Children's emotion regulation strategies in facing the Volatile, Uncertain, Complex, and Ambiguous (VUCA) World: A systematic narrative review

Strategi regulasi emosi anak-anak dalam menghadapi dunia Volatile, Uncertain, Complex, and Ambiguous (VUCA): Tinjauan naratif sistematis

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Abstract

Despite an increasing number of studies conducted on emotion regulation strategies, there is, however, a limited resource that acknowledges it as a whole due to an inclination towards children's well-being development. Thus, this research aims to produce a synthesis review of children's emotion regulation strategies in preparation to encounter a volatile, uncertain, complex, ambiguous (VUCA) world. The articles for systematic narrative review were retrieved through a rigorous database search from 2015 until current. Thirteen relevant articles were retrieved through a systematic search that concentrated on children's emotion regulation strategies. Five different families of emotion regulation strategies were identified from finalised articles including: (1) situation selection; (2) situation modification; (3) attentional deployment; (4) cognitive change; and (5) response modulation. The findings from the articles were synthesised into a literature matrix and added as supporting statements when all five strategies were further discussed. The systematic narrative review indicated that children from various age groups used the five emotion regulation strategies differently. The situational context was also considered when children used the strategies, as the were they were studies focused on different social contextual factors. Besides, in certain age groups, children are keen to use one of the emotion regulation strategies frequently.

Keywords: childhood; child development; cognitive change; VUCA world

Abstrak

Meskipun semakin banyak penyelidikan yang dilakukan tentang strategi pengaturan emosi, namun ada sumber terbatas yang mengakuinya secara keseluruhan karena kecenderungan terhadap perkembangan kesejahteraan anak-anak. Oleh karena itu, penelitian ini bertujuan untuk menghasilkan tinjauan sintesis strategi regulasi emosi anak-anak dalam persiapan menghadapi dunia yang volatilitas, ketidakpastian, kompleksitas, dan ambiguitas (VUCA). Artikel untuk tinjauan naratif sistematis diambil melalui database yang ketat yang dicari dari 2015 hingga 2022. Sebanyak 13 artikel yang relevan diambil melalui pencarian sistematis yang berkonsentrasi pada strategi regulasi emosi anak-anak. Lima keluarga yang berbeda dari strategi regulasi emosi diidentifikasi dari artikel final termasuk: (1) pemilihan situasi; (2) modifikasi situasi; (3) penyebaran perhatian; (4) perubahan kognitif; dan (5) modulasi respon. Temuan dari artikel disintesis ke dalam matriks literatur dan ditambahkan sebagai pernyataan pendukung ketika kelima strategi dibahas lebih lanjut. Tinjauan naratif sistematis menunjukkan bahwa lima strategi pengaturan emosi digunakan secara berbeda oleh anak-anak dari berbagai kelompok umur. Konteks situasional juga dipertimbangkan ketika anak-anak menggunakan strategi, karena studi mereka berfokus pada faktor kontekstual sosial yang berbeda. Selain itu, pada kelompok usia tertentu, anak-anak tertarik untuk sering menggunakan salah satu strategi pengaturan emosi.

Kata kunci: masa kecil; perkembangan anak-anak; perubahan kognitif; dunia VUCA

Introduction

Emotion regulation is a crucial developmental task that should be familiarised and promoted to children, specifically for children experiencing risky situations (Paley & Hajal 2022), as in life comes challenges and situations that challenge the children's emotions and consequently result in unpredictable actions and possibly stimulate certain behaviours towards the stressors. Sanchis-Sanchis et al. (2020) described emotion regulation as the skills and strategies that individuals, including children, need to influence or alter their emotional experiences. Associating to this, emotion regulation can be described as how individuals perceive and express their emotions using suitable skills or strategies by considering the situations they encounter (Gross 2015). Thus, when experiencing challenging environments, children might exhibit negative emotions and adverse behaviours due to their inability to regulate emotions in certain conditions (Yob et al. 2022). However, emotion regulation is not fully dependent on children's internal capabilities but also on external assistance from the adults within the family, school, or community context. Paley & Hajal (2022) stated that one could consciously and unconsciously regulate emotions; both conditions can be from an individual self or externally supported.

Evidence from Riva Crugnola et al. (2011) showed that, during infancy, infants tend to use different emotion regulation strategies such as self-comforting, protesting or smiling with the intention of eliciting the adults' support. Moreover, as children rely on their emotion regulation to achieve their goals in certain situations, it is essential for them to be flexible in changing the strategies used in adaptive emotion regulation concerning personal goals and contextual demands (Bonanno & Burton 2013, Aldao et al. 2015). However, each strategy works differently depending on the age groups and situations that children confront. Nonetheless, children still need emotion regulation strategies and the ability to regulate as it is the underlying structure for positive development and functioning in a multitude of domains (Di Maggio et al. 2016, Panlilio et al. 2018).

