



Psychological flexibility and suicide probability in adolescents: An ACT-based intervention study

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Título: Flexibilidad psicológica y probabilidad de suicidio en adolescentes: Un estudio de intervención basado en la Terapia de Aceptación y Compromiso (ACT).

Resumen: El objetivo del estudio era investigar si existe una relación entre la probabilidad de suicidio y la flexibilidad/rigidez psicológica en adolescentes y examinar el efecto de un programa de psicoeducación basado en ACT desarrollado por los investigadores sobre la reducción de la probabilidad de suicidio y la rigidez psicológica en adolescentes. Por lo tanto, el estudio consta de dos fases. La primera fase se llevó a cabo con el modelo de detección relacional y la segunda con el modelo experimental. La primera fase del estudio se llevó a cabo con 485 alumnos que estudiaban en un instituto. La segunda fase se llevó a cabo con un total de 24 estudiantes de este grupo que tenían una alta probabilidad de suicidio. En el estudio se comprobó que existía una relación positiva y moderadamente significativa entre los niveles de rigidez psicológica de los adolescentes y la probabilidad de suicidio. Además, se concluyó que el Programa de psicoeducación basado en ACT era eficaz sobre la probabilidad de suicidio, las subdimensiones de la probabilidad de suicidio y los niveles de rigidez psicológica de los adolescentes. Mejorar la flexibilidad psicológica de los adolescentes es importante para prevenir muchos problemas de salud mental, incluido el suicidio.

Palabras clave: Terapia de aceptación y compromiso. Adolescencia. Psicoeducación. Flexibilidad Psicológica. Suicidio.

Abstract: The aim of this study was to investigate whether there is a relationship between suicide probability and psychological flexibility/rigidity in adolescents and to examine the effect of an ACT-based psychoeducation programme developed by the researchers on reducing suicide probability and psychological rigidity in adolescents. Therefore, the study consists of two stages. The first stage was conducted with the relational screening model and the second stage was conducted with the experimental model. The first stage of the study was carried out with 485 students studying in a high school. The second stage was conducted with a total of 24 students from this group who had a high suicide probability. In the study, it was found that there was a positive and moderately significant relationship between adolescents' psychological rigidity levels and suicide probability. In addition, it was concluded that 'ACT Based Psychoeducation Programme' was effective on suicide probability, suicide probability sub-dimensions and psychological rigidity levels of adolescents. Improving the psychological flexibility of adolescents is important in terms of preventing many mental health problems, including suicide.

Keywords: Acceptance and Commitment Therapy. Adolescence. Psychoeducation. Psychological Flexibility. Suicide.

Introduction

Adolescence, generally defined as the period between the ages of 12 and 18, as a highly controversial, conflictual and stressful period. Adolescents' desire to gain independence by estrangement from the family may turn into feelings of loneliness, fear, insecurity, and powerlessness, and they may need the love and support of their family (Bayraktar, 2015). Sources of stress experienced during adolescence that lead to identity crises can be considered risk factors for suicide. According to Geldard & Geldard (2013), risk factors for adolescent suicide include a negative family environment, separation and divorce, living with a stepfamily, the physical and mental health status of family members, domestic violence, parental substance usage, school refusal, socioeconomic pressures, peer pressure, substance usage, risky sexual behaviors, antisocial behaviors, social appearance and body perception, difficulties in dating relationships, and more.

The American Psychiatric Association (APA, 2013) defines "suicide" as the deliberate act of causing one's own death; "suicide attempt" as an attempt to end one's life in a way that may result in death; and "suicidal ideation" as

deliberate, planned thoughts of ending one's life and self-harm. According to Ertemir & Ertemir (2003), the primary reason for attempting suicide in general was that individuals believed they could not cope with their problems, with 74.19% of the group seeing death as a solution. In addition, individuals who have attempted suicide use fewer functional coping skills than those who have never attempted suicide (Konkan et al., 2014). Given this evidence, anger, impulsivity, aggression, hopelessness, and inadequate coping skills may have a significant role in the process of suicidal ideation.

According to the World Health Organization (WHO, 2014), an average of one million people die by suicide each year worldwide, and suicide attempts, which are very rare in childhood, increase significantly from adolescence onwards. When ranking the causes of death among adolescents, suicide among adolescents ranks second or third in many countries. In Turkey, suicide and adolescent suicide statistics are also alarming. According to the WHO (2019), nearly 6000 people in Turkey ended their lives by suicide in 2016. According to the Turkish Statistical Institute (TURKSTAT, 2020), the number of suicides has been increasing over the years, and the suicide rate among 15- to 19-year-olds has reached a serious level. According to a survey on suicide and attempted suicide conducted by the Ministry of National Education (MoNE) of the Republic of Turkey (MoNE, 2003), the suicide rate in secondary schools was 6.5%, and

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the attempted suicide rate was 44.4% in a five-year period (1997-2002).

For adolescents at risk of suicide, there are some preventive and protective factors. These factors include individual characteristics such as having developed cognitive skills and social-communication skills, being able to evaluate events from different perspectives, showing flexibility and acting appropriately when necessary, and having high self-esteem (Ünlü et al., 2014). According to Bayraktar (2015), what is important when reacting to events is to know the ways of coping with problems and to solve problems from a constructive perspective.

Many researchers have determined that it is very important to carry out preventive and protective studies to prevent suicide in adolescents (Dattilo & Freeman, 2017; Gökkaya, 2023; Michelmore & Hindley, 2012; Savi-Çakar et al., 2020; Siyez & Baş, 2009). Considering the negative dimensions of suicide that occur in schools or are heard about by peers, such as encouragement and role models, it is predicted that these cases may gradually increase if no prevention activities are carried out. Therefore, it is important to conduct mental health protection and prevention studies to prevent suicides in schools.

