

Emotion Regulation and Resilience in the Context of Adverse Childhood Experiences: A Scoping Review

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Adverse childhood experiences (ACEs) negatively impact individuals' physical and mental health. Research literature often focuses on the impact of ACEs, with resilience and emotion regulation as protective factors. This scoping review aims to investigate the existing literature on how adverse childhood experiences, emotion regulation, and resilience have been defined, assessed, and studied in the empirical literature. Arksey and O'Malley's five-stage framework was employed as the scoping review methodology. Searches were carried out in three databases: Web of Science (WOS), PubMed, and SCOPUS. Nine studies from the years 2019 to 2023 were included in the final review. There were inconsistencies in the operational definitions and measures used for ACEs, emotion regulation, and resilience. The reviewed literature reinforces that resilience and emotion regulation serve as protective factors against the impacts of ACEs, emphasizing the need for interventions to promote these skills to counteract the negative effects of ACEs. This review also highlights the importance of focusing on emotion regulation as a crucial component in fostering resilience and addressing the long-term consequences of ACEs. Additionally, it highlights the significance of considering the cultural context within this field of study and the use of culturally sensitive approaches to enhance the relevance and effectiveness of interventions.

Keywords: adverse childhood experiences, emotion regulation, resilience, mental health

Adverse childhood experiences (ACEs) are traumatic events encountered by individuals aged below 18 years during their childhood and adolescence. These experiences included abuse (physical, emotional and sexual), neglect (physical and emotional), and household dysfunction (exposure to domestic violence, mental health problems, family incarceration, separation and substance misuse) (Felitti et al., 1998). The impact of ACEs on adult mental and physical health is significant, with a greater number of ACEs correlating to increased risks of chronic disease, mental illness, and health risk behaviours (Boullier & Blair, 2018; Sonu et al., 2019; Godoy et al., 2021). There is a correlation between the number of ACEs and the associated risk, meaning that as the number of ACEs increases by one unit, the risk also increases

(Campbell et al., 2016). Moreover, individuals with a high number of ACEs, such as four or more in adults, face significantly higher risks of developing mental health problems compared to those with few or no ACEs (Giovannelli et al., 2016; Shin et al., 2018). However, some individuals demonstrate resilience and do not encounter these negative consequences (Chandler et al., 2015), as resilience helps those exposed to ACEs achieve positive growth and adjustment (Ortiz, 2019). This underscores the significance of resilience in alleviating the impacts of ACEs and promoting positive outcomes.

Resilience encompasses the capability, resources and processes available to an individual or system to adapt successfully when faced with adversity (Masten &

Barnes, 2018; Han et al., 2023). The conceptualization of resilience has evolved over time, transitioning from a focus on individuals with seemingly innate invulnerability to exploring the factors that contribute to resilience, and ultimately to a contemporary developmental systems perspective. In this perspective, resilience is understood as the outcome of dynamic interactions among various systems, including biological and sociocultural factors (Masten & Barnes, 2018; Han et al., 2023). This shift implies that resilience arises from ordinary survival processes inherent to humans as adaptive beings, which encompass skills such as emotion regulation and executive functioning (Masten & Barnes, 2018; Han et al., 2023; Yehuda et al., 2006).

The regulation of emotions emerges as a pivotal factor in resilience, particularly concerning ACEs (Fisk, 2010; Tugade, 2007). Improved emotion regulation correlates positively with psychological resilience, and specific strategies for regulating emotions are uniquely associated with psychological resilience (Polizzi & Lynn, 2021). Emotion regulation is a vital underlying process of resilience, thus both emotion regulation and resilience building emerge as crucial factors.

The significance of this review lies in addressing the gap in the literatures, which

had predominantly focused on the effects of ACEs rather than causes of ACEs or how to prevent them from occurring (Karatekin et al., 2022) or how to alleviate the impacts or ACEs. Understanding the interplay between emotion regulation and resilience in the context of ACEs is essential for developing effective interventions and support systems to mitigate the long-term negative consequences of childhood adversity. This scoping review aims to investigate the existing literature on how adverse childhood experiences, emotion regulation and resilience have been defined, assessed, and studied in the empirical literature.

Method

A scoping approach provides a preliminary assessment of the research area with the aim of identifying and determining the nature and extent of research literature in a particular area. This scoping review was conducted using five stages of the framework adopted in the Arksey and O'Malley (2005): (1) identification of the research question, (2) identification of relevant studies, (3) study selection, (4) charting the data, and (5) collating, summarising and reporting the results. Figure 1 provides the steps of the scoping review methodology.