Features of emotion regulation are part of the measures taken to activate the goals in aiming to influence the emotion trajectory (Gross 2015). Corresponding to Gross, Gust et al. (2015) clarified that behavioural and mental strategies adopted as emotion regulation instruments are termed emotion regulation strategies. As emotion regulation is a compilation of complex processes; a process model of emotion regulation has identified five different families of regulation strategies, starting with situation selection, situation modification, attentional deployment, cognitive change and lastly, response modulation (Gross 2013). Additionally, situation selection, situation modification, attentional deployment, and cognitive change are assigned under antecedent-focused strategies, while response modulation is categorised as response-focused strategies. These two strategies are demonstrated differently as the antecedent-focused strategies are used for response tendencies. Before it is completely activated and contradictorily, response-focused strategies during the actual response are fully activated when the emotion is advancing (Bosse 2017).

Thus, living in the current situation of a volatile, uncertain, complex, and ambiguous (VUCA) world, children should be occupied with the strategies that could help them to regulate to avoid expressing externalising and internalising behaviours as well as exhibiting negative emotions (Ghani et al. 2022). According to Roderick and Carlisle (1998 as cited in Yarger 2006), VUCA (Volatility Uncertainty, Complexity and Ambiguity) was devised after the Cold War in the military to demonstrate a newly emerging type of warfare. From one perspective, the coinage was meant to describe the world where the threats are both diffuse and uncertain, where conflict is inherent yet unpredictable and where our capability to defend and promote our national interests may be restricted by materiel and personnel resource constraints.

In a condition of VUCA, the pandemic Covid-19 best describes the environment (Nangia & Mohsin 2020), which illustrates the consequence towards children due to environmental changes. Therefore, this narrative review of emotion regulation strategies aimed to distinguish children's emotion regulation strategies based on Gross's process model of emotion regulation (Gross 2013) in preparing them to face the VUCA world.

Research Method

This study reviews the evidence regarding the children's emotion regulation strategies in strengthening the children's ability to regulate when experiencing unforeseen circumstances during the challenging VUCA era. In reviewing the journals on children's emotion regulation strategies, the methodological concept developed for this study followed systematic reviewing techniques (McFadden et al. 2012), focusing on transparent and rigorous approaches in view of identification, quality appraisal and synthesis studies. In short, MacDonald (2003) emphasised that systematic reviews can provide a clearer picture of previous recent studies in answering the study's specific needs. However, a study of narrative reviews is not constrained to use the methodological concept depending on the journal style. Still, if the methods are applied, it could clarify the fundamental idea of the narrative reviews (Murphy 2012). The following paragraphs describe how finalised papers are retrieved using selected databases that could provide suitable references for the narrative review.

This narrative review adopted systematic searching techniques to retrieve reliable evidence from previous studies concerning children's emotion regulation strategies (McFadden et al. 2012). The past studies were identified using four primary databases: Web of Science (WOS), SCOPUS, ScienceDirect and Wiley. Further hand searches were also conducted in several databases to retrieve more references regarding the study focus. Figure 1 shows the application of the systematic review techniques in retrieving the papers from all the databases mentioned above. The paper identification started with constructing the keywords or search string that lasted one week, from 11th March until 17th March 2022. Databases used were considered when building the search string as it has distinct requirements of the Boolean search, and thus Table 1 shows the four different search strings constructed together with a few keywords for the hand- searched.

Table 1.
Database search string

Search directory	Search string
Scopus	TITLE-ABS-KEY (("child*" OR "kid*" OR "toddler*" OR "preschool*") AND ("emotion*" AND "regulat*") OR ("self" AND "regulat*") AND ("strateg*" OR "method*" OR "technique*")) AND ("during" OR "in") AND ("volatile" OR "fluctuat*" OR "*certain") AND ("environment" OR "situation" OR "surround*"))
WoS	TS= (("child*" OR "kid*" OR "toddler*" OR "preschool*") AND ("emotion*" AND "regulat*") OR ("self" AND "regulat*") AND ("strateg*" OR "method*" OR "technique*") AND ("during" OR "in") AND ("volatile" OR "fluctuat*") AND ("environment" OR "situation" OR "surround*"))
WILEY	"child" anywhere and "toddler" anywhere and "preschool" anywhere and "emotion regulation" anywhere and "strategy" anywhere and "method"
Science Direct	TITLE-ABS children OR preschool AND emotion regulation

Source: Primary data

Table 2.
Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
1. Articles published from 2015 until current	1. Full text not attained
2. English language	2. Children with special needs or disabilities
3. Journal articles	3. Related to adult's emotion regulation
4. Focus on children's emotional regulation	4. Related to emotional validation
5. Focus on emotion regulation strategies	5. Clinical Psychology and the medical field
6. Social Sciences or Education Psychology	6. Focus on education in general

Source: Primary data

IDENTIFICATION

521 records identified through database searching
- 17 Scopus
- 172 WoS
- 259 Wiley
- 73 Science Direct

