



**REVIEW**

# Classification of Influencing Factors and Mechanisms Underlying Emotion Regulation Choice

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**ABSTRACT: Backgrounds:** The factors influencing emotion regulation choice (ERC) are numerous, raising the question of how to classify them systematically. **Methods:** This study proposed a framework of four first-order factors—the emotion to be regulated, emotion regulation goals, emotion regulation resources, and psychosocial context—by integrating several key theories of ERC, including the Action Control Theory of Emotion Regulation, the Extended Process Model of Emotion Regulation, the Process-specific Timing Framework Theory, the Selection, Optimization, and Compensation model of Emotion Regulation, and the Emotion as Social Information Theory. **Results:** This research also provided a detailed examination of the effects of multiple second-order and third-order factors—those either unaddressed or insufficiently covered in previous reviews—on ERC. These factors included the nature of the emotion, emotional intensity, hedonic versus instrumental goals, cognitive factors (such as cognitive resources, executive functions, and cognitive abilities), personality (encompassing the Big Five Personality, attachment, and self-esteem), social support, and interpersonal contexts. **Conclusion:** Additionally, how gender and age exert an influence on ERC through differences in goals and cognition was examined. Future studies can further explore the interactive effect of different factors on ERC, and the neural correlates of ERC.

**KEYWORDS:** Emotion regulation choice; emotional intensity; emotional regulation goal; emotional regulation resource; psychosocial context

## 1 Introduction

In life, we inevitably experience a variety of negative emotions. For example, we often feel frustrated after failing an exam, sorrowful after a romantic setback, and angry when provoked or insulted by others. Prolonged exposure to intense negative emotions not only harms our physical and mental health but also damages our interpersonal relationships. Therefore, it is essential to regulate our emotions properly. Emotion regulation refers to the process by which individuals change the intensity, duration, and expression of their emotions to promote physical and mental health or better adapt to the environment [1–3].

When faced with similar stressful situations, different individuals often choose distinct ways to regulate their emotions. For instance, following an exam failure with frustration and low mood, some individuals may seek distraction through leisure activities to alleviate distress, some might confide in others, while others may reflect on the causes of their setback in order to achieve better results next time. Additionally, the same individual may adopt different emotional regulation strategies across situations. The concept of emotion regulation choice (ERC) was proposed to describe the inter-individual and intra-individual differences in the use of emotion regulation strategies. ERC is defined as the choice of an appropriate

emotion regulation (ER) strategy based on perceived benefits and costs in given circumstances [4,5]. The concept of ERC is expressed using several terms, including emotion regulation choice [5–8], emotion regulation strategies choice [9], choice of emotion regulation strategies [10], emotion regulation strategies selection [11,12], and selection of emotion regulation strategies [13]. While all these terms have been used in previous studies, the most commonly employed is “emotion regulation choice”. Therefore, this study adopts this terminology as well.

There are two key questions when exploring ERC: Why do some people choose this emotion regulation strategy while others choose another? Why does the same individual select this strategy in one situation but a different one in another? To answer these questions, it is necessary to understand the influencing factors and underlying mechanisms behind ERC. Exploring the factors and mechanisms that influence emotion regulation choice not only helps explain why individuals choose specific regulatory strategies but also enables them to make more flexible regulatory choices [6,14–16].

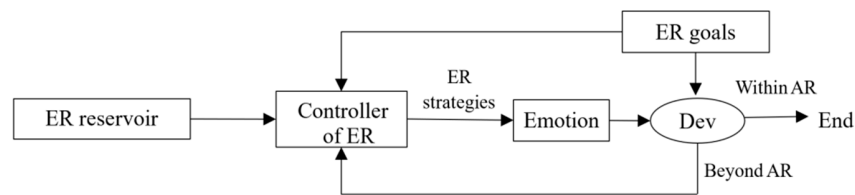
Given the multitude of factors influencing ERC, it is necessary to classify them. The classification of scattered influencing factors into distinct categories enables a more systematic investigation, thereby facilitating the identification of research gaps. Initially, researchers categorized these factors into two broad types: situational factors (external factors) and individual factors (internal factors) [15,17]. Subsequent studies further divided the influencing factors of ERC into five categories (Table 1): emotional factors, motivational factors, cognitive factors, individual factors, and sociocultural factors [18,19]. Previous classifications of the influencing factors of ERC were relatively broad and lacked sufficient theoretical support. This study has two objectives: (1) to classify the influencing factors of ERC and propose the first-order influencing factors, building upon existing theories of ERC; and (2) to further analyse the mechanisms through which various second-order factors—not yet addressed by Matthews et al. (2021) [18]—affect the selection of emotion regulation strategies.

## 2 The Theories and First-Order Factors of ERC

Multiple theories have been proposed to explain ERC. The Action Control Theory of Emotion Regulation [18] and the Extended Process Model of Emotion Regulation [4] regard emotion regulation as a closed-loop control process and use cybernetics to explain the emotion regulation process. Controlled object and control target are two key elements of closed-loop control. In the process of ERC, the controlled object is the emotion to be regulated, and the control target is the emotion regulation goal (Fig. 1). This control process consists of the following three stages. First, emotion regulation motivation is elicited when the deviation between the emotion triggered by a stimulus event and the emotion regulation goal is beyond the allowable range. Second, the individual retrieves accessible emotion regulation strategies from their existing strategy repertoire, evaluates the effectiveness and cost associated with each option, and selects the “optimal” strategy. Third, the selected strategy is implemented and its emotion regulation effect is assessed. If the deviation between the current emotion and the regulation goal is within the allowable range, which is a subjective tolerance threshold and varies across individuals or context, the emotion regulation process is terminated; otherwise, it enters the next cycle of emotion regulation, thus forming a closed-loop control process. It can be inferred from these theories that the emotion to be regulated and the emotion regulation goals are two important factors influencing ERC.

The Process-specific Timing Framework Theory posits that emotional intensity exerts a significant influence on the selection of emotion regulation strategies [20]. For high-intensity negative emotions, it is very difficult to engage in semantic reappraisal. Therefore, individuals tend to choose distraction strategies at the early attentional stage—strategies that quickly reduce emotional intensity with less cognitive effort,

such as shifting attention to personally engaging activities like listening to music or exercising. In contrast, for low-intensity negative emotions, individuals tend to prefer cognitive reappraisal strategies, as they offer better long-term outcomes. The theory further confirms that the emotion to be regulated is a crucial factor affecting ERC. Emotion regulation is not a singular process but rather a continuous, cyclical one [20]. The outcome of one emotional regulation cycle serves as input for the next, with individuals adjusting their regulatory strategies in subsequent cycles based on this feedback. For instance, when confronted with high-intensity emotions, an individual may first adopt a distraction strategy in the initial cycle, then transition to cognitive reappraisal in the following cycle once emotional intensity has diminished. This theory further underscores that emotions themselves are a key factor influencing ERC, while also validating the closed-loop control process of emotional regulation.



