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Original Article

Evaluation of psychometric properties of the Persian version of Avoidance and Fusion Questionnaire for Youth (AFQ-Y)

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Abstract

Introduction: The concept of psychological inflexibility (PI) was proposed by the acceptance and commitment therapy (ACT). Avoidance and Fusion Questionnaire for Youth (AFQ-Y) is one of the tools for measuring this factor in youth. The aim of this study is to assess the factor structure and psychometric features of the Persian version of AFQ-Y.

Materials and Methods: The cases of this study included 303 school students of Kashan, Iran who were selected through cluster sampling method during 2017. The tools used were AFQ-Y and Revised Children's Manifest Anxiety Scale (RCMAS). The factor structure of AFQ-Y was studied by exploratory and confirmatory factor analyses. Also, the convergent validity, test-retest reliability (4-week interval) and internal consistency of AFQ-Y were assessed. The statistical analysis was performed using SPSS version 19 and AMOS-22.

Results: The results of exploratory factor analysis (EFA) indicated two factors: "cognitive fusion" and "experiential avoidance". Confirmatory factor analysis (CFA) confirmed the 2-factor model (RMSEA 90% CI= 0.04-0.06). Furthermore, the convergent validity(r= 0.60, *P*< 0.001), Cronbach's alpha coefficient (α= 0.80) and test-retest reliability coefficient (r= 0.73) of this scale were also acceptable.

Conclusion: Based on the results, the Avoidance and Fusion Questionnaire for Youth is an appropriate tool with acceptable psychometric features for measuring psychological inflexibility in the youth population of Iran.

Keywords: Adolescent, Experiential avoidance, Cognitive fusion, Psychological inflexibility, Psychometric properties

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Introduction

The inefficiency of the first and second-generation therapies (behavioral therapy and cognitive-behavioral therapy) originated the development of third-generation behavioral therapies, emphasizing processes such as acceptance, mindfulness, attention, and values in the treatment of many psychological disorders (1). These therapies focus more on flexible and adaptable methods of responding to an unpleasant internal stimulus (2). The ACT (Acceptance-Commitment Therapy), developed by Steven Hayes, is more studied than other third-generation behavior therapies (3). In the ACT, it is assumed that most people find their feelings, emotions, or inner thoughts troubling, and they constantly attempt to change these internal experiences to be free of them. These attempts have proven to be ineffective and contrariwise have led to the intensification of feelings, emotions, and thoughts that the individual has so hardly tried to avoid in the first place (4). The primary purpose of ACT is to create psychological flexibility based on the person's life values, i.e., helping the patient to remove him/herself from avoidance and cognitive fusion cycle (5,6). Behavioral dysfunction can be a result of cognitive fusion and experiential avoidance. Cognitive fusion (7) is defined as "involvement with personal events", and experiential avoidance (8) as "unwillingness to experience personal events and the attempt to avoid, manage, change or controlling their frequency". Cognitive fusion and experiential avoidance are two related processes that lead to Psychological Inflexibility (PI). The studies have shown that psychological flexibility is not only associated negatively with psychological disorders (9), but it is also related to having a better lifestyle, emotional health, and job satisfaction (10,11).

Psychological flexibility plays a mediatory role in the effectiveness of adaptive coping styles on emotional and psychological health (12-14). There is significant evidence showing PI is highly related to a wide range of behavioral and psychological problems, including depression (15), anxiety (16), psychological distress (10), emotional distress in a stressful interpersonal context (17), and many other psychological disorders (9). Given the relation between PI and various mental disorders, especially emotional disorders, and the effects of these disorders on the quality of patients' lives (18), a tool is required that is capable of measuring the PI in various individuals, especially those that are exposed to various emotional disorders. One of the available and widely applied tools for measuring the psychological flexibility of adults is the Acceptance and Action Questionnaire-II (AAQ-II) that has good psychometric features (19), and it has been adjusted to include specific groups such as smokers (20), patients with pain disorder (21), and epileptic patients (22). AAQ-II is specialized for adults, and there are few tools for measuring PI in children and adolescents. However, ACT is equally applied to children and adolescents (23). Avoidance and Fusion Questionnaire for Youth (AFQ-Y) is the tool that is currently used for measuring PI in youth (24). This questionnaire was devised by Greco et al. in 2008, and its validity and reliability for the youth were determined. Studies showed that AFQ-Y is a more appropriate tool for youth when compared to AAQ-II, especially for individuals with lower literacy levels (25,26). This 17-item questionnaire was formed with AAQ as a basis designed by Hayes et al. (27). Greco et al. (24) reported one factor for it. They obtained a good internal consistency and convergent validity for AFQ-Y (24). The AFQ-Y psychometric properties have been studied in various countries. In the united states, factor analysis results showed one factor for it and reported the correlation between AFQ-Y and AAQ-II (r= 0.71), BDI (r= 0.47), and BAI (r= 0.31), which indicated the acceptable convergent validity of this questionnaire (26). In Spain, factor analysis results of this questionnaire demonstrated two factors of "experiential avoidance" and "cognitive fusion". Also, AFQ-Y had a positive correlation with depression and a negative correlation with life satisfaction (28). In Sweden, the results confirmed the single-factor model of AFQ-Y. Also, Cronbach's alpha was 0.93, and AFQ-Y correlated with AAQ-II (r= 0.80), BAI-Y (r= 0.69), and BDI-Y (r= 0.75)