5 duplicates removed

SCREENING

516 potentially relevant articles to be screened by title and abstract

468 articles were excluded by title and abstract

ELIGIBILITY

48 potentially relevant articles to be screened for data abstraction

37 Full-text were excluded with reasons:
- 1 Unattainable
- 20 Parental role in emotion regulation
- 4 Emotion regulation intervention
- 6 General perception of emotion regulation
- 6 Not related

2 articles were identified by hand-search

INCLUDED

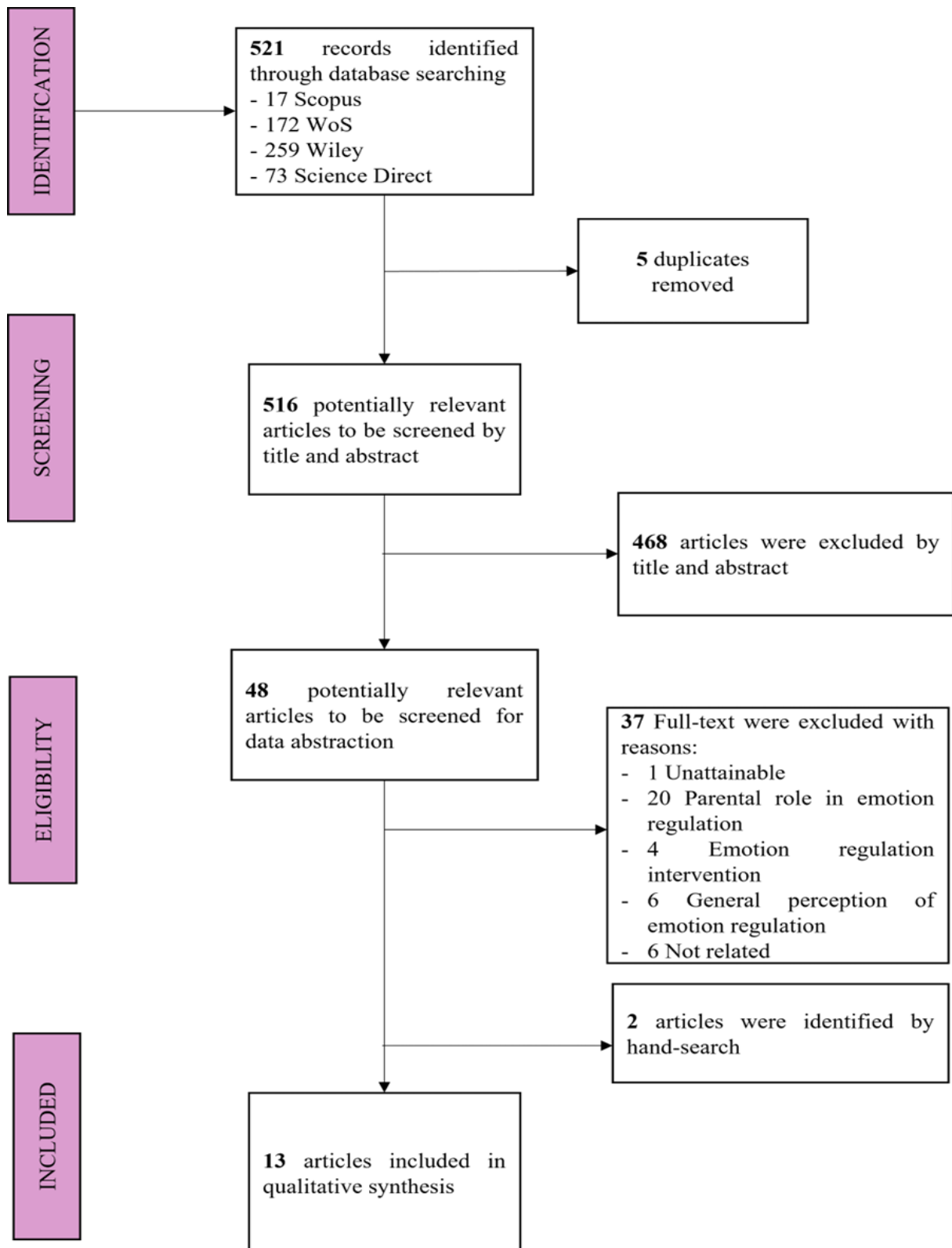**13** articles included in qualitative synthesis

Figure 1.
Flow diagram of systematic searching technique
Source: Primary data

Furthermore, inclusion and exclusion criteria (see Table 2) were added to all searches in terms of publication years, document type, language, and subject area. Publication years for the four primary databases were five years from 2018 until the present. In contrast, the hand-search process was narrowed down between 2015 and until current. The retrieved papers were restricted to only journal articles and the English language. Furthermore, all databases have various subject areas to identify relevant and reliable papers. According to our field of study, the databases might require many subject areas or none for this study. In relation, most databases include education, educational psychology, social sciences, other topics, and psychology. Notably, the papers have to focus on the study's main focus, children's emotion regulation strategies.

