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Rumination Mediates the Relationship Between Childhood Traumas with Cognitive Defusion, Acceptance, and Emotion Regulation: A Qualitative and Quantitative Study

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Abstract

This study examines the intermediary role of rumination in the relationship between childhood traumas in young adults and cognitive defusion, psychological acceptance, and suppression which is one of the emotion regulation strategies. In the quantitative stage of the study formed according to the explanatory sequential design, the intermediary role of rumination by using a structural equation model while in the qualitative stage, the intermediary role of rumination was analyzed through interviews using the interpretive phenomenology design. Personal Information Form, Childhood Trauma Scale, Short Form Ruminative Response Scale, Acceptance and Action Form II, Drexel Defusion Scale, and Emotion Regulation Scale were used in the research. At the end of the research, it was determined that childhood traumas have a negative effect on cognitive defusion and acceptance, while they have a positive effect on suppression. It was seen that rumination has a partial intermediary role in the relationship of childhood traumas with cognitive defusion, acceptance, and suppression. As a result of the qualitative analysis, twelve themes such as "Constantly thinking about the past, not being able to move away from childhood traumas, not being able to forgive their parents, inability to get rid of negative thoughts, living in the past, moving away from a value-driven life, false expression of emotion, suppression of emotions, emotions reflected in behavior, coping with negative emotions and desired emotion regulation" emerged concerning participants' experiences of cognitive defusion, acceptance, and suppression. Although one of the purposes of using AAQ-II in the study was to support discussions about the scale via qualitative results, this was a limitation for the study. Therefore, although a high rate was obtained, it is not possible to infer that childhood traumas and rumination can explain acceptance behaviors. For this, much more quantitative and qualitative

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studies are needed. Other qualitative research findings are thought to support quantitative research findings.

Keywords Childhood traumas · Cognitive defusion · Acceptance · Psychological flexibility · Rumination · Suppression

Introduction

Accidents, natural disasters, negative medical experiences, abuse, and neglect experienced during childhood are called childhood traumas (Fink et al., 1995). These traumas are generally regarded as types of trauma that are difficult to overcome due to the neglect and abuse by caregivers coinciding with a vulnerable period (Herman, 2007; Yılmaz et al., 2003). Childhood traumas cause many psychological problems during adulthood by making it difficult for individuals to show consistent reactions in their relationships (Copeland et al., 2018; Garnefski et al., 2001; Howe, 2005; Lee & Song, 2017; Makriyianis et al., 2019; Wolfe et al., 2001). While the continuation of traumatic experiences by repetition in the mind causes rumination (Kim et al., 2017), some studies show that ruminative thoughts are related to post-traumatic stress symptoms and psychological problems (Cann et al., 2011; Taku et al., 2009). Negative childhood experiences in individuals prevent them from accepting their emotions, thoughts, and experiences without being judgmental and from being open to new experiences (Hansen et al., 2014; Jaeger et al., 2014). According to acceptance and commitment therapy (ACT), it is important for psychological well-being to be able to cognitively defuse emotional experiences resulting from negative experiences and to accept these experiences instead of suppressing them (Kashdan et al., 2010).

The fact that there are many limitations to the approaches that make it possible to categorize mental disorders resulted in transdiagnostic approaches that focus more on the psychopathological processes underlying the diagnosis to emerge (Yektaş, 2020). In this way, even if the disorders are diagnosed differently, it can be determined in which way they overlap or diverge from each other (Batmaz, 2018). ACT also embraces a transdiagnostic approach outside of clinical classifications (Yektaş, 2020). In the present study, the relationships between the concepts of cognitive defusion, acceptance, suppression, and rumination were examined by embracing a transdiagnostic approach based on ACT. The aim was to contribute to the intervention processes focused on rumination for the prevention of various mental health disorders that may occur as a result of childhood traumas.

The Relationship Between Childhood Traumas and Rumination

The deterioration in the cognitive structure of individuals as a result of childhood traumas causes the rumination process, which enables these experiences to be reprocessed (Basharpoor et al., 2015; Cann et al., 2011; Carper et al., 2015; Ehlers & Clark, 2000; Hansen et al., 2014; Jaeger et al., 2014; Joseph et al., 2012;

Oginska-Bulik & Juczynski, 2016; Tedeschi & Calhoun, 2004; Valdez & Lilly, 2017). The individual's continuous thinking of the causes and consequences of an event unintentionally and the difficulty to stop doing so establishes intrusive rumination (Joormann & D'Avanzato, 2010; Taku et al., 2009). Rumination is interconnected to cognitive defusion and acceptance, which are the two components of psychological flexibility that stand for being open to experiences, and represents cognitive defusion and experiential avoidance (Nolen-Hoeksema et al., 2008; Yektaş, 2020). Cognitive defusion is different from other concepts that make up the psychological flexibility model despite being correlated with them. Cognitive defusion includes structures such as awareness, control over thoughts, flexibility, and self-awareness (Gillanders et al., 2014). As such, it is considered that existing ruminative thinking processes might negatively affect one's cognitive defusion experiences in a multidimensional structure. Only one study could be found that shows that rumination has an intermediary role in the relationship between negative affect and cognitive defusion (Costa et al., 2017) and it was considered important to conduct more relevant research.