**Figure 1:** The closed-loop control process model of emotion regulation strategies choice. Notes: ER, emotion regulation; Dev, deviation; AR, allowable range.

The Selection, Optimization, and Compensation with Emotion Regulation (SOC-ER) framework posits that emotion regulation is a complex process that requires certain conditions and consumes a certain amount of energy and resources. Therefore, individuals select a specific emotion regulation strategy based on their available resources (such as time constraints, ability, cognitive resources, material resources, social support, and proficiency in using specific emotion regulation strategies) [21]. When individuals have abundant resources, they tend to choose emotion regulation strategies that are high in resource consumption but effective; when their resources are scarce, they incline to select strategies that require fewer resources. For instance, as cognitive resources decline in older adults, they tend to adopt distraction strategies that demand low cognitive resources rather than cognitive reappraisal. It can be concluded from this theory that emotion regulation resources are the third important factor influencing the selection of emotion regulation strategies.

In addition, the psychosocial context also plays an important role in emotion regulation choice. The Emotion as Social Information Theory suggests that interpersonal contexts significantly influence whether individuals choose strategies of emotional expression or suppression [22–24]. When individuals intend to express their emotions, they need to take into account not only the specific emotions to be conveyed but also a host of situational factors—such as the receiver’s personality and time pressure, the social status and relational closeness between the two parties, cultural norms, and the context of communication. Matthews et al. (2021) also identified sociocultural factors as primary factors influencing ERC. Essentially, individuals choose specific emotion regulation strategies to better adapt to the corresponding situation [15].

In summary, the emotion to be regulated, emotion regulation goals, emotion regulation resources, and psychosocial context are the four first-order factors that affect ERC. Compared to the first-order factors proposed by Matthews et al. (2021) [18], all factors have been revised except for the emotion to be regulated. Specifically, “emotion regulation goals” is a more precise term than “motivational factors”; the concept of “emotion regulation resources” better reflects the underlying mechanisms than “cognitive factors” and personality; and “psychosocial context” encompass a broader scope than “sociocultural factors”.

Each first-order factor encompasses numerous second-order factors. Table 1 presents the second-order influencing factors of ERC introduced by Matthews et al. (2021) [18]. Among these, emotional intensity and emotional arousal are two concepts that are related yet distinct [25,26]. Emotional arousal refers to the activation level of the physiological and nervous systems. It is measured using relatively objective indicators such as heart rate, blood pressure, skin conductance, and electroencephalogram (EEG). Emotional intensity, on the other hand, refers to the strength of emotional experience and is a more subjective, holistic psychological perception. The two may align, as in cases of intense anger or joy, where the body is highly activated. However, they can also diverge. For example, intense sadness or depression may be accompanied by moderate or low physiological arousal, while mild or moderate tension may exhibit high arousal.

This study mainly focuses on two categories of second-order factors (Table 2). The first consists of factors not addressed in Matthews et al. (2021) [18], such as the nature of emotion. For factors that have already been introduced, such as emotional arousal and social culture, this study will not elaborate further or will only provide a brief overview. The second includes factors that were discussed in Matthews et al. (2021) [18] but require updating in light of recent research advances, such as emotional intensity and the Big Five personality traits. In addition, age and gender exert significant influences on ERC, but their effects are often achieved through multiple mediating factors, among which emotion regulation goals and cognitive factors are two important ones [27]. Therefore, this study focuses on the impacts of age and gender differences in emotion regulation goals and cognitive factors on ERC. The following sections elaborate on the effects of various second-order factors on ERC.

**Table 1:** Influencing factors of emotion regulation choice (ERC) from Matthews et al. (2021) [18].

First-Order Factors	Second-Order Factors
Emotional factors	Emotional valence Emotional intensity Emotional arousal
Motivational factors	Long-term goals Short-term goals
Cognitive factors	Cognitive affordance Cognitive effort Default cognitive strategies
Individual factors	Age Gender Mental health disorder Neuroticism trait
Social-cultural factor	Political ideology Culture

**Table 2:** Influencing factors of emotion regulation choice (ERC) in this study.

First-Order Factors	Second-Order Factors	Third-Order Factors
Emotional to be regulated	Nature of emotion	NA
	Emotional intensity	NA
ER goals	Motivational orientation	NA
	Temporal characteristics	NA

**Table 2: Cont.**

First-Order Factors	Second-Order Factors	Third-Order Factors
ER resources	Cognitive factors	Cognitive resources
		Executive functions
		Cognitive abilities
	Personality	Five-Big personality
		Attachment
		Self-esteem
		Time constraints
Material resources	NA	
Social support	NA	
Psychosocial context	Interpersonal situations	NA
	Social culture	NA

Note: ER, emotion regulation; NA, not applicable.

### 3 Emotions to Be Regulated

The nature and intensity of emotion are two crucial dimensions of emotion. This section addresses the impacts of the two emotional dimensions on ERC.

#### 3.1 Nature of Emotion

Based on valence, emotions are generally categorized into two broad classes: positive emotions and negative emotions. Each of the two categories encompasses a variety of specific emotions. For example, positive emotions include happiness, satisfaction, gratitude, while negative emotions consist of fear, anger, sadness, anxiety, depression, and so on. These specific emotions differ from one another, yet these differences are not reflected in emotional valence. The evolutionary perspective on emotion provides an explanation for these specific emotions, holding that the nature of emotion lies in functional patterns—integrating cognition, emotional experience, physiological responses, and motivation—that evolved over time to adapt to specific situations [28,29]. The core propositions of this theory are as follows. (1) Emotions are context-specific. Different situations elicit distinct emotional experiences and motivations, which drive individuals to engage in specific behaviors to effectively adapt to particular contexts [30,31]. (2) Similar contexts give rise to similar emotions, which form the same cluster of emotions; different contexts produce different emotions, which form distinct clusters of emotions. Given the wide variety of specific emotions and due to space constraints, the following section will focus on the effects of five commonly observed and extensively investigated emotions—happiness, fear, anger, sadness, and disgust—on ERC.

Happiness is a positive emotion arising from favorable situations or the satisfaction of needs. Given their advantageous position, happy individuals experience a weaker motivation to regulate emotions and have access to more flexible strategies, such as distraction or expressive suppression. In contrast to suppression, distraction proves to be the more effective regulatory approach [32]. ERP studies have shown that distraction can reduce positive emotion not only in the early stage of emotional processing but also in the late stage, whereas expressive suppression only weakens the intensity of positive emotion in the late stage.

Fear refers to a strong emotional experience when facing a dangerous situation and feeling powerless to control. When individuals experience fear, their sense of control is low, and their coping resources are insufficient, leading them to tend to use avoidance strategies, especially women and individuals with trait anxiety [33].

