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The Effect of Acceptance and Commitment Therapy on Cognitive Emotion Regulation and Emotional Inhibition in Girls with Non-Suicidal Self-injury

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Quantitative Study

Abstract

Background: Non-suicidal self-injury (NSSI) is prevalent in adolescent populations worldwide. Emotion dysregulation and emotional inhibition are believed to contribute to NSSI. This study assessed the impact of acceptance and commitment therapy (ACT) on cognitive emotion regulation and emotional inhibition in self-injurious preadolescents.

Methods: The present semi-experimental study was conducted with a pretest-posttest design and a control group. The statistical population of the study included all preadolescent girls with NSSI who had been referred to counseling centers in Tehran, Tehran, Iran, in 2019. A purposeful sampling method was used to select 30 preadolescent girls with NSSI for this controlled study. The participants were randomly divided into two experimental and control groups (15 participants per group) to attend weekly training sessions. The data collection tools used included the Deliberate Self-Harm Inventory (DSHI; Gratz, 2001) and Emotion Regulation Questionnaire (ERQ; Gross & John, 2003). The experimental group then underwent ACT (Cardaciotto, Herbert, Forman, Moitra, & Farrow, 2008) for 8 weekly 90-minute sessions, whereas the control group received no training. Multivariate analysis of covariance (MANCOVA) was used to analyze the data. Data were analyzed using SPSS software. A P-value of less than 0.05 was considered statistically significant.

Results: The results showed that ACT was effective on cognitive emotion regulation ($F = 18.09$; $P = 0.001$) and emotional inhibition ($F = 21.54$; $P = 0.001$) in self-injurious preadolescents. Univariate analysis of covariance (ANCOVA) revealed significant differences between the study groups in terms of cognitive emotional regulation ($F = 18.09$; $P = 0.001$) and emotional inhibition ($F = 21.54$; $P = 0.001$).

Conclusion: The results showed that ACT had a positive impact on cognitive emotion regulation and emotional inhibition in adolescents with NSSI.

Keywords: Acceptance and commitment therapy; Cognition; Emotions; Inhibition, psychological; Self-injurious behavior

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Introduction

In adolescence, non-suicidal self-injury (NSSI) is a common disorder, the severity of which reduces with age (Daukantaite et al., 2021). NSSI is defined as the direct and intentional destruction of a person's body tissue without the intent of death. This disease is very common in adolescent populations, with rates of about 17-18% and rates of up to 60% in child and adolescent clinical settings. NSSI peaks around age 15 with recovery in young to middle adulthood. It is known as a self-diagnostic entity and is associated with a wide range of psychiatric conditions (Ghinea, Fuchs, Parzer, Koenig, Resch, & Kaess, 2021). The prevalence of lifetime suicidal thoughts, suicide attempts, and NSSI among preadolescents was 15.1%, 2.6%, and 6.2%, respectively (Liu, Walsh, Sheehan, Cheek, & Sanzari, 2022). Developmental changes in the brain occur during childhood and adolescence, and are mainly caused by the activity of subcortical areas and subsequent interactions with prefrontal cortex areas. Emotional experiences and environmental influences can significantly alter the developmental trajectory of these regions, potentially contributing to later difficulties in emotion processing and regulation later in life (Westlund et al., 2017; Mayo et al., 2021).

Emerging evidence indicates that emotion processing deficits are associated with NSSI (Liu et al., 2022; Esfahani, Hasirchaman, Naeini, Sharifpour, Boorboor, & Jafari, 2021; Liao et al., 2022). Emotion regulation is often engaged in the following exposure to an aversive stimulus, in which it motivates the individual to regulate ensuing negative thoughts and/or experiences through a variety of strategies. These strategies can function in either healthy or unhealthy ways, which reflect one's psychological well-being (Liu et al., 2022). Indeed, individuals who engaged in NSSI, compared to controls, are also more likely to experience consistent negatively valenced emotions and report difficulties regulating their negative emotions (Boyes, Wilmot, & Hasking, 2020; Mayo et al., 2021). In addition, a recent experimental study also showed a significant relationship between interpersonally focused negative emotions and acute NSSI behaviors (Ammerman, Sorgi, Fahlgren, Puhalla, & McCloskey, 2021). According to the general strain theory (GST), external stressful events or situations can trigger negative emotions such as anxiety, depression, and anger, and to release these negative emotions, individuals react by attacking others or injuring themselves (Liao et al., 2022). The role of NSSI in emotion regulation has been further supported by research using experimental and ecological momentary assessment techniques. For example, Ewing, Hamza, and Willoughby (2019) conducted a meta-analysis of lab-based experimental (e.g., guided imagery, and acute pain) and moment sampling approaches to NSSI (Ammerman et al., 2021). Overall, the researchers found decreased negative affect following the administration of pain for both those who engaged in NSSI and those who did not engage in NSSI, a phenomenon referred to in the literature as pain-offset relief (Ewing, Hamza, & Willoughby, 2019).