(29). In the Netherlands, a three-factor model of AFQ-Y was confirmed that included "cognitive fusion", "experiential avoidance", and "inaction" factors. Also, a positive correlation between AFQ-Y total score and child anxiety were reported (30).

Considering the different results of the factor structure of this questionnaire in various countries, lack of tools for measuring PI for youth in Iran, and the importance of experiential avoidance and cognitive fusion in forming mental disorders, psychometric properties of AFQ-Y was studied in the present study for Iranian population.

Materials and Methods

The study population included 12-18 years old students of Kashan schools during 2017. According to Comfrey and Lee (31) suggestion to perform factor analysis, the sample size was calculated equal to 300 individuals. Finally 330 individuals were chosen by cluster sampling across 12 schools (6 girls' schools, 6 boys' schools) considering the possible drop rates. The inclusion criteria included the students aged 12-18 years, the Persian language, and lack of vision problems. Also, students who refused to answer or incomplete responses excluded. After obtaining the letter of consent and explaining the research process and the ethical issues, the participants answered the questions. Besides, the present study was approved by the Kashan University of Medical Sciences Research ethics committee with the grant number of IR.KAUMS.REC.1396.28. Finally 303 (159 boys and 144 girls) individuals completed the questionnaires. For assessing the retest reliability, 45 members of the sample were retested after a 4-week interval.

Research instrument

A) Avoidance and Fusion Questionnaire for Youth (AFQ-Y): This questionnaire was first developed by Greco et al. (24). AFQ-Y is a 17-item questionnaire for measuring PI in youth. This questionnaire measures two constructs: experiential avoidance and cognitive fusion. All questions are rated on a 5-point Likert scale (0= always disagree; 4= always agree). Greco et al. obtained a good internal consistency for AFQ-Y (α= 0.90). In addition, they reported the convergent validity of AFQ-Y with Multi-dimensional Anxiety Scale for Children (MASC) (r=0.58), Symptoms and Functioning Scale (SFS) (r= 0.64), Youth Quality Of Life Inventory-Revised (YQOL-R) (r= -0.39), Child Acceptance and Mindfulness Measure (CAMM) (r= -0.53), and White Bear Suppression Inventory (WBSI) (r= 0.53) (24). The psychometric features of this tool have been confirmed in the United States (26,32), Spain (28), Sweden (29), and Netherlands (30).

B) Revised Children's Manifest Anxiety Scale (RCMAS): Reynolds and Richmond first designed this scale to assess the diverse anxiety symptoms. RCMAS includes 37 items, of which 28 measure anxiety and nine others a polygraph scale that assesses the subject's wrong answers. The children are asked to answer yes/no to each item, and each item is scored either zero or one. The retest reliability of this scale with a 1-week interval (r= 0.88) and a 5-week interval (r= 0.77) was reported as satisfactory (33). In addition, one study showed a positive correlation between RCMAS and trait anxiety inventory of children (r= 0.85, P<0.001) (34). Taghavi and Alishahi studied the validity and reliability of this scale in Iranian population. They reported test-retest reliability with 3 to the 4-week interval (r= 0.67, P<0.0001) and suggested that RCMAS can discriminate between the youth with anxiety and normal children (P<0.001) (35).

In order to use the AFQ-Y in Iranian society, after the preparation of the original version of the scale, the following was done:

After securing permission from the tool manufacturer, AFQ-Y was translated by two translators fluent in English and Persian. Then, the translated versions were given to a special board of professors familiar with ACT, where they evaluated the translations, and their opinions were coordinated. The Persian version was then given to two Persian language experts to edit the vocabulary and grammar. Next, a version of the tool was sent to two individuals fluent in both English and Persian who had not seen the original version of the questionnaire to translate it to English (reverse translation). Afterward, this version was compared with the original, and its compatibility was examined.

Finally, the translated version was sent to the tool manufacturer, and he was asked to share his opinions about it. In the next step, the psychometric features of this questionnaire were assessed. The construct validity was studied via the EFA and CFA. For measuring the convergent validity, the AFQ-Y correlation with RCMAS was calculated. In order to examine the questionnaire reliability, retest (4-week interval) and internal consistency methods were applied.