Anger is a strong feeling of annoyance, displeasure, or hostility provoked by others' provocation, threats, or injustices when there is someone or something to blame [30]. Anger can lead individuals to aggression. Aggression helps individuals protect themselves, maintain their interests, and assert their social status within groups. However, it can damage interpersonal relationships, prompting individuals to adopt an expressive suppression strategy [34]. Whether individuals express or suppress their anger depends on a cost-benefit analysis. Men prioritize maintaining their social status within a group, and expressing anger helps them uphold this status. Therefore, they express their anger more frequently. In contrast, women prioritize maintaining interpersonal harmony, so they are more likely to suppress feelings of anger [34,35]. Moreover, the impact of expressing anger on interpersonal relationships is moderated by individuals' social status. High-status individuals are less affected, whereas low-status individuals may face severe consequences such as retaliation from leaders. Therefore, high-status individuals tend to express their anger, whereas low-status individuals tend to suppress it [34].

Sadness is a negative emotion caused by separation from important people, irreparable loss, or failure [30]. Previous research has examined gender differences in emotion regulation strategies for sadness [36]. Gender role theory suggests that social expectations for men are to be strong-minded, independent, and autonomous. Therefore, when it comes to feelings of sadness, they are more likely to adopt a strategy of emotional suppression to conceal their vulnerability. In contrast, women, who are more relationship-oriented, are more likely to express feelings of sadness in order to seek sympathy, comfort, and social support from others [30,35].

Disgust is an aversive emotional response triggered by perceived contaminants, prejudice, discrimination, or immoral behavior [31,37,38]. It comprises three distinct subtypes: core disgust, social disgust, and moral disgust [38]. Previous studies have demonstrated that individuals predominantly employ avoidance and distraction strategies to regulate disgust, regardless of its intensity level [31].

### **3.2 Emotional Intensity**

The Process-specific Timing Framework Theory has demonstrated the impact of emotional intensity on the selection of two strategies: distraction and cognitive reappraisal. This section will further explore the influence of emotional intensity on the choice of three other strategies: acceptance, emotional expression, and rumination.

The Process-specific Timing Framework Theory explains the effect of emotional intensity on ERC from the perspective of information processing difficulty [20]. The higher the intensity of negative emotions, the more difficult it is to engage in cognitive reappraisal of them. For high-intensity negative emotions, the cognitive effort required often exceeds the individual's capacity, so individuals tend to choose distraction strategies because this strategy can quickly reduce the intensity of their emotions with less cognitive effort required. In contrast, for low-intensity negative emotions, the cognitive effort required falls within the individual's capacity, so individuals tend to choose cognitive reappraisal strategies because these strategies can achieve better long-term effects.

Acceptance refers to changing the individual's attitude towards negative events or negative emotions from rejection and denial to acceptance; no longer making negative judgments about them, but normalizing and rationalizing them [39–41]. Avoidance refers to the anticipation that a certain situation will elicit

negative emotions in individuals, and thus avoiding that situation in advance to prevent the emergence of negative emotions [42]. Like cognitive reappraisal, acceptance is also an important cognitive change strategy [43]. Meanwhile, avoidance and distraction strategies share certain similarities, as both involve shifting attention away from stressful events. Therefore, the use of these two strategies can also be explained from the perspective of information processing difficulty. Under high emotional intensity, individuals tend to adopt avoidance strategies to rapidly reduce negative emotions with minimal cognitive resources; under low emotional intensity, acceptance strategies require fewer cognitive resources, making individuals more inclined to use them for long-term benefits [44].

Expressive suppression refers to inhibiting emotional expression after the emotional experience has already formed [45]. It requires considerable cognitive control [46] and depletes extensive cognitive resources [46,47], yet it helps maintain interpersonal harmony, particularly in collectivist cultures [48]. Under high emotional intensity, individuals tend to express emotions openly. This can be explained in two ways. On one hand, emotional expression can reduce negative emotions rapidly with minimal cognitive control [44]; on the other hand, according to the Social Sharing Theory of Emotion [49], emotions serve as an information-sharing function—the more intense the emotion, the stronger the tendency to share it with others to seek support [49,50]. Conversely, under low emotional intensity, the required cognitive control remains within manageable limits, leading individuals to prefer expressive suppression to preserve interpersonal harmony [44].

Rumination refers to the tendency of individuals to repeatedly and intrusively think about a specific negative event or problem [51]. Previous studies have shown that individuals tend to adopt rumination strategies under high emotional intensity. Two explanations account for this phenomenon. From an attentional perspective, high-intensity stimuli amplify attentional bias [52]. Under such conditions, individuals' attentional resources and cognitive processing become fixated on emotion-eliciting stimuli, which in turn facilitates the emergence of ruminative thinking [53]. From a functional perspective of emotion, rumination enables individuals to allocate more cognitive resources to analyzing negative events or problems, thereby promoting problem-solving. Consequently, under high-intensity emotional conditions, people are more likely to employ rumination strategies [51].

## 4 ER Goals

To engage in emotion regulation, an individual must first establish goals. Emotion regulation goals exert a direct guiding effect on the selection of strategies, which are essentially the means and pathways to achieve these goals [54,55]. Different types of goals prompt individuals to adopt distinct emotion regulation strategies. This section first reviews how different goals influence ERC, and then examines how the goal differences in gender and age exert an impact on ERC.

### 4.1 Hedonic and Instrumental Goals

Based on motivational orientation, ER goals fall into two categories: hedonic goals and instrumental goals [55]. Hedonic goals focus on emotional experiences, aiming to experience more positive emotions and fewer negative emotions; whereas instrumental goals refer to achieving certain performance goals or relationship goals, such as maintaining interpersonal harmony, reducing interpersonal conflicts. Eldesouky and English (2019) developed the Emotion Regulation Goal Scale, which further divides instrumental goals into three specific types: performance goals, prosocial goals, and impression management goals [56]. When individuals pursue hedonic goals, they are more likely to employ strategies such as distraction, cognitive reappraisal, and emotional expression to enhance positive emotions; when individuals pursue instrumental