Childhood Traumas and Cognitive Defusion

Childhood maltreatment is related to decreased executive functions in adulthood (Spann et al., 2012). Studies show that mental processes that determine how individuals perceive the experienced trauma are a factor in their trauma experiences (Bardeen & Fergus, 2016; LoSavio et al., 2017; Roley et al., 2015). When cognitive defusion, which is one of these mental processes, is removed from the equation; behaviors come under the control of negative thoughts and people lose touch with new experiences outside of negative thoughts (McCracken, 2014). Cognitive defusion is also one of the basic components related to being open to experiences like acceptance and it is one of the six processes in the psychological flexibility model of ACT (Yavuz, 2015). Cognitive defusion is a person's ability to move away from constantly recurring thoughts by and to be able to get rid of the effects of language and cognition on behavior (Yavuz, 2015). In the literature, it is mentioned that cognitive defusion is one of the aspects of psychological flexibility that is overlooked and it is suggested to further examine what are the relationships of cognitive defusion with other concepts (Gillanders et al, 2014). According to ACT, the control one has over cognitive processes affects how a person behaves (Hayes et al., 2006). Besides, taking a psychological distance from negative thoughts and emotions can lead to a decline in depressive symptoms (Costa et al., 2017). At this point, cognitive defusion is thought to be important in moving away from negative childhood traumas.

The Relationship of Childhood Traumas with Psychological Flexibility and Acceptance

The more people move away from the values they have in life, the more psychological inflexibility increases, and psychological flexibility decreases if they do not

act according to the context (Yavuz, 2015). This, in turn, prevents a person from being open to experiences, leading to experiential avoidance, which represents the psychopathological state the opposite of acceptance in the psychological flexibility model (Hayes et al., 2006; Yektaş, 2020). Acceptance represents accepting all our experiences as they are without fighting them and being disposed to engage in new behavior (Hayes et al., 2012). Accepting the emotions and thoughts one has and behaving in accordance with the determined direction a person has about life increases psychological flexibility (Eifert & Forsyth, 2005). Therefore, one of the best ways to reduce the effect of negative thoughts and emotions in an individual is not to fight them, but to accept them (Harris, 2016). Childhood traumas, on the other hand, prevent acceptance and being open to new experiences (Hansen et al., 2014; Jaeger et al., 2014). In this context, it is thought to be important to accept negative experiences that cannot be changed, such as childhood traumas, and to acknowledge the intermediary role of rumination in this process.

According to ACT, "experiential avoidance" is the inclusive term for the model of psychopathology. Acceptance is also the term used to describe this model positively; acceptance and experiential avoidance focus on how people respond to complex thoughts, emotions, and physiological sensations. Acceptance and experiential avoidance are examples of psychological flexibility and inflexibility, respectively, and can be used interchangeably (Bond et al., 2011). Because these concepts refer to the psychological stances and actions that people display when they include thoughts and feelings that they may not want to come into contact with at that moment, the more general inclusive term can be used to refer to the ACT model (Bond et al., 2011). These two terms emphasize how people's behavior can be determined in an inflexible, excessive, and harmful way through the avoidance of unwanted internal events so that they can follow their values and goals (Hayes et al., 2006). Based on this, high scores obtained from AAQ-II were evaluated as an indicator of a low acceptance level (Bond et al., 2011; McCracken, 2014).

All strategies that constitute psychological flexibility are meaningful to the extent that they enable the person to live a life in line with his or her values. However, current measures of psychological flexibility do not fully provide the instrumental use of psychological distress to achieve a valuable goal (Doorley et al., 2020). Much of what we know about psychological flexibility is based on the Acceptance and Action Questionnaires (AAQ and AAQ-II) and a single measurement approach (Doorley et al., 2020). However, in recent studies, researchers have questioned how the Acceptance and Action Questionnaire (Bond et al., 2011) is used in current research (Doorley et al., 2020; Gámez et al., 2011; Tyndall et al., 2018). Psychological flexibility is associated with psychopathology and well-being-functionality indicators (Cherry, 2021). However, AAQ-II (Bond et al., 2011) is thought to measure experiential avoidance and psychological inflexibility rather than psychological flexibility (Cherry, 2021). In this context, AAQ-II was used to measure acceptance (Bond et al., 2011; McCracken, 2014), representing the opposite of experiential avoidance behaviors.

It is said that users of AAQ-II infer the presence of psychological flexibility in the absence of psychological inflexibility and the presence of acceptance in the lack of experiential avoidance. This practice is questionable, given the debate over whether

psychological flexibility operates along a single continuum to psychological inflexibility (Ciarrochi et al., 2014; Kashdan & Rottenberg, 2010; Morris & Mansell, 2018). It has been argued in the literature that the presence of a positive structure cannot be inferred only through the absence of a seemingly negative structure and that it is essential to measure positive structures on their own directly (Johnson & Wood, 2017; Seligman & Csikszentmihalyi, 2000; Wood & Tarrier, 2010). Considering all these criticisms, AAQ-II was approached critically to measure behavior acceptance. It was discussed whether the statistical results obtained from the scale could be explained through qualitative analysis. Although ACT assumes that psychological flexibility consists of six interrelated processes, AAQ-II measures psychological flexibility as a one-dimensional construct (Gámez et al., 2011; Hayes et al., 2004; Rolffs et al., 2018).

Among the aims in the present study was to examine how childhood traumas affect one's openness to experiences. One of the concepts representing being open to experiences, cognitive defusion, is also referred to as a process of psychological flexibility (Hayes et al., 1999; Yektaş, 2020), but it is not adequately represented and evaluated in AAQ-II with a separate measurement. For this reason, in the present study, instead of measuring the ambiguous consequences of negative emotions as in AAQ-II (for example, "*Emotions cause problems in my life*"), as in the Personalized Psychological Flexibility Index (Kashdan et al., 2020) the participants were asked to fill in the items on the scale, taking into account the effects of their distress caused by childhood traumas in their current lives. Because psychological flexibility scores depend on idiographic targets, researchers are advised to be cautious about generalizing. The nature and prioritization of a person's goals can change over time, leading to more unstable psychological flexibility scores over extended periods. Further research using qualitative and quantitative approaches is recommended to understand psychological flexibility (Doorley et al., 2020). In light of all these inquiries, in the present study attempts were made to evaluate whether AAQ-II could measure acceptance (Bond et al., 2011; McCracken, 2014) by using qualitative analyses based on the data obtained from interviews. Looking at the themes revealed can contribute to showing which avoidance behaviors individuals exhibit, how difficulties in accepting affect people negatively, and that rumination is a tool.

