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The role of difficulties on emotion regulation in mediating the relationship between adverse childhood experiences and anxiety in emerging adulthood

Peran kesulitan regulasi emosi sebagai mediator dalam hubungan antara pengalaman masa kecil yang merugikan dan kecemasan pada masa dewasa awal

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ABSTRACT

Emerging adulthood is a developmental phase during which individuals may be particularly vulnerable to internalizing problems, such as anxiety. One of the determinant factors of anxiety is Adverse Childhood Experiences (ACE). This study aims to examine the role of ACEs in internalizing problems, considering difficulties in emotion regulation (DER) as a mediating variable in emerging adulthood in Indonesia. The study used a quantitative approach with a cross-sectional design. A total of 305 participants were selected using purposive sampling with the criteria of being aged 18-25 years and not having received a mental health diagnosis before from a professional expert, including psychologist or psychiatrist. The instruments employed including the Adverse Childhood Experiences Questionnaire (ACE-Q), the Difficulties in Emotion Regulation Scale (DERS-18), and the Depression Anxiety Stress Scale (DASS-21). Data analysis was performed using the Structural Equal Model with a Partial Least Square (SEM-PLS) approach through the Smartpls4 application. The results showed that DER (clarity, goals, non-acceptance, strategies) acted as a partial mediator in the relationship between ACE and internalizing problems (anxiety). However, impulse, as one of the dimensions of DER, did not act as a mediator in this study. The findings highlight the importance of emotion regulation as a psychological mechanism in understanding the long-term impact of ACE on internalizing problems in emerging adulthood.

ABSTRAK

Emerging adulthood *merupakan fase perkembangan yang rentan mengalami* internalizing problems*, seperti kecemasan. Salah satu faktor risiko yang berperan dalam munculnya masalah tersebut adalah* Adverse Childhood Experiences *(ACE). Penelitian ini bertujuan menguji peran ACE terhadap salah satu dimensi internalizing problems yaitu kecemasan dengan mempertimbangkan* difficulties on emotion regulation *(DER) sebagai variabel mediator pada* emerging adulthood *di Indonesia. Penelitian menggunakan pendekatan kuantitatif dengan desain cross-sectional, jumlah partisipan 305 dipilih menggunakan purposive sampling dengan kriteria yaitu 18-25 tahun dan tidak mendapatkan diagnosis terkait kesehatan mental dari professional ahli seperti psikolog/psikiater. Instrumen yang digunakan meliputi* Adverse Childhood Experiences *Questionnaire (ACE-Q),* Difficulties in Emotion Regulation Scale *(DERS-18), dan* Depression Anxiety Stress Scale *(DASS-21). Analisis data dilakukan dengan metode Structural Equal Model dengan pendekatan* Partial least square *(SEM-PLS) menggunakan aplikasi Smartpls4. Hasil penelitian menunjukkan bahwa DER (*clarity, goals, non-acceptance, strategies*) berperan sebagai* mediation partial *dalam hubungan ACE dan kecemasan. Namun terdapat dimensi DER yang tidak berperan menjadi mediator yaitu* impulse*. Temuan ini menegaskan pentingnya regulasi emosi sebagai mekanisme psikologis dalam memahami dampak jangka panjang ACE terhadap kecemasan pada* emerging adulthood*.*

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1. INTRODUCTION

Emerging adulthood refers to the developmental stage of individuals aged 18-25 years in which marked by a transition from adolescence to adulthood and the presence of various possibilities, as individuals face changes in areas such as work, identity exploration, interpersonal relationships, and social expectations (Arnett, 2006). The main characteristic of this stage includes independency that drives individuals to be responsible about their lives. Facing new forms of responsibility can make individuals vulnerable to pressure and create challenges in their daily lives (Condinata et al. 2021). When individuals are unable to cope with the pressure they experience, they may develop feelings of helplessness, hopelessness, and other negative emotions that contribute to stress. Condinata et al. (2021) supported this view by showing that most emerging adulthoods experience stress as they face challenges during this transition period, which consequently cause mental health issues.

Furthermore, the National Health Statistics Reports (NHSR) in 2022, in the United States shows that the prevalence of anxiety symptoms of individuals over the age of 18 continues to increase from 15.6 percent (2019) to 18.2 percent (2022). Meanwhile, in Indonesia, the 2018 Basic Health Research (Riskesdas) found that as many as 12 million people aged more than 15 years old experienced depression and anxiety disorders. This is supported by a study involving 393 participants aged 16-24 years and found that 95.4 percent had experienced symptoms of anxiety (Kaligis et al. 2021). These data indicate that anxiety is the most common mental health problem among emerging adults. Therefore, this study focuses on examining anxiety.

Anxiety refers to an emotion characterized with worried thoughts and somatic symptoms caused by tension, which drives individual to anticipate future danger, catastrophe, or misfortune (American Psychological Association, 2018). Anxiety, in general, is a normal emotional response that serves as an alarm to gain awareness, but it can also become disruptive when its intensity interferes with daily activities. Individuals experiencing anxiety may exhibit behaviors such as frequent avoidance, withdrawal from social interactions, excessive fear or worry without a clear cause, and fear of events that may not occur (Liu et al. 2011). If untreated properly, anxiety may reduce quality of life, impair physical health (Szuhany & Simon, 2022), and also decrease academic performance.

Furthermore, anxiety is influenced by two main factors: internal and external factors. Internal factors are related to individuals' psychological characteristics. One such factor is cognitive vulnerability, in which individuals tend to repeatedly focus on negative emotions rather than using coping strategies or redirecting their attention. Difficulties in regulating emotions and moods may also increase the risk of anxiety. In addition, interpersonal vulnerability can affect social relationships, making individuals more likely to experience sadness and become more sensitive to perceived threats during social interactions (Hansen & Jordan, 2017).

External factors include family-related conflicts, particularly difficulties in children's relationships with their parents, such as a lack of affection, emotional support, and effective communication (Balistreri & Alvira-Hammond, 2015). Traumatic childhood experiences, including exposure to violence and neglect at home, may also increase the risk of anxiety (Agnafors et al., 2023; Gomis-Pomares & Villanueva, 2023). Furthermore, parental illicit substance use may be associated with anxiety in their children (McGovern et al., 2023). Bullying victimization may also contribute to anxiety among individuals (Bie et al., 2024).