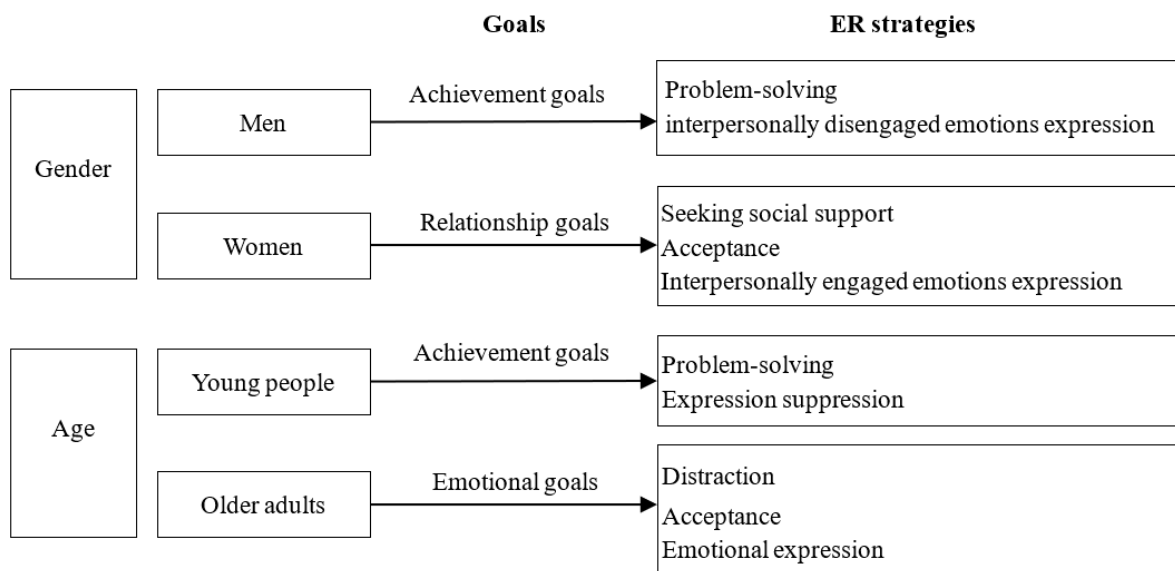
goals, they are more likely to use strategies such as expressive suppression and rumination to achieve those instrumental goals [12,57].

#### 4.2 Immediate and Long-Term Goals

ER goals can be categorized into immediate goals and long-term goals according to the temporal characteristics of goals [6]. In the experiment performed by Sheppes et al. (2014) [6], the operational manipulation of immediate goals was to instruct participants to select an emotion regulation strategy immediately after viewing negative affective images to downregulate negative emotions. In contrast, the operational manipulation of long-term goals was to inform participants that they would view the same images for a second time. The results revealed that participants were more inclined to adopt the distraction strategy under the immediate goal condition, whereas they preferred the cognitive reappraisal strategy under the long-term goal condition. Further research indicated that consideration of future consequences interacted with goal temporality [58]. In the immediate goal condition, individuals with low consideration of future consequences (CFC) were more inclined to adopt distraction strategies than their high-CFC counterparts. By contrast, in the long-term goal condition, participants high in CFC used cognitive reappraisal more frequently than those with low CFC.

#### 4.3 Gender Differences in Goals

According to gender role socialization theory, society has different expectations for men and women. Men are expected to be independent, strong-minded, aggressive, and achievement-oriented. Therefore, when facing pressure, they tend to use more problem-solving strategies [59,60] and emotional suppression [61] than women (Fig. 2). They also tend to seek less social support from others when encountering problems [62,63]. In contrast, women are expected to be gentle, caring, and nurturing. Women are encouraged to maintain good interpersonal relationships and care about others' feelings [59]. When facing problems, women are more inclined to use acceptance strategies [44], seek social support from others, especially emotional support [62,63].



**Figure 2:** Effects of gender and age differences in goals on emotion regulation choice (ERC).

In addition, men are more likely to express interpersonally disengaged emotions, including positive interpersonally disengaged emotions (such as pride) and negative interpersonally disengaged emotions (such as anger and contempt) [35]. The expression of these emotions helps men to highlight themselves and overcome crises. Women are inclined to express interpersonally engaged emotions, including positive interpersonally engaged emotions (such as empathy) and negative interpersonally engaged emotions (such as sadness, anxiety, depression, fear, shame, and guilt). The expression of these emotions helps them to better maintain relationships with others [35].

#### ***4.4 Age Differences in Goals***

The Socioemotional Selectivity Theory posits that individuals of different ages perceive future time differently, resulting in differing priorities in their goals [64]. Young people perceive the future time as infinite and are more inclined to pursue achievements, utilizing more social support-seeking, problem-solving and expressive suppression strategies. In contrast, older people perceive future time as limited and are more inclined to pursue emotional goals. Previous behavioral experiments and questionnaire surveys have both indicated that older adults tend to adopt strategies that quickly enhance positive emotions and reduce negative emotions, such as distraction [43,65–67], acceptance [43,68], and emotional expression [69]. In contrast, they are less likely to employ strategies like rumination [66] and expressive suppression [69], which may facilitate performance but are less effective in reducing negative emotions (Fig. 2).

### **5 ER Resources**

Emotion regulation resources encompass a variety of factors, including cognitive factors, personality, time constraints, material resources, and social support, among others [21]. The general mechanisms governing how emotion regulation resources influence ERC are as follows: when individuals possess ample emotion regulation resources, they tend to opt for strategies that entail higher resource consumption yet yield better regulatory effects, such as cognitive reappraisal or problem-solving; in contrast, when their resources are relatively scarce, individuals are more likely to choose strategies with lower resource demands, such as distraction. However, the specific influence of different resources on ERC varies. To our knowledge, no existing studies have explored the effect of material resources on ERC. Therefore, this section only addresses the influence of cognitive factors, personality, time constraints, and social support on ERC, excluding the consideration of material resources.

#### ***5.1 Cognitive Factors***

Cognitive factors encompass multiple concepts such as cognitive resources, cognitive control, executive function, and cognitive abilities.

##### ***5.1.1 Cognitive Resources***

Cognitive resources denote the attention required for executing controlled cognitive tasks [70]. Cognitive resources are essentially equivalent to working memory and serve as a fundamental prerequisite for performing various cognitive processing tasks [70]. When individuals' cognitive resources are insufficient, they tend to prefer distraction or avoidance strategies with low regulatory costs. This viewpoint is supported by empirical evidence. Ilan et al. (2019) measured working memory with the classic digit span subtest of the Wechsler Intelligence Scale for Children, 4th edition [71]. The results indicated that individuals with poor working memory tended to use distraction strategies more frequently. In an experiment, participants in two groups

were asked to perform arithmetic calculations for 10 s [6]. One group calculated arithmetic problems with a subtraction of 2, while the other group calculated arithmetic problems with a subtraction of 7. The second group, which consumed more cognitive resources and felt more fatigued, showed a higher propensity to choose distraction strategies, particularly under conditions of high emotional intensity [6].