Childhood Traumas and Suppression

Emotion regulation is defined as an individual's ability to put their emotional reactions, formed as a result of their life experiences, in a certain order (Koole, 2010; Thompson, 1994). The process model developed by Gross (1998) is one of the most effective models used to explain the concept of emotion regulation. Distancing one's self from the environment that brings about the emotion and giving more attention to one of the options that cause the spring of emotion are among the antecedent-focused strategies while suppression of emotions is one of the strategies of the response-focused emotion regulation (Gross, 1998; Gross & Thompson, 2007). Response-focused strategies such as suppression are used to change the reactions given after the spring of emotions (Gross & Thompson, 2007). Deliberately

suppressing emotions and thoughts, along with associating the suppressed thought with the elements in the context in which it is suppressed, also causes an increase in its frequency by having the opposite effect (Gold & Wegner, 1995; Harris, 2016; Shipman et al., 2007; Wegner et al., 1987, 1991). Accepting emotional experiences instead of suppressing them is important for an individual to continue their life in accordance with their values (Kashdan et al., 2010). Some studies demonstrate that individuals who have negative experiences such as childhood traumas have experiential avoidance problems about their emotions and that they have limited capacity for acceptance (Burns et al., 2010; Garnefski et al., 2001; Gross, 1999; Shipman et al., 2007). It is known that these people tend to use suppression more often as one of the emotion regulation strategies and that it is important to procure diversity in behavior to reduce suppression (Leonidou et al., 2016).

Current Study

For people to be psychologically flexible, they must have cognitive defusion and acceptance, which are the two main components related to being open to experiences (Yektaş, 2020). Furthermore, accepting and being open to emotional experiences instead of suppressing them is essential to leading a functional life (Kashdan et al., 2010). However, ruminative thoughts increase in people who have been exposed to childhood traumas, which leads the person away from being psychologically flexible (Cook et al., 2012). Even though there are studies that have examined these relationships in various ways, a study that examines the intermediary role of rumination in the relationship between childhood trauma, cognitive defusion, psychological flexibility, and emotion regulation in young adults using a mixed methodology has not been found in the literature. For this purpose, the following sub-objective questions were created in the quantitative section:

- Do childhood traumas significantly negatively predict cognitive defusion and acceptance?
- Do childhood traumas significantly predict suppression at a positive level?
- Does rumination have an intermediary role in predicting cognitive defusion, acceptance, and suppression of childhood traumas?

The sub-objectives determined for the qualitative part of the research are as follows:

- What are the common themes concerning the experiences of cognitive defusion, acceptance, and suppression of young adults with childhood traumas?
- How are the experiences of cognitive defusion, acceptance, and suppression of young adults with childhood traumas intermediated by rumination?

Method

Participants

The quantitative study group consists of young adults living in Turkey in 2021, aged between 20 and 40 years, selected by convenience sampling. The fact that the study took place during the Covid-19 pandemic made the data collection process difficult and was the reason for this sampling method being chosen. The data were collected online via Google Drive, and all ethical rules required by scientific research were followed in the data collection. In order to be able to analyze the structural equation model, the suggested sample size should be between 100 and 150 people (Kline, 2011). Since the structural equation model was tested, it was tried to reach the appropriate number of participants. 800 people were reached at first. According to the Childhood Trauma Scale, some criteria have been determined in order to be able to claim that individuals have childhood trauma. There are cut-off scores for each sub-scale. To be able to say that the participant has childhood trauma, the participant must receive at least 5 points from the sexual abuse subscale, 7 points from the physical neglect and emotional abuse subscale, and 12 points from the emotional neglect subscale. For the total score, this limit is 35 (Şar et al., 2012). Hence, only the participants who received more scores than the cutoff score from at least one of the Childhood Trauma subscales in the psychometric assessment were included in the study. 162 people were ruled out upon seeing that they could not exceed the cutoff score limit of any subscale. According to the standardized z scores in the remaining 638-person data set, it was seen that there were 48 people outside the ± 3 range and they were removed from the study group. Analyses were performed on the remaining 590 people. Information about the demographics of the group is presented in Table 1.

The scale scores of the participants who volunteered for the interview were ranked within the scope of criterion sampling. Interviews were conducted with 13 people whose childhood traumas, rumination, and suppression scores were high

Table 1 Demographic information of the quantitative study group

Demographic Variables	Group	Frequency (f)	Percentage (%)
Gender	Female	313	53.1
	Male	277	46.9
Marital status	Single	373	63.2
	Married	217	36.8
Graduation	Primary and secondary education	55	9.3
	Undergraduate	351	59.5
	Postgraduate	184	24.4
Level of socioeconomic	Low	63	10.7
	Middle	435	73.7
	High	92	15.6

and who's cognitive defusion and psychological flexibility scale scores were low. While the total scores of the participants from the Childhood Traumas Scale were at least 45, attention was paid to ensure that the participants scored above the cut-off point determined for each of the sub-dimensions of the scale. Thus, by creating a homogeneous study group, it was aimed to see the similarities and differences and to obtain detailed information about the case. Six of the participants were female and 7 were male. While 4 of the participants were married, 9 of them were single and 3 participants had children. While 9 participants had bachelor's degrees, 2 of them had received postgraduate education and 2 of them had received primary/secondary education. While 2 of the participants received psychological support, 11 of them indicated that they were aware that they should receive psychological support but they did not receive any.

