Original Article

Effectiveness of acceptance and commitment therapy on the anger rumination, hostile attribution and aggression in immigrant children

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Received: 19 June 2021 **Accepted:** 10 July 2021 **published:** 11 July 2021

Abstract

Background: Immigration is one of the social determinants of health. It affects the mental health very seriously. The present study was aimed to investigating the effectiveness of acceptance and commitment therapy on anger rumination, hostile attribution bias, and aggression of immigrant children.

Method: The present study was conducted through a pretest-posttest quasi-experimental method with a control group. It was done on a 24-subject sample of immigrant children selected by targeted sampling and randomly divided into two experimental and control groups. Measurement tools were the anger rumination scale, the hostile attribution scale, and Aggression Questionnaire of Buss and Perry. The experimental group then received acceptance and commitment therapy in eight 90-min sessions while the control group received no treatment. After holding the sessions, the experimental and control groups again completed the three questionnaires as post-test; and data were analyzed using multivariate analysis of covariance (MANCOVA) and SPSS software version 24.

Results: In the posttest, acceptance and commitment therapy reduced the anger rumination, hostile attribution bias and aggression variables of immigrant children in the experimental group compared to the control group ($p < 0.05$).

Conclusion: It could be concluded that acceptance and commitment treatment is effective on anger rumination, hostile attribution bias, and aggression of immigrant children.

Keywords: Acceptance and Commitment Therapy; Aggression; Anger Management Therapy; Mental Health Centers; Violence.

Cite this article as: Garivani G, Taheri E, Alizadeh Z. Effectiveness of acceptance and commitment therapy on the anger rumination, hostile attribution and aggression in immigrant children. *Soc Determinants Health.* 2021;7(1):1-9 DOI: http://dx.doi.org/10.22037/sdh.v7i1.35232

Introduction

Iran is one of the most important countries welcoming Afghan immigrants and refugees. Afghanistan is one of the countries that its unfavorable socio-economic situation and long wars have made it one of the largest first immigrant countries (1). Since the Soviet Union invasion, the war in Afghanistan has forced more than six million people to flee across borders to Iran or Pakistan. Based on the published reports, the number of Afghan immigrants living in Iranian cities has been estimated at 1009354 people, including 190765 families and 113201 singles. Immigrants live mainly in Tehran (40%), Isfahan (16%), Fars (10%), Sistan and Baluchestan (9%), Qom (8%), Kerman (6%) and Khorasan (3%). However,

concerning the Khorasan province, it should be stated that Mashhad in this province is ranked second in terms of the number of immigrant families (2).

Many immigrants move from their homeland with the hope of improving their life (3), but unfortunately dimensions of social harms are increasingly growing and bring problems for the community (4). Anger, aggression and hostility of children are among the social harms that are increasing.

Among the various issues related to the phenomenon of immigration as a social determinant of health, emotions of immigrants are a new issue for social researchers. Immigrants' live experience and the migration process provide a rich and complex field for social research on emotions, including development of emotional life in the displacement during time and space, differences in emotions in the homeland and foreign country, the impact of immigration on emotional culture and change in ethnic and social boundaries, and the intertwined ways in which emotions are disintegrate or reincarnate in response to the trajectory of the immigrant's life (5).

Aggression is one of the most serious social problems in the world, resulting in harm to oneself or others (6) and is one of the most complex emotions in response to situational stimuli and causes physiological changes such as increased blood pressure, heart rate and adrenaline levels and causes a variety of physical and mental problems that in turn can affect clinical functioning (7, 8).

considering aggression as a complex social behavior with many manifestations and causes that can be physical (slapping), verbal (shouting), direct (retaliation), and or indirect with the intention of harming a person's reputation and fame. Although aggressive behavior can be identified based on behavioral and facial manifestations, types of aggression such as reactive, active, hostile, instrumental, internal and external (9).