### 5.1.2 Executive Function

Cognitive control refers to the process through which individuals coordinate psychological processes and behaviors to achieve goals [72,73]. Cognitive control is a crucial component of cognitive abilities. A concept closely related to cognitive control is executive function. Executive function refers to a set of higher-order cognitive processes that facilitate goal-directed outcomes [74]. Executive function includes three interrelated yet distinct components: (a) inhibitory control, deliberate overriding of dominant or prepotent responses; (b) working memory, the ability to maintain and update information; and (c) cognitive flexibility, the ability to shift attention between mental sets or tasks. Executive function is also considered a component under the larger construct of self-regulation, defined as one's ability to regulate your own cognitions, emotions, and behaviors [75]. Researchers hold different views regarding the relationship between the concepts of cognitive control and executive function. Some argue that cognitive control and executive function are highly overlapping in their core meaning and can be used interchangeably, while others contend that executive function represents a broader concept, of which cognitive control is the core component [72,73,76]. Despite these conceptual disagreements, executive function generally has a clearer, more operationalized definition and more established measurement in empirical research. Accordingly, this study primarily focuses on examining the influence of executive function on ERC.

Effective emotion regulation requires a high level of executive function [77]. Different components of executive function influence the selection of different emotion regulation strategies. According to the mood-congruent theory, when an individual is in a negative emotional state, their working memory is filled with representations of various negative events. Individuals with high inhibitory control can effectively suppress these representations of negative events during emotion regulation, shift their attention to information relevant to the emotion regulation goals, and employ adaptive emotion regulation strategies (such as cognitive reappraisal) to achieve those goals. In contrast, when individuals have insufficient inhibitory control, they find it difficult to suppress the representations of negative events and shift their attention, which may lead to rumination and subsequently contribute to depression and other psychological disorders [67,78,79]. Furthermore, high working memory capacity helps individuals process multiple pieces of information simultaneously and continuously update them, thereby enabling more effective use of emotional expression and cognitive reappraisal strategies [80,81]. In contrast, insufficient working memory tends to lead individuals to adopt distraction or avoidance strategies [6,71]. In addition, individuals with high cognitive flexibility are able to understand emotional events from more perspectives, which allows them to adopt cognitive reappraisal strategies more readily [82].

### 5.1.3 Cognitive Abilities

Cognitive abilities refer to an individual's capacity to receive, process, store, and apply information. The Cattell-Horn-Carroll theory of cognitive abilities, commonly referred to as CHC theory, is the most dominant and widely applied integrative framework in contemporary research on the structure of intelligence. This theory conceptualizes cognitive abilities within a hierarchical model [83,84]. At the top of the model is general intelligence, while the intermediate level comprises 16 broad cognitive abilities. These 16 abilities can be further categorized into three major domains: domain-free general capacities, acquired knowledge, and

sensory- and motor-linked abilities. Domain-general capacities include fluid reasoning, short-term memory, long-term storage and retrieval, processing speed, reaction and decision speed, and psychomotor speed. Acquired knowledge encompasses comprehension-knowledge, domain-specific knowledge, reading and writing abilities, and quantitative knowledge. Sensory- and motor-linked abilities involve visual processing, auditory processing, olfactory abilities, tactile abilities, kinesthetic abilities, and psychomotor abilities.

Previous studies have examined the relationship between executive function and cognitive abilities within the CHC theoretical framework. Executive function is significantly associated not only with fluid reasoning, short-term memory, and processing speed—all of which fall under domain-free general capacities—but also with comprehension-knowledge (categorized as acquired knowledge) and visual processing (classified as sensory- and motor-linked abilities) [85,86].

Superior cognitive abilities can enhance cognitive processing. Opitz et al. (2014) assessed participants' cognitive abilities using four indices from the Wechsler Intelligence Scale for Children, Fourth Edition: Working Memory, Perceptual Reasoning, Verbal Comprehension, and Processing Speed [87]. Growney and English (2023) evaluated participants' cognitive abilities through measures of inhibitory control, working memory, cognitive flexibility, processing speed, episodic memory, vocabulary, and oral reading comprehension [88]. The findings demonstrate that individuals with higher cognitive abilities show a propensity for engagement strategies, including cognitive reappraisal and emotional expression, while those with comparatively lower cognitive abilities exhibit a stronger inclination toward disengagement strategies, such as distraction and suppression [87,88].

#### *5.1.4 Gender Differences in Cognitive Factors*

Previous studies have shown that there are differences between men and women in cognitive abilities and cognitive control. A nationally representative survey was conducted in Germany using the Wechsler Adult Intelligence Scale (Fourth Edition), and the results indicated that men's cognitive abilities, assessed with perceptual understanding, processing reasoning, and working memory, were significantly higher than women's [89]. Individuals with higher cognitive abilities tend to use cognitive reappraisal strategies [87]. Therefore, men are more likely to adopt cognitive reappraisal strategies than women [3,63].

Men also exhibit superior cognitive control abilities compared to women [90]. Participants were asked to smell the odor of rotten yeast for 3 s every 5 s to evoke negative emotions and simultaneously perform the n-back task, which requires participants to compare the stimulus that just appeared with the stimulus n positions back to evaluate their working memory. The results showed that men had higher activation in brain areas related to cognitive control (prefrontal cortex and superior parietal cortex) than women, while women had higher activation in brain areas related to emotion (amygdala and orbitofrontal cortex) than men [90]. Due to men's better cognitive control abilities, they are less likely to use rumination strategies than women [91].

#### *5.1.5 Age Differences in Cognitive Factors*

When examining the influence of age differences in cognitive factors on ERC, current research primarily focuses on comparisons between two critical developmental stages: differences between childhood and adolescence, and variations between middle adulthood and late adulthood.

#### *Differences between Childhood and Adolescence*

The development of emotion regulation strategy selection during the transition from childhood to adolescence exhibits the following characteristics. First, as individuals grow older, their cognitive abilities

improve, and they increasingly adopt problem-solving strategies [92,93]. Adolescents encounter numerous confusions and challenging problems during their development. Rumination helps adolescents allocate more cognitive resources to contemplate these confusions and facilitate problem-solving [51], thus leading to an increasing frequency of falling into rumination [11]. Additionally, adolescents gradually come to recognize that many problems in life are beyond their capabilities, leading to an upward trend in the use of avoidance strategies [11].

Second, as cognitive abilities continue to develop, individuals increasingly adopt cognitive reappraisal and acceptance strategies [11,93]. They become more capable of adopting a dialectical perspective on issues, actively reinterpreting the positive meaning of emotional events, accepting emotions or situations that cannot be changed in the present moment.

Third, adolescents' demands for social support shift from pure emotional comfort to more functional problem-solving. This is manifested in a gradual shift of their reliance from parents to peers and teachers, as well as an increase in the frequency of seeking instrumental social support (e.g., advice and assistance), accompanied by a corresponding decrease in seeking emotional support (e.g., comfort and empathy) [11,92,93].

Fourth, as the socio-emotional abilities of children and adolescents develop, they come to understand that emotional experiences and emotional expressions are separable. Appropriately suppressing emotional expression in certain contexts is necessary for social interactions. Concurrently, their cognitive control abilities improve, aiding in the successful inhibition of emotional expression, leading to an increasing use of expression suppression strategies [93,94].

