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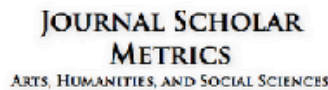
Effectiveness of ACT Group Therapy, DNA-V Model on Emotion Regulation, Social and Academic Skills of Adolescents

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ABSTRACT

The most dramatic change in an adolescent's life is the emotional change. They will suffer socially and academically without regulation. The purpose of this study was to investigate the effects of Acceptance and Commitment Therapy (ACT) group therapy on adolescents' emotions, interpersonal skills, and academic performance. According to research, low-and middle-income families have a higher rate of mental disorders in adolescents. A total of 122 participants were selected from low-, middle-, and high-income families. Randomly, the participants were divided into two groups: Control and Intervention. Ten sessions of ACT group therapy were performed for intervention group. The results showed that ACT group therapy had a significant effect on emotion regulation skills of adolescents. The results of this study showed that no statistical changes were seen in the control group but in the treatment group an improvement in social and academic skills and emotion regulation can be seen in participants from all social strata. This study has shown that the treatment based on ACT was effective in improving social and academic skills, and especially on emotion regulation in adolescents.
Key words: academic skills, ACT group therapy, adolescents, emotion regulation skills, social skills.

Novelty and Significance

What is already known about the topic?

- Current research has shown the importance of formal and informal training of social skills, emotion regulation skills and academic skills to prevent social harms.
- ACT-based training and interventions for adolescents has improved their performance in various areas including social intelligence, problem solving, decision making, adaptability and creativity.

What this paper adds?

- This study investigated the effectiveness of adolescent ACT therapy group intervention on emotion regulation skills, social skills, and academic skills.
- The results of this study have shown therapy based on acceptance and commitment has a significant effect on the regulation of emotions in adolescents.

Adolescence is a complex concept and includes various meanings. Its definition is between the ages of 10 and 19, but due to the changes that have taken place over the years, this age has continued until the 20s. A broad and accurate definition of adolescence is essential for treatment centers and necessary services and is important for the empowerment of the adolescent (Sawyer, Azzopardi, Wickremarathne, & Patton, 2018). However, researchers have found that only half of the adolescents who have been diagnosed with psychological disorders have received proper help (Foster, 2020). Research

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has shown that the statistics of mental disorders are higher in low- and middle-income families. Moreover, people's definition of their social class has a significant impact on determining the identity of an adolescent (Michelson *et alia*, 2020). The structure of the brain undergoes a complete transformation during this period, and this causes their behavior to change. For example, cognitive processing becomes complicated in adolescents and the lack of emotion regulation affects their decisions, dependence on peers, behavior and well-being (Crone & Dahl, 2012). In order to moderate positive and negative emotions it is necessary to have emotional regulation skills (De Berardis, Fornaro, Orsolini, Ventriglio, Vellante, & Di Giannantonio, 2020).

Emotion regulation can be defined as how a person can strengthen, tolerate or eliminate their emotions in line with their objectives (McRae & Gross, 2020). Emotion regulation can enable a person to resist necessary impulses and pursue long-term goals. But on the other hand, many evidences also show that when a person experiences immediate distress, emotion regulation decreases (Tice, Bratslavsky, & Baumeister, 2001). Emotion regulation is the ability to monitor, evaluate and modify emotional reactions. Evidence suggests that emotion regulation plays a causal role in the development of almost all mental illnesses, especially mood disorders, anxiety, drug use, eating, and personality (Burckhardt, Manicavasagar, Batterham, & Hadzi-Pavlovic, 2016). Emotion regulation strategies are: (a) "Cognitive Reappraisal" means reconsidering the emotion that attacks the person in a short period of time and (b) "Expressive Suppression", a strategy by which the person doesn't allow their feelings or mental experience to emerge (Schweizer, Gotlib, & Blakemore, 2020). These two factors are related to numerous psychological consequences such as self-esteem, life satisfaction, risk taking, problem solving, avoidance and positive social relations (Verzeletti, Zammuner, Galli, & Agnoli, 2016).

