Psychometric Properties of the Modified Persian Version of Adverse Childhood Experience Questionnaire for Athletes

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Original Article

Abstract

Introduction: The Adverse Childhood Experience (ACE) questionnaire is a self-administrable outcome tool designed to measure adverse childhood experiences. The aim of this study is to translate the ACE questionnaire into Persian and cross-culturally adapt it to athletes.

Materials and Methods: The English version of the 10-item ACE was translated into Persian and completed by a sample of 210 athletes along with Childhood Trauma Questionnaire (CTQ). Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used to evaluate the validity. Additionally, to measure reliability, Cronbach's alpha zand split-half coefficients were used. Convergent validity was also measured using Pearson's correlation coefficient.

Results: The validity of the Persian version of the CAE questionnaire was confirmed. The reliability values obtained in term of Cronbach's alpha and split-half coefficients were higher than 0.7. The correlation between ACE and CTQ was positive (r = 0.68, P < 0.001).

Conclusion: The Persian version of ACE is a reliable and valid measure in athletes.

Keywords: Childhood experience; Athletes; Validity; Reliability; Cross-cultural adaptation

Introduction

The results of various studies have shown that adverse childhood experiences (ACEs) including parental death and divorce, alcohol and drug use in the family, mental illness of family members, fights at home or with neighbors, being beaten, and sexual assault on the child (1,2), can affect his/her physical (3,4) and mental health (5,6) in adulthood and increase the likelihood of addiction (7,8), suicide (9), and sexual misbehaviors (10). Despite the negative impact of ACEs on physical and mental health in later stages of life, the story is not entirely despair. According to some studies, ACEs in some individuals may trigger stress-related

growth (SRG) (1,11,12). Focusing on positive growth, research has revealed that psychological flexibility is more common in the lives of people who have had adverse experiences in childhood and later in life (13-15).

The consequences of later life often depend on the presence or absence of protective factors early in the child's life (16). Nevertheless, the coping style of individuals who had a stressful life, for instance difficult circumstances in childhood, affects their experience leading to positive or negative consequences (17). Research evidence suggests that adverse experiences and hardships affect health and psychological outcomes in later

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life by altering genes (18,19) and brain structure and function (2,20,21).

For the first time, Felitti et al. designed and published the ACE questionnaire to measure the relationship between ACEs and health consequences in adulthood (22). This questionnaire has provided significant epidemiological evidence on the relationship between difficult childhood experiences and physical and mental illness in adulthood (22). The 10-item ACE questionnaire seeks to remind the subject of his or her exposure to psychological, physical, and sexual abuse before the age of 19, as well as the family dysfunction such as domestic violence, substance abuse, and imprisonment (22). This tool examines aspects of child abuse, including physical, psychological, and sexual abuse, physical and emotional neglect, and parental or family problems, including divorce, imprisonment, mental illness, and substance abuse. The items are answered as "yes/no" and the sum of *yes* answers indicate the amount of adverse experiences (23). Although the adverse experience score obtained from the ACEQ questionnaire indicates the number of adverse experiences and not their severity (each item indicates a type of adverse experience), investigations have discovered a relationship between the score obtained from this questionnaire and stress and various illnesses (24).

Although few psychometric studies have been conducted on the ACE questionnaire (25), since its introduction in 1998, the questionnaire has been widely used in a variety of studies for different population groups across the United States, Europe, and Asia (26,27). This scale has been able to differentiate the rate of hard experiences in different demographic subgroups. For example, the ACE questionnaire indicated higher rates of early hard experiences in homosexuals versus heterosexual populations (28). Additionally, psychometric research suggests that the scoring of the ACE questionnaire, albeit dependent on memory, remains a powerful predictor scale (25,29).