Measures

Childhood Trauma Childhood Trauma Scale adaptation of this scale developed by Bernstein et al. (1994) to Turkish was made by Şar et al. (2012). As a result of the confirmatory factor analysis applied to examine the construct validity of the scale, it was seen that the factor load of the sexual abuse aspect was low (0.18); therefore, it was excluded from the analysis. In order to obtain better fit values, the correlations between the error values of some items were decontrolled. As a result of confirmatory factor analysis, it was found that the tested model was significant ($x^2 = 571.924$; $Sd = 140$; $p < 0.001$) and that the four-factor structure of the scale was confirmed according to the calculated goodness of fit ($x^2/df = 4.09$, $RMSEA = 0.07$, $SRMR = 0.07$, $CFI = 0.90$, $GFI = 0.91$, $AGFI = 0.87$, $IFI = 0.90$). Cronbach's alpha coefficient for internal consistency of the scale was found to be 0.88.

Rumination Short Form Rumination Scale is a quaternary Likert scale designed by Treynor and colleagues (2003) in the form of two sub-dimensions. The adaptation of the scale to Turkish culture was made by Erdur Baker and Bugay (2012). As a result of the confirmatory factor analysis, the tested model was found to be significant ($x^2 = 67.31$; $Sd = 17$; $p < 0.001$), and it was seen that the one-factor structure had better-fit values ($x^2/df = 3.96$, $RMSEA = 0.07$, $SRMR = 0.03$, $CFI = 0.98$, $GFI = 0.98$, $AGFI = 0.84$, $IFI = 0.98$). The Cronbach alpha coefficient calculated for the measuring instrument was 0.87.

Acceptance Acceptance and Action Questionnaire (AAQ-II) developed by Hayes et al. (2004) was adapted to Turkish by Yavuz et al. (2016). High scores obtained from the scale indicate that there is psychological inflexibility in behavior, while low scores indicate that there is psychological flexibility. As a result of the confirmatory factor analysis applied to the scale ($x^2 = 33.60$; $Sd = 10$; $p < 0.001$), the goodness of fit values calculated to test the model met the criteria, and the one-factor structure was confirmed ($x^2/df = 3.36$, $RMSEA = 0.06$, $SRMR = 0.02$, $CFI = 0.99$, $GFI = 0.98$, $AGFI = 0.95$, $IFI = 0.99$). The Cronbach alpha coefficient calculated for the measur-

ing instrument was 0.90. The factor loads of the items in the scale vary between 0.67 and 0.82.

AAQ-II was used to measure acceptance, which represents the opposite of experiential avoidance behaviors and the scale was approached critically. Considering the items in the scale (example scale items: "*Painful experiences and memories in the past make it difficult to live a life that I value*", "*I worry about not being able to control my anxiety and feelings*", "*I am afraid of my feelings*"), it is thought to represent avoidance behaviors that occur as a result of not being able to accept feelings, thoughts, and experiences (Bond et al., 2011; McCracken, 2014). In addition, it was aimed to obtain in-depth information about the experiences of the participants through interviews, to investigate whether the qualitative results obtained support the quantitative results, and to discuss the face validity of AAQ-II (sample interview questions: "*Can you accept the traumas you experienced in your childhood as past experiences and continue with your life* ?", "*Do these negative memories that disturb you prevent you from acting according to your life values*?", "*What other things are preventing you from accepting the past and moving on with your life*?").

Drexel Defusion Drexel Defusion Scale was developed by Forman and others (2012) to measure the ability to move away from emotions and thoughts. It was adapted to Turkish by Yerin Güneri and Aydın (2021). As a result of the confirmatory factor analysis applied to this research, it was found that the tested model was significant ($x^2 = 46.50$; $Sd = 19$; $p < 0.001$), and the one-factor structure was confirmed according to the calculated goodness of fit values ($x^2/df = 2.45$, $RMSEA = 0.05$, $SRMR = 0.03$, $CFI = 0.98$, $GFI = 0.98$, $AGFI = 0.96$, $IFI = 0.98$). Cronbach's alpha coefficient calculated for the measuring tool was 0.85.

Suppression Emotion Regulation Scale developed by Gross and John (2003) has two sub-dimensions as suppression and reappraisal, and a total score cannot be obtained from the scale. Eldeleklioğlu and Eroğlu (2015), who are one of those who adapted the scale to Turkish, calculated the internal consistency coefficient for suppression as 0.73. As a result of the confirmatory factor analysis applied to the scale ($x^2 = 84.25$; $Sd = 33$; $p < 0.001$), the goodness of fit values calculated to test the model met the criteria and the structure was confirmed ($x^2/df = 2.55$, $RMSEA = 0.05$, $SRMR = 0.04$, $CFI = 0.98$, $GFI = 0.97$, $AGFI = 0.95$, $IFI = 0.98$). Cronbach's alpha coefficient for the suppression sub-dimension was calculated to be 0.78.

Semi-Structured Interview Form The questions prepared for the interview were sent to six academics who were experts in the field and they were revised according to their suggestions. The bracketing technique (Morrow, 2005) was employed throughout the research to prevent personal influences that would damage the reliability of the research. Bracketing can be applied to include the cultural characteristics of the person, age, gender, life experiences, and field of expertise, in short, all subjective elements that will affect the research (Fischer, 2009). Bracketing is a level of mindfulness that continues throughout the research process (Morrow, 2005). In order to achieve this, the researcher can take notes about the interviews, and then look at these

reminders and analyze them. These notes can include feelings, thoughts, and experiences and ideas about how they affect the research, so that these notes can be passed on to the reader and help bracket the analysis and interpretation process. Childhood experiences, family relationships, parenting experiences, and many other personal characteristics that might have affected the research were bracketed. Some examples from the 23 questions that make up the interview forms are presented here:

Do you have negative thoughts caused by the traumas you experienced during your childhood that make you uncomfortable by constantly repeating themselves in your mind?
How long can you avoid these thoughts oriented towards the past that are negatively affecting you?
How do you come to terms with the distressing emotions caused by negative thoughts from your childhood traumas?