There are three types of prevention activities carried out in schools: primary (basic) prevention, secondary prevention, and tertiary prevention. Primary (basic) prevention activities aim to prevent problems from occurring by increasing students' personal resources before issues arise. Secondary prevention studies are designed to prevent less serious problems and events from becoming chronic and damaging. Tertiary prevention studies are a type of treatment service and medical model that aims to reduce the negative consequences and effects of serious problems or illnesses (Eskin, 2014; King, 2001).

Researchers state that school-based and secondary prevention studies are more rational and effective in reducing the suicide probability in adolescents (Korkut Owen, 2020; Michelmore & Hindley, 2012; Portzky & Heeringen, 2006). However, researchers note that cognitive behavioral therapy [CBT] is the most common and effective preventive practice to reduce the probability of suicide among adolescents (Eskin & Köskün, 2019; Reinecke, 2000). Given the human perspective of ACT, a third wave CBT theory whose effectiveness is still under investigation, and its ultimate goal of psychological flexibility, it is believed to be effective in reducing the probability of suicide among adolescents.

According to ACT, psychological flexibility is being aware of experiences and open to accepting them by staying in the moment while performing behaviors in line with one's values (Harris, 2018). In other words, it is the individual's awareness and acceptance that he or she can perform many alternative actions in line with his or her meaningful goals and values (Herbert & Forman, 2011).

People encounter various situations in life, such as pain, loss, failure, and disappointment, and due to human nature,

they may experience. Simultaneously, human nature can impact the mind by repeatedly recalling these distressing events, leading it to perceive the future as bleak or negative (Harris, 2018). At this point, ACT suggests that an individual can find meaning, purpose, and resilience in their life, even when experiencing such great pain.

ACT-based psychoeducation programmes have been shown to treat drug addiction (Gonzalez-Menendez et al., 2014), smoking addiction (Tari, 2024), depression and anxiety, (Bean et al., 2017), anger, aggressive behaviours, anxiety (Donahue et al., 2017; Garivani et al., 2021; Kheyran-Alnesa et al., 2018), adolescents' social appearance anxiety and social anxiety (Özşahin Terkuran, 2023; Usta, 2017), psychological capital and emotion regulation (Bagheri-Sheykhangafshe et al., 2022), suicidal ideation, depression and suicide probability reduction (Ducasse et al., 2018; Shareh & Robati, 2022), fear of negative evaluation (Mousavi, 2023), earthquake-induced trauma (Yüncü, 2024), and ACT was found to be effective.

Adolescent suicide prevention practices hold significant importance. Because of the increase in adolescent suicides, it is necessary to focus on this issue. Increasing individuals' psychological resilience levels may lead them to recognize that negative emotions do not limit their lives, and they may have alternatives to suicide to address their problems. Since ACT contains unique experimental exercises, metaphors, and informative exercises (Harris, 2021) and supports this, it is considered suitable for interactional processes in group processes. In ACT, group processes generally attract attention with their instructive sides (Walser & Pistorello, 2004).

The study was conducted in two stages. The first stage was to see if there was a relationship between the probability of suicide and the psychological rigidity of the adolescents. Since there was a relationship between the two variables, it was thought that the psychoeducational programme developed on the basis of ACT could be effective on these two variables. For this reason, the second phase of the study, which constitutes the quasi-experimental dimension of the study, aimed to examine the effectiveness of the psychoeducation programme developed based on ACT in reducing the probability of suicide among adolescents. To achieve this goal, we plan to test the following hypotheses:

Hypothesis 1: There is a significant relationship between suicide probability levels and psychological rigidity/flexibility levels in adolescents.

Hypothesis 2: The suicide probability levels of the adolescents in the experimental group will decrease statistically significantly compared to the adolescents in the control group.

Hypothesis 3: The levels of hopelessness, negative self-evaluation, suicidal ideation, and hostility, which constitute the sub-dimensions of suicide probability, of the adolescents in the experimental group will decrease at a statistically significant level compared to the adolescents in the control group.

Hypothesis 4: Adolescents in the experimental group will have a statistically significant decrease in psychological rigidity compared to those in the control group.

Method

Research Model

Stage 1

In the first stage of this study, whether there is a relationship between adolescents' psychological flexibility/rigidity

levels and suicide probability was examined in the relational screening model.

Stage 2

We used a quasi-experimental design (2x3 split-plot factorial design) to examine the impact of the ACT-based psychoeducation program on reducing the probability of suicide in adolescents.

Table 1

Research design.

Groups	Pre-test	Process	Post-test	Follow-up test
Experiment	SPS, AAQ-II	Psychoeducation based on ACT	SPS, AAQ-II	SPS, AAQ-II
Control	SPS, AAQ-II	-	SPS, AAQ-II	SPS, AAQ-II

*SPS: Suicide Probability Scale, AAQ-II: Acceptance and Action Questionnaire-II

Process

Ethical approval was obtained before the study began. The researcher administered the SPS between September 25 and 27, 2023, to identify adolescents with a high suicidal probability. Data were collected from 485 students whose parental consent was obtained/volunteered. The psychoeducation sessions were attended by 28 students selected from 485 students. Next, we informed the parents of the adolescents participating in the study groups about the psychoeducation application and obtained their consent for the procedure. Pre-test measurements were taken two weeks before the psychoeducation, post-test measurements were taken two weeks after the psychoeducation, and follow-up test measurements were taken two months later.

Participants

Stage 1

Data were collected from 510 students studying in a high school in the Mediterranean region of Turkey. Data were collected from all students in the high school. However, due to the invalid scales filled by the students, statistical analyses were performed on the data collected from a total of 485 adolescents/high school students, 251 female (51.8%) and 234 male (48.2%).