In a study performed with the collaboration between the Kaiser Permanente San Diego Medical Center, California, USA and the Centers for Disease Control and Prevention in Atlanta, Georgia, USA, a large population was assessed using the ACE questionnaire. The statistical population of this study was provided by the Kaiser Center, which provides complete and standard medical, psychological, and social health, and prevention assessments annually for more than 50,000 members in San Diego County. Two weeks after receiving the assessments, the ACE questionnaire was sent to 13494 people. The participation rate was 70%. The findings showed good reliability of this questionnaire (25). Moreover, Wrigglesworth et al. examined the psychometric properties of the ACE questionnaire on 102 patients with mental disorders, 99 students, and 100 healthy adults and concluded that the questionnaire had good internal consistency (IC) and its score was associated with low and moderate depression and anxiety (19).

The objective in this study is to determine the psychometric properties of the ACE questionnaire for professional athletes, who are considered among the prosperous individuals in any society.

Materials and Methods

This study was a psychometric study. There is a discrepancy of opinion among experts to determine the sample size for factor analysis, but for this analysis, it is suggested to include 10 participants for each item (21). Accordingly, 100 participants (the questionnaire consisted of 10 items) were sufficient for the present study. The participants of the study were 201 athletes (99 girls and 112 boys) from different sports fields (volleyball, basketball, football, martial arts, track and field, and swimming) in Isfahan, Iran, ranging in age from 18 to 22 years, who were selected from among athletes competing at the national level. After the approval of the project in the Research Council, Isfahan (Khorasgan) Branch, Islamic Azad University, with the registration number 23821402941010 and obtaining the necessary permits, the questionnaire was provided to the participants. All of them completed the informed consent to participate in the study.

Data were collected using two questionnaires.

ACE Questionnaire: This scale was first developed by Felitti et al. (22) and measures ACEs up to the age of 18 (22). 5 items are related to aspects of child abuse and 5 are related to parent or family problems (23). Higher scores indicate more adverse experiences. Previous studies have reported good reliability for the English version of the ACEs questionnaire (19,25).

Childhood Trauma Questionnaire (CTQ): This scale was designed by Bernstein et al. to assess childhood injuries (30). The CTQ is a screening tool to identify individuals with experiences of childhood abuse and neglect that can be used for

both adults and adolescents. The questionnaire measures five types of childhood abuse, including "sexual abuse, physical abuse, emotional abuse, emotional neglect, and physical neglect," and consists of 28 items, of which 25 and 3 are used to assess the main components of the questionnaire and to identify people who deny their childhood problems, respectively. In the study by Bernstein et al., the Cronbach's alpha coefficient of the questionnaire on a group of adolescents for the dimensions of emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect was reported between 0.78 to 0.95 and its concurrent validity with therapists' rating of childhood trauma was reported in the range of 0.59 to 0.78 (30). In Iran, the Cronbach's alpha coefficient of five components of this questionnaire was 0.81 to 0.98 (31).

First, the ACE questionnaire was translated into Persian and returned to English to verify its accuracy (22). This is one of the minimum requirements for intercultural adaptation of scales (32). Disputes on the translations were discussed and resolved by two Persian speakers fluent in English. The translated version of the ACE questionnaire was read to 5 athletes. They were able to discuss the items without assistance, which indicated their correct understanding (face validity) (32).

The athletes were asked to complete the Persian ACE and CTQ questionnaires (30) after signing the informed consent to participate in the study.

In the present study, Cronbach's alpha and split-half coefficients were employed to examine the reliability and confirmatory factor analysis (CFA) and exploratory factor analysis (EFA) to determine validity. Furthermore, Pearson's correlation test was used to evaluate the concurrent validity. The calculations were analyzed in SPSS (version 23, IBM Corporation, Armonk, NY, USA) and AMOS software (version 22, IBM Corporation, North Castle, New York, USA).

Results

The demographic information of the participants is presented in table 1.