Research has shown that emotion regulation does not only refer to negative emotions as it also focuses on positive emotions (Gullone & Taffe, 2012). Emotion regulation balances positive and negative emotions. If negative emotions are not balanced, they cause antisocial behavior in adolescents. In order to prevent antisocial behaviors in adolescents, social skills training is necessary (Beelmann & Lösel, 2021). Those who have high social skills can manage their emotions better (De Berardis *et alia*, 2020). Recent studies have shown that in addition to the development of interpersonal skills, social skills training also helps regulate emotions in adolescents. Adolescents who have low social skills are not liked by their peers, and considering that acceptance into the peer group is of great importance in this age, if someone has poor social skills, they will not be accepted by the peer group, and this causes more isolation and weaker social skills (de Mooij, Fekkes, Scholte, & Overbeek, 2020).

In this regard, current research mentions the importance of formal and informal training of social skills, emotion regulation skills and academic skills to prevent social harms (Asensio-Ramon et alia, 2020). Sometimes, high expectations that students have of themselves and the failures they have encountered during their school life leads to behavioral and even academic problems. Many researches that have been done on students have revealed high levels of stress and mental health problems among this group (Hyun, Quinn, Madon, & Lustig, 2006). Many factors contribute to graduate student distress, such as the amount of school activity, financial problems, and academic performance. One of the things that should be considered in academic skills and performance is study skills. If a person improves their study skills, their academic performance will naturally increase, and as a result, the increase in academic skills leads to an increase in self-confidence and an improvement in their mental health (Paliliunas, Belisle, &

Dixon, 2018). It can be said that study skills include the amount of study that the student engages in regular study activities with appropriate study techniques (Dortuo, 2020). Good study skills make learners perform better in their academic performance (Akporehwe & Onwioduokit, 2010). Therefore, learning academic skills is necessary for students to successfully complete their education, create a job, and be able to have lifelong learnings and a job market (Müller, 2021).

One of the trainings that has led to the improvement of the academic performance quality during recent interventions is the treatment training based on acceptance and commitment (Paliliunas *et alia*, 2018). Acceptance and Commitment Therapy (ACT) is a form of psychotherapy developed in the late 20th century (Hayes, Strosahl, Wilson, 2011). ACT therapy is one of the third wave behavioral therapies and directly affects the acceptance of emotions and performance (Harris, 2019). ACT includes mindfulness, acceptance and behavior modification techniques, and its overall goal is to increase psychological flexibility, which helps to increase a person's ability to engage in adaptive behavior (Thompson, Destree, Albertella, & Fontenelle, 2021). ACT-based training and interventions for adolescents during informal trainings has left a positive impact and improved their performance in various areas including social intelligence, problem solving, decision making, adaptability and creativity (Asensio Ramón *et alia*, 2020).

Nevertheless, treatment based on acceptance and commitment for adults is different from treatment for adolescents (Szafran, Czupała, & Hayes, 2021). There are three basic foundations in the adolescent ACT approach namely, self-noticer, self-advisor, and self-discoverer whereas all three of them depend on the values of the adolescent. It should be noted that few studies have dealt with treatment based on research and special commitment of adolescents. For instance, (Makinde, Adeyinka, & Olusakin, 2021) concluded that ACT and social skills training significantly reduced depression in adolescents. In other study, Nasution, Sutatminingsih, and Yusuf (2019) conducted one intervention with seven adolescents from an orphanage, finding that ACT therapy did not have a significant effect on increasing the emotion regulation skills of adolescents who were victims of violence. On the other hand, Paliliunas et alia (2018) found the effectiveness of ACT to be very effective in terms of academic performance and psychological flexibility. Additionally, Burckhardt *et alia* (2016) concluded that ACT training has significantly reduced stress, anxiety and depression in adolescents; however, there was no studies that investigated the effectiveness of ACT specially for adolescents on the variables of emotion regulation skills, social skills and academic skills. Therefore, because the influence of adolescents from the peer group is very high. Because adolescents are highly influenced by their peers, it is necessary to conduct studies over the effectiveness of the adolescent-specific ACT on emotion regulation skills, social skills, and academic skills. As it was mentioned, due to the fact that the social class of adolescents has a significant impact on their psychological problems and self-concept, we examined this in high-, middle-, and low-income families.