#### Differences between Young Adulthood and Late Adulthood

As individuals age, the brain tissues of elderly people begin to degenerate. The degeneration follows the principle of "last-in-first-out," meaning that the frontal brain regions responsible for higher human functions such as planning and control, which mature later, degenerate first, while the posterior brain regions responsible for sensory functions, which mature earlier, degenerate later [95]. Due to the degeneration of brain tissues, the functions such as attention, memory, executive function, and processing speed also decline accordingly [95].

Cognitive reappraisal constitutes a complex cognitive process that demands both well-developed cognitive abilities and considerable social experience [96,97]. Individuals tend to employ cognitive reappraisal strategies with growing frequency from their 20s through their 60s [46,96]. Yet marked individual differences in cognitive abilities and social experience among older adults mean that some studies have found no significant difference in the frequency of cognitive reappraisal use between older and younger adults [98], and others even report a lower frequency among older adults [99]. Bailly et al. (2023) divided older adults into two groups: those aged 60–75 years and those aged over 75 years. The frequency of using cognitive reappraisal in the 60–75 age group did not differ significantly from that of younger adults, whereas the group aged over 75 years used cognitive reappraisal significantly less frequently than the younger adult group [27]. Furthermore, as expressive suppression relies on well-developed cognitive control ability—and older adults experience age-related declines in this capacity—their use of this emotion regulation strategy likewise tends to decline [100,101].

### **5.2 Personality**

Personality encompasses multiple constructs, among which the Big Five personality, attachment, and self-esteem are three particularly significant concepts that have been extensively explored by researchers. The following section focuses on the effects of these three factors on ERC.

### 5.2.1 Big Five Personality

According to the Big Five personality theory, there are five personality traits: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. Individuals with different personality traits tend to employ varying emotion regulation strategies. The meta-analytic results of correlations between them are shown in Table 3 [102,103].

Neuroticism is positively correlated with avoidance, substance use, distraction, rumination, and emotional social support, and negatively associated with cognitive appraisal and problem-solving [102,103], which can be explained in several ways. Firstly, individuals high in neuroticism experience elevated levels of negative emotions. According to the Process-specific Timing Framework Theory, they often resort to strategies like distraction, avoidance, and substance use as these methods can quickly elevate positive emotions with minimal cognitive effort. Conversely, they utilize cognitive reappraisal strategies less frequently, as these techniques demand a high level of cognitive exertion to manage intense negative emotions. Secondly, individuals with high neuroticism exhibit poor cognitive control abilities [104], making it difficult for them to suppress various negative event representations and shift attention to positive representations, leading to a propensity for rumination [102]. Lastly, highly neurotic individuals experience high levels of negative emotions and crave comfort and encouragement from others; therefore, they tend to seek emotional social support.

Extraversion is significantly positively correlated with cognitive reappraisal, problem-solving, and seeking instrumental and emotional social support, and significantly negatively correlated with expressive suppression [102,103]. This can be elucidated in several ways. Firstly, extraverts have high levels of positive emotions [105]. Drawing from the broaden-and-build theory of positive emotions, which posits that positive emotions facilitate cognitive thinking and problem-solving [106], extraverts are inclined to employ cognitive reappraisal and problem-solving strategies. Secondly, extraverts possess strong interpersonal skills and foster positive relationships. These relationships instill in them the belief that others are willing to assist, prompting them to frequently seek social support. Finally, extraverts tend to have closer relationships with others and often utilize emotion expression strategies. The level of intimacy in relationships significantly influences emotional expression. In situations where intimacy is lacking, individuals expressing emotions may feel insecure and apprehensive about negative feedback, leading to emotional suppression. Conversely, in high-intimacy relationships, emotional expressers trust the other party, believe that the other party can accept their negative emotions, provide comfort and support, and offer positive feedback, thereby making them more inclined to embrace authentic expression strategies [107].

Individuals with high openness to experience are characterized by their open-mindedness, willingness to explore, and enthusiasm for accepting new things. When faced with stressful situations, they are adept at considering problems from different perspectives and working to solve them. Therefore, they are more likely to employ cognitive reappraisal and problem-solving strategies [102].

Agreeable individuals are friendly, compassionate, and caring, and are willing to help others. They are good at empathizing with others and engaging in more prosocial behaviours. According to social exchange theory, they believe that they can also receive help from others when encountering difficulties. Therefore, individuals high in agreeableness are more likely to utilize seeking instrumental and emotional social support strategies [103].

A conscientiousness personality trait manifests itself in three main facets: orderliness (planful and organized), dependability (responsible and careful), and achievement orientation (hardworking and persistent). They tend to find meaning in stressful situations and adopt problem-solving strategies [102].

**Table 3:** Meta-analytic results of correlations between Big Five personality traits and emotion regulation (ER) strategies.

ER Strategies	N	E	O	A	C
Distraction	[0.17]	[0.09]	[0.05]		
Cognitive reappraisal	-0.19 [-0.16]	0.22 [0.22]	0.20 [0.15]	0.18 [0.14]	0.19 [0.20]
Acceptance	[-0.10]	0.12	[0.07]	[0.08]	0.11 [0.07]
Problem-solving	-0.17 [-0.13]	0.21 [0.20]	0.18 [0.14]	0.12 [0.09]	0.29 [0.14]
Instrumental social support		[0.22]	[0.06]	[0.08]	[0.08]
Emotional social support	[0.11]	[0.25]	[0.08]	[0.12]	[0.06]
Avoidance	0.31 [0.13]	-0.1	-0.05	-0.12	-0.13
Expressive suppression		-0.37	-0.12	-0.15	-0.08
Rumination	0.47	-0.2			
Substance use	[0.28]			[-0.18]	[-0.18]

Note: Data sourced from Barańczuk (2019) [102] [Connor-Smith and Flachsbart (2007)] [103]. The meta-analysis by Barańczuk (2019) was based on 156 samples (N = 46,345) with mean ages ranging from 11.1 to 65.5 years, while that by Connor-Smith and Flachsbart (2007) included 165 samples (N = 33,094) covering mean ages from below 17 to over 47 years. The correlation coefficients in the table are statistically significant, while empty cells indicate non-significant correlation coefficients in one study and unreported values in the other. ER, emotional regulation; N, neuroticism; E, extroversion; O, openness; A, agreeableness; C, conscientiousness.

### 5.2.2 Attachment

Attachment is a strong emotional connection to specific others formed by individuals in their early life experiences with primary caregivers, and it is an expectation and belief about self, others, and self-others relationships [108,109]. There are significant differences in emotion regulation strategies between individuals with secure and insecure attachment. Individuals with secure attachment believe that others are reliable and themselves are safe. They are more willing to express their emotions authentically. When faced with problems, they are more likely to seek social support from others, have a more positive evaluation of the problem, and actively work to solve the problem [110–112]. In contrast, individuals with insecure attachment perceive others as unreliable and themselves as unsafe. They tend to suppress their emotions. When encountering problems, they are less likely to seek social support from others, more prone to rumination and catastrophizing, and tend to adopt avoidance strategies [110–112].