Stage 2

At this stage, two different sampling methods (criterion and random) were used. Firstly, purposive/criteria sampling was used and then random sampling was used to allocate students to the experimental and control groups.

In the autumn term of the 2023-2024 academic year, 24 students who met the psychoeducation conditions among

485 students in a high school in the Mediterranean region of Turkey constituted the study group. These criteria are:

1. In the first stage, the SPS was administered as a data collection tool to volunteer students (485 students) who did not participate in the pilot study at the school where the study was conducted.
2. 52 students who had a high suicide probability among all students as a result of the score obtained from the SPS (between 100-120 points) were determined.
3. Preliminary interviews were conducted with 28 students in two consecutive grade levels, 11th and 12th grades. However, four students who received psychological support or a psychiatric diagnosis and were taking medication related to this diagnosis were excluded from the study.
4. After these criteria, 24 students remained. To conduct psychoeducation with adolescents, experts recommend a group size of 10 to 12 to ensure effective participation and efficiency (APA, 2022).
5. Participants were randomly assigned to the experimental and control groups by computer. Of the 24 participants included in the study, 12 (6 girls, 6 boys) formed the experimental group and 12 (7 girls, 5 boys) formed the control group. Given the cultural characteristics of the group, it was conducted as a closed group.

Instruments

Suicide Probability Scale (SPS): It was developed by Cull & Gill (1988) to assess suicide risk in adolescents and adults. Eskin (1993) adapted the SPS to the Turkish language. The Cronbach's alpha coefficients calculated in various studies to determine the internal consistency of the SPS are shown in Table 2.

Table 2*Cronbach Alpha coefficients of internal consistency of the scale.*

	Original scale	Turkish adaptation	In this study
SPS	.93	.89	.86
sub-dimension			
Hopelessness	.85	.80	.81
negative self-evolution	.58	.37	.77
suicidal ideation	.88	.74	.60
Hostility	.78	.63	.68

*SPS: Suicide Probability Scale***Acceptance and Action Questionnaire-II (AAQ-II):**

It was developed by Bond et al. (2011) to determine the psychological rigidity/flexibility levels of individuals. The scale's original form's Cronbach alpha coherence was found as 0.84. AAQ-II gives a single score. Yavuz et al. (2016) adapted the AAQ-II into Turkish and the scale has a 7-item, single-factor structure. High scores indicate psychological rigidity; low scores indicate psychological flexibility. Within the scope of this study, Cronbach alpha coefficient was found as 0.84 for the AAQ-II.

Development of Psychoeducation Programme

Before starting the study, the researcher who would conduct the psychoeducation program received theoretical and practical training on ACT and related theoretical and practical training. We examined group psychological counseling and psychoeducation programs based on ACT. We prepared a draft psychoeducation program by considering the stages of psychoeducation program development (Furr, 2000; Güçray et al., 2009). Seven mental health experts, then evaluated this draft program. We changed the order of some sessions, made corrections, and eliminated deficiencies based on the expert suggestions. We conducted a pilot study using the psychoeducation program draft. As a result of the pilot, the programme's weaknesses were strengthened. The psychoeducation program as a total of 10 sessions, each lasting 90 minutes and featuring structured content. Twelve volunteer high school students participated in a pilot application in November and December 2022 as part of the development of a psychoeducation program based on ACT.

Purpose and General Features of Psychoeducation Programme

Session 1: Providing information about the thoughts that cause discomfort/pain/disrupt functionality and ACT.

Session 2: The individual's ability to notice and recognise the happiness trap.

Session 3: Accepting/creating space for annoying sensations, thinking and memories rather than making control them (Acceptance).

Session 4: To be able to notice the feelings, thoughts and memories that disturb the individual; to observe them and change their effects on behaviour (Dissociation).

Session 5: Focusing on the present moment and time (Being in the moment).

Session 6: Being able to separate oneself from one's internal states or experiences (Contextual Self).

Session 7: Determining the values that give meaning and directing to the individual's life and taking decisive action in this direction (Values and Behaviours in line with Values).

Session 8: To be able to recognise and help someone who has thoughts of self-harm.

Session 9: Being able to evaluate self-harm thoughts in terms of dissociation, acceptance, being in the moment, contextual self, values, behaviours in line with values.

Session 10: To be able to express opinions and make self-evaluation within the framework of individual perspective on self-harm thoughts.

Analysing the Data*Stage 1*

In the first stage of this research, it was determined that the data were normally distributed and met the conditions for parametric testing. Pearson correlation analysis was used to examine the relationship between levels of psychological flexibility and suicide probability.

Table 3*Checking normality with Kurtosis and Skewness values.*

	N	Skewness	Std.Error	Kurtosis	Std.Error
AAQ-II	485	.438	.111	-.675	.211
SPS	485	.136		-.325	
hopelessness	485	.252		-.558	
negative self-evolution	485	.048		-.628	
suicidal ideation	485	-.318		-.353	
hostility	485	.551		.045	

SPS: Suicide Probability Scale, AAQ-II: Acceptance and Action Questionnaire-II

In this study, Skewness and Kurtosis values were examined to determine whether the data were normally distributed. When Table 3 is examined, Skewness and Kurtosis values between -3 and +3 indicate that the data meet the assumptions of normality (Kline, 2011; Hair et al., 2010).

Stage 2

1. The normality assumptions of the data belonging to the SPS and AAQ-II were tested with the Shapiro-Wilk (less than 30). The data meet the assumptions of normality ($p > .05$).
2. Whether the condition of equality of variances was met was examined by Levene test. When the participants were analysed in terms of the SPS ($F_{1,22} = .004, p > .05$) and SPS-Hopelessness ($F_{1,22} = .563, p > .05$), SPS-Negative Self Evaluation ($F_{1,22} = 1.807, p > .05$), SPS-Suicide Ideation ($F_{1,22} = 2.621, p > .05$), SPS-Hostility ($F_{1,22} = .707, p > .05$), AAQ-II ($F_{1,22} = 1.160, p > .05$), it was found that group variances

were homogeneous in all pretest results of the experimental and control groups.