The findings suggest that difficulty inhibiting ongoing motor responses triggered by negative emotional reactions may be a shared neurocognitive characteristic of NSSI (Allen, Sammon, Fox, & Stewart, 2020). Previous findings suggest that emotional response inhibition deficits specifically to self-harm (SH) stimuli may pose a vulnerability to increased NSSI urge intensity during real-time, state-level negative effects (Burke et al., 2021). Previous results suggest that impulsive behavior in NSSI may involve specifically impaired inhibitory control over started negative emotional impulses. This deficit in late response inhibition regarding negative emotional stimuli might reflect a cognitive mechanism or pathway to elevated negative urgency among

people who self-injure (Allen & Hooley, 2019). It has been reported that impulsive individuals may be more likely to choose self-harm as an emotion regulation strategy when they experience strong and poorly controlled emotional states. Emotional dysregulation contributes to impulsivity, and it has shown emotional instability to predict impulsive behaviors even after controlling for trait impulsivity (Peters, Baetz, Marwaha, Balbuena, & Bowen, 2016).

Both psychological and biological factors appear to increase vulnerability to NSSI. The psychological factors may include problem-solving, lack of self-esteem, impulsiveness, vulnerability to pessimistic thoughts about the future (i.e., despair), and feeling trapped. The biological factors include disturbances in the serotonergic system and stress response (Wilks, Gurtovenko, Rebmann, Williamson, Lovell, & Wasil, 2021). Psychological approaches are used to treat this group of people that are involved in SH, typically including brief individual and group psychological therapy. Currently, there is no single treatment that is the gold standard for children and adolescents struggling with NSSI (Gilbert et al., 2020). There is a noticeable increase in the number of trials and approaches to the treatment of psychosocial interventions in SH (Witt et al., 2021). For example, effective interventions typically include an important component of family or parent education (Glenn, Esposito, Porter, & Robinson, 2019), mentalization-based treatment (MBT), cognitive behavioral therapy (CBT) (Witt et al., 2021), dialectical behavior therapy (DBT) (Wilks et al., 2021), mindfulness (Najian, Kachooei, & Farahani, 2022), routine psychiatric care, augmentation of usual care, active comparator, placebo, alternative drug therapy, or a combination of these (Wilks et al., 2021). There is a lack of evidence for the effectiveness of interventions in the treatment of SH in children and adolescents, although the social and psychological contribution to the risk of developing NSSI is relatively high. The biological mechanisms underlying NSSI have recently been revealed and have guided the development of effective psychosocial treatments for self-injury. Less is known about self-injurious thoughts and behaviors (SITBs) in preadolescence, than in older age groups, partly because of the common view that young children are incapable of non-suicidal self-injurious thoughts.

The present study investigated the effectiveness of Acceptance and Commitment Therapy (ACT) on cognitive emotion regulation and emotional inhibition of people who perform NSSI. Considering that most of the previous studies in different fields have conducted different research on preadolescents suffering from self-injury disorder, we tried to use treatment based on acceptance and commitment, the effectiveness of which has been confirmed on emotional disorder and self-compassion among preadolescents (Izakian, Mirzaian, & Hosseini, 2019). The aim of this study was to examine cognitive emotion regulation and emotional inhibition in self-injurious preadolescents using acceptance and commitment-based therapy.