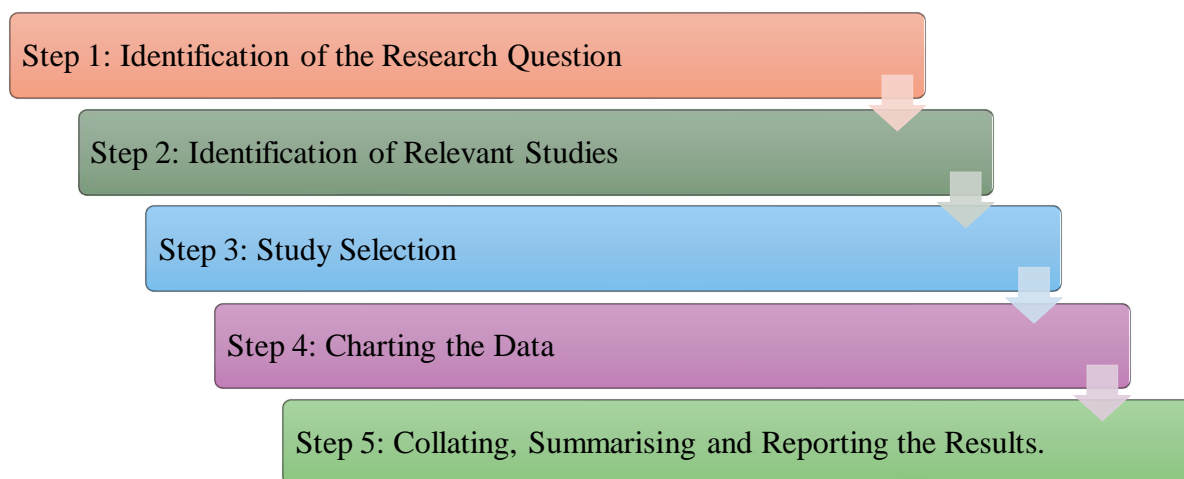


Figure 1 Steps of Arksey and O'Malley's Scoping Review Methodology

Step 1: Identifying The Research Question

This scoping review explores existing research on emotion regulation and resilience in the context of ACEs, which involves the following research questions:

1. How have the concepts ACEs and emotion regulation been operationalised and assessed?
2. How have the concepts ACEs and resilience been operationalised and assessed?
3. What are the key findings?

Step 2: Identifying Relevant Studies

Electronic literature searches through Web of Science (WOS), PubMed and SCOPUS databases to identify English-language articles published between 2019 to 2023. A comprehensive search strategy was developed combining the three concepts of ACEs, emotion regulation and resilience. Boolean operators “OR” and “AND” were used to combine these concepts. These keywords were entered with the use of Boolean operators and the following database filters were applied: (1) English as language medium, and (2) 2019/01/01 to 2023/12/31 as the publication range. The limitation on the number of years searched is to make sure only recent research from the year 2019 through the end of year 2023 will be included in the review.

Table 1 provided the keywords that guided the search which were generated following the Joanna Briggs Institute (2017)

methodology of population, concept, and context criteria (PCC). In PubMed, the following strategy was used: (Adverse childhood experience OR Childhood Adversity OR ACEs OR Childhood Maltreatment OR Adverse Childhood) AND (Resilience or Resiliency or Resilient) AND (Emotion Regulation OR Emotion dysregulation). Searches were adapted for each database to match the specific structure of each database.

Step 3: Selecting Appropriate Articles for the Scoping Review

Data extraction and synthesis were conducted by the authors. Firstly, based on titles and abstracts, articles that are not empirical studies such as systematic reviews, literature reviews, opinion/commentary papers, editorials, dissertations, and conference papers were excluded. Additionally, articles that do not in the context of ACEs, emotion regulation and/or resilience were excluded. Secondly, full-text screening was performed for further identified relevant studies that it was not possible to decide using the title and abstract. Each article's relevance was assessed by reading its abstract and looking for the variables measured, sample population, and measurement tools. When these details were missing from the abstract, a closer look at the text was conducted, with a focus on the methodology and discussion. Full-text papers were screened using the inclusion and exclusion criteria outlined in Table 2 to ensure relevant papers were selected. Studies that did not fall in the inclusion criteria as well as studies fell in

Table 1

Summary of Keywords Based on the PCC Criteria

Criteria	Keyword	List of expanded keywords generated
Population	-	-
Concept	Emotion Regulation	Emotion dysregulation
	Resilience	Resiliency or Resilient
Context	Adverse Childhood Experiences	Childhood Adversity OR ACEs OR Childhood Maltreatment OR Adverse Childhood

Table 2

Inclusion and Exclusion Criteria Using the PCC Criteria

PCC criteria	Inclusion criteria	Exclusion criteria
Population	<ul style="list-style-type: none"> • Children, adolescents/ teenagers and adults population across the lifespan 	<ul style="list-style-type: none"> • -
Concept (Emotion Regulation, Resilience)	<ul style="list-style-type: none"> • Articles that included concept of emotion regulation, resilience and adverse childhood experience; • Quantitative measures on emotion regulation and/or resilience in the context of adverse childhood experiences 	<ul style="list-style-type: none"> • Articles did not include the psychological assessment tools used. • Physical pain resilience
Context (Adverse Childhood Experiences)	<ul style="list-style-type: none"> • ACEs exposure informed by ACEs definition by Felitti et al. (1998): Physical abuse, emotional abuse, sexual abuse, physical neglect, emotional neglect, household dysfunction: mental health issues, family members in prison, parents with alcohol/drug abuse problem, presence of domestic abuse, separation/disappearance of parent. 	<ul style="list-style-type: none"> • Research not related to conventional ACES (e.g., trauma related to physical illness, intergenerational trauma, secondary trauma and vicarious trauma), COVID-19; • Trauma experienced after 18 years old; • Stressful life events not related to ACEs
Other	<ul style="list-style-type: none"> • Articles published in English language (translations included); Empirical studies • Full text accessibility 	<ul style="list-style-type: none"> • Articles not accessible in full text; • Duplicated articles • Review, study protocol, framework, model, opinion/ commentary papers, editorial, dissertation, and conference papers

the exclusion criteria were excluded. After screening, a total of 9 studies were included in the review. Figure 2 presents a PRISMA flowchart that illustrates the study screening and selection process.