- Whether the sphericity condition is met or not is analysed by Mauchly sphericity test. In cases where the sphericity assumption is met, Sphericity Assumed analysis results are presented. At this stage, the assumption of sphericity could not be met in the SPS ($W = .483, p < .05$) and SPS- Hostility sub-dimension ($W = .495, p < .05$). Therefore, the Greenhouse-Geisser value of Epsilon was analysed. The sphericity assumption was fulfilled in the sub-dimension of hopelessness ($W = .801, p = .097, p > .05$), negative self-evaluation sub-dimension ($W = .957, p = .631, p > .05$), suicidal ideation sub-dimension ($W = .754, p = .052, p > .05$) and AAQ-II ($W = .930, p = .465,$

$p > .05$). Therefore, Sphericity Assumed analysis results are presented.

Therefore, we used a mixed analysis of variance (ANOVA) in line with the research's purpose. The test resulted in the use of the Bonferroni test to determine the source of difference. The margin of error was set at .05.

Results

Findings on the relationship between suicide probability and psychological rigidity of adolescents

In the study, it was analysed whether there was a relationship between suicide probability and psychological flexibility/rigidity and the results are shown in Table 4.

Table 4

Correlation results of the relationship between psychological flexibility/rigidity and suicide probability in adolescents.

Variable	AAQ-II	SPS	Hopelessness	Negative self-evolution	Suicidal ideation	Hostility
AAQ-II	1					
SPS	.648**	1				
Hopelessness	.701**	.845**	1			
Negative self-evolution	.468**	.811**	.570**	1		
Suicidal ideation	.127**	.551**	.184**	.339**	1	
Hostility	.573**	.735**	.626**	.473**	.167**	1

** $p < .01$

When Table 4 was analysed, it was found that there was a positive and moderately significant relationship between suicide probability and psychological flexibility/rigidity levels in adolescents ($r = .64, p < .01$). When the sub-dimensions of psychological flexibility/rigidity (AAQ-II) and Suicide Probability Scale (SPS) were examined; 'hopelessness' and 'psychological rigidity' were positive and highly significant ($r = .70, p < .01$), 'negative self-evaluation' and 'psychological rigidity' were positively and moderately significant ($r = .46, p < .01$), 'suicidal ideation' and 'psychological rigidity' were positive and low significantly ($r = .12, p < .01$), 'hostility'

and 'psychological rigidity' were positively and moderately significantly ($r = .57, p < .01$).

Findings on the effectiveness of the psychoeducation programme developed based on ACT to reduce the suicide probability of adolescents

We studied a mixed measures (2x3) ANOVA analysis to test whether there was a statistically significant difference between the mean scores obtained from the measurements of the adolescents in the experimental and control groups. Table 5 presents the outcomes.

Table 5

Analysis of variance (ANOVA) results for 2x3 mixed measurements.

Variables	Groups	Pre-test		Post-test		Follow-up		F _(2,44)	η^2
		M	SD	M	SD	M	SD		
SPS	E	102.75	2.30	73.41	3.31	73.75	5.49	232.547***	.914
	C	102.50	2.22	102.91	3.14	102.75	3.07		
Hopelessness	E	35.83	3.66	24.41	2.23	24.66	2.90	52.967***	.707
	C	36.25	3.62	36.00	4.89	36.83	3.37		
Negative Self-Assessment	E	25.58	3.55	19.91	1.56	19.75	2.26	12.573***	.364
	C	26.08	2.31	26.00	2.23	25.66	2.53		
Suicide Ideation	E	23.50	3.28	15.83	1.46	15.91	1.56	46.365***	.678
	C	22.25	2.00	23.33	2.60	21.83	1.94		
Hostility	E	17.83	1.69	13.25	1.05	13.41	1.31	18.502***	.457
	C	17.91	2.35	17.50	2.74	18.41	2.06		
AAQ-II	E	30.91	7.42	18.00	3.93	17.83	3.63	43.675***	.665
	C	30.00	5.15	30.83	4.76	30.83	4.52		

E: Experimental group, C: Control group, *** $p < .001$

Examining Table 5, as a result of the analysis of variance performed on the mean scores of the adolescents in the experimental and control groups from the pretest, posttest, and follow-up tests, it is seen that the group and measurement common effect of the psychological rigidity, Suicide Probability Scale (SPS) and SPS subdimensions were

significant and the eta-squared value had a large effect size. Considering the results obtained, all the values show that the process of the psychoeducation programme based on ACT has a significant effect on the probability of suicide and the level of psychological rigidity of the adolescents.

Table 6
ANOVA results according to Wilks' Lambda statistic.

Variable	Effect	Wilks λ	Sd	F	η^2
SPS	Measur	.35	2	288.54***	.965
	Measur*Grup	.33	2	307.74***	.967
Hopelessness	Measur	.178	2	48.339***	.822
	Measur*Grup	.154	2	57.866***	.846
Negative Self-Assessment	Measur	.449	2	12.899***	.551
	Measur*Grup	.497	2	10.610***	.503
Suicide Ideation	Measur	.161	2	54.917***	.839
	Measur*Grup	.185	2	46.361***	.815
Hostility	Measur	.269	2	28.600***	.731
	Measur*Grup	.185	2	46.321***	.815
AAQ-II	Measur	.270	2	28.377***	.730
	Measur*Grup	.223	2	36.658***	.777

*** $p < .001$

When analysing Table 6, it was found that the time (measurement) and group (intervention) dependent common effect of the SPS (Suicide Probability Scale) and its subdimensions and the AAQ-II (Acceptance and Action Questionnaire-II) variables was statistically significant ($p < .05$).