Moreover, several external factors can be grouped under the concept of adverse childhood experiences (ACEs), including family conflict (Balistreri & Alvira-Hammond, 2015), traumatic experiences involving violence and neglect (Agnafors et al., 2023; Gomis-Pomares & Villanueva, 2023), parental drug abuse (McGovern et al., 2023), and exposure to violence or bullying (Bobrowski & Ostaszewski, 2022). Brown et al. (2016) found that exposure to various forms of abuse, including violence and neglect, was associated with anxiety. Experiences of violence and neglect may contribute to insecure attachment, which can lead individuals to suppress their emotions and increase vulnerability to anxiety. Therefore, ACEs represent a relevant risk factor for understanding individual differences in anxiety.

Adverse childhood experiences (ACE) are defined as traumatic experiences experienced since childhood or adolescence, before the age of 18 (Felitti et al., 1998). This includes various types of abuse: violence (physical violence, emotional abuse, and sexual violence), neglect (emotional neglect and physical neglect), and domestic dysfunction (domestic violence, parental divorce, mental illness in the family, substance abuse, and incarcerated family members) (Felitti et al., 1998). Individuals who experience ACE, consciously or unconsciously exhibit psychopathological symptoms by displaying anxiety tendencies (Villanueva et al. 2024).

A study conducted by Hicks et al. (2021) on adolescents, showing that ACE is directly related to the occurrence of anxiety, where the more individuals experience ACE, the higher the level of anxiety experienced. Not only in adolescents, ACE becomes a predictor of anxiety in emerging adulthood. Studies show that individuals with moderate to very high exposure of ACE are at greater risk of depression and anxiety in adulthood than individuals without ACE (Trivedi et al., 2024). This is supported by research by Gomis Pomares & Villanueva (2023) which shows that the amount of exposure to individuals who experience ACE is the most prominent predictor of experiencing anxiety in emerging adulthood.

In contrast to other studies, the study of Villanueva et al. (2024) showed that overall ACE was significantly associated with mental health problems, but not all types of ACE had the same influence; some categories of ACE did not show a significant association with internalizing problems, whereas ACE categories such as parental separation did not show a significant association with anxiety. Other studies have also shown that sexual violence is the only ACE that predicts anxiety, while parental neglect and mental illness have no significant association (Muniz et al. 2019).

These different findings highlight a critical gap how ACE and anxiety understood across different context. While some studies focused on cumulative risk of ACE to anxiety, the other one focused on specific types of traumas and its impact to emerging adulthood. Therefore, this study needs to be conducted to re-examine and clarify these inconsistencies by investigating the effect of ACEs to anxiety in order to provide a clearer framework on how early childhood trauma shapes anxiety in later life. The first hypothesis in this study is that there is a positive effect of ACE to anxiety

Due to the inconsistencies in several studies that have been conducted on ACE and anxiety (Gomis Pomares & Villanueva, 2023; Muniz et al. 2019), these mixed findings indeed point toward potential boundary conditions. Nonetheless, there is still a critical need to understand psychological process linking childhood trauma to emerging adults outcomes. This study introduces a mediator to examine this mechanism. Emotion regulation is proposed as a variable that mediates the relationship between ACEs and anxiety. Emotion regulation

refers to the ability to manage and respond to emotions adaptively (Gross, 1998). However, difficulties in managing emotions effectively may result in difficulties in emotion regulation (DER).

Prior studies have shown that, in addition to contributing to anxiety, ACEs may also lead to difficulties in emotion regulation (Cole & Diaz, 2024; Dagnino et al. 2025). Difficulties on emotion regulation (DER), defined as a condition when individuals experience difficulties in responding to and regulating emotions adaptively, is characterized by a lack of emotional awareness, lack of emotional clarity, difficulty in carrying out goal-oriented behavior, difficulty controlling impulses, and not receiving emotional responses (Gratz & Roemer, 2004). Individuals who experience DER use rigid and non-adaptive ways in regulating their emotions.

Heleniak et al. (2016) stated that DER can be caused by the environment, relationships with family members, and experiences experienced by individuals. Individual who's experience adverse experience since childhood, will be exposed to toxic stress without adequate emotional co-regulation from caregivers. This prolonged adversity may disrupt the neurobiological development for emotional control and coping mechanism (Cicchetti, 2006). Consequently, as they transition into emerging adulthood, they may fail to develop adaptive coping and emotion regulation strategies. The inability to regulate their emotion as coping from difficulties, individual tend to become anxious. This developmental pathway is supported by several studies that have been conducted that ACE can play a role in DER in adult individuals (Dagnino et al., 2025; Dragan, 2020; Zhou et al. 2025). Another studiy found that there is a contribution of ACE to DER, which specifically to dimension clarity (Cole & Diaz, 2024). Thus, the second hypothesis proposed in this study is that there is an effect of ACE to all dimensions of DER, including awareness, clarity, goals, control, non-acceptance, and strategies.

Furthermore, research shows that DER also contributes to anxiety (Xie et al. 2025), in which caused by traumatic experiences experienced by individuals can make individuals prone to anxiety. This is due to the individual's inability to identify, understand, and manage negative emotions adaptively, making these emotions accumulate and eventually lead to the development of anxiety (Sloan et al. 2017). Subsequently, DER in the long term can result in individuals experiencing psychological distress thereby lowering feelings of self-esteem, increasing feelings of social isolation, worsening self-perception in individuals and withdrawing which ultimately refers to anxiety. This makes the third hypothesis in this study that there is an effect of all dimensions of DER (awareness, clarity, goals, control, non-acceptance, and strategies) to anxiety.

Research conducted in Western cultural contexts have examined the role of adverse childhood experiences (ACEs) in anxiety during emerging adulthood and found a significant association between the two (Gomis Pomares & Villanueva, 2023; Trivedi et al. 2024). Additionally, research related to DER as a mediator between ACE and anxiety has also been conducted (Cloitre et al. 2019; Cole & Diaz, 2024). In Indonesia, research on ACEs and anxiety has been conducted among adolescents (Bakhtiar et al., 2023). However, research examining DER as a mediator in the relationship between ACEs and anxiety during emerging adulthood remains limited.

Cultural differences between Indonesia and Western countries may also influence the relationships among these three variables. In addition, Indonesia is a developing country with

persistent poverty and inequality, which may increase children's exposure to ACEs. Therefore, further research is needed to examine these relationships in the Indonesian context, as the dynamics of ACEs, DER, and anxiety may differ from those observed in Western populations.