METHOD

Participants

A sample of adolescents of high-, middle-, and low-income families were select using a stratified sampling method in order to be a sample representative of the entire society. In the next step, the available groups were randomly assigned to a condition of the study. In order to reach these objective visits were made to educational and

treatment centers available in the city of Isfahan (Iran). One of the private schools of Isfahan city was selected as a representative for the high-income families, and one of the classes was randomly included in the sample group. Then, one of the educational centers, in the geographically low-income neighborhood of the city was chosen as a representative for low-income families. To select adolescents from the middle level of society, an institution in the middle-income areas of the city was chosen. A total of 150 adolescents (125 females) were selected to participate in this study Among them, 18 participants were excluded because they did not meet the inclusion criteria (3), or because they declined to participate (15). The rest of the participants (N= 132) were randomly placed into two groups of Control and Treatment (n= 66 in each group). Ten participants dropped out, five from the Control group and five from the Treatment group (one participant due to immigration problems, five participants for time management limitations, one because of disease, and three due to unwillingness to participate (Figure 1 display the flow-chart for selecting Participants).
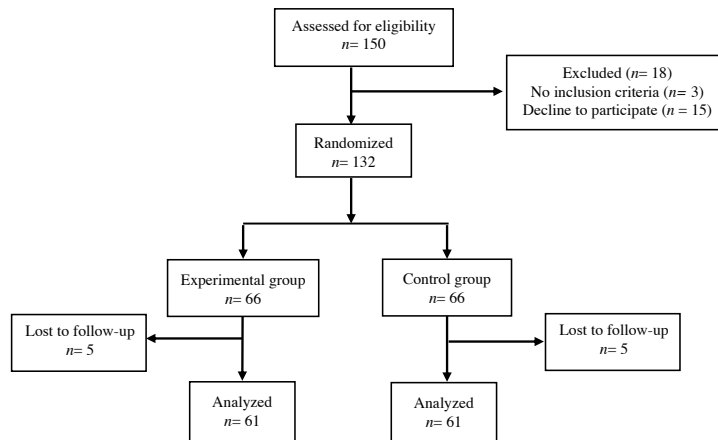
Figure 1. Flow-chart for selecting Participants.

Finally, in this study they participated in the treatment group 20 adolescents from high-income families, 21 adolescents from middle-income, and 20 adolescents from low-income families. Simultaneously, in the control group participated 20 adolescents from high-income neighborhoods, 21 from middle-income, and 20 from low-income areas. Informed consent was obtained from all individual participants included in the study.

Informed consent was obtained from all individual participants included in the study All procedures performed in studies involving human participants were in accordance with the ethical standards of the University of Isfahan and with the identifier IR.UI. REC.1401023 and its later amendments or comparable ethical standards.

Instruments

Emotion Regulation Questionnaire (Gross & John, 2003). Originally this questionnaire contains 10 items that measure two general emotion regulation strategies, i.e., cognitive reappraisal and expressive suppression. 6 items evaluate the reappraisal strategy and 4 items evaluate the suppression strategy. Each item includes a 7-point Likert scale (1= completely disagree to 7= completely agree). They reported the validity and reliability

of the questionnaire with an internal consistency coefficient of 0.73 and a test-retest reliability coefficient of 0.69 for both strategies (Gross & John, 2003). In this study we used the revised form (Emotion Regulation Questionnaire for Children and Adolescents, ERQ-CA, Gullone & Taffe, 2012) created to evaluate emotion regulation strategies in children and adolescents aged 9 to 18 years, . In this adolescent-child form the items have been changed in terms of structure to make it suitable for non-adults. Nonetheless, conceptually, they are exactly aligned with the adult form of the ERQ. Gullone and Taffe (2012) checked the psychometric properties of ERQ-CA with a sample of 827 children and adolescents aged 10 to 18 years. In their study, Cronbach's alpha for all items related to reappraisal strategies was 0.83 and for different age groups in the range of 0.82 to 0.86. This coefficient was equal to 0.75 for all items related to suppression and for different age groups in the range from 0.69 to 0.79. Examining the factor structure also emphasized the bifactor nature of the questionnaire. Cronbach's alpha calculated for the whole questionnaire was 0.81 and for the two factors of reappraisal and suppression was 0.79 and 0.68, respectively. In this questionnaire, like in the original form, it has two factors (reappraisal and suppression). Each item includes a 7-item Likert scale (1= completely disagree to 7= completely agree).