The Bonferroni multiple comparison test was performed to determine which measurements were significantly different. The results obtained are described below.

There was a significant difference between the pre-test ($M = 102.75$) and post-test ($M = 73.41$); pre-test ($M = 102.75$) and follow-up test ($M = 73.75$) SPS of the experimental group ($p < .05$). There was a significant difference between pre-test ($M = 35.83$) and post-test ($M = 24.41$); pre-test ($M = 35.83$) and post-test ($M = 24.66$) hopelessness scores ($p < .05$). There was a significant difference between the pre-test ($M = 25.58$) and post-test ($M = 19.91$); pre-test ($M = 25.58$) and post-test ($M = 19.75$) negative self-evaluation scores of the experimental group ($p < .05$). There was a significant difference between the pre-test ($M = 23.50$) and post-test ($M = 15.83$); pre-test ($M = 23.50$) and post-test ($M = 15.91$) suicidal ideation scores ($p < .05$). It was found that there was a significant difference between the pre-test ($M = 17.83$) and post-test ($M = 13.25$); pre-test ($M = 17.83$) and post-test ($M = 13.41$) hostility scores ($p < .05$). It was found that there was a significant difference between pre-test ($M = 30.91$) and post-test ($M = 18.00$); pre-test ($M = 30.91$) and follow-up test ($M = 17.83$) psychological rigidity scores of the experimental group ($p < .05$). There was no significant difference between the control group pretest, posttest and follow-up test measures of SPS, hopelessness, negative self-evaluation, suicidal ideation, hostility and psychological rigidity variables ($p > .05$).

Discussion and Conclusion

In this study, it was found that there was a positive and moderately significant relationship between adolescents' psychological rigidity levels and their suicide probability. In other words, it can be said that as the psychological rigidity levels of adolescents increase (as their psychological flexibility levels decrease), their suicide probability also increases. In addition, as the psychological rigidity levels of adolescents increase (as their psychological flexibility levels decrease), the levels of 'hopelessness', 'negative self-evaluation' and 'hostility', which are part of suicide probability, also increase. Therefore, Hypotheses 1 was supported by the results. It is stated that psychological flexibility is related to suicidal ideation and suicide probability (Ducasse et al., 2018; Shareh & Robati, 2022). In the study conducted by Sarica (2016), a negative moderate relationship was found between the suicide probability of students and problem solving skills related to cognitive flexibility. There was a significant negative relationship between suicidal tendency and psychological well-being in adolescents (Durmuş, 2020). The existence of a relationship between these variables suggests that individual or group studies conducted in schools or other settings to improve adolescents' levels of psychological flexibility may be important in preventing many mental health problems, including suicide.

The study found that the ACT-based psychoeducation program was effective in reducing the suicide probability and sub-dimensions of suicide probability (hopelessness, negative self-evaluation, suicidal ideation, and hostility) in adolescents. Therefore, Hypotheses 2 and 3 were supported by the results. In the literature, there is no experimental study examining the effect of ACT on adolescents' suicide probability.

Furthermore, there is a lack of evidence-based studies in the field of acceptance and commitment therapy with adolescents. Some researchers have also expressed the lack of literature on this topic (Barnes et al., 2017; Murrell et al., 2014; Tighe et al., 2018). Conversely, researchers found a limited number of experimental studies on the relationship between ACT and suicide among university students, military personnel, veterans, and other adult populations. Bagheri-Sheykhgafshe et al. (2022) found that an ACT-based program significantly increased self-esteem, optimism, psychological resilience, self-efficacy, and cognitive reappraisal in university students with suicidal ideation. Shareh and Robati (2022) found that there was a significant decrease in suicidal thoughts, hopelessness, and depression levels among soldiers participating in ACT-based structured group therapy. Walser et al. (2015) found that there were significant decreases in the severity of depression and suicidal ideation among veterans participating in ACT-D therapy. Ducasse et al. (2018), in their study with individuals who attempted suicide and received outpatient treatment (diagnosed with suicidal behavior disorder), found that the ACT-based structured program was effective in reducing suicidal thoughts in patients with suicidal behavior disorder. The study by Zou et al. (2022) found that positive self-evaluation is a protective factor against suicidal ideation and mediates the relationship between depression and suicidal ideation. Researchers emphasized that enhancing positive self-evaluation in adolescents can reduce suicidal ideation and, consequently, suicide risk.

The study found that an ACT-based psychoeducation program was effective in reducing adolescents' levels of psychological rigidity. Therefore, Hypotheses 4 was supported by the results. This study developed an ACT-based psychoeducation program to lower the likelihood of suicide. ACT is based on a model of psychological flexibility. According to ACT, psychological flexibility skills enable individuals to cope with the difficulties and pain they face in their lives. This study designed and implemented a program to help at-risk young people enhance their psychological resilience by identifying distressing thoughts and applying ACT-based knowledge and skills to manage these thoughts.

ACT explains psychopathology in terms of psychological rigidity. According to ACT, what reveals psychopathology is the individual's avoidance of pain and intense efforts to control it. Individuals may engage in behaviors that are detrimental to their physical, emotional, and psychological well-being in order to eliminate these unwanted experiences. Psychological rigidity consists of six interrelated processes such as cognitive consolidation, experiential avoidance, loss of contact with the moment, attachment to the past and future, attachment to the conceptualized self, and distancing from values.

Pain and suffering are two different states of being. ACT argues that suffering is normal and exists in all human beings. Each person is unique, experiencing their suffering and difficulties at different levels or at different times. At

certain times, only some people may suffer more than others. The relationship with pain is what turns pain into suffering. ACT states that the individual does not have to identify with their suffering. According to ACT, accepting the pain is a step towards freeing the individual from their suffering (Hayes & Smith, 2021).