Research Design

The research was designed according to the explanatory sequential pattern from mixed methods. It is argued that the researcher should have a justification for using the mixed method. The inadequacy of a single data source in the research, the need to explain the results found at the beginning, the generalizability of the findings, and the need to develop the research with a second method are among these reasons. In addition, the research can be made stronger by compensating for the weaknesses of both quantitative and qualitative research with the mixed method, and it brings practicality to the research by combining deductive and inductive thinking by using numbers and words (Creswell & Clark, 2015).

Analysis of the Data

Structural equation analysis was used to examine the relationships between the variables in the study. In order to see whether they support the model obtained before the structural equation model, the factor structures and validity of the scales were first examined through confirmatory factor analysis (Jöreskog & Sörbom, 1993; Meydan & Şeşen, 2011). The confirmatory factor analysis results of each of the scales are given in the sections where information about the scales is explained and it was seen that the scales exhibit acceptable compatibility with the data obtained. Then the relationships between the structures in the model were evaluated. Before starting the structural equation model analysis, the assumptions regarding this analysis were checked. The assumptions of study group size, multivariate normality, and multicollinearity required for this analysis were tested. The skewness and kurtosis values of each variable were calculated for univariate normality, which is the prerequisite for meeting the multivariate normality assumption (Kline, 2011). Variance increase factors (VIF) and tolerance values (TV) of the variables in the model were calculated to determine whether there was a multicollinearity problem between the variables. In the case of VIF$\geq$ 10 and TV$\leq$ 0.10, the multi-connection problem occurs (Çokluk et al., 2010). The analysis revealed that the VIF values were between 1.18 and 2.24,

TV values were between .45 and .85, and there was no problem of multicollinearity between the variables. The fact that Mardia's multivariable standardized coefficient of kurtosis is less than 8 suggests that the data have a multivariable normal distribution (Kline, 2011). The standardized kurtosis value calculated was 27.02 and it was decided to use the bootstrap method, which does not require the assumption of normality (Hair et al., 2014; Pardo & Roman, 2013). A 2000 bootstrap sample was generated from the data set and the analyses were performed. The indirect effects in the model were examined based on the confidence intervals calculated by the bootstrap method. The fact that the confidence interval for the indirect effect does not contain 0 indicates that the indirect effect is statistically significant (Shrout & Bolger, 2002).

In the analysis of the qualitative data, Smith and Osborn's interpretive phenomenological analysis steps were applied. Interpretive phenomenology is a methodology that focuses on how the individual experiences and makes sense of events and processes subjectively (Larkin et al., 2006). As a result of reading the obtained data in detail, the codes were listed and then these codes were reconstructed with a more analytical and theoretical rating and converted into themes. For this, the interview reports were read many times and the expressions used by the participants, the language they used, and their own thoughts were noted. Re-reading the text made it easier for the researchers to see and analyze common themes by familiarization with the data. Conceptual names were given to the themes obtained at the end of the study, and the themes were summarized and presented in tabular form. In addition, attempts were made to increase the explanatory power by including the quotations explaining the themes.

Results

Quantitative Findings

In the research, analyses were performed on 590 participants. The fact that the coefficient of skewness is less than ±3 and the coefficient of kurtosis is less than ±10 sufficient to meet the normal distribution assumption (Kline, 2011). It was observed that the skewness and kurtosis values of the scores obtained from the measurement tools are within the specified range. The relationships between the variables were examined by Pearson Correlation analysis in Table 2.

Mediating Variable Analysis Results

The results of the analysis related to the direct effects of trauma on cognitive defusion, acceptance, and suppression are presented in Figure 1.

The fit values of the model are presented in Table 3.

When Table 3 is analyzed, it is understood that the model in which the direct effect of trauma on cognitive defusion, acceptance, and suppression is tested is generally compatible with the available data on an acceptable level. It can be seen that trauma has a negative effect on cognitive defusion (β= -0.44; t=-6.40; p< 0.001)

and acceptance (β= 0.58; t=9.24; p< 0.001) (as the scores from psychological flexibility scale increase, the scores from acceptance decrease). However, it has a positive effect on suppression (β= 0.30; t=5.48; p< 0.001). The model in which the mediating effect of rumination is tested is shown in Figure 2.

After looking at the fit values of the model in Fig. 2 (x^2/df=2.32, $RMSEA$=0.05, $SRMR$=0.06, CFI=0.90, IFI=0.90, $AGFI$=0.83, GFI=0.85), it was seen that the model in which the intermediary effect of rumination was tested in the relationships between trauma and cognitive defusion, acceptance and suppression was generally compatible with the available data on an acceptable level. Trauma and rumination explained 35% of the change in cognitive defusion, 66% of the change in acceptance and 13% of the change in suppression. The values of the path coefficients in the model in Fig. 2 are shown in Table 4.

The fact that the confidence interval for the indirect effect does not contain 0 suggests that the indirect effect is statistically significant (Shrout & Bolger, 2002). Rumination has a partial intermediary role in the relationships between trauma and cognitive defusion, acceptance, and suppression. When both models are studied the sub-objectives created at the beginning of the research are verified.

Qualitative Findings

The themes and sub-themes reflecting the intermediary role of rumination in cognitive defusion, acceptance, and suppression experiences of young adults with childhood traumas are presented in Table 5.