In the face validity stage, item 3 of the ACE questionnaire was changed. The item read: "Has anyone who was at least 5 years older than you ever touched or hugged you or asked you to touch their body in a sexy way?" "Or did he have oral, anal, or vaginal sex with you?" The second part of the item, dealing with oral, anal, and vaginal sex, was removed for cultural reasons and the participants' stance

Table 1. Demographic characteristics of the participants

Personal characteristics		Value
Gender [n (%)]	Female	99 (49.2)
	Male	112 (50.8)
Type of sport [n (%)]	Volleyball	53 (26.3)
	Basketball	37 (18.4)
	Football	69 (34.3)
	Martial arts	24 (12.0)
	Swimming	18 (0.09)
Age [year (mean ± SD)]	Female	20.78± 2.14
	Male	21.64±2.83

SD: Standard deviation

stance in response to this phrase. To perform EFA, first the quality of the correlation matrix of the scale propositions as well as the sampling capability were examined. The value of the Bartlett's test of sphericity was 497.653 which was significant at the level of 0.001. The Kaiser-Meyer-Olkin (KMO) coefficient for this analysis was 0.815. Thus, the information in the data matrix was significant and the sample size was suitable for factor analysis.

Based on the EFA results using the principal component analysis (PCA) method and with orthogonal rotation, a factor with eigenvalue greater than one was extracted, which explained 66.71% of the total variance of the scale. The eigenvalue of this factor was obtained as 3.23 and confirmed. The results of EFA and questionnaire items are presented in table 2.

As shown in table 2, in all questions, the factor loads were higher than 0.4 and desirable. Besides, the degree of commonality or correlation of the questions was appropriate and ranged from 0.400 to 0.888. CFA was exploited to investigate the factor structure. The measurement model was assumed based on the EFA results, as presented in figure 1.

The general indices of fitness of model are given in table 3. Accordingly, the fitness indices were desirable in the model for measuring ACEs (33); so that the relative χ^2 index was 2.65, indicating that this model was acceptable. The Tucker-Lewis index (TLI) and comparative fit index (CFI) were higher than 0.9 and the parsimony comparative fit index (PCFI) was higher than 0.5. The value of root mean square error of approximation (RMSEA) as the most important overall fitness index was calculated to be 0.08, which indicated that in general, the ACE model was of a good fit. The CFA results are reported in table 4.

Table 2. Factor loads and commonalities of the Adverse Childhood Experience (ACE) questionnaire items

Item	Parts	Factor load	Commonalities
1	Did a parent or other adult in the family often use to swear to you, insult you, or make you feel stupid or humiliated? Or did they act in such a way that you were afraid of being harmed? Yes/No. If your answer is "yes", enter number 1.	0.815	0.440
2	Did a parent or other adult in the family often push you, grab you, hit you, or throw something at you? Have you ever been beaten so badly that it left a bruise on your body or you get hurt? Yes/No. If your answer is "yes" enter number 1.	0.529	0.469
3	Has anyone at least 5 years older than you ever touched or hugged or asked you to touch their body in a sexy way? Yes/No. If your answer is "yes", enter number 1.	0.933	0.877
4	Did you often feel that your family did not like or care about you? Or did you feel that your family did not care for each other, did not feel close to each other, or did not support each other? Yes/No. If your answer is "yes", enter number 1.	0.863	0.777
5	Did you often feel that you did not have enough food to eat, you had to wear dirty clothes, and that you had no one to protect you? Or were your parents so drunk that they could not take care of you or take you to the doctor if necessary? Yes/No. If your answer is "yes", enter number 1.	0.932	0.881
6	Were your parents divorced? Yes/No. If your answer is "yes", enter number 1.	0.836	0.747
7	Did your mother or stepmother use to be pushed, slapped, or thrown something at? Or did she sometimes use to be punched and kicked, bitten, or hit with a hard object? Or was she constantly beaten for several minutes or threatened with a gun and a knife? Yes/No. If your answer is "yes", enter number 1.	0.490	0.557
8	Did you live with someone who drank alcohol or used drugs? Yes/No. If your answer is "yes", enter number 1.	0.669	0.619
9	Was anyone in your family depressed or mentally ill, or did anyone in your family commit suicide? Yes/No. If your answer is "yes", enter number 1.	0.754	0.596
10	Was a member of your family imprisoned? Yes/No. If your answer is "yes", enter number 1.	0.581	0.401