Step 4: Charting the Data

Step 4 involves the extraction of data from the full-text papers. Firstly, the authors determine the variables that were generated

according to the research questions, particularly quantitative measures on ACEs, emotion regulation and resilience, and key findings. Next, we used the descriptive analytical method to arrange the findings in the form of a table. The data were summarize included general study information (author, year, country of study), methodology (study design, sample size, population), measures (ACEs, emotion regulation and resilience) and key findings.

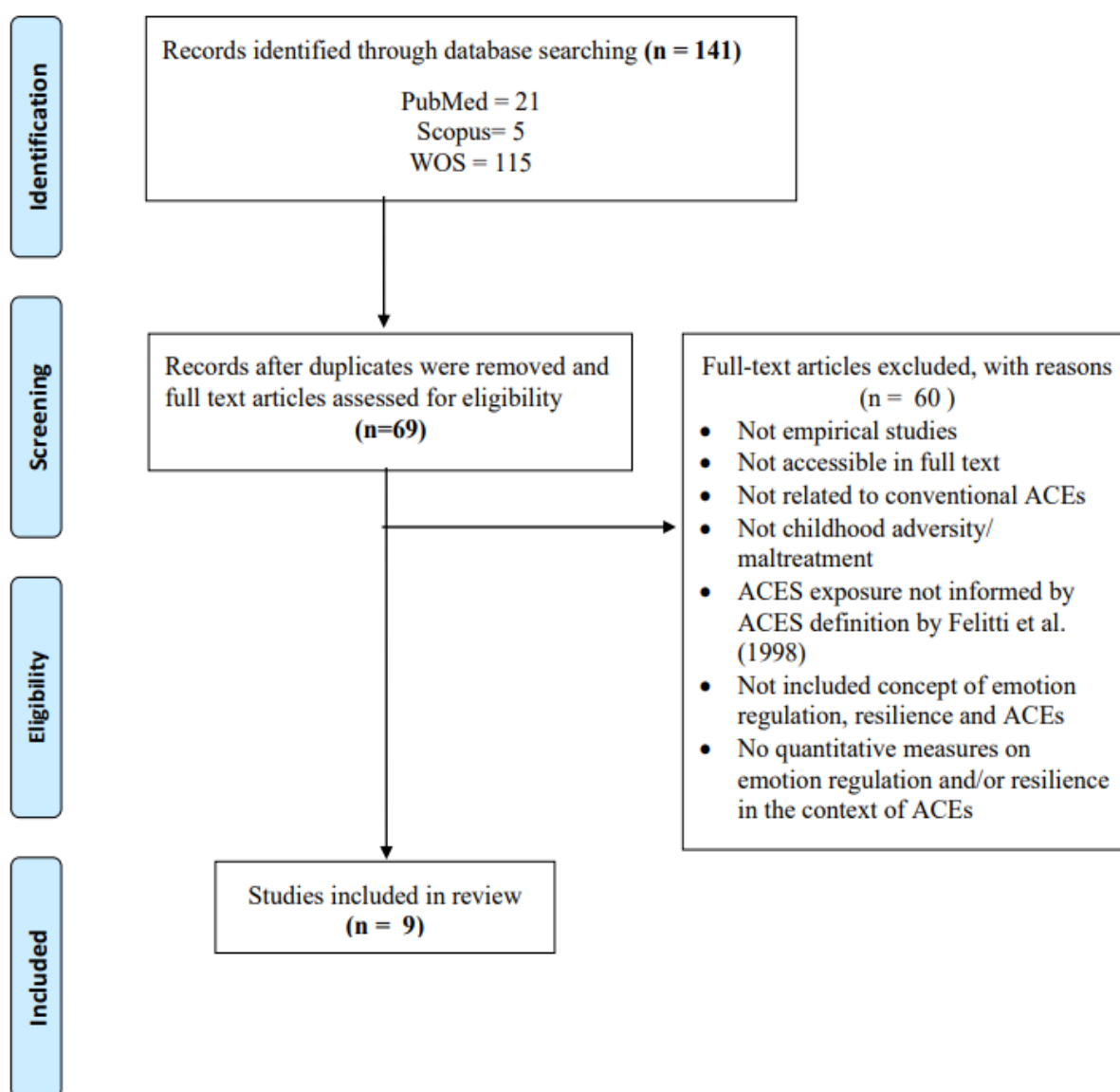


Figure 2 PRISMA Flowchart for the Selection of Studies

Step 5: Summarising, Analysing and Reporting the Results

This stage included data analysis, reporting, and interpreting the findings. The purpose of the synthesis was to understand how concepts of ACEs, emotion regulation, and resilience had been defined, operationalised and assessed. The results are reported within the context of research questions. It will be divided into the following themes: (1) Measures and (2) Key findings. The results will be further discussed in the discussion section.