The themes and sub-themes, the participants are coded as (K1, K2, K3, K4, ..., K13). Examples of statements explaining the theme of constantly thinking about the past and the expressions that constitute the most frequently mentioned sub-themes by the participants are presented here:

> *Inability to stop thoughts* "It starts like a broken record, the same things keep spinning in my head until they drive me crazy. It feels like if I called and yelled at my dad at that moment, I would calm down" (K1).
>
> The *past affecting the present* "So, in the simplest way, I was repeatedly cheated on and eventually got divorced, which was also a trauma, but I recovered within a year. But the formative years of life, the memories, events, traumas experienced during that most innocent childhood era are not easily erased. They are always here with me" (K3).

Examples of statements explaining the theme of inability to move away from childhood traumas:

> *Stimuli that remind memories* "Frankly, I feel sad when I see others having happy family relationships. For example, something happens to me, or I need help, there is a situation that requires a little more male strength, but I realize that I can't call my father" (K6).

Table 2 Descriptive values of the scores obtained from the measurement tools

Variables	N	Min	Max	Avg	Sum of Square	Skewness		Kurtosis		1	2	3	4	5
						z	Standard error	z	Standard error					
Acceptance	590	7	48	22.92	9.91	0.35	0.10	−0.79	0.20	1.00				
Rumination	590	9	40	21.63	6.25	0.18	0.10	−0.69	0.20	0.67**	1.00			
Cognitive defusion	590	1	39	22.15	7.66	−0.02	0.10	−0.52	0.20	−0.50**	−0.46**	1.00		
Childhood traumas	590	23	68	32.41	8.88	1.29	0.10	1.40	0.20	0.43**	0.31**	−0.31**	1.00	
Suppression	590	7	30	24.98	4.97	−1.06	0.10	0.67	0.20	−0.08	−0.08	0.34**	−0.17**	1.00

Ss Sum of Square, *Se* Standard error

**$p < 0{,}01$; *$p < 0{,}05$; $N = 590$

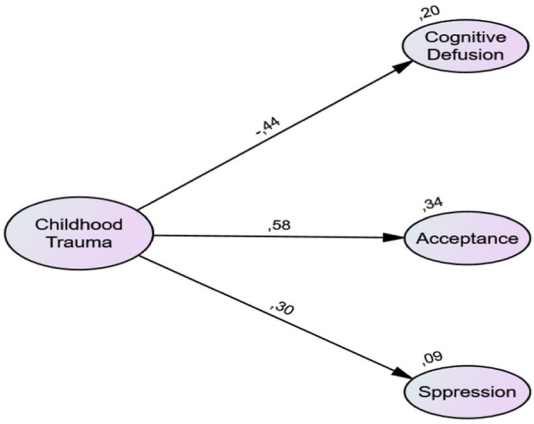

Fig. 1 Direct effect of trauma on cognitive defusion, acceptance, and suppression

Table 3 Fit values of the structural equation model developed to test the direct effect of trauma on cognitive defusion, acceptance, and suppression

Criterion	Good Fit	Acceptable fit	Obtained values	References
(χ^2/sd)	≤3	≤4–5	2.52	Byrne (1989)
RMSEA	≤0.05	0.06–0.08	0.05	Browne and Cudeck (1993)
SRMR	≤0.05	0.06–0.08	0.07	Hu and Bentler (1998)
CFI	≥0.95	0.90–0.94	0.90	McDonald and Marsh (1990)
IFI	≥0.95	0.90–0.94	0.90	Bollen (1989)
GFI	≥0.90	0.89–0.85	0.87	Tanaka and Huba (1985), Jöreskog and Sörbom (1993)
AGFI	≥0.90	0.89–0.80	0.85	

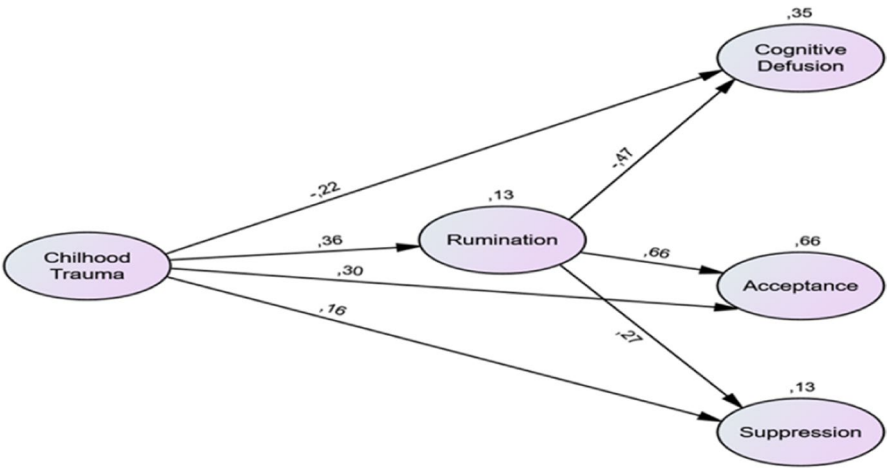

Fig. 2 Intermediary effect of rumination in the relationships between trauma and cognitive defusion, acceptance, and suppression

Table 4 The values of the path coefficients included in the model developed to test the indirect effect of trauma on cognitive defusion, acceptance, and suppression

	Independent variable	Dependent variable	B	β	Critical Rate (t)	VAFa	*p*	Bootstrap %95 confidence ınterval	
								Lower limit	Upper limit
Direct effect	Rumination	Cognitive Defusion	−0.42	−0.47	−6.74		***	−0.56	−0.37
Direct effect	Rumination	Acceptance	1.37	0.66	10.80		***	0.58	0.73
Direct effect	Rumination	Suppression	0.39	0.27	4.98		***	0.15	0.38
Direct effect	Trauma	Rumination	0.43	0.36	6.41		***	0.22	0.46
Direct effect	Trauma	Cognitive Defusion	−0.24	−0.22	−4.20		***	−0.34	−0.12
Direct effect	Trauma	Acceptance	0.74	0.30	6.70		***	0.21	0.39
Direct effect	Trauma	Suppression	0.29	0.16	3.02		**	0.05	0.28
Indirect effect	Trauma	Cognitive Defusion	−0.18	−0.17		39%	***	−0.23	−0.11
Indirect effect	Trauma	Acceptance	0.59	0.24		41%	***	0.16	0.31
Indirect effect	Trauma	Suppression	0.17	0.10		33%	***	0.05	0.16