Based on the data in table 4, in the measurement model to evaluate the CFA, all factor loads of the questions were higher than 0.3 and in only one question the factor load was close to 0.3, but all factor loads were significant at the level of less than 0.001. This level of significance in all items indicated the desirability of the factor load in all questions. The results of the descriptive findings of the dimensions of the Life Attitudes Scale (LAS) and two-dimensional correlation coefficients are presented in table 5.

Given the data in table 5, the mean of the eighth question (0.16) was higher than that of the other questions. Additionally, the correlation between the questions of the questionnaire was significant at the level of 0.001.

The reliability of the instrument using Cronbach's alpha and split-half coefficients was reported as 0.758 and 0.702, respectively. Accordingly, the obtained reliability values were higher than 0.7 and acceptable. The correlation between the ACEs and CTQ questionnaires was calculated to be 0.68 which was significant at the level of P < 0.001.
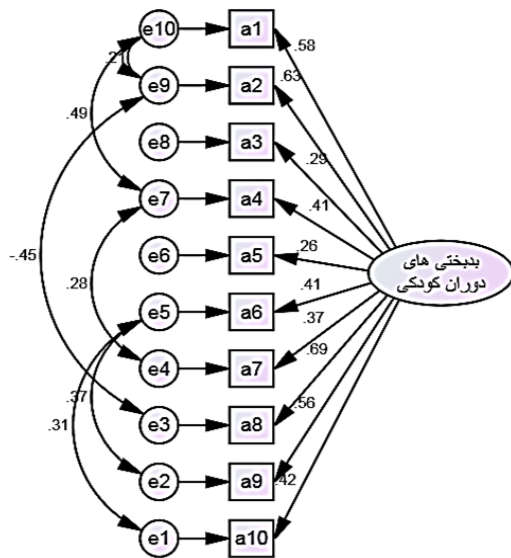
Figure 1. Confirmatory factor analysis (CFA) model of adverse childhood experiences (ACEs)

Discussion

The aim of this study was to validate the Persian version of the ACEs questionnaire. The results confirmed the validity of the questionnaire, which was consistent with the findings of previous studies claiming the good validity for the ACEs questionnaire (19,25).

The convergent validity was measured by measuring the relationship between ACE questionnaire and CTQ scale, with the results indicating a positive correlation between the two questionnaires. This finding was in line with the results of previous studies that reported a significantly positive correlation between the ACE questionnaire and the CTQ scale (19).

Based on the results of the present study, the questionnaire had a good level of IC and this

finding was similar to the results of previous studies which showed good IC of these subscales (19). Based on the validity and reliability findings, the ACE questionnaire is a suitable tool for measuring ACEs.

Table 4. Results of confirmatory factor analysis (CFA) in the items of the Adverse Childhood Experience (ACE) questionnaire

Items	Standard estimate	Critical value	P
1	0.576		
2	0.627	3.02	0.001
3	0.302	2.53	0.001
4	0.410	2.87	0.001
5	0.258	2.18	0.001
6	0.411	2.87	0.001
7	0.365	2.76	0.001
8	0.961	3.12	0.001
9	0.557	3.10	0.001
10	0.422	2.91	0.001

There are several other questionnaires for screening child abuse in a self-reporting manner, including the Child Abuse and Trauma Scale (CATS), CTQ (30), and Trauma Experience Checklist (TEC) (35). However, the ACE questionnaire has uniquely succeeded in revealing the strong association between various forms of difficult childhood experiences with poor health (various physical and behavioral diseases) in adulthood (22,36,37).