In selecting the relevant journal references, five hundred and twenty-one (521) papers were retrieved at the identification stage and subsequently checked for duplication. A total of five duplicate articles were removed, and only 516 relevant articles remained to be screened by title and abstract during the screening stage. Title and abstracts were screened according to emotion regulation strategies, and 468 articles were excluded. After the screening process, the remaining 48 articles were measured for eligibility. The eligibility process excluded 37 studies and produced 11 studies for qualitative synthesis.

The removal of the articles was due to different focus and contrast with the needs of the study: One article was unable to be retrieved, 20 articles emphasised a parental role in emotion regulation, four articles highlighted emotion regulation interventions, six articles talked about general perceptions of emotion regulation, and six articles were not related to children's emotion regulation. Two hand-search articles were obtained and added to the final number of the finalised relevant studies. In completing all four stages of retrieving relevant studies, 13 reliable articles were used to review children's emotion regulation strategies.

Results and Discussion

The distribution of the studies was mostly from 2020 with (n=5) (Atkinson et al. 2020, Cai et al. 2020, Kao et al. 2020, Oeri & Roebers 2020, Wang & Barret 2020). In 2018, n=3 studies were retrieved (Rao & Gibson 2018, Hipson et al. 2019, Liu et al. 2019). In addition, a total of n=1 studies (Wan & Savina 2015, Lopez-Perez et al. 2016, Parsafar et al. 2019, Boldt et al. 2020, Schoppmann et al. 2022) each was identified in 2015, 2016, 2019, 2021 and 2022. In line with the aim of the study, the methodologies of studies were presented in the form of a literature matrix. The studies investigating children's emotional strategies varied in conducting research. Most of the studies (n=5) were conducted using a quantitative research design (Wan & Savina 2015, Hipson et al. 2019, Liu et al. 2019, Cai et al. 2020, Kao et al. 2020). In addition, n=3 identified articles that used quantitative experimental research methods (Parsafar et al. 2019, Oeri & Roerbers 2020, Schoppmann et al. 2022). Contrastingly, three studies used qualitative research design with n=2 focused on qualitative with longitudinal research method (Atkinson et al. 2020, Boldt et al. 2020) studies applied qualitative with observational study (Wang & Barrett 2020). Additionally, two articles conducted mixed-method studies (Lopez-Perez et al. 2016, Rao & Gibson 2018).

Sustaining the nature of the research, all studies had children as their respondents. However, the samples varied; three studies had infants and toddlers (Atkinson et al. 2020, Kao et al. 2020, Schoppmann et al. 2022). The frequent sample used was the preschool age where n=4 studies had them as respondents (Hipson et al. 2019, Cai et al. 2020, Oeri & Roebers 2020, Wang & Barrett 2020) while n=3 studies had set school-age children as their samples (Wan & Savina 2015, Rao & Gibson 2018, Liu et al. 2019). However, one study that applied longitudinal research observed the infants until they reached school age (Boldt et al. 2020). Further, n=2 studies focused on preschool and primary school children (Lopez-Perez et al. 2016, Parsafar et al. 2019).

Apart from the study distribution, the reasons for conducting the study on children's emotion regulation strategies differed according to the needs of the study. Hence, the 13 finalised papers retrieved were categorised according to the general purposes of the studies. N=4 studies had conducted studies intending to investigate the effect or use of regulation in various contexts (family, peers, school) and

different age categories (Hipson et al. 2019, Boldt et al. 2020, Kao et al. 2020, Oeri & Roebers 2020). A total of n=3 studies were conducted that aimed to examine the use of emotional regulation strategies in various contexts (family, peers, school) and within different ranges of age groups (Rao & Gibson 2018, Parsafar et al. 2019, Atkinson et al. 2020). In addition, a total of n=2 studies looked into the parental, caregivers, or environmental influence on the children's application of emotion regulation strategies (Liu et al. 2019, Schoppmann et al. 2022). Also, n=4 studies aimed to make a comparison of the usage of emotion regulation strategies among children with different age groups and in a different context of family, peers, school, and behaviours (Wan & Savina 2015, Lopesz-Perez et al. 2016, Cai et al. 2020, Wang & Barrett 2020).

The research elements of the finalised journals were parallel to the narrative review as it provides the main emotion regulation strategies. Through the systematic searching techniques, five main strategies: situational selection, situational modification, attentional deployment, cognitive change, and response modulation, were discovered and emphasised by all 13 articles. However, not all articles had an even number of strategies, as few studies mentioned more than one strategy, while some studies interpreted the strategies by giving situational examples, explaining strategies sub-categories and even synonymous terms of the strategies. In correlation, n=10 articles focused on more than one strategy (Wan & Savina 2015, Lopez-Perez et al. 2016, Rao & Gibson 2018, Parsafar et al. 2019, Atkinson et al. 2020, Cai et al. 2020, Hipson et al. 2019, Liu et al. 2019, Oeri & Roebers 2020, Wang & Barrett 2020) while the remaining n=3 articles highlighted only one out of five main strategies (Kao et al. 2020, Oeri & Roebers 2020, Schoppmann et al. 2020).