Results

As shown in Figure 2, a total of 141 papers were identified from three online databases, particularly PubMed, SCOPUS and Web of Science (WOS). After removing duplicates and papers that are not available in full text, 69 papers were reviewed using the inclusion and exclusion criteria. There were 60 full text articles excluded from the review and 9 studies were included in the analysis. Table 3 illustrates the summary of study characteristics.

Table 3

Summary of Study Characteristics

Author (Year)	Country	Method		Quantitative measures			Key findings
		<i>n</i>	Pop. (Age)	ACEs	ER	R	
Maurer et al. (2023)	Canada	91	University Students (Mean Age= 26; SD=6.78)	ACEQ CTQ-SF	DERS-SF	CD-RISC-10	<ul style="list-style-type: none"> • Consistent use of the JoyPop app enhanced multidimensional resilience and improved affect regulation. • Perceived stress decreased with app use, especially for those exposed to more than four ACEs. • The findings supported an approach that modelled resilience as a complex, dynamic, and multicomponent process, supported by individual and interpersonal resources.
Yöyen & Bozacı (2023)	Turkey	423	Adults (Aged 18- 60) (74% Female; 26% Male)	CTS-33	ERDS-16	SPRS	<ul style="list-style-type: none"> • Emotion regulation difficulties (i.e. openness, rejection, and strategies) and childhood traumas (i.e. emotional abuse, physical neglect, emotional neglect, and physical neglect) significantly predicted interpersonal problems. • Psychological resilience had a low but significant effect on interpersonal problems. • Recommended interventions included dialectical behaviour therapy, schema therapy, and cognitive behavioural therapy.
MacIsaac et al. (2021)	Canada	156	First-Year Undergraduate Students	ACEQ	DERS-SF	CD-RISC-10	<ul style="list-style-type: none"> • JoyPop app usage correlated with improvements in emotion regulation and depression symptoms.

Author (Year)	Country	Method		Quantitative measures			Key findings
		<i>n</i>	Pop. (Age)	ACEs	ER	R	
			(Mean Age= 19.02; SD=2.90)				<ul style="list-style-type: none"> • Higher ACEs scores showed faster rate of change in emotion regulation. • The JoyPop app represented an important step forward in integrating resilience intervention research with a technology-based medium that provided in-the-moment support.
Francoeur et al. (2019)	Canada	483	University Students (Aged 18–25; Mean Age= 22.05) (81.2% Female)	CTQ-SF (French version)	CERQ (French version)	CYRM (French version)	<ul style="list-style-type: none"> • Emotion regulation and mentalization both acted as protective factors in the context of childhood maltreatment. • Emotion regulation mediated the relationship between childhood maltreatment and breakup adjustment, highlighting its role in promoting resilience. Mentalization mediated the relationship between childhood maltreatment and psychiatric symptoms. • Higher emotion regulation skills, mentalization and personal levels of control were associated with greater resilience and fewer psychiatric symptoms.
Kumar et al. (2022)	United States	491	Women (Aged 18-25)	[Childhood Sexual Abuse Severity] from CTQ-SF	[Goal-Directed Emotion Dysregulation] subscale from DERS	-	<ul style="list-style-type: none"> • Childhood sexual abuse severity predicted later of depression and anxiety symptoms through greater emotion dysregulation particularly difficulties engaging in goal-directed behaviours. • Mindful awareness weakened the relationship between goal-directed emotion dysregulation and symptoms of depression and anxiety.

Author (Year)	Country	Method		Quantitative measures			Key findings
		<i>n</i>	Pop. (Age)	ACEs	ER	R	
Park et al. (2022)	Australia	242	Adults completed MRI from TWIN-E cohort study (Gatt et al., 2012)	ELSQ	ERQ	-	<ul style="list-style-type: none"> • Exposure to early life stress (ELS) altered brain patterns, increasing covariation in salience and executive control networks but decreasing grey matter covariation in temporo-parietal areas which related to resilience. • Cognitive reappraisal mediated the relationship between brain function and well-being in ELS-exposed individuals. • Stronger GMC in prefrontal and parietal regions was associated with resilience in ELS-exposed individuals with high levels of well-being, suggesting that cognitive reappraisal strategies may be effective in neurotherapeutic interventions to promote resilience.
Chen et al. (2021)	China	3146	Children and Adolescents (Aged 10-17)	CTQ	-	RSCA	<ul style="list-style-type: none"> • Childhood maltreatment was linked to an increased risk of suicidal ideation (SI), with emotional abuse showing the strongest association. • Resilience mediated this relationship, with emotion regulation and interpersonal assistance being the most prominent mediators.
Tian et al. (2021)	China	3146	Adolescents/ Students (Aged 10-17)	CTQ	-	RSCA	<ul style="list-style-type: none"> • Resilience partially moderated and mediated the association between childhood maltreatment (CM) and self-harm (SH). • Among the dimensions of resilience, emotion regulation, interpersonal assistance, and family support were the strongest mediators.