Although various studies have reported a positive correlation between the number of ACEs and health outcomes in adulthood (22), this questionnaire has been criticized. In fact, a review of the items in the ACE questionnaire suggests that many items were mixed together or categorized into many different types and sources of difficult childhood experiences. For example, item 5 actually asks 2 questions, one of which must be true to obtain the score of 1, but in the first part it talks about recalling and remembering the

Table 3. The Adverse Childhood Experience (ACE) Questionnaire measurement model fitness indices

Index		Desirable limit	Index value in model	P	Status in proposed model
Absolute	χ^2	Significance level above 0.05	76.614	0.001	Desirable according to other indices
	df	-	29.000	-	-
Adaptive	TLI	Above 0.9	0.903	-	Desirable
	CFI		0.915	-	
	PCFI	Above 0.5	0.578	-	Desirable
Parsimonious	RMSEA	Less than 0.1	0.082	-	Desirable
	χ^2 Normalized to degree of freedom (CMIN/df)	Less than 5	2.650	-	Desirable

TLI: Tucker-Lewis index; CFI: Comparative fit index; PCFI: Parsimony comparative fit index; RMSEA: Root mean square error of approximation; df: Degree of freedom

Table 5. Descriptive findings and correlation coefficients between the Adverse Childhood Experience (ACE) Questionnaire questions

Questions	Mean ± SD	1	2	3	4	5	6	7	8	9
1	0.1 ± 0.3									
2	0.1 ± 0.3	0.500*								
3	0.05 ± 0.21	0.270*	0.320*							
4	0.13 ± 0.33	0.615*	0.268*	0.303*						
5	0.01 ± 0.12	0.622*	0.233*	0.324*	0.375*					
6	0.08 ± 0.26	0.221*	0.258*	0.292*	0.285*	0.251*				
7	0.03 ± 0.16	0.267*	0.287*	0.274*	0.414*	0.244*	0.376*			
8	0.16 ± 0.39	0.383*	0.272*	0.258*	0.260*	0.247*	0.387*	0.464*		
9	0.15 ±0.36	0.327*	0.327*	0.244*	0.271*	0.263*	0.518*	0.202*	0.429*	
10	0.09 ± 0.29	0.245*	0.245*	0.324*	0.294*	0.255*	0.441*	0.273*	0.286*	0.259*

SD: Standard deviation

lack of adequate food or shelter, and in the second part, it talks about parental neglect due to drunkenness. Thus, while the ACE questionnaire is generally sensitive to reminding neglect, it lacks the ability to identify the form of neglect, its root causes (whether due to simple poverty, or parents with a genetic predisposition to addiction, or both), time of occurrence, and duration of these stressors (38).

Limitations
The subjects were selected using the convenience sampling method. This sampling method may not be desirable for a psychometric study.

Recommendations
The ACE questionnaire can be used in longitudinal studies to assess the relationship between ACEs and indicators of mental and physical performance in adulthood. Researchers and clinicians can better decide on the appropriate treatment approach based on the ACE questionnaire.

In the present study, the psychometric properties of this questionnaire for athletes were confirmed. It is suggested that in order to use this questionnaire more widely, its psychometric properties be examined for other samples as well.

Conclusion
Overall, the results of the present study revealed that the ACE questionnaire is a valid and reliable scale for assessing difficult childhood experiences.

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Authors' Contribution
Setareh Dineli: Study design and ideation, executive services, selection and screening of subjects, Providing study equipment and samples, data analysis, statistics, manuscript preparation, verification and submission of the article, correspondence; Rokhsareh Badami: Study design and ideation, executive services, selection and screening of subjects, providing study equipment and samples, data analysis, manuscript preparation, verification and submission of the article, correspondence; Zohreh Meshkati: providing study equipment and samples, manuscript preparation, verification and submission of the article, correspondence; Sahar Faeghi: providing study equipment and samples, data analysis, manuscript preparation, verification and submission of the article, correspondence.

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Conflict of Interest
There was no conflict of interest.

References
1. McLeod JD, Almazan EP. Connections between childhood and adulthood. In: Mortimer JT, Shanahan MJ, editors. Handbook of the life course. Boston, MA: Springer US; 2003. p. 391-411.