### 5.2.3 Self-Esteem

Self-esteem refers to an individual's attitude and experience of self-acceptance and self-appreciation formed after evaluating oneself as a whole [113,114]. Self-esteem comes from both the acceptance and appreciation of significant others (parents, teachers, peers) and the extent to which individuals achieve success or meet expectations in specific areas they choose for themselves [115]. Individuals with high self-esteem have a more positive evaluation of themselves, are more willing to express their emotions, especially anger, and are more likely to use cognitive reappraisal strategies; whereas individuals with low self-esteem have negative self-evaluations, tend to suppress their emotions, and adopt distraction or avoidance strategies [113,116,117].

## 5.3 Time Constraints

Time constraints directly affect the availability of cognitive resources, significantly impairing an individual's ability to execute complex emotion regulation strategies. This limitation leads people to prefer regulation methods that require fewer cognitive resources [118]. Liu et al. (in press) conducted two experiments. In Experiment 1, participants were shown emotionally evocative pictures of varying intensity

and asked to choose between distraction or cognitive reappraisal strategies to regulate their emotions, while their choice reaction times were recorded. In Experiment 2, two experimental groups were set up: a time-constrained group and a time-sufficient group. The time-constrained group was required to make their choice within a limited time (one standard deviation below the average choice reaction time from Experiment 1), whereas the time-sufficient group was instructed to think carefully before making their selection. The results showed that in the time-constrained group, regardless of high or low emotional intensity, participants tended to choose the distraction strategy. In the time-sufficient group, participants preferred distraction under high emotional intensity; whereas they tended to choose cognitive reappraisal under low emotional intensity.

#### **5.4 Social Support**

Social support includes instrumental social support and emotional social support. Multiple studies have shown that social support has a significant impact on emotion regulation [119–121]. First, instrumental social support provides individuals with methods and pathways to solve problems, thereby motivating them to adopt problem-solving strategies. Second, emotional social support directly enhances positive emotions and reduces negative emotions. According to the broaden-and-build theory of positive emotions [106], positive emotions can help individuals take action and solve problems. Third, providers of social support may assist individuals in adjusting their perspectives on negative events [122]. Fourth, social support itself makes individuals feel interpersonal warmth, leading to a more positive evaluation of the world. In summary, both instrumental and emotional social support contribute to helping individuals change their perspectives on negative events, solve problems, and thereby effectively reduce rumination [123].

### **6 Psychosocial Context**

When discussing the impact of contextual factors on ERC, researchers mainly explore how interpersonal situations and social culture influence the choice of strategies for expressing or suppressing emotions [17,18]. Regarding social culture, Liu et al. (2016) examined how two contrasting cultural orientations—collectivism and individualism—shape the choice of these two strategies. In individualistic cultures, individuals typically opt for authentic expression to mitigate negative emotions and uphold self-esteem, whereas in collectivistic cultures, individuals tend to resort to expressive suppression to maintain interpersonal harmony [48]. Pruessner and Altan-Atalay (2025) further demonstrated that, compared to individuals in collectivist cultures, those in individualist cultures are more inclined to use interpersonal emotion regulation strategies, including seeking comfort from others, soliciting others' perspectives, and learning from others' methods to cope with difficult situations [124]. Compared to broader sociocultural factors, micro-level interpersonal situations exhibit greater complexity and exert a more significant influence on ERC. Therefore, this section focuses on how individuals select between emotional expression and expressive suppression strategies in varying interpersonal situations.

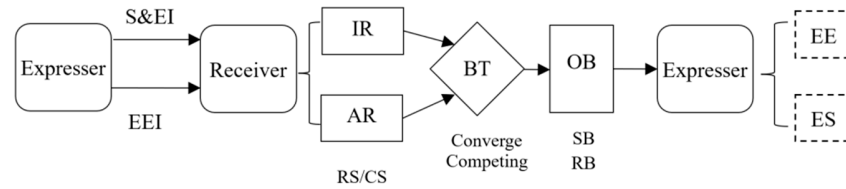
Emotion as Social Information Theory explains how individuals choose between emotional expression and expressive suppression during interpersonal interactions [22–24]. During the process of emotional expression, the expresser conveys two types of information: situational and evaluative information, as well as emotional experience information (Fig. 3). Upon receiving emotions, the receiver generates two psychological reactions: an inferential response and affective reaction. Inferential response refers to the receiver inferring the reasons behind the emotional experience of the emotion expresser. Affective reactions refer to the receiver's reaction to the expresser's emotional experience, encompassing reciprocal and complementary reactions. Reciprocal reaction occurs through emotional contagion, where the receiver

experiences similar emotions to the expresser. For example, the anger expressed by the expresser triggers anger in the receiver, and the sadness expressed triggers sadness in the receiver as well. Complementary reaction refers to the receiver generating the emotional experience that the expresser expects based on the social function of emotional expression. For instance, the anger expressed by the expresser triggers feelings of fear or submission in the receiver, while the sadness expressed triggers feelings of sympathy in the receiver.

The behavioral tendencies resulting from inferential response and affective reaction can sometimes converge and sometimes compete. The relative strength of these two behavioral tendencies is influenced by multiple factors, including the personality of the receiver (especially agreeableness), empathy, time pressure, perception of the sincerity of the expresser; the status and intimacy of the relationship between the two parties, cultural norms, and the context (private versus public settings), ultimately determining the overt behavior of the receiver. Specifically speaking, there are three situations [24]: (1) the receiver engages in deep information processing or perceives the emotion expressed by the expresser as appropriate, in which case the behavioral tendency resulting from inferential response transforms into overt behavior; (2) the receiver perceives the emotion expressed by the expresser as inappropriate, leading the affective reaction (often negative) to manifest in overt behavior; (3) the behavioral tendencies resulting from inferential response and affective reaction both manifest in overt behavior, resulting in a contradictory behavior. The behavioral response of the receiver towards the expresser may be supportive or rejecting. The expresser would choose to express or suppress their emotions based on past or anticipated behaviors from the receiver.

To better understand the complex process described above, let's consider an example. Let's say a child didn't do well on an exam and tells their parents about it. In this scenario, the child is communicating two pieces of information to the parents: the situational and evaluative information that the exam didn't go well, and the emotional experience information including feelings of sadness and anxiety (How should I tell my parents about this bad news? How should I improve my grade in future?). Upon receiving this information, the parents have two psychological reactions. The inferential response is to perceive the child's emotions (sadness, anxiety) and infer the reason (not doing well in this exam). The reciprocal affective responses are sadness ("My child didn't do well in the exam, and I feel very upset too") and anxiety ("My child didn't do well in the exam. How can I help him improve his grades?"). The complementary affective response is sympathy ("My child didn't do well in the exam, he is very sad. I should comfort him"). In addition to sadness and sympathy, there may also be feelings of shame ("My child didn't do well, it's embarrassing in front of others"), disappointment, anger, and so on. The relative strength of these psychological responses determines the parents' eventual overt behaviour. If the parents comfort and help the child (supportive behaviours), the child would feel comfortable informing the parents about similar situations in the future (expressing emotions). However, if the parents react with anger and blame (rejecting behaviours), the child may choose to conceal similar situations from the parents in the future (expressive suppression).