The relationships among ACEs, DER, and anxiety can also be explained through developmental psychopathology theory. According to Cicchetti (2006), psychopathology develops through interactions among biological, psychological, and environmental factors. Going from this perspective, traumatic childhood experiences, such as violence, neglect, and family dysfunction, represent environmental factors that may contribute to difficulties in emotion regulation (DER). These experiences may also affect the prefrontal cortex and alter neural processes involved in emotion regulation, representing a potential biological pathway. In addition, traumatic experiences can trigger excessive cortisol release, which may increase vulnerability to stress and anxiety. Anxiety may then emerge as a psychological response to anticipated negative experiences, affecting individuals' ability to regulate their thoughts and behaviors.

Taken together, difficulties in emotion regulation (DER) may mediate the association between adverse childhood experiences (ACEs) and anxiety in emerging adulthood. In line with theory proposed by Cicchetti (2006) regarding developmental psychopathology, traumatic childhood experiences may affect the development of emotion regulation skills. Disruptions in this ability can lead to difficulties in regulating emotions, which may increase individuals' vulnerability to anxiety and other forms of psychopathology (Cloitre et al., 2019). Therefore, DER can play an important role as a pathway that bridges the relationship between ACE and anxiety. ACEs can weaken an individual's ability to regulate emotions, resulting in an inability to regulate emotions which ultimately makes individuals more susceptible to experiencing anxiety. Therefore, the fourth hypothesis proposed in this study is that there is a role of DER as a mediator in the relationship between ACE and anxiety.

Based on the explanation above, this study is expected to provide insight into the impact of ACEs on DER and their implications for mental health during emerging adulthood. It also serves as a reference for future research, given the limited number of studies in Indonesia examining these relationships among emerging adults.

2. METHODS

Design

This study employed a quantitative approach to objectively measure the role of research variables using numerical data (Azwar, 2018). The data obtained from the respondents will be statistically analyzed and then the results are interpreted which is used to understand the problem according to the theoretical study (Sugiyono, 2017). In this study, the researcher used three variables consisting of independent variables, namely adverse childhood experiences (ACE), dependent variables namely anxiety, and mediator variables namely difficulties on emotion regulation (DER).

Participants

The population of this study comprised adults, with the sample consisting of emerging adults aged 18–25 years old. Purposive sampling was used based on the following criteria:

participants were aged 18–25 years old and had not been diagnosed with a mental health condition by a qualified professional, such as a psychiatrist or psychologist. Based on a G*Power calculation with an effect size of 0.15, an alpha error probability of 0.05, and a statistical power of 0.80, a minimum sample of 68 participants was required for two predictor variables.

A pilot study involving 50 participants was conducted to assess the feasibility of the research instrument. The main study subsequently involved 305 participants who provided informed consent before completing the questionnaire. Participants were informed about the potential risk of emotional discomfort because the questionnaire addressed childhood experiences. The participants consisted of women (75.7 percent) and men (24.3 percent). Their ages were 18 years (6.6 percent), 19 years (20.0 percent), 20 years (14.1 percent), 21 years (21.0 percent), 23–24 years (6.9 percent), and 25 years (10.2 percent).

Measurement

Adverse Childhood Experiences (ACE)

In this study, adverse childhood experiences (ACEs) are defined as traumatic experiences occurring before the age of 18 that may have detrimental effects on individuals. ACEs were assessed across 10 categories: physical abuse, emotional abuse, sexual abuse, physical neglect, emotional neglect, and family dysfunction, including domestic violence, parental divorce, mental illness in the family, substance abuse at home, and family members who were incarcerated. ACEs were measured using the Adverse Childhood Experiences Questionnaire (ACE-Q) developed by Felitti et al. (1998), which consists of 17 items covering these 10 categories. Each item uses a dichotomous response format (Yes = 1, No = 0). If a participant answered "Yes" to one or more items within a category, the participant was considered to have experienced that ACE category.

The questionnaire was adapted into Bahasa Indonesia following the guidelines of Beaton et al. (2000). Content validity was established through expert judgment by three experts. Pilot study data were then analyzed to assess item discrimination using corrected item–total correlation, with a criterion of > 0.30 (Azwar, 2022). The coefficients ranged from 0.262 to 0.659. One item, item 16, had a coefficient below 0.30. However, this item was retained because it represented a specific ACE category that was not captured by the other items. The reliability analysis showed good internal consistency, with a Cronbach's alpha of $\alpha = .879$. An example item is: "*Apakah orang tua atau orang dewasa lain di rumah sering mendorong, menarik, menampar, atau melempar sesuatu ke arah Anda*?"

Difficulties on Emotion Regulation (DER)

Difficulties in Emotion Regulation (DER) refer to difficulties in recognizing, understanding, and managing emotions, which may limit individuals' ability to use adaptive emotion regulation strategies. DER was measured using the Difficulties in Emotion Regulation Scale (DERS-18), an abbreviated version developed by Victor & Klonsky (2016). The scale consists of 18 items covering six dimensions: lack of emotional awareness, lack of emotional clarity, difficulties engaging in goal-directed behavior, impulse control difficulties, non-acceptance of emotional responses, and limited access to emotion regulation strategies. Each

item is rated on a five-point Likert scale: 1 = Almost Never, 2 = Rarely, 3 = Sometimes, 4 = Often, and 5 = Almost Always.

The scale was adapted into Bahasa Indonesia following the guidelines of Beaton et al. (2000) and underwent expert judgment by three experts. Pilot study data were analyzed to assess item discrimination using corrected item–total correlation, with a criterion of > 0.30 (Azwar, 2022). Two items did not meet this criterion and were removed: item 3 (0.141) from the awareness dimension and item 9 (0.143) from the goals dimension. The subsequent reliability analysis was therefore conducted using 16 items. Cronbach's alpha values indicated good internal consistency across all six dimensions: awareness (α = 0.756), clarity (α = 0.856), goals (α = 0.726), impulse (α = 0.881), non-acceptance (α = 0.824), and strategies (α = 0.776). Example items include "*Saya peka terhadap perasaan saya*" (awareness), "*Saya kesulitan memahami perasaan saya*" (clarity), "*Saya sulit berkonsentrasi ketika saya kesal*" (goals), "*Saat saya kesal, saya sulit dikendalikan*" (impulse), "*Saya kecewa pada diri sendiri ketika saya merasa kesal*" (non-acceptance), and "*Saat kesal, saya merasa hanya bisa berlarut dalam perasaan itu*" (strategies).