2. Heim C, Shugart M, Craighead WE, Nemeroff CB. Neurobiological and psychiatric consequences of child abuse and neglect. Dev Psychobiol 2010; 52(7): 671-90.
3. Felitti VJ. Childhood sexual abuse, depression, and family dysfunction in adult obese patients: A case control study. South Med J 1993; 86(7): 732-6.
4. Felitti VJ. Long-term medical consequences of incest, rape, and molestation. South Med J 1991; 84(3): 328-31.
5. Gould DA, Stevens NG, Ward NG, Carlin AS, Sowell HE, Gustafson B. Self-reported childhood abuse in an adult population in a primary care setting. Prevalence, correlates, and associated suicide attempts. Arch Fam Med 1994; 3(3): 252-6.
6. Van Niel C, Pachter LM, Wade R, Felitti VJ, Stein MT. Adverse events in children: predictors of adult physical and mental conditions. J Dev Behav Pediatr 2014; 35(8): 549-51.
7. Cavanaugh CE, Petras H, Martins SS. Gender-specific profiles of adverse childhood experiences, past year mental and substance use disorders, and their associations among a national sample of adults in the United States. Soc Psychiatry Psychiatr Epidemiol 2015; 50(8): 1257-66.
8. Anda RF, Croft JB, Felitti VJ, Nordenberg D, Giles WH, Williamson DF, et al. Adverse childhood experiences and smoking during adolescence and adulthood. JAMA 1999; 282(17): 1652-8.
9. Dube SR, Anda RF, Felitti VJ, Chapman DP, Williamson DF, Giles WH. Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span: findings from the Adverse Childhood Experiences Study. JAMA 2001; 286(24): 3089-96.
10. Dong M, Anda RF, Dube SR, Giles WH, Felitti VJ. The relationship of exposure to childhood sexual abuse to other forms of abuse, neglect, and household dysfunction during childhood. Child Abuse Negl 2003; 27(6): 625-39.
11. Park CL, Fenster JR. Stress-related growth: Predictors of occurrence and correlates with psychological adjustment. J Soc Clin Psychol 2004; 23(2): 195-215.
12. Tedeschi RG, Calhoun LG. Posttraumatic growth: Conceptual foundations and empirical evidence. Psychol Inq 2004; 15(1): 1-18.
13. Masten AS. Ordinary magic. Resilience processes in development. Am Psychol 2001; 56(3): 227-38.
14. Bonanno GA, Papa A, O'Neill K. Loss and human resilience. Appl Prev Psychol 2001; 10(3): 193-206.
15. Bonanno GA. Loss, trauma, and human resilience: have we underestimated the human capacity to thrive after extremely aversive events? Am Psychol 2004; 59(1): 20-8.
16. Fraser MW, Kirby LD, Smokowski PR. Risk and resilience in childhood. In: Fraser MW, editor. Risk and resilience in childhood: An ecological perspective. Washington, DC: National Association of Social Workers; 2004. p. 13-66.
17. Aldwin CM, Levenson MR. Posttraumatic growth: A developmental perspective. Psychol Inq 2004; 15(1): 19-22.
18. Uher R, McGuffin P. The moderation by the serotonin transporter gene of environmental adversity in the etiology of depression: 2009 update. Mol Psychiatry 2010; 15(1): 18-22.
19. Wrigglesworth J, Ancelin ML, Ritchie K, Ryan J. Association between DNA methylation of the KITLG gene and cortisol levels under stress: A replication study. Stress 2019; 22(1): 162-8.
20. Benedetti F, Poletti S, Radaelli D, Pozzi E, Giacosa C, Ruffini C, et al. Caudate gray matter volume in obsessive-compulsive disorder is influenced by adverse childhood experiences and ongoing drug treatment. J Clin Psychopharmacol 2012; 32(4): 544-7.
21. Teicher MH, Anderson CM, Polcari A. Childhood maltreatment is associated with reduced volume in the hippocampal subfields CA3, dentate gyrus, and subiculum. Proc Natl Acad Sci USA 2012; 109(9): E563-E572.
22. Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, Edwards V, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. Am J Prev Med 1998; 14(4): 245-58.
23. Finkelhor D, Shattuck A, Turner H, Hamby S. A revised inventory of Adverse Childhood Experiences. Child Abuse Negl 2015; 48: 13-21.
24. Murphy A, Steele M, Dube SR, Bate J, Bonuck K, Meissner P, et al. Adverse Childhood Experiences (ACEs) questionnaire and Adult Attachment Interview (AAI): Implications for parent child relationships. Child Abuse Negl 2014; 38(2): 224-33.
25. Dube SR, Williamson DF, Thompson T, Felitti VJ, Anda RF. Assessing the reliability of retrospective reports of adverse childhood experiences among adult HMO members attending a primary care clinic. Child Abuse Negl 2004; 28(7): 729-37.
26. Ramiro LS, Madrid BJ, Brown DW. Adverse childhood experiences (ACE) and health-risk behaviors among adults in a developing country setting. Child Abuse Negl 2010; 34(11): 842-55.
27. Matsuura N, Hashimoto T, Toichi M. Correlations among self-esteem, aggression, adverse childhood experiences and depression in inmates of a female juvenile correctional facility in Japan. Psychiatry Clin Neurosci 2009; 63(4): 478-85.
28. Andersen JP, Blosnich J. Disparities in adverse childhood experiences among sexual minority and heterosexual adults: results from a multi-state probability-based sample. PLoS One 2013; 8(1): e54691.
29. Hardt J, Vellaisamy P, Schoon I. Sequelae of prospective versus retrospective reports of adverse childhood experiences. Psychol Rep 2010; 107(2): 425-40.
30. Bernstein DP, Stein JA, Newcomb MD, Walker E, Pogge D, Ahluvalia T, et al. Development and validation of a brief screening version of the Childhood Trauma Questionnaire. Child Abuse Negl 2003; 27(2): 169-90.
31. Ebrahimi H, Dejkam M, Seghatoleslam T. Childhood traumas and suicide attempt in adulthood. Iran J Psychiatry Clin Psychol 2014; 19(4): 275-82. [In Persian].
32. Zang Y, Hunt NC, Cox T, Joseph S. Short form of the Changes in Outlook Questionnaire: Translation and validation of the Chinese version. Health Qual Life Outcomes 2012; 10(1): 41.