Scientific studies in the field of mental health have shown the importance of group work with psychoeducational programs that improve the knowledge and skills of young people to reduce suicide risk. In group work, young people relax and gain strength when they realize that the difficulties they are experiencing are not just their own and that they are not alone. Psychoeducation programs for young people at risk of suicide can reduce their risk and suicide probability by increasing their cognitive awareness and level of consciousness, challenging their existing thought and behavior patterns and offering new alternatives, developing problem-solving and coping skills, and strengthening their communication and social skills without triggering suicidal thoughts and behaviors.

Limitations

The study has some limitations. One limitation stems from an earthquake occurring within the studied group, which is a unique situation. Due to the earthquake on 6 February 2023, the region where the study was conducted experienced many social, economic and environmental changes. It was assumed that all participants were equally affected by the earthquake.

Another limitation is the low number of students participating in the quasi-experimental study (24 students). This was due to the selection of students at high risk of suicide, as determined by the SPS results. Additionally, the APA (2022) recommends that group sizes for psychoeducation with adolescents should be between 10 and 12 to ensure effective participation and group efficiency.

Suggestions

Administrators, school counselors, psychologists, social workers, and other relevant professionals in schools and residential institutions can learn about the program. Experimental studies can be conducted with parents, teachers and friends of adolescents to reduce the possibility of suicide in adolescents.

The study group of this research consists of adolescents attending a high school in the Mediterranean region of Turkey. Future studies can be conducted with samples drawn from different cities or geographical regions, or with nationally representative samples. Additionally, the study can be repeated by increasing the number of participants.

Complementary information

Article Note: This article is derived from the PhD dissertation of Yunus Emre Aydın, entitled ‘Investigation of the effect of psychoeducation program based on acceptance and commitment therapy on reducing suicide probability in adolescents’, completed under the supervision of Binnaz Kıran.

Additional information: Part of this study was presented as an oral paper at the 24th International Congress on Psychological Counseling and Guidance, held 17–19 November 2023 at Ankara University.

Ethical approval: Ethical approval for this study was obtained from the Social and Human Sciences Ethics Committee of Mersin University (Approval number: 29/03/2022-114).

Author Contribution Statement: In this study, the first author contributed 60% (idea, design, data collection, analysis and/or in-

terpretation, literature review, manuscript writing, resources, references, other) and the second author contributed 40% (literature review, critical review, supervision, other).

Conflict of interest: We prepared this study in accordance with the rules of scientific research and publication ethics. The author(s) reported no potential conflict of interest.