Anxiety

Anxiety is characterized by excessive worry and fear followed by several responses that often appear such as avoidant behavior, negative self-judgment as well as physiological symptoms such as body shaking, sweating and nausea. Anxiety measurements in this study used DASS-21 developed by Lovibond & Lovibond (1995), consisting of 21 items from three dimensions: depression, anxiety, stress. Each item is answered using a likert scale with four points, namely "0 = does not apply to me at all", "1 = applies to me at some times", "2 = applies to me most of the time", "3 = applies to me". This scale has been adapted by Hakim & Aristawati (2023) with a CFA value of $\sum 2$ (183) = 736.743, p = <.001 RMSEA = .072, SRMR = .045, CFI = .914, and TLI = .901. In this study, DASS-21 was solely used on the anxiety subscale, the calculation for item test correlation was ranging from 0.432 - 0.645. The results of the reliability analysis in the pilot test showed that Cronbach's Alpha was good (α = .800). The item of anxiety subscale such as "*Saya merasa ketakutan tanpa alasan jelas*"

Procedure

Prior to data collection, the study underwent an ethical feasibility assessment and was declared ethically feasible under ethics approval number No. 06.11.4/UN32.14.2.8/LT/2025. Data were collected by distributing an online questionnaire to participants through social media platforms, including WhatsApp groups, Instagram, TikTok, and X. Upon accessing the questionnaire link, participants first read the information sheet, which detailed the study objectives, procedures, data confidentiality, voluntary participation, potential benefits and risks, and the researchers' contact details. Participants who agreed to participate provided informed consent by selecting "Yes, I agree" and then completed the demographic questions to determine their eligibility based on the inclusion criterion of being 18–25 years old.

Eligible participants then completed the Adverse Childhood Experiences Questionnaire (ACE-Q), Difficulties in Emotion Regulation Scale (DERS-18), and Depression Anxiety Stress Scales-21 (DASS-21). After completing all questionnaires, participants submitted their responses and were directed to a thank-you page. Participation was voluntary, and no compensation was provided.

Data Analysis

The data analysis process began with conducting a descriptive statistic for each variable, followed by correlation analysis between variables. Subsequently, hypothesis testing was conducted using the Structural Equal Model method with the Partial least square (SEM-PLS) approach. SEM-PLS is an extension of path analysis within the SEM framework that is used to examine relationships among independent and dependent variables (Hair et al., 2017).

SEM-PLS consists of two main evaluation models: (1) The measurement model (outer model), which evaluates the relationships between indicators and their respective latent variables; and (2) The structural model (inner model), which evaluates the relationships among latent variables based on the research framework. The measurement model is assessed using the following criteria: (a) Factor loadings > 0.70; (b) Average variance extracted (AVE) > 0.50; and (c) Composite reliability > 0.70. The structural model is evaluated using (a) R^2 values of 0.25, 0.50, and 0.75, indicating weak, moderate, and strong explanatory power, respectively, and (b) hypothesis testing using the bootstrapping method with 5,000 resamples. A relationship is considered statistically significant when the p-value is < 0.05.

3. RESULTS AND DISCUSSION

Results

Table 1. Descriptive statistics analysis

Variables	N	Minimum	Maximum	Mean	Standard deviation
ACE	305	0	8	2.02	1.823
DER *(Awareness)*	305	2	9	4.84	1.460
DER *(Clarity)*	305	3	15	10.11	1.941
DER *(Goals)*	305	2	10	6.79	1.963
DER *(Impulse)*	305	4	15	9.69	2.315
DER *(Non-Acceptance)*	305	3	15	9.69	3.008
DER *(Strategies)*	305	3	15	9.27	2.875
Anxiety	305	0	42	21.24	9.523

Table 1 illustrates the descriptive data from the measurement of the three research variables. The ACE variable has an average value of 2.02 (SD = 1.823), while the DER variable itself has variations based on its dimensions, for the awareness dimension it has an average value of 4.84 (SD = 1.46), the clarity dimension has an average of 10.11 (SD = 1.941), the goals dimension has an average of 6.79 (SD = 1.963), the impulse dimension has an average of 9.69 (SD = 3.008). The non-acceptance dimension has an average of 9.69 (SD = 3.008), and the strategies dimension had an average of 9.27 (SD = 2.875). For the anxiety variable itself, it had an average of 21.24 (SD = 9.523).

The many types of ACE exposure experienced by participants are described in table 2. Overall, when viewed based on the many types of exposure experienced by participants, some participants experienced 1-2 types of ACE exposure (15.7 percent). Meanwhile, based on the type of ACE category that the participants felt the most, it was emotional neglect (54.4 percent, Table 3). The type of ACE category that participants rarely experience is family members in prison (3.6 percent).

Table 2. Exposure to ACE in subjects

Adverse Childhood Experiences (ACEs)	Frequency	Percentage
0	91	29.8%
1	48	15.7%
2	48	15.7%
3	43	14.1%
4	44	14.4%
5	22	7.2%
6	6	2.0%
7	2	0.7%
8	1	0.3%
Total	305	100%

Table 3. Categories of ACEs experienced by participants

Adverse Childhood Experiences (ACEs)	Frequency	Percentage
Emotional Violence	116	38.0%
Physical Violence	62	20.3%
Sexual Violence	39	12.8%
Emotional Neglect	166	54.4%
Physical Neglect	37	12.1%
Divorced Parents	61	20.0%
Domestic Violence	51	16.7%
Substance Use	20	6.6%
Mental Health Disorders	54	17.7%
Family members in prison	11	3.6%

An overview of the participants' levels of anxiety propensity categories is shown in Table 4. The majority of participants had a tendency to anxiety in the very heavy category (57.4 percent). Whereas, the least prevalent experience among participants was family members in prison (3.6 percent).

Table 4. Categorization internalizing problems

Anxiety	Standard	Frequency	Percentage
Normal	0 - 7	25	8.2%
Lightweight	8 - 9	6	2.0%
Medium	10 - 14	60	19.7%
Weight	15 - 19	39	12.8%
Very Heavy	> 20	175	57.4%

Before testing the hypothesis through structural model testing (inner model), the model measurement test (outer model) was initiated as a prerequisite to ensure that the indicators used have a good level of validity and reliability to describe the research construct. The results of the outer model are shown in Table 5. In this study, adverse childhood experiences (ACEs) were operationalized as dummy variables and divided into two categories, ACE 1 and ACE 2, with individuals who had not been exposed to ACEs (ACE = 0) serving as the reference

group. ACE 1 compared individuals with no ACE exposure (ACE = 0) with those who had experienced 1–3 types of ACEs. ACE 2 compared individuals with no ACE exposure (ACE = 0) with those who had experienced more than four types of ACEs.