33. Gefen D, Straub D, Boudreau MC. Structural equation modeling and regression: Guidelines for research practice. Commun Assoc Inf Syst 2000; 4(1): 7.
34. Sanders B, Becker-Lausen E. The measurement of psychological maltreatment: Early data on the Child Abuse and Trauma Scale. Child Abuse Negl 1995; 19(3): 315-23.
35. Nijenhuis ERS, Van der Hart O, Kruger K. The psychometric characteristics of the Traumatic Experiences Checklist (TEC): First findings among psychiatric outpatients. Clin Psychol Psychother 2002; 9(3): 200-10.
36. Hughes K, Bellis MA, Hardcastle KA, Sethi D, Butchart A, Mikton C, et al. The effect of multiple adverse childhood experiences on health: A systematic review and meta-analysis. Lancet Public Health 2017; 2(8): e356-e366.
37. Wilkes TC, Guyn L, Li B, Lu M, Cawthorpe D. Association of child and adolescent psychiatric disorders with somatic or biomedical diagnoses: Do population-based utilization study results support the adverse childhood experiences study? Perm J 2012; 16(2): 23-6.
38. Zarse EM, Neff MR, Yoder R, Hulvershorn L, Chambers JE, Chambers RA. The adverse childhood experiences questionnaire: Two decades of research on childhood trauma as a primary cause of adult mental illness, addiction, and medical diseases. Cogent Med 2019; 6(1): 1581447.