***$p < 0{,}001$; **$p < 0{,}01$; [a]VAF = indirect effect/total effect * 100

Table 5 Themes associated with the participants' cognitive defusion, acceptance, and suppression experiences

	Themes	Sub-Themes
Themes associated with cognitive defusion experiences	*Theme 1*: Constantly Thinking about the Past	Inability to stop thoughts (13), The past affecting the present (17), Inability to forget (14), Inability to establish new relationships (9)
	Theme 2: Inability to move away from childhood traumas	Stimuli that remind memories (10), Spiritual childhood scars (13), Inability to trust (7), Feeling of worthlessness (10)
	Theme 3: Inability to Forgive Their Parents	Abusive and neglectful parents (14), Passive parents (8), Unchanging parental behavior (8), Psychosomatic symptoms (7), Bursts of anger (10), Fear of being like their parents (5)
	Theme 4: Getting rid of negative thoughts	Accepting and forgiving the past (12), Working (8), Psychological support (9), Activities that give happiness and social support (8), Parents correcting their behavior (6), The dream of becoming a desired parent (9)
Themes related to acceptance experiences	*Theme 1*: Living in the past	Traumas that affect the present moment (16), Lack of love (11), Distorted thoughts (13)
	Theme 2: Moving away from value-driven life	Intolerance (5), Disrespect for others (9), Lack of empathy (6), Unwanted behavior (13)
	Theme 3: A life focused on the present and on values	Changing the mindset (7), Accepting and forgiving their parents (10), Psychological support (6), Motivation to be a good parent (7)

Table 5 (continued)

	Themes	Sub-Themes
Themes associated with the experiences of the suppression sub-dimension of emotion regulation	*Theme 1*: False expression of emotion	Inability to control emotions (8), Being affected by the past (6), Bottling things up (9)
	Theme 2: Suppressing emotions	Learning (7), The idea of not being understood (8), Embarrassment (3)
	Theme 3: Emotions reflected in behavior	Physical reflections (6), Lack of Self-confidence (8), Inability to trust people (8)
	Theme 4: Coping with negative emotions	Expressing emotions correctly (12), Being occupied with work (6), Spending time with family (7), Fun activities (14)
	Theme 5: Desired emotion regulation	Getting rid of negative thoughts (11), Acknowledging the past (9), Desired parental behaviors (6)

Spiritual childhood scars "My memories of my mother and father are limited, but they are so tragic and dramatic. It's like I'm not healing. I think these are also spiritual scars. It is very difficult for a person to escape from their childhood. These scars are not forgotten. I experienced physical violence from my mother when I was with my grandmother" (K4).

An example of a statement explaining the theme of inability to forgive their parents:

Abusive and neglectful parents "My father left my mother, me and my sibling when we were very young. He never took care of his family, he got a job every now and then, but did not work and would quit. I had a twin, whom I called my sibling just now, but he died of hunger, not joking, died of hunger" (K4).

An example of a statement explaining the theme of getting rid of negative thoughts and the expression that constitutes the most frequently mentioned subthemes is presented here:

Accepting the past and forgiving "As I said, I have to forgive my father and move ahead somehow. Time goes by so fast and he never changes. He is only stealing from my present and my future" (K6).

It was observed that participants often use expressions that suggest that they continue to be influenced by their past while explaining their experiences of psychological flexibility and acceptance. An example of a statement explaining the theme of living in the past is presented here:

Traumas that affect the present moment "There's nothing about me right now or about my normal, anyway. I go about my life normally. I take care of my son, work, take care of the house, etc. I bring everything negative from the past, of course, it kills my current mood and energy" (K1).

An example of a statement explaining the theme of moving away from a value-driven life:

Unwanted behavior "I find myself saying things I don't want to. In short, I can't get rid of the past and my parents" (K12).

An example of a statement explaining the theme of a life focused on the present:

Accepting and forgiving your parents "I have to accept everything that has happened and forgive everything" (K11).

It was seen that participants often used expressions suggesting that they had difficulty expressing their emotions while describing their experiences of suppression. An example of a statement explaining the theme of false expression of emotion is presented here:

Bottling it up "I ignore, which is one of the worst things to do. I bottle it up. It's just that now I share things with the person from whom I receive profes-

sional support. Thanks to this, I no longer suppress my thoughts and feelings as I used to" (K3).

An example of a statement explaining the theme of suppressing emotions:

The thought of not being understood “We used to cry our hearts out and then fall silent. So, as a child who grew up just like this, I think that people won’t understand even if I talk; and I’m, therefore, silent” (K13).

An example of a statement explaining the theme of emotions reflected on behavior:

Inability to trust people "The emotions that I suppress are generally positive actually. It is very difficult for me to say positive things to people. Or if I say or do something a little bit nice to someone, I immediately start thinking if this will spoil them" (K7).

An example of a statement explaining the theme of coping with negative emotions

Fun activities "Sometimes I go fishing, or take a walk. I just try to relax somehow. I’ll go on a picnic by the dam or something, but I can’t leave my thoughts at home, they will follow me everywhere” (K4).

An example of a statement explaining the theme of desired emotion regulation:

Getting rid of negative thoughts "I’m trying to silence the voices in my head and focus on the good and the present. I try not to get stuck in the past and build up my willpower” (K11).