Outer model

Table 5. Convergent validity

Variables	Indicator	Outer Loading	AVE
Adverse Childhood Experiences (ACE)	ACE 1	1.000	
	ACE 2	1.000	
Difficulties on Emotion Regulation (DER)	C1	0.933	0.858
	C2	0.919	
	C3	-0.715	
	G1	0.849	0.742
	G2	0.873	
	I1	-0.037	0.676
	I2	0.860	
	I3	0.783	
	NA1	0.787	0.666
	NA2	0.859	
	NA3	0.800	
	ST1	0.792	0.629
	ST2	0.811	
	ST3	0.777	
Anxiety	A1	0.693	0.583
	A2	0.659	
	A3	0.809	
	A4	0.775	
	A5	0.853	
	A6	0.845	
	A7	0.686	

Convergent validity is established when the outer loading exceeds 0.60 and the AVE exceeds 0.50. The ACE construct has an outer loading of 1.000, indicating a strong correlation between the ACE indicator and its latent construct. For the DER construct, two indicators did not meet the required threshold: the clarity dimension (C3 = −0.715) and the impulse dimension (I1 = −0.037). Therefore, these indicators were removed from the subsequent analysis. The remaining indicators, with outer loadings above 0.60, demonstrated adequate correlations with their respective latent variables.

Furthermore, the AVE criterion requires values greater than 0.50. All the dimension of DER variables fulfilled the criterion, which include clarity (0.858), goals (0.742), non-acceptance (0.666), strategies (0.629), anxiety (0.583). Showing that the AVE value is met criterion (> 0.50), this shows that a correlation of the latent construct is able to adequately explain the variance of its indicators, so that the convergent validity in the model can be met.

The composite reliability for all variables demonstrated good reliability (CR > .70), which is ACE = .736; each dimension of DER ranged from .836 to .925 (Table 6). Overall, the prerequisites before conducting hypothesis tests through the outer model have been established, hypothesis tests through the inner model then can be carried out.

Table 6. Reliability test

Variables	Dimensions	*Component Reliability* (rho_c)
Adverse Childhood Experiences (ACE)	ACE	0.736
Difficulties on Emotion Regulation (DER)	CLARITY	0.923
	GOALS	0.852
	IMPULSES	0.806
	NON-ACCEPTANCE	0.857
	STRATEGIES	0.836
Internalizing Problems	EMERGENCY	0.907

Inner model

Table 7. R-square

Variables	R Square Adjusted (R^2adj)
CLARITY	0.225
GOALS	0.287
IMPULSES	0.243
NON-ACCEPTANCE	0.333
STRATEGIES	0.346
EMERGENCY	0.665

The first analysis examined the effects of ACE and all DER dimensions on anxiety (Table 7). For the clarity dimension, an adjusted R^2 value of 0.225 was obtained, indicating that 22.5 percent of the variation in clarity can be explained by ACE in the research model. For the goals dimension, the adjusted R^2 value was 0.287, indicating that 28.7 percent of the variation in goals can be explained by ACE. Similarly, the impulse dimension had an adjusted R^2 value of 0.243, indicating that 24.3 percent of the variation in impulse can be explained by ACE. The non-acceptance and strategies dimensions had adjusted R^2 values of 0.333 and 0.346, respectively, indicating that ACE explains 33.3 percent and 34.6 percent of the variation in these dimensions.

For anxiety, the adjusted R^2 value was 0.665, indicating that 66.5 percent of the variation in anxiety can be explained by the independent variables included in the model, while the remaining 33.5 percent is explained by factors outside the model.

Table 8. The role of ACE on anxiety in emerging adulthood (direct effect)

Path Coefficient	ACE 1			ACE 2		
	b	T stat	p	b	T stat	p
ACE → Anxiety	0.266	4.915	0.000	0.593	3.070	0.000

Table 8 highlights the role of ACE in anxiety (direct effect). The results of the direct effect analysis showed that ACE 1 had a significant effect on anxiety ($\beta = 0.266$; T= 4,915; $p < .001$ Individuals exposed to 1–3 types of ACEs had higher levels of anxiety than those who were not exposed to ACEs. Furthermore, the analysis of ACE 2 showed a significant effect on anxiety ($\beta = 0.593$; $T = 3.070$; $p < .001$), with individuals exposed to more than four

types of ACEs reporting higher levels of anxiety than those who were not exposed to ACEs. Overall, the first hypothesis of this study is supported, suggesting that ACEs are associated with higher levels of anxiety among emerging adults.

If the two categories compared, ACE exposure at the value of the coefficient (β) in ACE 2 was consistently greater than ACE 1 in anxiety. These findings indicated the more individuals are exposed to ACE, the more it contributes greatly to the anxiety dimension. It can therefore be concluded that ACE 1 & ACE 2 significantly predict anxiety directly.

Table 9. The role of ACE on DER in emerging adulthood

Path Coefficient	ACE 1			ACE 2		
	b	T stat	p	B	T stat	p
ACE → DER (Clarity)	0.645	12.607	0.000	1.297	5.248	0.000
ACE → DER (Goals)	0.820	7.194	0.000	1.441	15.746	0.000
ACE → DER (Impulse)	0.699	6.072	0.000	1.341	12.579	0.000
ACE → DER (Non-Acceptance)	0.666	6.062	0.000	1.571	17.936	0.000
ACE → DER (Strategies)	0.839	7.874	0.000	1.596	15.788	0.000

Based on the results in table 10, the analysis of the ACE variable path coefficient 1 has a significant influence on several dimensions of the DER, clarity (β = 0.645; T = 12.607; p < .05), goals (β = 0.820; T = 7.194; p < .05), impulse (β = 0.699; T = 6.072; p < .05), non-acceptance (β = 0.666; T = 6.062; p < .05), and strategies (β = 0.839; T = 7.874; p < .05). These findings indicate that individuals exposed to 1–3 types of ACEs experience greater difficulties in emotion regulation than those who were not exposed to ACEs. Furthermore, ACE 2 had a significant effect on several DER dimensions, including clarity (β = 1.297; T = 5.248; p < .05), goals (β = 1.441; T = 15.746; p < .05), impulse (β = 1.341; T = 12.579; p < .05), non-acceptance (β = 1.341; T = 12.579; p < .05), and strategies (β = 1.596; T = 15.788; p < .05). These results show that individuals exposed to more than four types of ACEs experience greater difficulties in emotion regulation than those who were not exposed to ACEs.