Methods

The present semi-experimental study was conducted with a pretest-posttest design and a control group. The statistical population of the study included all non-suicidal self-injurious preadolescent girls who had been referred to Tehran Counseling Center, Tehran, Iran, in 2019. A purposeful sampling method was used to select 30 preadolescent girls with NSSI for this controlled study. The participants were randomly divided into two experimental (n = 15) and control groups (n = 15). Based on an effect size of 0.25, alpha of 0.05, and test power of 0.95, the minimum number of samples to achieve the desired power was 30 individuals. The study inclusion

criteria were a high score on the Deliberate Self-Harm Inventory (DSHI; Gratz, 2001), conscious consent to participate in the study, lack of participation in similar psychological interventions, female gender, age of 11-13 years, and lack of any other serious mental disorders, such as thyroid, schizophrenia, bipolar disorder, and taking no medications. The exclusion criteria were being absent from more than 2 sessions, physical disability, and providing incomplete information.

To conduct the research, psychological centers in Tehran were consulted (Negah, Pirouzi, and Masire-sabz centers), after obtaining the necessary permissions. The screening consisted of interviewing 81 preadolescent girls with NSSI and selecting 30 girls to attend weekly training sessions (n = 15 per group). The second author implemented the treatment protocol in Masire-sabz centers since it had more amenities. Before the intervention, both groups completed questionnaire. The experimental group was then subjected to ACT for 8 weekly 90-minute sessions, whereas the control group received no training. A summary of the sessions of the training program is provided in table 1 (Cardaciotto, Herbert, Forman, Moitra, & Farrow, 2008). To evaluate the effect of training, the tests were repeated in both groups by the researcher. Ethical considerations were observed in this study. The subjects were informed about the objectives and rules of the research and their attitudes and opinions were respected. All subjects were allowed to withdraw from the research at any stage. Moreover, the control group could undergo the ACT sessions after the study.

Deliberate Self-Harm Inventory: The DSHI was designed by Gratz (2001) to measure various types of self-harming behavior in the non-patient community. This questionnaire contains 17 descriptive phrases on common intentional self-injury behaviors (scratching the head and face, scratching and piercing the skin, burning, engraving writings and photos on the skin, etc.). Each phrase asks about the

Table 1. Treatment protocol of acceptance and commitment

Meetings	The content of the meetings
1st	Conducting the pretest, determining the goals of the meetings, inviting the participants to form groups of 2 and introduce themselves to each other, reviewing and examining the participants' problems, explaining the philosophy of the ACT therapy intervention, and signing a consulting contract to attend on time
2nd	Mindfulness practice: meditation and awareness of the body, breathing, sounds and thoughts
3rd	Understanding the nature of emotions, thoughts, and actions, investigating the effectiveness of avoidance strategies and ultimately creative despair, using the metaphor of pushing the board
4th	Creative frustration: examining the behaviors that the group has presented to avoid thoughts and feelings and asking about ineffective actions such as self-harm - using the metaphor of wrestling in the sand and tug of war with monsters
5th	Explanation of the illusion of control control the metaphor of thinking about ice cream Acceptance: the use of boards on the knees and divas in the boat
6th	Dissociation: showing separation between oneself and one's inner experiences and behaviors, observing oneself as a background
7th	Diffusion: use of the leaves on the river, thoughts like stars, and fish and sea metaphors
8th	Acceptance: Creating space for painful feelings caused by relationships and accepting these feelings instead of hurting yourself (allowing yourself to have painful internal experiences to act in line with your values)
9th	Introducing the concept of purpose: practicing the purpose circle, the concept of values, and discovering the practical values of life
10th	Mindfulness training: preparation to end the meetings, a general review of the program, and review and discussion of the programs, and discussion of the positive reasons for continuing the training post-test implementation

frequency of various self-injury behaviors in the past year. Scoring included yes (score 1) and no (score 0). Gratz (2001) reported the Cronbach's α coefficient of the questionnaire to be 0.82 and its reliability coefficient after 2 weeks (test-retest) to be 0.68 (Gratz, 2001). The Cronbach's α coefficient of the DSHI in the Iranian sample was 0.71, which indicates acceptable reliability and validity. The content of the test were obtained through a survey of psychologists and educational scientists (Nobakht & Dale, 2017).

Emotion Regulation Questionnaire (ERQ): The ERQ was designed by Gross and John (2003). The ERQ consists of 10 items in the 2 subscales of cognitive reappraisal (6 items) and expressive suppression (4 items). The items are scored on a 7-point Likert scale ranging from 1 (totally disagree) to 7 (agree). The Cronbach's alpha coefficient of the subscales of cognitive reappraisal and expressive suppression was 0.79 and 0.73, respectively. The test-retest reliability of the whole scale after 3 months was 0.68 (Gross and John, 2003). The staff and Catholic students of the University of Milan reported the intrinsic homogeneity coefficient of this scale to be 0.48-0.68 for the cognitive reappraisal subscale and 0.42-0.63 for the expressive suppression subscale. The Persian version of the ERQ has been standardized by Hasani (2016). In this study, the validity of the scale was calculated based on the internal consistency method (Cronbach's alpha domain: 0.60-0.81).