Study Skills Inventory (SSI; Al Faris *et alia*, 2018). The SSI is a 50-question inventory that includes six subscales of ability to read textbooks (8 questions), note-taking (5 questions), memory enhancement (9 questions), exam preparation (12 questions), increasing concentration (10 questions). and time management (6 questions). The questions were scored on a 4-point scale (always-often-sometimes-rarely) and were scored from 4 to 1 respectively. Thus, the range of individual score was between minimum 1 and maximum 4. The average score 3 and above of the questionnaire was good study skills, 2 to 3 as average study skills and less than 2 as poor study skills. A score of 60% or less was considered as poor study skills, a score of 60 to 80% as average study skills, and a score above 80% as good study skills. It should be noted that Cronbach's alpha in this questionnaire was .82 (Congos, 2001).

Social Skills Inventory ((Inderbitzen & Foster, 1992). The Inventory contains 39 five-choice items in which the subject expresses their answer to each item in a range of options from not at all to always true. They reported the validity of this list to be .90. Moreover, the expressions of this questionnaire are in two positive and negative behaviors.

Design and Procedure

The current study is semi-experimental using the pre-test, post-test method with a control group. Before the implementation of the pre-test and the intervention, the conditions of this study were fully explained to the adolescents, and after informing them, a written consent was obtained from them. After taking the pre-test, only the treatment group entered the intervention phase. The intervention in this study was a group therapy based on Acceptance and Commitment, which was generally implemented in ten 90-minute sessions, once a week including the two sessions in which pre-test and post-test were taken. After the sessions, a post-test was taken from both treatment and control groups. The protocol for this intervention was derived from the work of Hayes & Ciarrochi (2015).

Intervention

The group therapy intervention was applied over ten sessions whose contents are indicated below.

First session: Getting to know the treatment process, introducing the therapist to the group members, getting to know and communicating with the group members, taking the pre-test.

Second session: A general explanation about the DNA-V map (adviser, noticer and

discoverer) using the practice of being in the place of adviser, noticer and discoverer, giving practice to each person.

Third session: Reviewing the assignment of the previous session, expressing and explaining the psychological DNA structure of each person using relevant animations and getting to know the noticer in more detail using a short exercise of awareness (body scan), practice for the next session.

Fourth session: Reviewing the assignment of the previous session, talking about the experiences and evaluating them in the psychological DNA map of each person, examining emotions and ways of dealing with emotions using the problem control metaphor of ball in the pool and under the water.

Fifth session: Reviewing the assignment of the previous meeting, playing the role of an advisor in each person's mind and addressing self-conceptualization and practicing for the next session.

Sixth session: Reviewing the assignment of the previous meeting, explaining the value concept, distributing the value card and recognizing each person's values, practicing for the next session.

Seventh session: Reviewing the assignment of the previous session, distributing the ability card and recognizing the abilities of each person, practicing for the next session.

Eighth session: Reviewing the assignment of the previous session, applying and clarifying the values and abilities in the DNA structure, practice for the next session.

Ninth session: Review of previous session's assignment, exercise to recognize each person's DNA structure, exercise to detach from thoughts and feelings using self-metaphor as context, practice for the next session.

Data Analysis

Data analysis was conducted to examine the effects of ACT therapy on mentioned variables in each of three income groups categorized as low, moderate, and high. The study involved administering ACT therapy sessions to each of the three income groups, and the outcomes were measured both before and after the intervention using t-test due to data normality. To assess the effect of the ACT therapy between groups, one- way ANOVA were used. SPSS 16 was used for data analysis.