Results

The participants consisted of 159 boys (52.4%) and 144 girls (47.5%), aged 12-18 years, with a mean age of 15.26 ± 1.34 years. The mean scores the AFQ-Y and the RCMAS were 31.53 ± 11.29 and 10.59 ± 5.82, respectively.

To study the construct validity and factor structure of this test, the exploratory factor analysis by principal components analysis was applied. Accordingly, KMO was 0.79, and the $\chi 2$ indicator in the Bartlett test was 47.1137 ($P<$ 0.001), showing the sample and the chosen variables adequate for performing factor analysis. Two factors were extracted by exploratory factor analysis by varimax rotation and based on Eigen values (Table 1).

Table 1. Results of the exploratory factor analysis of the AFQ-Y

Item	Factor1	Factor2
1	0.45	0.18
2	0.73	0.00
3	0.44	0.24
4	0.50	-0.04
5	0.42	0.24
6	0.17	0.68
7	0.11	0.69
8	0.20	0.67
9	0.42	0.11
10	0.53	0.06
11	0.04	0.58
12	0.47	0.18
13	0.51	0.19
14	-0.04	0.71
15	0.21	0.54
16	0.73	0.03
17	0.56	0.06
Eigen values	4.18	1.95
Factor variances (%)	19.65	16.47
Total variance (%)	36.12	

According to the results, items 1, 2, 3, 4, 5, 9, 10, 12, 13, 16, and 17 were loaded in the first factor. In the second factor, items 6, 7, 8, 11, 14, and 15 were placed. Considering the contents of items, it can be said that the first factor (11 items) measures "cognitive fusion". The second factor included six items that assess "experiential avoidance".

The results were different in some cases with Greco et al. original version, and the scale structure was changed from one factor to two factors. In order to ensure the accuracy of this structure, confirmatory factor analysis was applied (Table 2). These analyses were conducted by using IBM AMOS-22 software.

Table 2. Confirmatory factor analysis results of AFQ-Y

Fitness index	χ^2	df	χ^2/df	GFI	AGFI	CFI	RMSEA (90% CI)
Two -factor model	214.17	113	1.89	0.92	0.90	0.90	0.05 (0.04-0.06)

χ2/df: Chi-square/Degrees of freedom, *GFI:* Goodness of Fit Index, *AGFI*: Adjusted Goodness of Fit Index, *CFI*: Comparative Fit Index, *RMSEA*: Root Mean Square Error of Approximation

In this study, $\chi 2$, χ^2/df, GFI, AGFI, CFI, RMSEA indicators were used for comparing the assumed model fitting. The chi-square (χ^2/df) < 2 and GFI, AGFI, and CFI≥ 0.90 indicate the appropriate fitting of model (36,37). Among the goodness of fit indices, the Root Mean Square Error of Approximation (RMSEA) is less sensitive to the sample size, and smaller values suggest a higher model fit. For example, RMSEA≤ 0.05 indicates a good fit, 0.05≤ RMSEA≤ 0.08 suggests a relatively good fit, 0.08≤ RMSEA≤ 0.10 indicates an average fit, and it is higher than .1 shows a weak fit the model (38).

Based on what was discussed and by considering the reported results in Table 2, it can be told that the two-factor model had a desirable fit (Figure 1).