Author (Year)	Country	Method		Quantitative measures			Key findings
		<i>n</i>	Pop. (Age)	ACEs	ER	R	
Tian et al. (2020)	China	2,084	Maltreated Teenagers/ Students (Aged 10-17)	CTQ	-	RSCA	<ul style="list-style-type: none"> • Strengthening these aspects of resilience could reduce SH risk among adolescents who had experienced CM. • Resilience was inversely correlated with self-harm (SH), repeated SH, and severe SH for all types of childhood maltreatment. • Among resilience dimensions, emotion regulation was the strongest factor linked to SH among abused youths. • Higher resilience levels were associated with decreased risks of self-harm occurrence, repetition, and severity in adolescents who had experienced emotional abuse (EA) and physical neglect (PN). • Resilience building intervention through enhancing emotion regulation ability, improving goal concentration, and consolidating interpersonal assistance, can effectively reduce SH risk, repetition, and severity in maltreated adolescents.

Note. *n* = sample size; pop. = population; ACEs = Adverse Childhood Experiences; ER = Emotion Regulation; R = Resilience. ACEQ = Adverse Childhood Experiences Questionnaire; Childhood Trauma Questionnaire = Childhood Trauma Questionnaire; CTQ-SF = Childhood Trauma Questionnaire-Short Form; CTS-33 = Childhood Trauma Scale; ELSQ = Early Life Stress Questionnaire. DERS = Difficulties in Emotion Regulation Scale; DERS-SF = Difficulties in Emotion Regulation Scale - Short Form; ERDS-16 = Emotion Regulation Difficulty Scale - Short Form; CERQ = Cognitive Emotion Regulation Questionnaire; ERQ = Emotion Regulation Questionnaire. CD-RISC-10 = Connor Davidson Resilience Scale-10; SPRS = Short Psychological Resilience Scale; CYRM = Child and Youth Resilience Measure; RSCA = Resilience Scale for Chinese Adolescents.

(1) Study Characteristics and Methodology

Out of the nine studies, three were conducted in Canada (Maurer et al., 2023; MacIsaac et al., 2021; Francoeur et al., 2019), three studies took place in China (Chen et al., 2021; Tian et al., 2021; Tian et al., 2020), while one study was carried out in Turkey (Yöyen & Bozacı, 2023), United States (Kumar et al., 2022) and Australia (Park et al., 2022) respectively. Three studies were conducted in 2021, two in 2023, two in 2022, one in 2020, and one in 2019.

Six studies focused on adult populations (Maurer et al., 2023; MacIsaac et al., 2021; Francoeur et al., 2019; Yöyen & Bozacı, 2023; Kumar et al., 2022; Park et al., 2022) while three on children and adolescent populations (Chen et al., 2021; Tian et al., 2021; Tian et al., 2020). The age range reported was 10 to 60 years. Three studies reported no age range for the sample. The majority of the studies involved both genders, with only one study had only female participants (Kumar et al., 2022). Three studies had total sample sizes of more than 2000 (Chen et al., 2021; Tian et al., 2021; Tian et al., 2020), three studies had total sample sizes of more than 400 (Francoeur et al., 2019; Yöyen & Bozacı, 2023; Kumar et al., 2022), one study had total sample sizes of more than 200 (Park et al., 2022), one study had total sample sizes of more than 100 (MacIsaac et al., 2021), and one study had total sample sizes of below 100 (Maurer et al., 2023).

Based on Table 2, it was found that there were four studies utilized quantitative measures ACEs, emotion regulation and resilience, two studies quantitative measures ACEs and emotion regulation while three studies utilized quantitative measures ACEs and resilience.

(2) Measures

Adverse Childhood Experiences (ACEs)

There were 55 discrete variables measured under the category of ACEs across the nine studies included in this review. While many studies measured sexual abuse (n = 9), emotional abuse (n = 8), and physical abuse (n = 8), followed by emotional neglect (n = 7) and physical neglect (n = 7).

Most articles (55.6 %) in this review operationalized ACEs through childhood maltreatment (Bernstein et al., 1994), included three types of abuse (physical, sexual, emotional) and two types of neglect (emotional and physical). 22.2 % articles (Maurer et al., 2023; MacIsaac et al., 2021) used the variants of the original ACEs measure (Felitti et al., 1998) as their operational definition of ACES, which defined ACEs as exposure to adverse experiences during childhood that included abuse (emotional, physical, sexual), neglect (emotional and physical), and household dysfunction (domestic violence, substance use, incarceration, mental illness, and divorce). In addition, 11.1% articles (Yöyen & Bozacı, 2023) operationalized ACEs as the maltreatment by family members during childhood including physical abuse, emotional abuse, physical neglect, emotional neglect, sexual abuse, and excessive protection-control (Şar et al., 2020). 11.1% articles (Park et al., 2022) used 19 early life stress events that may have occurred prior to the age of 16 years, such as physical/sexual/emotional abuse, neglect and poverty, health-related traumas, bullying, and family/parent-related conflict and separation (McFarlane et al., 2005) as the operational definition.

The most frequently used tool for assessing ACES was the Childhood Trauma Questionnaire (CTQ; Bernstein et al., 1994) (n = 6). It was also found that modifications

were made, such as short form of the questionnaire (CTQ-SF; Bernstein et al., 2003) and translated versions in Chinese and French languages. The Chinese version of CTQ showed acceptable reliability by Zhao et al. (2005) and Han et al. (2018), while French version of CTQ-SF was validated by Paquette et al. (2004). Two studies used Adverse Childhood Experiences Questionnaire (ACEQ; Felitti et al., 1998), one study used Childhood Trauma Scale (CTS-33; Şar et al., 2020) while one study used Early Life Stress Questionnaire (ELSQ; McFarlane et al., 2005) to assess ACEs. One study (Kumar et al., 2022) focused exclusively on the Childhood Sexual Abuse Severity subscale of the CTQ-SF.