In this regard, some theorists, believe that the role of hostile attribution bias has a particular importance in the occurrence of aggression. Also, cognitive mechanisms of aggression have been studied many times, and hostile attributions have Hostile attribution bias refers to a tendency to interpret the concept of others as a sign of social conditions that are ambiguous and hostile, without a relationship between them (10). In some studies, stated that people who misinterpret a person's behavior are more likely to react to themselves and others. They also tend to activate attributional and hostile schemes in their long-term memory, so long-term attention to bitter events is a key characteristic of anger rumination (11, 12).

Anger rumination is one of the structures related to anger. If we consider anger as an emotion, anger rumination is thinking about that emotion (13). Anger rumination as a repetitive and passive thinking that is manifested during the experience of anger and is responsible for its continuation and increase affects negative internal and external events (14). People with anger rumination often experience anger in the form of mental imagery with all the aggressive and imaginative details of revenge (15). A study in Ireland supported the hypotheses that tendency for anger rumination is positively related to levels of aggression (16). Given what was stated, it can be stated that anger rumination is involved in occurrence of aggressive behaviors, and hostile attribution bias is one of the most important aggressive reactions. In this regard, several interventions including social and psychodrama skills for have been used for immigrant children. One of the other treatments that can be considered in this regard is acceptance and commitment therapy. been identified as an important cognitive factor in development of aggression (17).

Acceptance and commitment therapy defined as an effective behavioral therapy approach based on communicative framework theory, which sees human psychological problems primarily as

psychological inflexibility created by cognitive fusion and experimental avoidance that has the favorable outcome of psychological inflexibility (18).

In other words, it is an opportunity for clients to maintain or change their behavior to achieve valuable goals and outcomes (19). Also, this approach has six basic principles of cognitive defusion, acceptance, contact and connecting with the present moment, observing self, values clarification, and committed action. Instead of trying to change the frequency or intensity of unwanted and stressful psychological events (such as thoughts, feelings, and physical senses), this approach tries to change the way people relate to unwanted private experiences and help them to use behaviors that are consistent with their values and are unrelated to their internally stressful experiences. This approach uses experimental exercises and metaphors that go beyond linguistic limitations (20).

Many studies have been conducted on the effectiveness of acceptance and commitment therapy and their results show that this method can be used for a wide range of clinical problems, including anxiety disorders (e.g., generalized anxiety disorder, social anxiety and panic), post-traumatic fear, chronic pain, depression, substance use, and psychotic symptoms (21). Hence, there is no research available on the effectiveness of acceptance and commitment therapy in reducing anger, hostility, and aggression in children immigrating to Iran. Also, due to the long history of Afghan migration to Iran and a significant number of them and the limitations and problems that this minority group faces in full compliance with the destination community and the effectiveness of acceptance and commitment treatment on a wide range of clinical problems, it seems that each of these variables has a separate role in their quality of life.

Given what was stated above, the aim of this study was to assess the effectiveness of acceptance and commitment treatment on anger rumination, hostile attributions and aggression of immigrant children.

Methods

Participants

This study was an applied and quasi-experimental study with a pretest and posttest design with a control group. The statistical population of the study was all immigrant children aged 12 to 18 years in Mashhad, Iran. In the present study, 24 people were purposefully selected based on clinical interview, inclusion criteria and fulfillment of research conditions. Inclusion criteria of the study were being immigrant, age between 12 and 18 years, absence of clinical disorders based on clinical interview, not receiving any psychological treatment, willingness to participate in the study and signing a written consent.

Instrument

A. Anger rumination scale: Sukhodolskys Anger Rumination Scale is a 19-item test that measures the tendency to think about current angry situations and recall angry past experiences. A higher score indicates more anger rumination in this instrument. Test questions measure four subscales of anger rumination including angry memories, thoughts of revenge, angry after-thoughts, and understanding of causes in four-point Likert scale ranging from a score of one (very low) to a score of four (very high). In their study, Cronbach's alpha coefficient of 0.93 was obtained for internal consistency and test-retest reliability with one-week interval was reported at 0.77. consistency coefficients of the subscales of this test reported from 68% to 85% (17). Cronbach's alpha coefficient reported for the total scale and its subscales, including angry after-thoughts, thoughts of revenge, angry memories and understanding the causes at 0.97, 0.95, 0.96, 0.97 and 0.97, respectively. They also showed that this questionnaire has good content, convergent and discriminative validity (12).