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References

- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). American Psychiatric Publishing.
- APA. (2022). Psychotherapy: understanding group therapy. <https://www.apa.org/topics/psychotherapy/group-therapy>
- Bagheri-Shaykhangafshe, F., Kiani, A., Savabi-Niri, V., Aghdasi, N., & Bourbour, Z. (2022). The efficacy of acceptance and commitment therapy on psychological capital and emotion regulation of students with suicidal ideation. *International Journal of Behavioral Sciences*, 16(2), 96-102.
- Barnes, S. M., Smith, G. P., Monteith, L. L., Gerber, H. R., & Bahraini, N. H. (2017). ACT for Life: Using acceptance and commitment therapy to understand and prevent suicide. *Handbook of Suicidal Behaviour*, 485-504.
- Bayraktar, S. (2015). İntihar kavramının çocuklar ve ergenler açısından ele alınması [Conceptual issues concerning suicide in children and adolescents]. *Mediterranean Journal of Humanities*, 1, 139-159. <https://doi.org/10.13114/MJH.2015111373>
- Bean, R. C., Ong, C. W., Lee, J., & Twohig, M. P. (2017). Acceptance and commitment therapy for PTSD and trauma: An empirical review. *The Behavior Therapist*, 40 (4), 145-150.
- Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., ... & Zettle, R. D. (2011). Preliminary psychometric properties of the Acceptance and Action Questionnaire-II: A revised measure of psychological inflexibility and experiential avoidance. *Behavior therapy*, 42(4), 676-688.
- Cull, J. G., & Gill, W. S. (1988). Suicide probability scale. *Journal of Consulting and Clinical Psychology*. <https://doi.org/10.1037/t01198-000>
- Dattilo, F. M & Freeman, A. (2017). *Kriz Durumlarında Bilişsel Davranış Stratejiler* [Cognitive behavioral strategies in crisis situations] (B. Altındal, Trans.). Litera.
- Donahue, J. J., Santanello, A., Marsiglio, M. C., & Van Male, L. M. (2017). Acceptance and commitment therapy for anger dysregulation with military veterans: A pilot study. *Journal of Contemporary Psychotherapy*, 47, 233-241.
- Ducasse, D., Jaussent, I., Arpon-Brand, V., Vienot, M., Laglaoui, C., Béziat, S., ... & Olié, E. (2018). Acceptance and commitment therapy for the management of suicidal patients: a randomized controlled trial. *Psychotherapy and psychosomatics*, 87(4), 211-222.
- Durmuş, Y. (2020). *Ergenlerde intihar eğiliminin yordanması: yaşam nedenleri, psikolojik iyi oluş ve aleksitimi'nin rolü* [Prediction of suicidal tendency in adolescents: The role of reasons for living, psychological well-being and Alexitima]. (Publication no.643220) [Master's thesis, Muğla Sıtkı Koçman University] The Thesis Database of the Turkish Council of Higher Education
- Eskin, M. (1993). Swedish translations of the suicide probability scale, perceived social support from friends and family scales, and the scale for interpersonal behavior: a reliability analysis. *Scandinavian Journal Of Psychology*, 34(3), 276-281.
- Eskin, M. (2014). *İntihar: açıklama, değerlendirme, tedavi ve önleme* [Suicide: explanation, assessment, treatment, and prevention]. Türk Psikologlar Derneği Yayınları.
- Eskin, M., & Köskün, T. (2019). İntiharda bilişsel davranışçı terapiler [Cognitive-behavioral therapies in suicide]. In G. Bahadır & E. Ertekin (Eds.), *Farklı tanı gruplarında bilişsel davranışçı terapiler* [Cognitive-behavioral therapies across different diagnostic groups] (pp. 68–75). Türkiye Klinikleri.
- Ertemir, D. & Ertemir, M. (2003). Gençlerin intihar girişimlerinin özellikleri [Characteristics of suicide attempts among young people]. *Düşünen Adam Psikyatri ve Nörolojik Bilimler Dergisi*, 16, 231-234.
- Furr, R.S. (2000). Structuring the group experience: A format for designing psychoeducational groups. *Journal for Specialists in Group Work*, 25(1), 29-49.
- Garivani, G., Taheri, E., & Alizadeh, Z. (2021). Effectiveness of acceptance and commitment therapy on the anger rumination, hostile attribution and aggression in immigrant children. *Social Determinants of Health*, 7(1), 1–9. <https://doi.org/10.22037/sdh.v7i1.35232>
- Geldard, K., & Geldard, D. (2013). *Ergenler ve gençlerle psikolojik danışma: Proaktif yaklaşım* (M. Pişkin, Trans.) [Counseling adolescents and young people: A proactive approach]. Nobel Akademi Yayıncılık.
- González-Menéndez, A., Fernández, P., Rodríguez, F., & Villagrà, P. (2014). Long-term outcomes of Acceptance and Commitment Therapy in drug-dependent female inmates: A randomized controlled trial. *International Journal of Clinical and Health Psychology*, 14(1), 18-27. [https://doi.org/10.1016/S1697-2600\(14\)70033-X](https://doi.org/10.1016/S1697-2600(14)70033-X)
- Gökkaya, S. C. (2023). Okul temelli intihar önleme programlarının incelenmesi [A Review of School-Based Suicide Prevention Programs]. *Ege Eğitim Dergisi*, 24(2), 209-223. <https://doi.org/10.12984/egcedf.1213519>
- Güçray, S. S., Çekici, F. & Çolakkadıoğlu, O. (2009). Psiko-eğitim gruplarının yapılandırılması ve genel ilkeleri [Planning of psycho-educational groups and their principle]. *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, 5(1), 134-153.
- Hair, J., Black, W. C., Babin, B. J. & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Prentice Hall.
- Harris, R. (2018). *ACT'yi kolay öğrenmek: İlkeler ve ötesi için hızlı bir başlangıç* [ACT made simple: A quick start guide to ACT fundamentals] (T. H. Karatepe & K. F. Yavuz, Trans. Eds.; 3rd ed.). Litera.
- Harris, R. (2021). *Mutluluk tuzağı* [The happiness trap] (M. H. Türkçapar & K. F. Yavuz, Ed. Trans.). Litera.
- Hayes, S. C. & Smith, S. (2021). *Zihminden çık bayatına gir* [Get Out of Your Mind and Into Your Life] (S. İlkay & K. F. Yavuz, Ed. Trans.). Litera.
- Herbert, J. D., & Forman, E. M. (Eds.). (2011). *Acceptance and mindfulness in cognitive behavior therapy: Understanding and applying the new therapies*. John Wiley & Sons. <https://doi.org/10.1002/9781118001851>.
- Kheyran-Alnesa, M., Mirzaian, B. & Yar-Ali, D. (2018). The effectiveness of acceptance and commitment-based therapy on anger, anxiety and