A comprehensive list of ACEs discrete variables and measurements can be found in Table 4.

Emotion Regulation

There were 28 discrete variables measured under the category of emotion regulation across the nine studies included in this review. While many studies measured goals ($n = 4$), strategies ($n = 3$) and clarity/openness ($n = 3$).

Most articles (33.3%) in this review operationalized emotion regulation through multiple aspects of emotion dysregulation, including non-acceptance of emotional responses, difficulties engaging in goal-directed behaviours, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity (Gratz & Roemer, 2004). 33.3% articles operationalized emotion regulation through two emotion regulation strategies: the constant tendency to regulate emotions by cognitive reappraisal or expressive suppression (Gross & John, 2003). 16.7% articles operationalized emotion regulation through five subdimensions of emotion regulation difficulties: openness (clarity), goals, drive, strategies and rejection

(Bjureberg et al., 2006). 16.7% articles operationalized emotion regulation by addressing the self-regulatory, conscious, and cognitive components of emotion regulation by distinguishing between nine different strategies included self-blame, other-blame, rumination, catastrophizing, putting into perspective, positive refocusing, positive reappraisal, acceptance, and planning (Garnefski, Kraaij, & Spinhoven, 2001).

The most frequently used tool for assessing emotion regulation was the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), where two studies (Maurer et al., 2023; MacIsaac et al., 2021) used 18-item Short Form (DERS-SF; Kaufman et al., 2015), while one study (Yöyen & Bozacı, 2023) employed the 16-item version (DERS-16; Bjureberg et al., 2015) or the Emotion Regulation Difficulty Scale - Short Form (ERDS-16) as mentioned in the study (Yöyen & Bozacı, 2023). One study (Kumar et al., 2022) focused solely on the Goal-Directed Emotion Dysregulation subscale of the DERS. One study (Park et al., 2022) used Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) while one study (Francoeur et al., 2019) used Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski, Kraaij, & Spinhoven, 2001) in French version (D'Acromont & Van Der Linden, 2006) to assess emotion regulation.

A comprehensive list of emotion regulation measurements can be viewed in Table 5.

Resilience

There were 21 discrete variables measured under the category of emotion regulation across the nine studies included in this review, which mostly measured goal concentration, interpersonal assistance, emotion regulation, positive perception and family support.

Most articles (42.9%) or three out of seven articles measures resilience in this review operationalized resilience through five dimensions of resilience: goal concentration, interpersonal assistance, emotion regulation, positive perception, and family support (Hu & Gan, 2008). 28.6% articles or two articles in this review operationalized resilience as grounded in biological, psychological, and social facets (Campbell & Davidson, 2003). 14.3% or one article in this review operationalized resilience as resources (individual, relational, communal and cultural) available to individuals, that may bolster their resilience (Daigneault, Dion, Hébert, McDuff, & CollinVézina, 2013; Ungar et al., 2008). 14.3% or one article in this review operationalized resilience as psychological resilience as the ability to bounce back or recover from stress (Smith et al., 2008).

The most frequently used tool for assessing resilience was the Resilience Scale for Chinese Adolescents (RSCA; Hu & Gan, 2008), followed by two studies (Maurer et al., 2023; MacIsaac et al., 2021) used Connor Davidson Resilience Scale-10 (CD-RISC-10; Campbell-Sills & Stein, 2007). There was one study (Francoeur et al., 2019) used Child and Youth Resilience Measure (CYRM; Ungar et al., 2008) that was in French version (Daigneault et al., 2013). One study (Yöyen & Bozacı, 2023) used Brief Resilience Scale (BRS; Smith et al., 2008) or Short Psychological Resilience Scale (SPRS) as named in the study (Yöyen & Bozacı, 2023) to assess resilience.

A comprehensive list of resilience measurements can be viewed in Table 6.

(3) Key Findings

Among the dimension of resilience, emotion regulation was the most promote resilience for ACEs. In general, emotion regulation plays a crucial role in various aspects of mental health outcomes,

including adjustment following romantic breakups and the development of psychiatric symptoms. Furthermore, emotion regulation and mentalization act as protective factors against psychiatric symptoms in the context of childhood maltreatment, highlighting their significance in promoting resilience (Francoeur et al., 2019).

Childhood traumas, especially emotional abuse and neglect, significantly predict interpersonal problems, emphasizing the importance of addressing emotion regulation difficulties and providing interventions such as Dialectical Behaviour Therapy, Schema Therapy, and Cognitive Behavioural Therapy (Yöyen & Bozacı, 2023).

Resilience serves as a protective factor against suicidal ideation and self-harm behaviours among individuals with childhood maltreatment histories. Specifically, dimensions of resilience such as emotion regulation, interpersonal assistance, and family support play prominent roles in mediating these associations, suggesting the importance of strengthening psychological resilience to mitigate risks (Chen et al., 2021; Tian et al., 2020, 2021).