B) Aggression Questionnaire: Aggression Questionnaire is a self-report tool and includes 29 items and four subscales of physical aggression, verbal aggression, anger and hostility (22). Subjects answer to each of the items on a five-point Likert scale ranging from quite similar to me 5), somewhat similar to me 4), neither similar to me nor not similar to me 3), somewhat similar to me 2) and not very much similar to me 1), they answer.

Two items of 9 and 12 are scored in reverse. The aggression questionnaire has acceptable validity and reliability. The results of test-retest coefficient for the four scales were obtained at 80% to 72% and the correlation among four subscales was obtained at 38% to 49%. By examining the psychometric properties of this questionnaire, its four-factor structure was confirmed. Also, the validity of this test was reported at 0.78 by using test-retest method (23).

C) Hostile attribution questionnaire: The Hostile Attribution Questionnaire was developed to measure hostile attribution. It includes 20 items scored on 5-point Likert scale (strongly disagree to strongly agree) (20). To prevent the uniformity of the subjects' test answers, some of the questions in this questionnaire are scored in reverse. To assess the validity of this

Table 1. ACT 8-session protocol

Session	Descriptions and goals of therapy
Session 1	Welcoming and familiarizing the group members with the therapist and each other, establishing communication with the group members, explaining the group's goals and rules, including not being absent, attending sessions on time, doing assignments, stating the principle of confidentiality and mutual respect, general description of the psychological approach
Session 2	Creating insights in members about the problem and challenging control, introducing tendency as another answer, assignments, preparing a list of ways to control problems and examining their advantages and disadvantages.
Session 3	Reviewing previous session assignments, introduction and application of cognitive fault techniques, intervention in the performance of problematic language chains, assignment, writing troublesome thoughts and accompanying them, discovering and examining their effects on mood of people.
Session 4	Assignment and reviewing of the previous session, application of mind-awareness techniques, withdrawal from mind modeling, learning to see inner experiences as a process, assignment, applying mindfulness exercises outside of therapy sessions and in everyday affairs of life.
Session 5	Assignment and reviewing of the previous session, observing self as a context, weakening self-concept and expressing self as an observer. Assignment, performing exercises of observing self and recording the cases in which students have succeeded in observing and not evaluating experiences and emotions.
Session 6	Reviewing the assignments of previous session, introducing the concept of value and identifying the life values of the members and measuring the values based on their importance. Assignment, discovering the practical values of life in different areas and preparing a list of barriers to progress in the realization of values.
Session 7	Reviewing of previous session assignments, providing practical solutions to remove barriers to values, understanding the nature of desire and commitment, determine patterns of action appropriate to values, assignment, report on the pursuit of values and think about the achievements of the sessions.
Session 8	Summarize the concepts reviewed during the sessions, asking members to explain their achievements to the group.

questionnaire, explanatory and confirmatory factor analysis were used and the results of his research showed that all 20 items of this questionnaire have a significant factor load on an underlying factor (23). To assess the reliability of the questionnaire, the test-retest method used and the results showed a positive and significant correlation of 0.79 between the two stages of test (24).

Procedure

After selecting the sample based on the mentioned criteria, the aim of research was first explained for the subjects and the data of this research were collected through a questionnaire. First, volunteers were screened to participate in the study using a clinical interview based on inclusion criteria. To collect statistical data of the research, 24 people were selected as the sample group and randomly assigned to the experimental and control groups and three questionnaires were completed for them. Then, the experimental group received acceptance and commitment treatment for 8 sessions. It should be noted that the control group was on the waiting list during this period and at the end of the eighth session, the questionnaires were completed again by experimental and control groups (Table 1). The structure of sessions is based on an 8-session protocol adopted from the step-by-step self-study book of Acceptance and Commitment Therapy (ACT) (25).

Results

In both experiment and control group 66.7 percent of participants were male and 33.3 percent were female.

Table 2 and Table 3 presents the mean and standard deviation of the participants' scores in the research variables and its subscales in pre-test and post-test.