Discussion

The study analyses the intermediary role of rumination and the relationship of young adults’ childhood traumas with cognitive defusion, acceptance, and suppression with mixed methodology. At the end of the study, it is observed that cognitive defusion and acceptance levels of young adults with childhood trauma decrease as their trauma increases, and their suppression levels increase as well. Additionally, rumination has an intermediary role in the relationship of childhood traumas with cognitive defusion, acceptance, and suppression. The opinions of the participants also indicate that people often do not succeed in dissociating from childhood traumas and they continue to remember these traumas over and over again.

This study, just like the literature, shows that there is a positive relationship between childhood traumas and rumination (Hovens et al., 2016; Sarin & Nolen-Hoeksema, 2010; Spasojevic & Alloy, 2002; Szabo et al., 2020; Watts et al., 2020). Participants often mentioned expressions such as spiritual childhood scars and similar expressions while describing the childhood traumas they had experienced. Looking at previous studies; it was seen that childhood traumas’, rumination, and moving away from cognitive defusion cause the individual to blame themselves (Moser et al., 2007), bring about disassociation in the individual (Parfait et al., 2022),

depression (Raes & Hermans, 2008), anxiety (Garcia-Gomez et al., 2019; Makriyianis et al., 2019) and post-traumatic stress disorder (Benfer et al., 2020; Watkins, 2008), which is also similar to the results obtained from this study. According to the qualitative results obtained from the study, participants who have childhood trauma get constantly stuck in the past and experience various mental disorders since they have not learned how to control their emotions properly. These results support the study (Basharpoor, 2020), which shows that the post-traumatic growth of people who were exposed to childhood trauma and moved away from cognitive defusion was decreased, and it is thought that the results also allow us to see the reasons. Again, other studies support the results from this research and show that low levels of psychological flexibility increase post-traumatic stress symptoms (Boykin et al., 2020; Meşe, 2021), ruminative thinking styles and avoidance behaviors (Bjornsson et al., 2010; Yasinski et al., 2019).

The literature supports the results obtained from this study and it demonstrates that people who have childhood traumas are prone to having more difficulty regulating their emotions (Dereboy et al., 2018; Shipman et al., 2007). Rumination was found to be an important factor in the relationship between experienced traumas during childhood and an individual's emotional state during adulthood (Kim et al., 2017). Rumination increases the stress perceived by the individual (Cenksever-Önder & Utkan, 2018) and is related to suppression, anxiety, and depression, which are some of the maladaptive emotion regulation strategies (Aldao et al., 2010; Nolen-Hoeksema & Aldao, 2011).

Conclusion

It was observed that rumination has an intermediary role in the relationship between childhood traumas and suppression, which is one of the strategies of cognitive defusion, psychological acceptance, and emotion regulation. It is essential to determine the relationships between transdiagnostic psychological processes such as cognitive defusion, acceptance, suppression, and rumination in order to contribute to the relationships of these concepts with each other in the treatment processes. It was intended that the similarities and differences in the relationships between cognitive defusion, acceptance, rumination, and suppression were observed through subthemes as a result of the qualitative analyses. As a result of themes such as "Getting rid of negative thoughts, a life focused on the present and on values, desired emotion regulation", substantial inferences were made about what can be done to increase the cognitive defusion and acceptance of young adults with childhood traumas and to reduce their suppression and rumination. Additionally, looking at the literature on ACT, it was seen that studies on cognitive defusion were insufficient and it was suggested to increase the number of studies on this topic, specifically to examine cognitive defusion's relationship with well-established variables such as rumination (Gillanders et al., 2014). Considering that the studies conducted in this field are only quantitative studies and there is a very limited number of them, it is thought that this study conducted with mixed methodology will contribute to the literature.

Limitations and Future Directions

According to the results of the quantitative analysis, childhood traumas and rumination explain 66% of acceptance behaviors. However, the qualitative results do not fully explain the acceptance behaviors and give information about psychological flexibility and psychological inflexibility. Although a small number of themes and sub-themes indirectly reflect the behaviors that arise as a result of not being able to accept feelings, thoughts, and experiences, in general it is seen that this significant explanation rate is not supported by qualitative results. It is not possible to infer that childhood traumas and rumination can explain acceptance behaviors. Much more quantitative and qualitative studies are needed for this. In conclusion, although one of the purposes of using AAQ-II in the study was to support the discussions about the scale with qualitative results, it was a limitation for the study when the results were examined. In addition, the research was limited to responses by the participants in the interviews and the characteristics measured by the measurement tools used.

Based on the results obtained from this study, the recommendations presented to experts and other researchers working in the field are as follows: In order for individuals to increase their mental well-being, accept their past, and engage in action-oriented behavior; psychological support programs focused on forgiveness can be prepared. As it was observed that the thought of not being understood and being self-conscious because of others has an impact on suppressing emotions, social emotional skills development psycho-educational programs can be prepared. People with childhood traumas believe that they can recover when they stop thinking about the past. It can be studied what variables prevent these individuals from accepting their past as it is and what secondary gains, they may have to allow them to keep the past constantly active and alive in their minds.

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Data Availability The authors are willing to share their data, analytics methods, and study materials with other researchers upon request.

Code Availability The authors used AMOS and MAXQDA functions for their analyses.

Declarations

Conflict of ınterest The authors have no conflicting or competing interests to declare.

Ethical Approval The approval of the ethics committee, dated 05.04.2021 and numbered 3-6, was received from the Research and Publication Ethics Committee of Marmara University Institute of Educational Sciences. All procedures performed in these studies were in accordance with the APA ethical guidelines, the ethical standards of the institutional research committee, and the 1964 Helsinki declaration and its later amendments.

Consent for Publication All participants gave consent for their data to be used in publication.

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