RESULTS

Comparison of baseline clinical characteristics and dependent variables between the control and treatment groups displayed no significant difference prior to the start of the intervention (Table 1 shows this data).

Table 1. Comparison of *Means* and *Standard Deviations* in dependent variables between the Control and Intervention groups.

Variables	Control Group $M(SD)$	Intervention Group $M(SD)$
Age	14.10 (0.7)	14.11 (0.68)
Cognitive Reappraisal	11.43 (3.47)	12.15 (3.75
Expressive Suppression	19.00 (4.67)	19.23 ± 4.8
Social Skills	92.64 (18.38)	96.03 ± 15.74
Educational Skills	138.64 (24.88)	125.07 ± 23.89

Table 2 shows the Mean (*M*) and Standard Deviation (*SD*) values for all variables showed changes in all variables with 95% confidence interval (*CI*) for both the control and treatment groups in all conditions. The control group shows in all of the conditions

(including low-, middle- and high-income families) no significant differences before and after 8 weeks in cognitive reappraisal (CA), expressive suppression (ES), social skills (SS) and academic skills (AS). The only significant difference was present in the CA variable in middle-income families with a significant improvement ($p= .04$).

However, in the Treatment group there was a significant effect of the intervention in ES and CA in the conditions of low-, middle- and high-income families (see Table 2). In social skills only adolescents in high income families showed a significant improvement ($p= .002$) while in academic skills, adolescents in low- and middle-income families showed significant differences ($p= .035$, $p <.001$ respectively).

Table 2. Mean and Standard Deviation values and *p* values of control and experimental groups including low-, middle-, and high-income families.

Variables	Control group						Experimental group					
	LI M (SD)	p	MI M (SD)	p	HI M (SD)	p	LI M (SD)	p	MI M (SD)	p	HI M (SD)	p
ES before	10.86 (4.36)	.22	11.89 (2.30)	.58	11.6 (3.37)	.59	12.3 (4.18)	.000	12.43 (4.21)	.001	11.7 (2.81)	.021
ES after	10.5 (4.09)		12.16 (2.89)		11.3 (4.11)		9.15 (4.38)		9.71 (3.64)		9.75 (3.49)	
CA before	17.45 (5.58)	.81	20.63 (3.84)	.04	19.15 (3.88)	.06	19.30 (4.69)	.001	20.81 (4.54)	.000	17.50 (4.86)	.025
CA after	17.59 (4.88)		22.63 (5.03)		21.2 (5.52)		23.05 (3.41)		23.48 (3.65)		20.2 (3.90)	
ES before	99.14 (17.77)	.06	89.42 (20.64)	.61	88.55 (15.40)	.29	95.2 (15.8)	.621	98.52 (17.43)	.82	94.25 (14.25)	.002
ES after	96.41 (17.66)		90.32 (21.96)		91.55 (16.44)		93.75 (14.43)		99.43 (19.38)		99.65 (14.63)	
AS before	131.00 (31.67)	.18	145.11 (17.97)	.2	134.8 (20.69)	.12	128.5 (28.12)	.035	116.14 (23.31)	.000	131.00 (17.37)	.36
AS after	123.05 (26.72)		140.68 (23.85)		138.4 (20.16)		142.8 (25.43)		130.62 (20.22)		135.90 (26.47)	

Notes: AS= Academic Skills; CA= Cognitive Reappraisal; ES= Expressive Suppression; HI= High Income; LI= Low Income; MI= Middle Income; SS= Social Skills.

DISCUSSION

This study investigated the effectiveness of adolescent ACT therapy group intervention on emotion regulation skills, social skills, and academic skills and concluded that therapy based on acceptance and commitment has a significant effect on emotion regulation as a group. This variable separately examined evaluation and suppression factors. in the suppression factor in all treatment groups; A significant difference was observed in the low-, middle- and high-income families.