Moreover, n=8 articles provided the strategies with situational examples (Lopez-Perez et al. 2016, Rao & Gibson 2018, Hipson et al. 2019, Atkinson et al. 2020, Boldt et al. 2020, Oeri & Roebers 2020, Schoppmann et al. 2020, Wang & Barrett 2020). On the other hand, n=7 articles complemented the strategies explanation by adding on both sub-categories of strategies and examples (Wan & Savina 2015, Rao & Gibson 2018, Parsafar et al. 2019, Atkinson et al. 2020, Oeri & Roebers 2020, Schoppmann et al. 2020, Wang & Barrett 2020).

The narrative review adapts Gross's (2013) emotion regulation process model. Five different families of emotion regulation strategies: situation selection, situation modification, attentional deployment, cognitive change, and response modulation were illustrated in the process model of emotion regulation strategies. The author explained the process of each strategy by illustrating various ways of regulating while considering the age group, situational context and children's temperament. Complementing the emotion regulation strategies, the narrative review provides evidence from the finalised 13 studies in the literature matrix.

Table 3.
Table of emotion regulation strategies

References & title	Purpose of study & study design	Target group & Age	Emotion regulation strategies & sub-categories		Results
Rao and Gibson (2018) Motivations for emotional expression and emotional regulation strategies in Chinese school-aged children	The study purposed to determine the motivation and strategies, as well as appraisal, by looking into children's experience, expression, and emotional regulation within Chinese culture and a boarding school context. (Mixed-method study)	69 children from a China boarding school (7–10-year-olds)	i. ii. iii. iv.	Response Modulation (Suppression) Cognitive Change (Appraisal) Attentional Deployment (Self-distraction & concentration) Situation Modification (Social Modification)	Chinese children were better at expressing their emotions to their peers than the family. Older children inclined to hide their emotions more than the younger children and more in family context. Lastly, thematic analysis discovered six emotion regulation strategies. Older and younger children were also identified to have a vast difference in "mental engagement" and "social engagement" strategies.
Kao et al. (2020) Parental and family-level sociocontextual correlates of emergent emotion regulation: Implication for early social competence	The study aimed to examine the parental and family-level socio-contextual correlation concerning emotion regulation skills of 3-year-olds. It investigated the development of emotion regulation capacities functions with behavioural problems and social competence. Quantitative	90 children 90 primary caregivers	i. ii.	Cognitive Change (Reappraisal) Response Modulation (Suppression)	Children with a higher income and parents who practise adaptive emotion regulation strategies tend to possess better emotion regulation. Better children's emotion regulation skills are relatable with fewer behavioural problems and more instrumental helping behaviour.
Oeri and Roebers (2020) Regulating disappointment can impair cognitive performance in kindergarten children: Individual differences in ego depletion	The study examined whether the regulation of disappointment impairs kindergarten children's cognitive performance. Quantitative	74 kindergarten children Mean age of 5 years and 6 months	i. ii.	Cognitive Change (Reappraisal) Response Modulation (Suppression)	The experimental group showed reduced cognitive performance in terms of accuracy and speed. Besides, children who portrayed different reactions or emotions when receiving unwanted gift did not show impaired cognitive performance. Finally, it is important to take into consideration the individual difference in regulation strategies when examining ego depletion.

Boldt et al. (2020) The significance of early parent-child attachment for emerging regulation: A longitudinal investigation of processes and mechanism from toddler age to pre adolescence	The study aimed to investigate the relationship between children's early attachment with social regulation and adjustment in preadolescence Qualitative (Longitudinal research)	102 community mothers, fathers, and children.	i. Cognitive Change (Adaptive social regulation)	Attachment assessment at two years has portrayed significant results even though it provides an indirect predictor of social regulation for children aged 10 to 12. The study also showed that children's capacities for emotion regulation in response to frustration at the ages of 3, 4, and 5 could increase the possibility of security-initiated paths to future social regulation.
Hipson et al. (2019) Active emotion regulation mediates links between shyness and social adjustment in preschool	The study aimed to examine the mediating role of emotion regulation strategies in relation to young children's shyness and social adjustment in preschool. Quantitative	248 preschool children (2.5- 5 years old)	i. Cognitive Change (Active regulation) ii. Situation Selection	Active regulation mediated association between shyness and subsequent prosocial and socially withdrawn behaviours. Besides, socially withdrawn behaviour was stronger among boys.
Schoppmann et al. (2022) Can you teach me not to be angry? Relations between temperament and the emotion regulation strategy distraction in 2-year-olds	The study goal is to investigate if 2-year-old German toddlers, predominantly from families with high levels of parental education, learned the ER strategy distraction through observational learning and its interaction with temperament Quantitative (Experimental research)	96 full-term 24 months toddlers (24 ± 1 month)	i. Attention Deployment (Distraction)	A high frequency of distraction correlated with a reduced negative effect. Besides, observation learning increased the use of distraction. Highly active toddlers used active playing activities to distract from frustrating situations, and less active temperament toddlers used calmer activities.
Atkinson et al. (2020) Emotion regulation from infancy to toddlerhood: Individual and group trajectories of full term and very low preterm infants	The study proposed to explore the preuse of self-soothing, attentional distraction, and dyadic regulation in full-term and healthy very-low-birthweight (VLBW) pre-term infant-mother dyads at five and a half, 12, and 18 months of age. Qualitative (Longitudinal study)	46 full term infants and 56 VLBW /preterm (5 and a half, 12, and 18 months)	i. Attentional Deployment (Self-comfort, gaze eversion) ii. Situation Modification (Self-soothing, self-comfort) iii. Cognitive Change	Findings illustrated that self-soothing and attentional deployment are not frequently used by infants but more dyadic regulation as they grow up. In addition, results showed no prominent difference in emotion regulation behaviours between the full-term and VLBW/ pre-term toddlers.