Multivariate analysis of covariance (MANCOVA) was used to analyze the data. Data were analyzed using SPSS software (version 23; IBM Corp., Armonk, NY, USA). A P-value of less than 0.05 was considered statistically significant.

Results

The participants comprised 30 preadolescent girls with a mean age of 12.13 ± 0.68 years in the experimental group and 11.78 ± 0.66 years in the control group.

As illustrated in table 2, the mean cognitive emotional regulation scores of the control and experimental groups in the pretest were 49.72 ± 6.35 and 48.37 ± 6. 29, respectively, and in the posttest were 48.73 ± 6.25 and 55.43 ± 6.21, respectively. Moreover, the mean emotional inhibition scores in the control and experimental groups in the pretest were 69.52 ± 8.19 and 69.78 ± 7.64, respectively, and in the posttest were 70.35 ± 8.73 and 78.76 ± 8.23, respectively. As can be seen in table 3, the experimental and control groups have significant differences based on the dependent variables at the level of P <≤0.001.

Therefore, it is possible to conclude that at least one of the dependent variables (cognitive emotional regulation and emotional inhibition) differs significantly between the two groups. To find out the difference, 2 analysis of covariance (ANCOVA) tests were performed in the MANCOVA context. According to the

Table 2. The distribution of the scores of variables in the pretest vs. posttest phases

Variable	Groups	Statistical index	Mean ± SD	P-value
Cognitive emotion regulation	Pretest	Control	49.72 ± 6.35	0.200
		Experimental	48.37 ± 6.29	0.178
	Posttest	Control	48.73 ± 6.25	0.231
		Experimental	55. 43 ± 6.21	0.153
Emotional inhibition	Pretest	Control	69.52 ± 8.19	0.211
		Experimental	69.78 ± 7.64	0.200
	Posttest	Control	70.35 ± 8.73	0.189
		Experimental	78.76 ± 8.23	0.200

SD: Standard deviation

Table 3. Results of multivariate analysis of covariance on variables

Statistic test	Value	F	P-value	Effect size
Pillai's trace	0.693	59.23	0.001	0.71
Wilks' lambda	0.184	59.23	0.001	0.71
Hotelling's trace	7.82	59.23	0.001	0.71
Roy's largest root	3.29	59.23	0.001	0.71

calculated effect size, about 77% of the total variance of the experimental and control groups is due to the effect of the independent variable.

Based on table 4, MANOVA revealed significant differences between the experimental and control groups at the level of $P < 0.001$. As a result, 2 univariate ANCOVA tests were conducted. Univariate ANCOVA revealed significant differences between groups in terms of cognitive emotional regulation ($F = 18.09$; $P = 0.001$; $\eta p^2 = 51$) and emotional inhibition ($F = 21.54$; $P = 0.001$; $\eta p^2 = 0653$). Regarding the emotional inhibition variable, ACT proved more effective than one (0.65).

Discussion

The aim of this study was to assess the effectiveness of the ACT approach on cognitive emotion regulation and emotional inhibition in self-injurious preadolescents. The findings showed that the effect of ACT was significant on the cognitive regulation of emotion and emotional inhibition in this sample, meaning that this treatment approach increased both of these variables.

Thus, to explain and strengthen the findings, it can be noted that there are studies that have used similar approaches to treat this group of people, and we have compared the results of those studies with the desired approach. As was explained in the introduction section, this approach has only been examined in one previous article. Finding in this study is in line with the studies by Izakian et al. (2019), and Keshtkar, Naziri, Mohammadi, and Fath (2021). In the study by Keshtkar et al. (2021), ACT effectively reduced aggression and increased flexibility in students with self-injurious behavior. The findings of Izakian et al. (2019) demonstrated that ACT led to improvements in emotional dysregulation among self-harming students in both the posttest and follow-up stages. Previous findings indicated that individuals with a history of NSSI reported significantly more difficulties in regulating their negative and positive emotions than those who had not engaged in NSSI (Allen et al., 2020; Burke et al., 2021; Allen & Hooley, 2019; Peters et al., 2016; Wilks et al., 2021).