The findings of this study on ACT therapy on CA and ES can be considered in line with the results of Fledderus, Bohlmeijer, Pieterse, and Schreurs (2012) and Levin, Haeger, Pierce, and Twohig (2017) regarding the effectiveness of treatment based on acceptance and commitment in reducing depression. In addition, the results of this study are in line with the results of the study of Swain, Hancock, Dixon, Koo, and Bowman (2013) who confirmed the effectiveness of this treatment on the anxiety of children and adolescents and with the results of the study of Zarling, Lawrence, and Marchman (2015) in which ACT reduced aggression.

The results had showed a significant improvement in the re-evaluation factor in the treatment group in low-, middle-, and high-income families. Also, a significant difference in this factor can be seen only in the middle income families of the control group (Salter, Cumming, Hughes, & De Ste Croix, 2022). Since one of the characteristics of adolescence is reaching intellectual, physical and emotional maturity, which happens completely suddenly and the time period may be different from one person to another

(Salter *et alia*, 2022), it is believed that maybe the adolescents of this group completely random in the interval between the pre-test and the post-test, their maturity changes have led to this significance. Also, such a result may have been achieved due to external or internal reasons of the people themselves.

In the control group, no significant difference was seen in any social class. In the treatment group, a significant difference was seen only in the high-income families. Also, there has been an improvement in the average group, but this improvement is not statistically significant. There is no improvement in the low-income families. According to previous research the context and conditions of the family are very effective in the development of social skills and the role of parents in social skills is prominent. The reason why no improvement has been seen in low-income families is that those families are adolescents, single parents and economically weak. It seems that economic conditions have an impact on people's social skills. Also, the economic conditions affect the personal values of each person. For this reason, in this study, it was seen that as the economic conditions move from low to high income families, the adolescents had a better relationship with the part of defining the values of this approach. As a result, their social skills increased significantly (Makinde *et alia*, 2021). Emotion regulation training leads to a person having a better understanding of the interaction of thoughts, feelings, and behaviors in creating internal experiences, and accordingly regulates their emotions in a way that functions based on the social environment (Suri & Gross, 2016). The findings were in line with the results of Garrote (2017).

The results of this study showed that no statistical changes were seen in the control group. But in the treatment group, this improvement can be seen in all social strata. Especially in the low-and middle-income families, this improvement is significant, but in the high-income families, although the improvement has been achieved, it is not statistically significant. Maybe it is because in Iran, most of the high-income families are not concerned about the progress of education to enter the labor market.

Another reason that the treatment group had a significant result in academic skills is that when the treatment group learned emotion regulation, this led to a reduction in stress in them, and this indicates that the positive effect of emotion regulation leads to an increase in skill and academic performance in them. A similar study conducted by Niculescu, Tempelaar, Dailey-Hebert, Segers, and Gijselaers (2015) on the effectiveness of emotion regulation on academic success shows that knowing and communicating with emotion leads to experiencing positive emotions. Therefore, students learn with more pleasure, which leads to their academic progress.

It should be noted that in some cases there was improvement in dependent factors in the control group, but this improvement was very small and not statistically significant. The first reason for justifying this matter is that the adolescents had already answered the questions of this questionnaire, they were also familiar with these questions for the post-test. Familiarity with the questions can affect how they answer.

Based on the results of this study, the treatment based on acceptance and special commitment of adolescents was effective on social skills, academic skills, an especially on emotion regulation. It is suggested that future research should study this approach more and try to increase the number of samples. One of the reasons why some variables were not significantly significant in this study may be the small number of samples.

One limitation of this study is the potential lack of representative samples within the three income groups. Furthermore, for greater accuracy, it is advisable to ensure gender balance within each income group when considering the size of the male and female

participants. A smaller sample size could affect the study's statistical power, potentially impeding the identification of significant differences or relationships among variables.

This study showed that group therapy based on DNA-V adolescent ACT has a significant effect on adolescent emotion regulation skills. It also affects the academic skills and social skills of adolescents. Therefore, if education includes this approach in its educational programs, the mental health of adolescents will increase.

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