Early life stress (ELS) influences brain structure and function, with cognitive reappraisal emerging as a potential target for neurotherapeutic interventions to enhance resilience (Park et al., 2022).

Consistent utilization of the JoyPop app demonstrates potential to enhance multidimensional resilience, particularly by improving affect regulation, behavioural responses, and cognitive processes. This suggests a technology-based interventions in supporting individuals with high ACEs exposure (Maurer et al., 2023; MacIsaac et al., 2021).

Overall, these findings revealed the nature of resilience processes in individuals exposed to ACEs and emphasize that resilience acts as a protective factor against the negative impacts of ACEs. Strengthening emotion regulation enhances resilience and helps mitigate adverse outcomes. Targeted interventions, including technology-based approaches, are effective in promoting resilience and addressing the impacts of ACEs.

Table 4

ACEs Measures

Authors (Year), Country	ACEs measures	E A	P A	S A	Uns. A	E N	P N	Uns. N	Inc .	D V	P Sep.	MI &/ SUI	Subs. Misuse	Xs PC	H-Rel. Tr., Bul., & Fam./P-Rel. Confl
Maurer et al. (2023), Canada	ACEQ	√	√	√		√	√		√	√	√	√	√		
	CTQ-SF	√	√	√		√	√								
Yöyen & Bozacı (2023), Turkey	CTS-33	√	√	√		√	√								√
MacIsaac et al. (2021), Canada	ACEQ	√	√	√		√	√		√	√	√	√	√		
Francoeur et al. (2019), Canada	CTQ-SF (French version)				√			√							
Kumar et al. (2022), Unites States	CTQ-SF: Childhood Sexual Abuse Severity			√											
Park et al. (2022), Australia	ELSQ	√	√	√				√			√				√
Chen et al. (2021), China	CTQ (Chinese version)	√	√	√		√	√								
Tian et al. (2021), China	CTQ	√	√	√		√	√								
Tian et al. (2020), China	CTQ	√	√	√		√	√								
Total	55	8	8	9	1	7	7	2	2	2	3	2	2	1	1

Note. ACEQ = Adverse Childhood Experiences Questionnaire; Childhood Trauma Questionnaire = Childhood Trauma Questionnaire; CTQ-SF = Childhood Trauma Questionnaire-Short Form; CTS-33 = Childhood Trauma Scale; ELSQ = Early Life Stress Questionnaire; EA = Emotional Abuse; PA = Physical Abuse; SA = Sexual Abuse; Uns. A = Unspecified type of abuse; EN. = Emotional Neglect; PN. = Physical Neglect; Uns. N = Unspecified Type of Neglect; Inc. = Incarceration; DV = Domestic Violence; PSep. = Parental Separation; MI&/SUI = Mental Illness and/or Suicide; Subs. Misuse = Substance Misuse; Uns. = Unspecified; XsPC = Excessive Protection/Control; H-Rel. Tr., Bul., & Fam./P-Rel. Confl = Health-Related Traumas, Bullying, and Family/Parent-Related Conflict.

Authors (Year), Country	ER measures	Aw.	Cl./ Op.	Go als	Str.	Imp .	Non acc	Drv .	Rej .	Acc.	S- Bl	O- Bl	Rum.	Catas .	Per sp.	P.Re foc	P.Re app	Pl an	CR	ES
Park et al. (2022), Australia	ERQ																		√	√
Total	28	2	3	4	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1

Note. ER = Emotion Regulation. DERS = Difficulties in Emotion Regulation Scale; DERS-SF = Difficulties in Emotion Regulation Scale - Short Form; ERDS-16 = Emotion Regulation Difficulty Scale - Short Form; CERQ = Cognitive Emotion Regulation Questionnaire; ERQ = Emotion Regulation Questionnaire. Aw. = Awareness; Cl./Op. = Clarity/Openness; Goals = Goals; Str. = Strategies; Imp. = Impulse; Drv. = Drive; Nonacc. = Nonacceptance; Rej. = Rejection; Acc. = Acceptance; S-Bl. = Self-blame; O-Bl. = Other-blame; Rum. = Rumination; Catas. = Catastrophizing; Persp. = Putting into Perspective; P.Refoc. = Positive Refocusing; P.Reapp. = Positive Reappraisal; Plan. = Planning; CR = Cognitive Reappraisal; ES = Expressive Suppression.

Table 6

Resilience Measures

Authors (Year), Country	R measures	Goal. Conc.	Interp. Assist.	Emo. Reg.	Pos. Percep.	Fam. Supp.	Psych. Res.	BioPsySoc. Res.	Ind./Soc. Res.	Fam. Res.	Comm. Res.
Maurer et al. (2023), Canada	CD-RISC-10							√			
Yöyen & Bozacı (2023), Turkey	SPRS						√				
MacIsaac et al. (2021), Canada	CD-RISC-10							√			
Francoeur et al. (2019), Canada	CYRM (French version)								√	√	√
Chen et al. (2021), China	RSCA	√	√	√	√	√					
Tian et al. (2021), China	RSCA	√	√	√	√	√					
Tian et al. (2020), China	RSCA	√	√	√	√	√					
Total	21	3	3	3	3	3	1	2	1	1	1

Note. CD-RISC-10 = Connor Davidson Resilience Scale-10; SPRS = Short Psychological Resilience Scale; CYRM = Child and Youth Resilience Measure; RSCA = Resilience Scale for Chinese Adolescents. Goal. Conc. = Goal Concentration; Interp. Assist. = Interpersonal Assistance; Emo. Reg. = Emotion Regulation; Pos. Percep. = Positive Perception; Fam. Supp. = Family Support; Psych. Res. = Psychological Resilience; BioPsySoc. Res. = Biopsychosocial Resilience; Ind./Soc. Res. = Individual/Social Resilience; Fam. Res. = Family Resilience; Comm. Res. = Community Resilience.