- hostility for heart surgery patients. *Journal of Biochemical Technology*, 9(4), 43-49.
- King, K. A. (2001). Developing a comprehensive school suicide prevention program. *Journal of School Health*, 71(4), 132-137.
- Kline, R. (2011). *Principles and practice of structural equation modeling* (2nd ed.). The Guilford Press.
- Konkan, R., Erkuş, G. H., Güçlü, O., Şenormancı, Ö., Aydın, E., Ülgen, M. C., & Sungur, M. Z. (2014). İntihar girişiminde bulunan kişilerde başa çıkma tutumları [Coping strategies in patients who had suicide attempts]. *Nöropsikiyatri Arşivi*, 51(1), 46-51. <https://doi.org/10.4274/npa.y6578>
- Korkut Owen, F. (2020). *Okul temelli önleyici rehberlik ve psikolojik danışma* [School-based preventive guidance and psychological counseling]. Anı Yayıncılık
- MEB [MoNE]. (2003). *Okullarımızda intihar ve suç araştırma raporu* [Suicide and crime investigation report in our schools]. Özel Eğitim Rehberlik ve Danışma Hizmetleri Genel Müdürlüğü.
- Michelmore, L. & Hindley, P. (2012). Help-seeking for suicidal thoughts and self-harm in young people: A systematic review. *Suicide and Life-Threatening Behavior*, 42(5), 507-524. <https://doi.org/10.1111/j.1943-278X.2012.00108.x>
- Mousavi, S. E. (2023). *Sosyal kaygı yaşayan öğrencilerde kabul ve kararlılık temelli psikoegitimin sosyal kaygı belirtileri, yaşantısal kaçınma ve olumsuz değerlendirilme korkusu üzerine etkisi* [The effect of acceptance and commitment-based psychoeducation on social anxiety symptoms, experiential avoidance and fear of negative evaluation in students with social anxiety disorder] (Publication no. 795370) [Doctoral dissertation, Atatürk University]. The Thesis Database of the Turkish Council of Higher Education
- Murrell, A. R., Al-Jabari, R., Moyer, D., Novamo, E. & Connally, M. L. (2014). An acceptance and commitment therapy approach to adolescent suicide. *International Journal of Behavioral Consultation and Therapy*, 9(3), 41.
- Özşahin Terkuran, N. (2023). *Kabul ve kararlılık terapisi temelli müdahale programının ergenlerin sosyal kaygı düzeyleri üzerine etkisinin incelenmesi* [Investigation of the effect of act-based intervention program on social anxiety levels, psychological flexibility and value of adolescents] (Publication no.832835) [Doctoral dissertation, Çukurova University]. The Thesis Database of the Turkish Council of Higher Education
- Portzky, G., & Van Heeringen, K. (2006). Suicide prevention in adolescents: a controlled study of the effectiveness of a school-based psycho-educational program. *Journal of Child Psychology and Psychiatry*, 47(9), 910-918. <https://doi.org/10.1111/j.1469-7610.2006.01595.x>
- Reinecke, M. A. (2000). Suicide and depression. In F. M. Dattilio & A. Freeman (Eds.), *Cognitive-behavioral strategies in crisis intervention* (2nd ed., pp. 84-125). The Guilford Press
- Savi-Çakar, F., Girgin, M. & Uzun, K. (2020). Ergenlerin intihar girişimlerinde risk faktörleri ve psikolojik yardım alma durumlarının incelenmesi [Investigation of risk factors and psychological helping in adolescents' suicide attempts] *International Social Sciences Studies Journal*, 6 (68), 3599-3618. <http://dx.doi.org/10.26449/sssji.2568>
- Shareh, H., & Robati, Z. (2022). Effect of acceptance and commitment group therapy on cognitive flexibility, suicidal ideation, depression, and hopelessness in conscripts. *Iranian Journal of Psychiatry and Clinical Psychology*, 27(4), 412-427.
- Siyez, D. M. ve Baş, A. U. (2009). Turkish school counsellors and counselling students' knowledge of adolescent suicide. *Journal of Psychologists and Counsellors in Schools*, 19(1), 25-40.
- Tarı, E. (2024). *Kabul ve kararlılık terapisi yönelimli grup müdahalesinin sigara bağımlılığı üzerindeki etkisi* [The effect of acceptance and commitment therapy-based group intervention on smoking addiction] (Publication no.845092) [Master's thesis, Istanbul Medipol University]. The Thesis Database of the Turkish Council of Higher Education
- Tighe, J., Nicholas, J., Shand, F., & Christensen, H. (2018). Efficacy of acceptance and commitment therapy in reducing suicidal ideation and deliberate self-harm: systematic review. *JMIR mental health*, 5(2).
- TURKSTAT (2020). Statistics on death and cause of death. <https://data.tuik.gov.tr/Bulten/Index?p=Olum-ve-Olum-Nedeni-Istatistikleri-2019-33710>
- Usta, F. (2017). *Kabul ve Kararlılık Terapisi yönelimli psiko-eğitim programının ergenlerin sosyal görünüş kaygısı ve kabul ve eyleme geçme düzeylerine etkisi* [Effects of acceptance and commitment therapy oriented psycho-educational program on social appearance anxiety and levels of acceptance and action among adolescents] (Publication no.462299) [Doctoral dissertation, Sakarya University].
- The Thesis Database of the Turkish Council of Higher Education <https://acikerisim.sakarya.edu.tr/handle/20.500.12619/69531>
- Ünlü G., Aksoy Z. & Ersan E. E. (2014). İntihar girişiminde bulunan çocuk ve ergenlerin değerlendirilmesi [Evaluation of child and adolescents with attempted suicide]. *Pamukkale Medical Journal*, 7(3), 176-183.
- Walser, R. D. & Pistorello, J. (2004). ACT in group format. S. C. Hayes & K. D. Strosahl (Ed.), In *A practical guide to acceptance and commitment therapy* (pp.347-372). Springer.
- Walser, R. D., Garvert, D. W., Karlin, B. E., Trockel, M., Ryu, D. M. & Taylor, C. B. (2015). Effectiveness of Acceptance and Commitment Therapy in treating depression and suicidal ideation in Veterans. *Behaviour research and therapy*, 74, 25-31.
- World Health Organization. (2014). Preventing suicide: A global imperative. World Health Organization. <https://www.who.int/publications/i/item/9789241564779>
- World Health Organization. (2019). Suicide in the world: global health estimates (No.WHO/MSD/MER/19.3). World Health Organization. <https://apps.who.int/iris/bitstream/handle/10665/326948/WHO-MSD-MER-19.3-eng.pdf>
- Yavuz, F., Ulusoy, S., İskin, M., Esen, F. B., Burhan, H. S., Karadere, M. E. & Yavuz, N. (2016). Turkish version of Acceptance and Action Questionnaire-II (AAQ-II): A reliability and validity analysis in clinical and non-clinical samples. *Bulletin of Clinical Psychopharmacology*, 26(4), 397-408.
- Yüncü, Ö. (2024). *Kabul ve Kararlılık Terapisinin (ACT) depresyondan etkilenen üniversite öğrencilerinin travmalarına ve psikolojik esnekliklerine etkisi* [The impact of Acceptance and Commitment Therapy on trauma and psychological flexibility among university students affected by the earthquake] (Publication no.851063) [Master's thesis, İstanbul Nişantaşı University]. The Thesis Database of the Turkish Council of Higher Education
- Zou, S., Song, X., Tan, W., Deng, F., Zhang, H., Xu, H., ... & Yin, L. (2022). Core self-evaluation as mediator between depressive symptoms and suicidal ideation in adolescents. *Journal of affective disorders*, 302, 361-366.