 2. According to the English manuscript, factor 1 is attention deficit and factor 2 is hyperactivity.

Table.2, Factor loadings for questions in relation to extracted factors

question	Factor 1	Factor2
2	0.85	
1	0.75	
4	0.72	
3	0.72	
5		0.87
6		0.86

To endorse two factor structure of the questionnaire, confirmatory factor analysis in media of AMOS-8 were performed. Goodness of fit indexes for validation of the model are summarized in table 3.

Table.3, Goodness of fit Indexes for two factor model

	Acceptable level	Value
.normed chi-square	3>	2.7
root Mean Square Error Approximation	0.1>	0.08
comparative Fit Index	0.9<	0.97
normed Fit Index	0.9<	0.90
goodness of Fit Index	0.9<	0.96
adjusted Goodness of Fit Index	0.9<	0.94

DISCUSSION:

Adult ADHD is not a common diagnosis, but not due to low prevalence. Overlaps of symptoms with other psychiatric disorder, comorbidities like substance abuse, obsessive compulsive disorder, atypical depressions, and personality disorders, all are interacting with the diagnosis. For example impulsivity or lack of adequate attention and concentration could be a symptom of adult ADHD, but OCD, substance abuse and borderline personality disorders may also causes them. A diagnostic clue is that adult ADHD starts at childhood and continued to adulthood.

Screening of adult –ADHD using ASRS, followed by rolling out other psychiatric conditions could be a valuable strategy. Results of our study showed that translation of ASRS into Persian language has no impact on two factor structure of the questionnaire. Internal consistency of Persian ASRS was also similar to previous reports (Davari-Ashtiani et al., 2014). According to the acceptable internal consistency, ASRS could be utilized in clinical diagnosis beside clinical interview and mental status examination. Small number of questions and short required time make it easy to use in epidemiological studies.

In conclusion, Persian translation of ASRS-V1.1 has adequate internal consistency and confirmed factor structure in comparison with English manuscript.

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