When comparing the path coefficients (β) between the two categories of ACE exposure, the coefficient for ACE 2 is consistently higher than that for ACE 1 across all DER dimensions, namely clarity, goals, impulse, non-acceptance, and strategies. This finding suggests that exposure to more than four types of ACEs has a stronger association with difficulties in emotion regulation than exposure to 1–3 types of ACEs, with the ACE = 0 group serving as the reference group. Therefore, the results suggest that greater exposure to different types of ACEs is associated with greater difficulties in emotion regulation. Overall, the second hypothesis of this study is supported.

Table 10. The role of DER on anxiety in emerging adulthood

Path Coefficient	b	T stat	p
DER (Clarity) → Anxiety	0.205	5.208	0.000
DER (Goals) → Anxiety	0.169	3.110	0.002
DER (Impulse) → Anxiety	0.008	0.150	0.881
DER (Non-Acceptance) → Anxiety	0.165	2.676	0.007
DER (Strategies) → Anxiety	0.247	3.917	0.000

Table 10 shows the role of DER on anxiety. Several dimensions of DER are shown to relate with anxiety, including clarity, goals, nonacceptance, and strategies ($p < .05$). A positive pathway coefficient (β) indicates a one-way relationship, thus increased difficulties in emotion regulation will contribute to increased anxiety levels. Meanwhile, the impulse dimension had no effect on anxiety ($\beta = 0.008$; $T = 3.110$; $p > .05$).

Table 11. The role of DER in mediating the relationship between ACE and anxiety in emerging adulthood (indirect effect)

Path Coefficient	ACE 1			ACE 2		
	b	T stat	p	b	T stat	p
ACE → DER (Clarity) → Anxiety	0.132	3.671	0.000	0.890	6.262	0.000
ACE → DER (Goals) → Anxiety	0.138	2.827	0.005	0.243	3.033	0.003
ACE → DER (Non-Acceptance) → Anxiety	0.110	2.442	0.015	0.259	2.602	0.009
ACE → DER (Strategies) → Anxiety	0.207	3.405	0.001	0.392	3.657	0.000

Table 11 describes the indirect influence of ACE on anxiety mediated by DER. For ACE 1, the DER on the clarity dimension plays a role in mediating ACE and anxiety ($\beta = .132$; $T = 3.671$; $p < .001$), the goal dimension also showed its role as a mediator in the relationship between ACE and anxiety ($\beta = .138$; $T = 2.827$; $p < .05$), the non-acceptance dimension plays a role in mediating ACE and anxiety ($\beta = .110$; $T = 2.442$; $p < .05$), and the strategies dimension shows its role as a mediator in the relationship between ACE and anxiety ($\beta = .207$; $T = 3.405$; $p < .05$).

For ACE 2, the DER on the clarity dimension plays a role in mediating ACE and anxiety ($\beta = .890$; $T = 6{,}262$; $p < .001$), the goals dimension also showed its role as a mediator in the relationship between ACE and anxiety ($\beta = .243$; $T = 3.033$; $p < .05$), the non-acceptance dimension plays a role in mediating ACE and anxiety ($\beta = .259$; $T = 2.602$; $p < .05$), and the strategies dimension showed its role as a mediator in the relationship between ACE and anxiety ($\beta = .392$ $T = 3.657$; $p < .001$).

Overall, the mediation analysis indicates partial mediation, suggesting that ACEs are associated with anxiety both directly and indirectly through DER, particularly the clarity, goals, non-acceptance, and strategies dimensions. Thus, the fourth hypothesis of this study is supported, indicating that DER mediates the relationship between ACEs and anxiety among emerging adults.

The path coefficients for ACE 2 were consistently higher than those for ACE 1, with the group without ACE exposure serving as the reference group (Figure 1). These findings suggest that greater exposure to different types of ACEs is associated with greater difficulties in emotion regulation, which in turn contribute to higher levels of anxiety.

As illustrated in Figure 1, the direction of the ACE1 and ACE2 towards each DERS dimension indicates the direct influence of the category of adverse childhood experiences on each dimension of difficulties in emotional regulation, including clarity, goals, Impulse, non-acceptance, strategies. Additionally, the direction of each DERS dimension to anxiety indicates the direct effect of each dimension of emotional regulation difficulties on anxiety symptoms. The values shown on each arrow are path coefficients, whilst the values in brackets indicate the significance level (p-value). The values within each circle represent the coefficient of determination (R^2), which describes the proportion of variance in the dependent construct that can be explained by other constructs in the model.