In explanation of these results, it can be said that treatment based on acceptance and commitment taught female students with self-injurious behavior to focus on creating a valuable life instead of changing and reducing the symptoms and freeing their thoughts, feelings, memories, and physical sensations.

This method of therapy through cognitive dissonance seeks to help people with self-injurious behavior not to yield inflexibly to their thoughts and mental laws, and instead to find ways to interact effectively with the world so as to increase their flexibility and their ability to manage negative emotions, or help them through emotional inhibition (Keshtkar et al., 2021; Hayes, Strosahl, & Wilson, 1999).

Table 4. Results of analysis of covariance in multivariate analysis of covariance

Dependent variable	SS	MS	F	P-value	ηp^2
Cognitive emotion regulation	2476.75	2476.75	18.09	0.001	0.51
Emotional inhibition	4967.23	4967.23	21.54	0.001	0.65

SS: Sum of squares; MS: Mean squares

The comparison of the pretest and posttest illustrated the significant effect of this treatment approach. In a review of the research literature in the field of the effectiveness of ACT in the sample group of self-harming children, not many findings were obtained. In this therapy method, the component of ACT provides the client with the possibility to accept unpleasant internal experiences without trying to control them, and this makes those experiences seem less threatening. In other words, it directs attention and allows the individual to observe mental events instead of considering these events as a part of his being (Heath, Carsley, De Riggi, Mills, & Mettler, 2016). The authors believe that since this therapy method is based on acceptance and commitment, in accepting the reactions of being in the present, and observing yourself to achieve an activated sense, it has an effective method of regulating excitement, and controlling mental ruminations and negative thoughts (Hayes et al., 1999).

These results should be considered preliminary. The limitations of the study justify caution in interpreting the results, such as the small sample size, the lack of homogenization of the groups, and the presence of disturbing variables, so it cannot be said that the results obtained are completely influenced by the implementation of the desired approach. Therefore, it is suggested that the variables of cognitive flexibility, cognitive diffusion, rumination, and cognitive fusion be investigated in adolescents with NSSI with this approach in future studies. As this study focused on girls with self-injury, it is recommended that further research be conducted on boys as well. Future studies should examine age groups, duration of self-injury, parent characteristics, and economic conditions because this study did not assess these factors.

Conclusion

The results showed that ACT training had a positive impact on cognitive emotion regulation and emotional inhibition in adolescents with NSSI. Treatment based on ACT uses train metaphors to help adolescents with NSSI distinguish between the built world of thoughts and minds as a continuous process; thus, the trained person can distinguish between who is thinking and verbal categories that people give to themselves by thinking.

Conflict of Interests

Authors have no conflict of interests.

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References

Allen, K. J. D., & Hooley, J. M. (2019). Negative emotional action termination (NEAT): Support for a cognitive mechanism underlying negative urgency in nonsuicidal self-injury. *Behav.Ther*, *50*(5), 924-937. doi:S0005-7894(19)30013-9 [pii];10.1016/j.beth.2019.02.001 [doi]. Retrieved from PM:31422848

Allen, K. J. D., Sammon, M. M., Fox, K. R., & Stewart, J. G. (2020). Emotional response inhibition: A shared neurocognitive deficit in eating disorder symptoms and nonsuicidal self-injury. *Brain.Sci*, *10*(2). doi:brainsci10020104 [pii];brainsci-10-00104 [pii];10.3390/brainsci10020104 [doi]. Retrieved from PM:32075254

Ammerman, B. A., Sorgi, K. M., Fahlgren, M. K., Puhalla, A. A., & McCloskey, M. S. (2021). An experimental examination of interpersonal problem-solving in nonsuicidal self-injury: A pilot study. *J Psychiatr.Res.*, *144*, 146-150. doi:S0022-3956(21)00544-6

[pii];10.1016/j.jpsychires.2021.09.005 [doi]. Retrieved from PM:34628275

Boyes, M. E., Wilmot, A., & Hasking, P. A. (2020). Nonsuicidal self-injury-related differences in the experience of negative and positive emotion. *Suicide Life.Threat.Behav., 50*(2), 437-448. doi:10.1111/sltb.12599 [doi]. Retrieved from PM:31682015