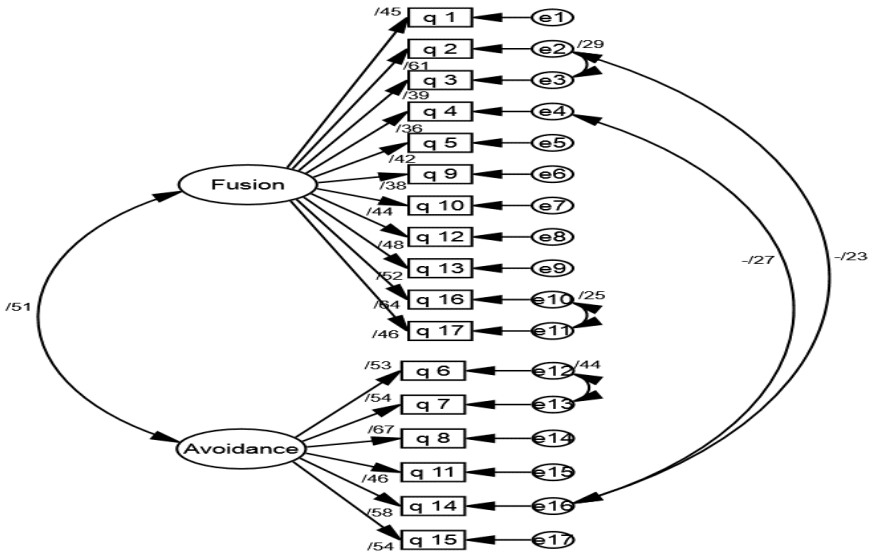

Figure 1. Bifactor model of AFQ-Y with standard coefficients

To assess the convergent validity of this scale, the Pearson correlation of this scale and its sub-scales with RCMAS total score were studied. The correlation between AFQ-Y and RCMAS was 0.50. Also, the correlation between the cognitive fusion sub-scale, experiential avoidance, and RCMAS were 0.60 and 0.16, respectively (P< 0.01). These results indicated the convergent validity of this scale.

The internal consistency by Cronbach's alpha of the total scale was 0.80, and for the cognitive fusion and experiential avoidance, factors were 0.76 and 0.74, respectively. The test-retest reliability for a 4-week interval of full scale, cognitive fusion, and experiential avoidance factors were 0.73, 0.70, and 0.62, respectively (P< 0.01).

Discussion

The present study aimed to examine the factor structure and psychometric features of a Persian version of AFQ-Y in the Iranian youth population. The results indicated two factors for this questionnaire: "cognitive fusion" and "experiential avoidance". Also, the confirmatory factor analysis showed that the two-factor model

of this scale has an excellent fit. Results showed a good RMSEA of the scale (RMSEA= 0.05, CFI= 0.90) which is similar with original version (RMSEA= 0.06; CFI= 0.90) (24). Cognitive fusion and experiential avoidance are two related processes which lead to the psychological inflexibility as a transdiagnostic process in much psychological disorder (39). According to the results of our study is the consistent theoretical pathological model of ACT and support the idea that the two interrelated concepts of defining a state of psychological inflexibility. Therefore, AFQ-Y appears to be a useful instrument to assess cognitive fusion and experiential avoidance following psychological inflexibility in future research. Nonetheless, more studies on the Iranian adolescent population can support the results of the present study.

Regarding the reliability of this scale, the results indicated a good internal consistency (α= 0.80) which is lower than the original version (α= 0.90), Sweden version (α= 0.93), and Spain version (α= 0.87). As well as the test-retest reliability was satisfactory for the total scale and had proper Pearson correlation coefficients duration a 4-week interval of was 0.73 (*P*< 0.01). Overall, our results indicated that the AFQ-Y items measure what they intend to measure consistently and reliably.

Regarding scale validity of AFQ-Y in the present study, it has been observed that the total score and its subscales correlated positively with RCMAS, which shows that if a person has more PI, cognitive fusion, and experiential avoidance, his/her anxiety will grow. This finding is consistent with previous studies (24,26,28,29) and confirms the acceptable convergent validity of this scale as Venta et al. (40) research findings showed that AFQ-Y total score was a suitable predictor for anxiety disorder among clinical youth. Furthermore, Simon and Verboon's (30) study results reported the correlation between AFQ-17 and anxiety symptoms. Furthermore, Greco et al. (24) showed a significant association between PI and anxiety symptoms in older children. Anxious children could thus benefit from targeting their IP, which is done in the ACT. Consequently, we also expect that AFQ-Y scores can predict anxiety in youth, as the results confirmed.

However, investigations reveal that psychological inflexibility is essential for mental health and behavioral effectiveness (41). It is related to higher depression, anxiety, stress, pain, and overall psychological distress for children and adolescents (42,43). Therefore, there is a critical necessity for validation and development of the child and adolescent measures that appropriately assess the construct of psychological inflexibility. Consequently, the present results are consistent with the findings of Greco et al. (24); Simon and Verboon (30). Therefore, the AFQ-Y appears to be a more appropriate and valuable assessment tool for measure cognitive fusion, experiential avoidance, and psychological inflexibility in adolescents.

The limitations to our study include the use of a non-clinical sample and the use of the limited adequate questionnaires to assess the convergent and divergent validity of the scale because of a few valid surveys in the adolescent population in Iran. Hence, it is suggested to determine the validity and reliability of this scale in subsequent studies used clinical sample adolescents, the larger sample size, and also to take advantage of more questionnaires.

Conclusion

Based on the results, Avoidance and Fusion Questionnaire for Youth has outstanding psychometric features in Iranian society to assess psychological inflexibility, experiential avoidance, and cognitive fusion features. Since access to tools for assessing psychological inflexibility in youth is limited in Iranian society, therefore, applying this scale is advised. However, it is worth mentioning that this study is conducted with the non-clinical sample, and it is proposed that future studies are conducted with clinical samples and youth with anxiety disorder and determine the cut score for the Persian version of Avoidance and Fusion Questionnaire for Youth.

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