Since the significance level in the interaction between anger rumination pretest and group is equal to 0.255 and is greater than 0.05, the assumption of

Table 2. Mean and standard deviation of research variables in pre-test and post-test

Variable	group	stage	n	mean	SD
Total scale of anger rumination	Experimental	pretest	12	47.33	7.74
		posttest	12	37.50	3.99
	Control	pretest	12	43.75	6.61
		posttest	12	45.08	8.11
Total scale of aggression	Experimental	pretest	12	25.86	84.6
		posttest	12	92.75	30.6
	Control	pretest	12	75.82	02.11
		posttest	12	08.89	30.9
Total scale of hostile attribution	Experimental	pretest	12	50.75	77.22
		posttest	12	83.53	14.8
	Control	pretest	12	67.75	39.6
		posttest	12	58.72	05.6

SD: Standard Deviation

Table 3. Homogeneity of regression line slope for variables of anger rumination, aggression, hostile attributions

Source of variations	Dependent variable	Sum of squares	df	Mean of squares	F statistic	sig
Interaction of group and anger, aggression and hostile attribution pretest	Anger rumination	35.107	2	17.553	1.484	0.255
	Aggression	25.385	2	12.692	0.343	0.714
	Hostile attribution	20.062	2	10.031	0.181	0.836

Df: degree of freedom

Table 4. Analyzing homogeneity of variance-covariance matrix of anger rumination, aggression, hostile attributions

Variable	Box's test	F-statistic	Df 1	Df 2	sig
anger rumination, aggression, hostile attributions	8.73	1.238	6.00	72	0.283

Table 5. Analyzing homogeneity of variance of groups in anger rumination, aggression, hostile attribution

Levene's test dependent variable	F-statistic	Df1	Df2	sig
Anger rumination	0.660	1	22	0.425
Aggression	6.025	1	22	0.022
hostile attribution	0.055	1	22	0.816

Table 6. Wilks lambda test to determine the effect of group variable on variables of anger rumination variables, aggression and hostile attribution

Effect	tests	value	F-statistic	Df1	Df2	sig	Eta-squared
Group	Pillai's Trace	0.793	21.773	3.000	17.000	<0.001	0.793
	Wilks Lambda	0.207	21.773	3.000	17.000	<0.001	0.793
	Hotelling's Trace	3.842	21.773	3.000	17.000	<0.001	0.793
	Roy's Largest Root	3.842	21.773	3.000	17.000	<0.001	0.793

homogeneity of regression line slope is equal for both control and experimental groups and since the significance level in the interaction between the aggression pretest and group is equal to 0.714 and is greater than 0.05, the assumption of homogeneity of regression line slope is equal for both control and experimental groups, and since the significance level in the interaction between the hostile attribution pretest and the group is equal to 0.836 and is greater than 0.05, the assumption of equality of regression line slope is equal for both control and experimental groups (Table 4).

Since the significance level of Box's test (0.283) is greater than 0.05, the assumption of homogeneity of the covariance matrix is confirmed (Table 5).

Since the significance level in Levene's test in the anger rumination variable is 0.425 and is greater than 0.05, the assumption of homogeneity of variance is confirmed and since the significance level in the Levene's test in the aggression variable is 0.022 and is less than 0.05, the assumption of homogeneity of variance is not confirmed and since the significance level in the Levene's test in the hostile attribution variable is 0.816 and greater than 0.05, the assumption of homogeneity of variance is confirmed.

The multivariate Wilks lambda test was used to determine the effect of group on the variables of anger rumination, aggression and hostile attribution (Table 6).

Wilkes lambda test showed that the general effect of the group was significant ($F=21.773$, $P<0.001$), so there was a significant difference between the control and experimental groups in at least one of the variables of anger remuneration, aggression and hostile attribution.

Discussion

The results of the present study showed that acceptance and commitment therapy had a significant effect on anger rumination, hostility and aggression in the experimental group compared to the control group. In other words, the results suggest that this therapy reduced the mean scores of anger rumination, hostile attribution and aggression of immigrant children.