Burke, T. A., Allen, K. J. D., Carpenter, R. W., Siegel, D. M., Kautz, M. M., Liu, R. T. et al. (2021). Emotional response inhibition to self-harm stimuli interacts with momentary negative affect to predict nonsuicidal self-injury urges. *Behav.Res.Ther, 142*, 103865. doi:S0005-7967(21)00064-4 [pii];10.1016/j.brat.2021.103865 [doi]. Retrieved from PM:33940222

Cardaciotto, L., Herbert, J. D., Forman, E. M., Moitra, E., & Farrow, V. (2008). The assessment of present-moment awareness and acceptance: the Philadelphia Mindfulness Scale. *Assessment., 15*(2), 204-223. doi:1073191107311467 [pii];10.1177/1073191107311467 [doi]. Retrieved from PM:18187399

Daukantaite, D., Lundh, L. G., Wangby-Lundh, M., Clareus, B., Bjarehed, J., Zhou, Y. et al. (2021). What happens to young adults who have engaged in self-injurious behavior as adolescents? A 10-year follow-up. *Eur.Child Adolesc.Psychiatry., 30*(3), 475-492. doi:10.1007/s00787-020-01533-4 [pii];1533 [pii];10.1007/s00787-020-01533-4 [doi]. Retrieved from PM:32318877

Esfahani, M. N., Hasirchaman, F., Naeini, V. S., Sharifpour, L., Boorboor, N., & Jafari, J. S. (2021). Treatment of automatic negative thoughts and non-suicidal self-injury (nssi) behavior in borderline personality disorder adolescents: dialectical behavior therapy. *Int J Health Stud, 8*(2), 31-35. doi:10.22100/ijhs.v8i2.900 [doi].

Ewing, L., Hamza, C. A., & Willoughby, T. (2019). Stressful experiences, emotion dysregulation, and nonsuicidal self-injury among university students. *J Youth.Adolesc., 48*(7), 1379-1389. doi:10.1007/s10964-019-01025-y [pii];10.1007/s10964-019-01025-y [doi]. Retrieved from PM:31025157

Ghinea, D., Fuchs, A., Parzer, P., Koenig, J., Resch, F., & Kaess, M. (2021). Psychosocial functioning in adolescents with non-suicidal self-injury: the roles of childhood maltreatment, borderline personality disorder and depression. *Borderline.Personal.Disord Emot.Dysregul., 8*(1), 21. doi:10.1186/s40479-021-00161-x [pii];161 [pii];10.1186/s40479-021-00161-x [doi]. Retrieved from PM:34193286

Gilbert, A. C., DeYoung, L. L. A., Barthelemy, C. M., Jenkins, G. A., MacPherson, H. A., Kim, K. L. et al. (2020). The treatment of suicide and self-injurious behaviors in children and adolescents. *Curr Treat Options Psych, 7*(1), 39-52, doi:10.1007/s40501-020-00201-3 [doi].

Glenn, C. R., Esposito, E. C., Porter, A. C., & Robinson, D. J. (2019). Evidence base update of psychosocial treatments for self-injurious thoughts and behaviors in youth. *J Clin.Child Adolesc.Psychol., 48*(3), 357-392. doi:10.1080/15374416.2019.1591281 [doi]. Retrieved from PM:31046461

Gratz, K. L. (2001). Measurement of deliberate self-harm: Preliminary data on the Deliberate Self-Harm Inventory. *J Psychopathol Behav Assess, 23*(4), 253-263. doi:10.1023/A:1012779403943 [doi]. doi:doi:10.1023/A:1012779403943. Retrieved from Plenum Publishing Corp.

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *J Pers.Soc Psychol., 85*(2), 348-362. doi:10.1037/0022-3514.85.2.348 [doi]. Retrieved from PM:12916575

Hasani, J. (2016). Persian version of the Emotion Regulation Questionnaire: Factor structure, reliability and validity. *Int J Behav Sci, 10*(3), 108-113.

Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and commitment therapy: An experiential approach to behavior change*. New York, NY, US: Guilford Press.

Heath, N. L., Carsley, D., De Riggi, M. E., Mills, D., & Mettler, J. (2016). The relationship between mindfulness, depressive symptoms, and non-suicidal self-injury amongst adolescents. *Arch.Suicide Res., 20*(4), 635-649. doi:10.1080/13811118.2016.1162243 [doi]. Retrieved from PM:26984524

Izakian, S., Mirzaian, B., & Hosseini, S. H. (2019). The effectiveness of acceptance and

commitment therapy on emotion dysregulation and self-compassion among self-harm students. Journal of Thought and Behavior in Clinical Psychology, 14(53), 17-26.