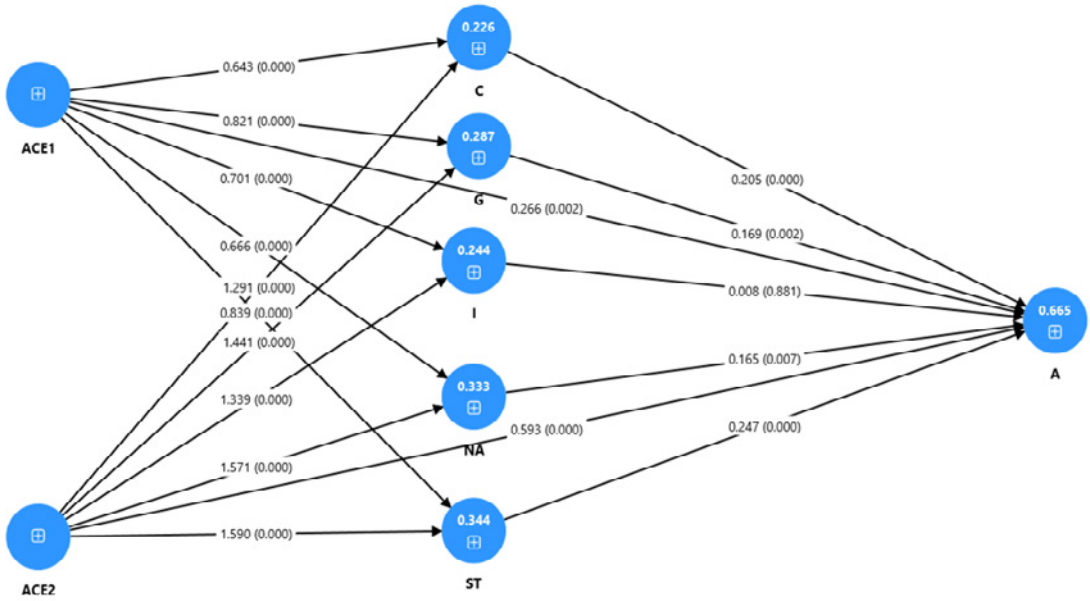


Figure 1. Analysis of the role of DER in mediating the relationship between ACE and Anxiety (Note: ACE1 = participants with 1–3 Adverse Childhood Experiences; ACE2 = participants with ≥ 4 Adverse Childhood Experiences (reference category = no ACE); C = lack of emotional clarity; G = Difficulties Engaging in goal-directed Behavior; I = Impulse Control Difficulties; NA = Non-Acceptance of Emotional Responses; ST = Limited Access to Emotion Regulation Strategies; A = Anxiety)

Discussion

This study aims to examine the role of DER in mediating the relationship between ACE and anxiety. The results showed that there is a role of DER in mediating the relationship between ACE and anxiety, with the role of significant DER dimensions consisting of clarity, goals, non-acceptance, and strategies. These findings are in line with the study conducted by Rudenstine et al. (2019), in which similarly found that DER is able to mediate the relationship between ACE and psychological distress, such as anxiety and depression. In this study, individuals exposed to > 4 types of ACE were susceptible to having difficulties in identifying negative emotions that ultimately caused anxiety.

Exposure to ACEs, such as emotional, physical, or neglectful abuse, can disrupt the development of the brain nerves responsible for processing emotional stimuli (Mirman et al. 2021). This disruption may lead to maladaptive avoidance mechanisms that reduce emotional awareness as a way of protecting individuals from stress or overwhelming experiences during childhood (McLaughlin et al., 2019). Consequently, individuals exposed to ACEs may experience greater difficulties in regulating their emotions. Persistent difficulties in emotion regulation, in turn, increase vulnerability to various psychological disorders later in life.

Specifically, this finding relates to the clarity dimension, which reflects an individual's difficulty in understanding and identifying the emotions they are experiencing. Individuals exposed to ACEs develop hyperactive stress-response systems and cognitive schemas that are biased toward perceived threats (Cicchetti & Toth, 2016). These changes make it more difficult

for individuals to recognize and understand their emotional states. Difficulty identifying emerging emotions may make these experiences feel uncontrollable, ultimately contributing to excessive worry and anxiety responses (McLaughlin et al., 2019). In the context of ACE, the inability to understand emotions is exacerbated by traumatic experiences that resulted from a threatening condition, which in turn transform anxiety into maladaptive responses to cope with the threatening condition.

A study also found that traumatic childhood experiences can disrupt emotional processing, making it difficult for individuals to recognize and distinguish between different emotional states, such as anger, sadness, and anxiety (Paulus et al., 2021). This is in line with previous research that found that ACE can contribute to the occurrence of emotion regulation difficulties (DER), one of which is clarity, which refers to the difficulty of individuals to know or understand the emotions experienced (Cole & Diaz, 2024; Rudenstine et al. 2019).

Regarding the goals dimension, which refers to an individual's difficulty maintaining focus and pursuing goals when experiencing negative emotions, traumatic and stressful childhood experiences may interfere their ability to complete tasks or achieve goals while experiencing negative emotions. Neurologically, ACEs can disrupt with the development of the prefrontal cortex and limbic system responsible for maintaining focus on goals when individuals are under stress (Rudenstine et al., 2019). Individuals with history of exposure to ACE will develop maladaptive emotion regulation strategies, by which negative emotions can hinder the individual's ability to prioritize tasks or goals.

These findings are consistent with previous studies showing that individuals exposed to ACEs tend to have difficulty maintaining focus on tasks or pursuing their goals when experiencing negative emotions (Dagnino et al. 2025; Schweitzer et al. 2025). As a result, the negative emotions experienced are overinterpreted as something harmful, thus triggering elevated alertness, excessive worry, and persistent anxiety (Quiñones-Camacho & Davis, 2019). Studies show that individuals who are unable to recognize the experienced emotions may label negative emotions as anticipation, which in turn interprets the signal as a dangerous threat (Liu et al. 2017; Yildirim et al. 2023), ultimately make individuals experience intense anxiety.

Previous studies have also shown that when individuals experience negative emotions, they may become more reactive to perceived threats and focus excessively on their emotional experiences rather than completing tasks or pursuing predetermined goals (McLaughlin et al., 2019). This heightened focus on threats may increase concerns about potential negative situations and interfere with individuals' ability to remain engaged in goal-directed activities (Eysenck et al., 2020). Individuals with a history of ACE exposure may also experience heightened stress reactivity, which disrupt attention when negative emotions arise and make it more difficult to complete tasks, make decisions, and maintain consistent behavior (Hanson et al., 2017). These difficulties may subsequently contribute to persistent anxiety responses (Flechsenhar et al., 2022).

The non-acceptance dimension refers to an individual's difficulty accepting negative emotions and the tendency to reject or react negatively to their own emotional experiences. In the context of ACEs, individuals exposed to more than four types of ACEs have greater difficulty accepting negative emotions such as sadness, anger, and distress. These emotions are perceived as threatening and in need of immediate avoidance, driving individuals to become overly worried and continually attempt to control or suppress their emotions, which contribute

to anxiety (Paulus et al., 2021; Tull et al., 2015). Difficulty accepting negative emotions also result in self-directed negative reactions, such as rejection, anger toward oneself, and feelings of shame (Paulus et al., 2021). When individuals are unable to accept negative emotions, they may attempt to control or avoid these emotions, which can ultimately contribute to anxiety (Bardeen et al., 2014).

Other studies also explain that children who experience traumatic experiences, such as violence, in childhood often have difficulty recognizing, expressing, and understanding their emotions. These difficulties may contribute to increased anger (Fox et al., 2015), difficulties in managing stress and controlling impulses, and a greater tendency to use maladaptive coping mechanisms (Ford et al., 2020). Non-acceptance further encourages the use of maladaptive strategies, as individuals suppress their emotions rather than acknowledge and accept negative emotional experiences. Although this strategy can provide short-term relief, it can reinforce anxiety in the long term (Bandoli et al., 2017). Studies have shown that individuals who are trained to accept negative emotions may have greater ability to manage anxiety than those who attempt to suppress their negative emotions (Pizzie et al., 2020).