Wang and Barrett (2020) U.S. and Chinese preschoolers' compliance and regulatory behaviours in two challenging contexts	The study goal was to compare U.S. and Chinese preschoolers' rule compliance, regulatory behaviours, and the associations between regulatory behaviours and rule compliance in two socially and emotionally challenging tasks. Qualitative (Observational study)	34 mainland Chinese and 39 European U.S. preschoolers (3-3.5 years old)	i. Situation Modification (Self-soothing) ii. Situation Modification (Physical- Focal avoidance) iii. Attentional Deployment (Distraction- Self-distractive)	The study findings indicated that U.S. preschoolers showed greater resistance to temptation and maintained similar levels of repair of mishaps as compared to Chinese children. Besides, self-soothing and avoidance were used more frequently among Chinese preschoolers than distractive strategies. The social distraction helped the U.S. children in terms of their rule compliance in the mishap task but unable to guide children in the temptation task. However, social distraction was discovered to be unhelpful for Chinese children for both tasks.
Cai et al. (2020) Are emotion regulation strategies different among 3-6-year-old aggressive children? Evidence from China	The study attempted to distinguish emotion regulation strategies among children aged 3-6 years old with different types of aggression and investigate the relationship between emotion regulation strategies and aggressive behaviours. Quantitative	1187 children (3–6-year-olds)	i. Situational Modification (Social-Self-comfort) ii. Situation Modification (Physical- Seeking for support)	A high frequency of distraction correlated with a reduced negative effect. Besides, observation learning increased the use of distraction. Highly active toddlers used active playing activities to distract from frustrating situations, and less active temperament toddlers used calmer activities.
Parsafar et al. (2019) Emotion regulation strategy flexibility in childhood: When do children switch between different strategies?	The study aimed to investigate the developmental origins of the dynamic ER strategy use patterns, previously documented in adult samples that may be precursors of flexible ER development in childhood Quantitative (Experimental research)	181 children (4-11 years old)	i. Cognitive Change (Reappraisal) ii. Attentional Deployment (Visual, cleared/ ignore/ deny) iii. Response Modulation (Behavioural)	Results showed that, when encountering negative emotions, children were accustomed to distraction. It shows the newly emerged awareness of the utility of disengagement strategies for managing negative feelings. Besides, reporting strategies were compatible with instructions, while strategy-switching descriptions were synonyms with negative emotions, majorly among children who acquired specific ER instructions.

Liu et al. (2019) Parental support and homework emotions in Chinese children: Mediating roles of homework self-efficacy and emotion regulation strategies	The study aimed to evaluate Chinese children complex multiple mediation model, connecting parental support, homework self-efficacy emotion regulation and homework emotions. Quantitative	832 children (Fourth and fifth grade primary school students)	i. ii.	Cognitive Change (Reappraisal) Response Modulation (Expressive suppression)	Results of the study indicated that parental support indirectly influenced homework emotions through the positive relationship between homework self-efficacy and cognitive reappraisal strategy. However, homework self-efficacy and expressive suppression strategy were not involved in the relationship between parental support and homework emotions.
Lopez-Perez et al. (2016) Studying children's intrapersonal emotion regulation strategies from the Process Model of Emotion Regulation	The study aimed to investigate children's abilities to regulate their emotions and to assess how children of different ages use distinct emotion regulation strategies. Mixed-method study	Study 1 180 parents of children aged between 3 and 8 years old Study 2 126 children between 3-8 years old	i. ii. iii. iv.	Situation Selection Situation Modification Cognitive Change Attentional Deployment	The study's findings indicated emotion regulation abilities and strategies based on children's age differences. Results also reported that children from 5 to 8 years old frequently used situation selection, situation modification and cognitive change, while 3 to 4-year-olds tend to apply attentional deployment. However, response deployment was discovered to have no age differences.
Wan and Savina (2015) Emotion regulation strategies in European American and Hong Kong Chinese Middle School Children	The study aimed to determine the European American and Hong Kong Chinese children's emotion regulation strategies during emotion-eliciting situations. Quantitative	54 European American children and 89 Chinese children (10-11-year-old)	i. ii. iii.	Attention Deployment (Positive distraction, situation avoidance) Response Modulation (Deep breathing, experiential suppression) Situation Modification (Talking to someone)	Results indicated that situation avoidance was most effective for American and Chinese children in countering their anger. Talking to somebody helped them to deal with their anger and sadness compared to fear. American children viewed deep breathing as the most effective method to deal with their anger while Chinese children thought it helped them with their anger and fear. In addition, American children highly scored on positive distraction and talking to someone strategies.