However, no research was found to be consistent or inconsistent with results of the present study but, the they are in line with those of previous studies conducted on other types of therapies (such as cognitive-behavioral therapy, resilience training, etc.) showed that acceptance and commitment therapy have a significant effect on reducing anger rumination, aggression, and anger attribution.

Also, similar to previous studies that have shown acceptance and commitment therapy has a significant effect on reducing aggression (26) and increasing a number of variables including flexibility, resilience, psychological well-being, quality of life, the results of a study showed that hostile attribution bias in aggressive behaviors has a significant effect on behavioral problems and maternal anxiety (27) In explaining the above results, it can be stated that people with anger rumination tend to focus on mood-related thoughts during angry events. Thus, it can be assumed that people with anger rumination often experience anger as a mental image with all the aggressive details related to revenge. Thus, aggressive behavior in children, when they face a barrier in achieving their goal and cannot easily eliminate it, they show the behaviors in the form of harassment of others, fighting with peers, disturbing the environment, destruction of other objects and equipment. It also causes physiological changes such as high blood pressure, heart rate and adrenaline levels and causes a variety of physical and mental problems (28) and is seen in different reactive, active, hostile, instrumental, internal and external forms.

Hostile attribution is recognized as an important cognitive factor in the development of aggression. Hostile attribution is viewed as a tendency to be hostile to behavior of others even when the nature of social status is ambiguous and harmless (28). In explaining these results, it can be stated that the reason for success of acceptance and commitment therapy in treatment of different types of clinical disorders as well as different groups of people is that this treatment does not seek to change the intellectual content, but is a behavioral therapy that focuses on accepting beliefs versus challenge with them, mindfulness, cognitive fault, or description of meaningless thoughts and feelings, values-based life, personal spirituality, and more flexible ways of responding to inner unpleasant stimuli. This treatment helps the client to achieve a more valuable and satisfying life by increasing cognitive flexibility rather than simply focusing on cognitive reconstruction. Acceptance and commitment therapy leads to psychological resilience. In this approach, psychological resilience increases the ability of clients to relate to their experiences at the present and to act in a way that is consistent with the selected values (18). Hence, acceptance and commitment therapy uses acceptance and mindfulness processes and commitment and behavior change processes to create psychological resilience.

This therapeutic approach helped immigrant children to increase contact with the present and to accept thoughts, feelings, values, self-observation related to aggression and anger rumination such as pessimistic evaluation of themselves and others, wandering in the world of negative thoughts on the past instead of trying to control or avoid it. In this method, clients learned the skills to identify and observe their unpleasant thoughts and feelings, and use metaphors and exercises, experience the costs associated with their past attempts to control and manage anger rumination, aggression, and hostile attributions. They also learned to give up any unnecessary attempts to change the form or frequency of unwanted inner experiences such as thoughts, memories, emotions, and bodily sensations, leading to reduced levels of aggression, anger rumination, and hostile attributions and psychological distortions. ACT also helped the clients with techniques such as cognitive fault to learn interacting or relating to thoughts, feelings, and bodily sensations in the present and in flexible

ways and without setting new rigid rules. In addition, they practiced liberation from thoughts, feelings, and behaviors, and see themselves as separate from their problems. Finally, therapists help them identify their values and practice the behaviors that serve those values. In other words, they committed themselves to act in a way that is consistent with their selected values (11,18). In general, all principles and processes in treatment lead to a reduction in efforts to avoid external thoughts and situations such as aggression, a reduction in cognitive errors such as anger rumination, as well as hostile thoughts and feelings towards life goals and values, and it increases commitment and achievement of goals consistent with the selected values, factors that increase the psychological resilience of immigrant children and thus reduce their anger, aggression and hostile attribution.

Authors' contributions

Study concept and design: GG, ET; Data gathering: GG, ET, ZA; Data analysis: GG; ET; Writing manuscript: GG, ET, ZA; Revise manuscript: GG, ET, ZA; Approve manuscript: GG, ET, ZA**.**

Conflict of interest

None declared.

Source(s) of support

No financial support

Informed Consent

written informed consent was obtained.

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