The next dimension is strategies**,** which refers to the individual's limitations in emotion management strategy. The results showed that individuals exposed to more than four types of ACEs tend to have difficulty implementing effective emotion regulation strategies that eventually developed on the onset of anxiety. This is because individuals with ACE exposure often grow up in environments that do not provide adequate support for developing adaptive coping strategies when experiencing negative emotions. Neglect and emotional punishment during childhood hinder the development of emotion regulation skills, making it more difficult for individuals to employ effective emotion regulation strategies (Kim & Cicchetti, 2010; McLaughlin et al. 2019). Previous studies explain that individuals with high exposure to ACE have limitations in emotion regulation strategies since the environment is not supportive for individuals to carry out adaptive emotion regulation strategies, such as calming down when experiencing negative emotions (Sheridan & McLaughlin, 2014). Maladaptive emotion regulation strategies may manifest in behaviors such as avoidance and excessive fear or worry (Aldao et al. 2016; Bardeen et al. 2014). Subsequently, individuals exposed to ACEs experience greater difficulty employing effective emotion regulation strategies, which ultimately contribute to anxiety symptoms (Heleniak et al. 2016).

This may be partly explained by disruption of the hypothalamic-pituitary-adrenal (HPA) axis, which can impair individuals' ability to respond adaptively to emotional experiences and interfere with emotion regulation processes (Cicchetti, 2006; Herzog et al., 2018). Consequently, individuals with greater ACE exposure experience greater difficulty regulating their emotions, which manifest as an inability to calm themselves and a tendency to rely on maladaptive rather than adaptive coping strategies (McLaughlin et al., 2019). Disruptions in emotion regulation may also be reflected in behaviors such as intense anger and impulsivity (Thompson, 2019).

Overall, these findings are in accordance with the theory of psychopathological development proposed by Cicchetti (2006), in which stated that psychopathology is the result of the interaction between biological, psychological and environmental factors throughout an individual's life. From this perspective, emotion regulation provides a framework for understanding how psychopathology may develop following traumatic experiences.

Individuals exposed to such experiences may grow up with difficulties in understanding, accepting, and managing negative emotions, which can impair their ability to regulate emotions when facing psychological stress. When these difficulties persist, negative emotions last longer, increase in intensity, and become more difficult to control. Consequently, unmanaged negative emotions manifest as excessive sadness and fear, difficulties controlling thoughts and behaviors, and feelings of distress, which may contribute to the development of psychopathological symptoms, including anxiety.

The findings are consistent with Cole & Diaz (2024), who found that DER mediates the relationship between ACEs and anxiety. Cloitre et al. (2019) also explained that traumatic experiences, such as abuse, neglect by caregivers, and exposure to violence, can impair emotional functioning and ultimately affect mental and physical health during emerging adulthood. Similarly, Zhou et al. (2025) identified DER as a pathway linking ACEs to anxiety. Therefore, the present study provides further evidence of the role of DER in mediating the relationship between ACEs and anxiety. These findings strengthen the understanding that traumatic childhood experiences may have long-term effects on psychopathological outcomes through difficulties in emotion regulation.

In this study, the mediation was partial, as ACEs were associated with anxiety both indirectly through DER, particularly the clarity, goals, non-acceptance, and strategies dimensions, and directly. Thus, ACEs may contribute to anxiety through difficulties in emotion regulation while also having a direct association with anxiety.

However, contrary to previous findings (Rudenstine et al., 2019), the present study found that the awareness and impulse dimensions of DER did not mediate the relationship between ACEs and anxiety. In contrast, impulse has been identified as a mediating dimension in the relationship between childhood emotional violence and anxiety disorders (Soenke et al., 2010). These differences may be related to the outcomes examined in previous studies. For example, psychological distress is a broader outcome that encompasses various forms of emotional problems, including depression, anxiety, and stress. Therefore, the awareness dimension may be more relevant as a mediator when the outcome reflects psychological distress more broadly. In the present study, anxiety was examined as a specific outcome, which may be more strongly associated with cognitive biases and threat-related processing than with emotional awareness.

Some limitations of this study are observed: the multidimensional nature of difficulties in emotion regulation may not have been fully captured in the analytical model. Although most dimensions significantly mediated the relationship between adverse childhood experiences and anxiety, the awareness and impulse dimensions did not show significant effects. This suggests that the influence of these dimensions may vary depending on psychological or contextual factors that were not examined in the present study.

Further research is encouraged to examine deeper roles of each dimension of difficulty in emotion regulation, particularly awareness and impulse which in this study did not show a significant effect to anxiety in emerging adulthood. These findings suggest only partial dimensions of emotion regulation function uniformly in explaining the impact of ACE. Therefore, follow-up research needs to utilize a more detailed analytical approach to identify specific contexts or psychological conditions in which these dimensions become more relevant.

4. CONCLUSION AND RECOMMENDATIONS

Based on the results of this study, it can be concluded that DER, particularly the clarity, goals, non-acceptance, and strategies dimensions, mediates the relationship between ACEs and anxiety. Individuals exposed to more than four types of ACEs showed greater difficulties in emotion regulation, which were associated with higher levels of anxiety. The awareness dimension was not significantly associated with ACEs or anxiety and therefore excluded from the subsequent mediation analysis. Furthermore, the impulse dimension did not significantly contribute to the development of anxiety in the mediation model.

The mediation analysis indicated partial mediation, meaning that ACEs were associated with anxiety both directly and indirectly through DER. These findings can provide a basis for prevention and intervention efforts among individuals with a history of ACEs. Because the clarity, goals, non-acceptance, and strategies dimensions were found to mediate the relationship between ACEs and anxiety, interventions may focus on strengthening specific emotion regulation skills. These may include improving individuals' ability to recognize and understand their emotional experiences (clarity), developing adaptive strategies for managing emotional distress (strategies), supporting individuals in maintaining goal-directed behavior when experiencing negative emotions (goals), and promoting acceptance of negative emotions without excessive shame or self-blame (non-acceptance). Strengthening these skills may help reduce the difficulties in emotion regulation associated with ACEs and, in turn, reduce vulnerability to anxiety.

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