Source: Primary data

Situation selection

Selecting situations by considering the emotional impact describes Gross's (2013) first process model of emotion regulation, situation selection. Simultaneously, Gross (2015) indicates situation selection as a progressive and proactive strategy in which people anticipate the after-effect of the situation before they conclude whether or not to approach or avoid a particular situation. Concisely, children can change their external circumstances by approaching the positive situation that could benefit them or retrieving themselves from the negative situation that certainly looks damaging or might trigger negative emotions. The situation selection also depicts antecedent focused on describing the root of emotional expression. Likewise, Somerville & Whitebread (2019) stated that antecedent focuses are triggered before a person can completely respond to their emotion.

This strategy that enables children to choose their situations is one of the best options for regulating emotions. Other strategies, including cognitive strategies, might not be effective for a particular group of people (Aldao 2015). Favourably, being selective in situations would be advantageous for children with poor regulation and recurringly experience highly intense emotions (Webb et al. 2017). Concerning children's emotion regulation, children's interpretation of strategically selecting their situations differs from the adults' as it could be more prominent to their well-being (Ghani et al. 2023). In the children's condition, they can decide to change their external circumstances by selecting or completely avoiding a situation that can induce emotions within the time (Gross 2015).

Importantly, situation selection requires children to understand the possible condition of a situation and its plausible consequences. Hence, Lopez-Perez et al. (2016) stated that individuals need to employ emotional knowledge and cope with affective forecasting when using this specific strategy of situation selection. On top of that, all emotion regulation strategies, including situation selection, are bound to be developed as individuals aged to 5 to 6 and show improvement (Bassett et al. 2012).

Summarising Table 3, children regulate their emotions differently depending on the strategies they could use, and the frequency for each strategy differs according to age group. Pertaining to the first antecedent-focused strategy, situation selection, Lopez-Perez et al. (2016) found that children aged 5 to 6 and 7 to 8 commonly used situation selection along with situation modification and cognitive change. Corresponding to the findings, the authors provide situation examples in explaining the response of situation selection from 5 to 6 and 7 to 8 years old (e.g., "When he knows he's going to get angry, he goes to a chair on the landing next to the bookcase"). The situational example showed that children are aware of their emotion hence they choose to exit from the undesirable situation. Besides, in the experimental study by Lopez-Perez et al. (2016), children are given a concrete scenario to elicit a response to emotion regulation strategies. Based on the situational example, children choose to escape a certain situation (feeling bad) and calm themselves by being in their own space.

Situation modification

Following the first emotion regulation strategy, situation modification is closely associated with situation selection. The result from an experimental study by Vujovic et al. (2014) indicated the strategy of changing or erasing unpleasing pictures, according to the respondents, hardly differentiated but avoiding an evoking emotional situation is akin to situation selection. In contrast to situation selection, situation modification helps to alter the circumstances when individuals encounter a situation. Similarly, individuals try to adapt to emotionally challenging situations by considering the social context. Additionally, in situation modification, individuals do not directly avoid challenging situations but rather make changes in the aspects of the physical situation in intending to change the emotional impact (Van Bockstaele et al. 2019).

Furthermore, situation modification studies primarily focus on children as social support seeking, equally used among 3 (three) to 4 (four) and 5 (five) to 6 (six) year-olds (Sala et al. 2014). The finding of the study also indicated that social support is not only used in those aged between 3 (three) and 6 (six) but is equally used in different age groups. However, Lopez-Perez et al. (2016) disagreed with Sala et al. (2014) as situation modification could be used consistently by older children owing to the ability to separate emotions and goals and the ability to predict the possible effect.

Attentional deployment

Contradicting situation selection and modification, attentional deployment is one of the emotion regulation strategies that can aid in diverting children's attentional focus on altering their emotional experience (Gross 2013). In parallel, this particular strategy includes redirecting attention to different aspects of a situation that could affect emotional responses (Torrence & Connelly 2019), whether positive or negative. Concisely, attentional deployment is where individuals distract themselves by doing something that comforts or soothes them from experiencing unpleasant emotions. Furthermore, two possible approaches distinguish attentional deployment from the other emotion regulation strategies: distraction and concentration.

As defined by Webb et al. (2012), distraction deflects individuals from the present emotion within the situation. However, concentration is the opposite of distraction, where individuals remain focused on the emotional features of the situation they are experiencing (Lewis et al. 2008). In accordance to attentional deployment, past studies perceived distraction differently. Roque and Verissimo (2011) stated that distraction could minimise anger and express better compliance in anger-eliciting situations. Additionally, a temporal association study indicated that 20-month toddlers' toy exploration strategies resulted in a downturn of negative affect (Ekas et al. 2011) which supports distraction as an adaptive emotion regulation strategy that lessens anger in toddlers (Lopez-Perez et al. 2016).