Keshtkar, F., Naziri, G., Mohammadi, M., & Fath, N. (2021). The effectiveness of acceptance and commitment-based therapy on aggression and cognitive flexibility of female students with self-injurious behavior in high school in Shiraz. *Community Health Journal, 15*(4), 79-88. doi:10.22123/CHJ.2022.294676.1745 [doi].

Liao, C., Gu, X., Wang, J., Li, K., Wang, X., Zhao, M. et al. (2022). The relation between neuroticism and non-suicidal self-injury behavior among college students: Multiple mediating effects of emotion regulation and depression. *Int J Environ.Res.Public.Health, 19*(5). doi:ijerph19052885 [pii];ijerph-19-02885 [pii];10.3390/ijerph19052885 [doi]. Retrieved from PM:35270578

Liu, R. T., Walsh, R. F. L., Sheehan, A. E., Cheek, S. M., & Sanzari, C. M. (2022). Prevalence and correlates of suicide and nonsuicidal self-injury in children: A systematic review and meta-analysis. *JAMA.Psychiatry, 79*(7), 718-726. doi:2792812 [pii];yoi220031 [pii];10.1001/jamapsychiatry.2022.1256 [doi]. Retrieved from PM:35612875

Mayo, L. M., Perini, I., Gustafsson, P. A., Hamilton, J. P., Kampe, R., Heilig, M. et al. (2021). Psychophysiological and neural support for enhanced emotional reactivity in female adolescents with nonsuicidal self-injury. *Biol.Psychiatry Cogn Neurosci Neuroimaging, 6*(7), 682-691. doi:S2451-9022(20)30346-3 [pii];10.1016/j.bpsc.2020.11.004 [doi]. Retrieved from PM:33541848

Najian, A., Kachooei, M., & Farahani, H. (2022). Online mentalization-based treatment on negative affection and non-suicidal self-injury in adolescence. *Journal of Research in Psychopathology*, *3*(8), 34-40. doi: 10.22098/JRP.2022.10449.1075 [doi]. Retrieved from https://jrp.uma.ac.ir/article_1586.html

Nobakht, H. N., & Dale, K. Y. (2017). The prevalence of deliberate self-harm and its relationships to trauma and dissociation among Iranian young adults. *J Trauma.Dissociation., 18*(4), 610-623. doi:10.1080/15299732.2016.1246397 [doi]. Retrieved from PM:27736465

Peters, E. M., Baetz, M., Marwaha, S., Balbuena, L., & Bowen, R. (2016). Affective instability and impulsivity predict nonsuicidal self-injury in the general population: A longitudinal analysis. *Borderline.Personal.Disord Emot.Dysregul., 3*, 17. doi:51 [pii];10.1186/s40479-016-0051-3 [doi]. Retrieved from PM:27999677

Westlund, S. M., Klimes-Dougan, B., Mueller, B. A., Eberly, L. E., Reigstad, K. M., Carstedt, P. A. et al. (2017). Multi-modal neuroimaging of adolescents with non-suicidal self-injury: Amygdala functional connectivity. *J Affect.Disord, 221*, 47-55. doi:S0165-0327(16)31545-2 [pii];10.1016/j.jad.2017.06.004 [doi]. Retrieved from PM:28628767

Wilks, C. R., Gurtovenko, K., Rebmann, K., Williamson, J., Lovell, J., & Wasil, A. R. (2021). A systematic review of dialectical behavior therapy mobile apps for content and usability. *Borderline.Personal.Disord Emot.Dysregul., 8*(1), 29. doi:10.1186/s40479-021-00167-5 [pii];167 [pii];10.1186/s40479-021-00167-5 [doi]. Retrieved from PM:34857035

Witt, K. G., Hetrick, S. E., Rajaram, G., Hazell, P., Taylor Salisbury, T. L., Townsend, E. et al. (2021). Psychosocial interventions for self-harm in adults. *Cochrane.Database.Syst.Rev., 4*(4), CD013668. doi:CD013668.pub2 [pii];10.1002/14651858.CD013668.pub2 [doi]. Retrieved from PM:33884617