Discussion

This scoping review aimed to explore how the concepts of ACEs, emotion regulation, and resilience have been defined, assessed, and studied in the empirical literature. The review identified nine studies examining these concepts across the lifespan in children, adolescents/teenagers, and adults.

Inconsistencies were found in the operational definitions and measures used for ACEs, emotion regulation, and resilience. However, studies conducted in China showed some consistency in the measurement of ACEs and resilience. Regarding ACEs, the review revealed that most studies focused on abuse (physical, sexual, and emotional), particularly sexual abuse, with limited research on family dysfunction variables. Although ACEs addressed the family context, they often overlooked important factors such as financial difficulties, community violence, and peer victimization (McLennan et al., 2020). Additionally, most measurements used were short-form versions. There were also inconsistencies in the naming of measurement tools, with the 16-item version of the DERS (DERS-16; Bjureberg et al., 2015) being modified or referred to as the Emotion Regulation Difficulty Scale - Short Form (ERDS-16) and the Brief Resilience Scale (BRS; Smith et al., 2008) being modified or referred to as the Short Psychological Resilience Scale (SPRS) in Yöyen and Bozacı's (2023) study.

The review's findings align with existing literature, emphasizing the importance of resilience as a protective factor against the adverse effects of ACEs. The studies supported the involvement of psychosocial mechanisms, such as emotion regulation, in linking ACEs to mental health consequences (Panagou & MacBeth, 2022). The findings highlight that enhancing emotion regulation can significantly improve mental health and interpersonal functioning for individuals with ACEs. This

underscores the need for interventions to promote resilience and emotion regulation skills, including emerging technology-based interventions, to counteract the negative impacts of childhood adversity. Furthermore, the review reinforces that focusing on emotion regulation is crucial for building resilience, as emotion regulation is a prominent mediator of resilience. Thus, it is important to note that resilience-building interventions are particularly effective when they emphasize enhancing emotion regulation abilities.

This review found that within the studies, most respondents in those studies in the review of the populations were women. Several research studies have emphasized the significance of investigating ACEs, emotion regulation, and resilience among at-risk demographics, including males. Lyons (2015) stressed the importance of implementing interventions aimed at enhancing resilience specifically for lesbian and gay male populations. Wolff & Sánchez (2019) further highlighted the role of resilience in alleviating psychological distress among incarcerated men, particularly in the context of ACEs and substance abuse. Berke et al. (2018) underscored the necessity of considering the fluid nature of masculinity and its interplay with emotion regulation in comprehending male psychopathology. Out of the nine studies, most were conducted in Canada and China, highlighting the need for research across diverse cultural contexts to avoid bias. Alhowaymel et al. (2020) and Ceccarelli et al. (2022) emphasize the significance of a global perspective in understanding ACEs, considering the impact of cultural, social, and economic variables. Snodgrass et al. (2017) highlighted the need for culturally sensitive approaches in mental health research, which can be achieved through the development of affect scales that reflect local emotional experiences and cultural background. These studies highlight the essentiality of integrating diverse cultural

perspectives in ACEs research to make sure its effectiveness and relevance across diverse contexts. A global perspective is crucial for understanding how cultural factors influence ACEs, emotion regulation and resilience. Incorporating culturally sensitive approaches and exploring underrepresented populations will enhance the generalizability and relevance of findings.

Overall, it is worth noting that resilience and emotion regulation are critical protective factors that can either prevent or mitigate the negative impacts of ACEs. Resilience acts as a mediator between ACEs and their adverse outcomes, with emotion regulation being the most potential mediator in this process. Understanding the interaction between emotion regulation and resilience in the context of ACEs is essential for developing effective interventions and support systems. This review also emphasizes the importance of focusing on emotion regulation as a crucial component in fostering resilience as well as addressing the long-term consequences of childhood adversity. Additionally, it highlights the importance of considering cultural context within this field of study and using culturally sensitive approaches to enhance the relevance and effectiveness of interventions.

Limitation

This review's limitations include the restriction to a few databases, exclusion of grey literature, and the focus on English-language articles. These factors may have led to the omission of relevant studies and limited the comprehensiveness of the review.

Conclusion

In conclusion, this scoping review has provided an overview of the literature concerning emotion regulation and resilience within the context of ACEs. This

study mapped the evidence in relation to the definitions and operationalisation of ACEs and emotion regulation and resilience in current research. Generally, there are a limited number of empirical studies that examine the emotion regulation and resilience in the context of adverse childhood experiences. However, the reviewed literature reinforces that resilience and emotion regulation are protective factors against the impacts of ACEs and highlights the importance of enhancing emotion regulation to build resilience in individuals affected by ACEs, while also considering cultural context.

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