Some reviewed studies included in Table 3 distinguish the distraction of attentional deployment by considering the age group, children's temperament, and environmental contexts. Findings by Schoppmann et al. (2022) indicate that distraction is frequently used during observational learning. Among 145 toddlers (24 months old), most active toddlers were inclined to engage in active activities to distract themselves when they experienced an unfavourable situation. In contrast, less active children tended to adopt calmer activities as an act of distraction. Expanding the use of distraction in different age groups, a longitudinal study by Atkinson et al. (2020) showed that infants cooperate with self-comfort by exploring ways to distract themselves. Infants would use their environment as they independently self-regulated, including when infants play with chairs' belts and search for toys.

In line with the key elements of attentional deployment, Wang & Barrett's (2020) findings illustrated the difference between concentration and distraction used by the United States and China preschool children. Socioemotional difficulties influenced all 73 children. Summarising the findings, the equal mishap showed a significant difference between U.S. and Chinese children, where U.S. children expressed greater resistance to temptation. In addition, Chinese children regularly used avoidance and self-soothing strategies, but U.S. children tended to use more disruptive strategies than China children.

Cognitive change

Cognitive change, commonly applied as cognitive reappraisal, occurs in the early process of emotion regulation and can modify the trajectory of the process altogether (Somerville & Whitebread 2019). In sum, cognitive reappraisal can influence and determine the response in a certain situation; thus, individuals either regulate their emotions positively or negatively. Moreover, Aldao et al. (2010), supported by Hendricks & Buchanan (2016), expressed that cognitive reappraisal is a practical strategy concentrating on emotion regulation. Like attention deployment, cognitive reappraisal has distinct elements contradicting the four emotion regulation strategies families. Specifically, cognitive reappraisal integrates a top-down process related to cognitive control.

Hua et al. (2015) further explained that, starting from age three, children are competent to adapt to reappraising and, as children age, this notable ability will improve (Silvers et al. 2012). Besides, individuals who use this strategy are likely to have higher self-esteem, feel more content with life and express less regulation of depression (Schäfer et al. 2016), unlike individuals who use situation selection as they have poorer regulation (Webb et al. 2017). Sala et al. (2014) state that preschool-age children consciously use cognitive reappraisal to regulate their emotions. Cognitive reappraisal thereupon shows that this strategy of influencing children's way of thinking regarding an emotional stimulus is purposely to alter their emotional responses towards it. For instance, Rao & Gibson (2018) show the situational

examples given by the respondents that portrayed how cognitive reappraisal works when children face undesirable situations; "I tell myself that 5 days passed quickly" and "I would be in a better mood if I eat something yummy".

Response modulation

The last process, which aims only to express emotions, reflects the last emotion regulation strategy. Response modulation can be described as a response-focused strategy. According to Gross (2015), response-focused strategies are applied during the beginning of full emotion. Besides, these strategies prove their practicality during response modulation. However, suppression in response modulation is known as maladaptive response-focused strategies, which modify the expression alone. This approach will only result in unwanted consequences (Somerville & Whitebread 2019). Furthermore, Liu et al. (2019) described response modulation as expressive suppression, which is when individuals maintain a straight face when being publicly shamed. Individuals could experience this situation at a young age or older.

As recorded in Table 3, Rao & Gibson (2018) conducted a study on school-aged children. Results from the study indicated that suppression of response modulation is used physiologically. Children suppress themselves by doing body adjustments when experiencing an unwanted situation. For example, the children would take a deep breath and walk to relieve themselves. The findings also stated that children would suppress their thoughts on the situations by reminding themselves not to think of any other things and forget about the episodes.

Conclusion

This review has classified five different families of emotion regulation strategies. The description and situational examples can recognise and differentiate the strategies used by different age groups depending on the situation. Notably, situation selection benefits children with poor regulation as they can decide to avoid being in undesirable situations. Hence, avoiding the situations would help them to conceal negative emotions. However, if the children find themselves to be in an unwanted situation, a situation modification strategy would aid them in altering their physical situation to enhance positive mood and avoid negative emotions.

Attentional deployment, as opposed to situation selection and modification, channels children's focus through distraction and concentration to modify their emotional experience. Similarly, this strategy focuses on producing positive emotional experiences and minimising the probability of children expressing negative emotions. Meanwhile, cognitive change requires the children to change their thinking towards the situation they encounter with the plausible emotional impact in mind. Distinct from cognitive change, response modulation elicits responses or emotions as part of children's regulation. The responses can be through suppression, where children attempt to hide their observable emotional expressions. Nevertheless, it is important to remember that some children are incapable of using certain strategies as some require better regulation and adequate knowledge of emotions, for instance, situation selection and cognitive change. On that account, it is pivotal to enhance the emotional regulation strategies among children to ensure better regulation when they encounter unfortunate circumstances as they live in the VUCA world.

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