In addition, the researchers also distinguished between strong interpersonal situations (workplace, lower-status individuals to higher-status individuals) and weak interpersonal situations (family, higher-status individuals to lower-status individuals). In strong interpersonal situations, where there are higher demands on individuals to conform to the situation, individuals are more likely to use expressive suppression strategies; whereas in weak interpersonal situations, where there are lower demands on individuals to conform to the situation, individuals are more likely to express their emotions (including anger) more authentically [125–127].



**Figure 3:** The emotions as social information (EASI) model. Notes: S&EI, situational and evaluative information; EEI, emotional experience information; IR, inferential response; AR, affective reaction; RS, reciprocal reaction; CS, complementary reaction; BT, behavioral tendency; OB, overt behavior; SB, supportive behaviors; RB, rejecting behaviors; EE, emotional expression; ES, expressive suppression.

## 7 Discussions

### 7.1 Highlights of This Study

ERC is a very complex process, with many influencing factors. How to systematically and clearly elaborate these factors and their effects on ERC? Compared to previous reviews, this study presented the following highlights in addressing this issue.

First, grounded in key theories and the core concept of ERC, this study proposed a framework of four first-order factors, including the emotion to be regulated, emotion regulation goals, emotion regulation resources, and context. This approach offers a more logically sound foundation than prior reviews that merely enumerated influencing factors. For instance, the term “emotion regulation goals” is more precise than motivational factors, which encompass both long-term and short-term goals. Furthermore, the concept of emotion regulation resources—encompassing cognitive and personality factors as well as time, material resources, and social support—provides a broader conceptual scope and yields deeper insight into the essential determinants of ERC. In addition, the psychosocial context incorporates both the sociocultural context and specific interpersonal situations, reflecting a more comprehensive framework.

Second, this study detailed the influence of multiple second-order and third-order factors on ERC, which have not been addressed in prior reviews. These factors include the nature of emotion, hedonic and instrumental goals, cognitive components (such as cognitive resources, executive function, and cognitive abilities), personality (e.g., self-esteem and attachment styles), social support, and interpersonal contexts.

Third, this study systematically examined the effects of several previously underexplored factors on ERC. For example, this study not only elaborated on the impact of emotional intensity on the selection of two strategies—distraction and cognitive reappraisal—based on the Process-specific Timing Framework Theory, but also its influence on the choice of three other strategies: acceptance, emotional expression, and rumination. Furthermore, beyond the well-documented effects of neuroticism, the study investigated how the other four major personality traits—extraversion, openness, agreeableness, and conscientiousness—impact ERC. Additionally, it provided a detailed analysis of the impacts of gender and age on ERC by means of the differences in emotion regulation goals and resources.

### 7.2 Practical Implications

The findings of the present study carry the following important implications. First, this study contributes to a deeper understanding of ERC among others. In daily life, when individuals adopt seemingly maladaptive emotion regulation strategies, it is sometimes difficult for observers to comprehend the underlying reasons. Based on the framework of this study, their strategy choices can be analysed by integrating specific situational factors from multiple perspectives, including the emotion to be regulated, emotion regulation goals, emotion regulation resources, and psychosocial context. For instance, an individual’s choice of avoidance may result

from insufficient regulatory resources when confronting intense negative emotions, stem from aversion toward specific people or events, or be associated with low levels of interpersonal trust. Therefore, in-depth analysis of the specific causes behind avoidance behaviours is of greater practical value and constructiveness than judging such strategies as inappropriate from one's own standpoint.

Second, this study can provide practical guidance for others (e.g., clients) in selecting appropriate emotion regulation strategies. When the emotion regulation strategies currently adopted by an individual are not conducive to maintaining physical and mental health, or fail to meet the needs of environmental adaptation, flexible adjustments to such strategies become necessary. In this process, multiple factors—such as the emotion to be regulated, emotion regulation goals, emotion regulation resources, and psychosocial context—should be taken into comprehensive consideration to help them select more suitable strategies, thereby achieving more effective emotion management and social adjustment.

### **7.3 Limitations and Future Directions**

Previous studies have conducted extensive researches on ERC and have achieved fruitful results. However, due to the complexity of ERC, there are still quite a few of limitations that require further research. Further exploration can be conducted from the following aspects.

First, a theoretical framework that integrates the four first-order factors can be constructed. Although researchers have proposed multiple theories regarding the factors influencing ERC, these theories separately explore the effects of different factors on such selection, without systematically integrating the four first-order factors into a unified theoretical framework. Future research could consider building upon the closed-loop control process model of ERC by incorporating two additional factors—emotion regulation resources and psychosocial context—thereby developing a more comprehensive and integrated theory.

Second, the impact of the interaction of different factors on ERC can be explored. ERC is influenced by numerous factors. While existing empirical studies have investigated multiple determinants [31,128], they seldom examined whether interactions exist among these factors or how such potential interactions might affect ERC. Future research can examine how the interplay between different factors affects ERC. For instance, interpersonal situation and personality could be combined to explore their interactive effect on ERC. In a strong interpersonal situation, individual's ERC may be more influenced by the interpersonal situation in order to better fit the situation, while in a weak interpersonal situation, the individual's ERC may be more influenced by personality. For another example, when the emotion regulation strategies required to achieve emotion regulation goals are inconsistent with those potentially elicited by the emotion itself, how do individuals ultimately select and adopt emotion regulation strategies?

Third, more longitudinal studies can be conducted to more accurately reveal the effects of various factors on ERC. Previous studies investigating how various factors influence ERC using questionnaire methods have predominantly employed cross-sectional surveys. The simultaneity of data in such designs limits the validity of causal inferences. In contrast, longitudinal studies can control for autoregressive effects, thereby providing more reliable evidence for causal relationships among variables. Therefore, future research should place greater emphasis on longitudinal studies to more precisely uncover the impact of various factors on ERC.

Fourth, the neural mechanisms underlying ERC can be studied. Investigating the neural mechanisms underlying the selection of emotion regulation strategies contributes to a deeper understanding of the intrinsic processes through which individuals make decisions under the combined influence of multiple factors, such as the emotions to be regulated, emotion regulation goals, and available regulatory resources. Currently, there are a substantial amount of researches on the neural mechanisms of specific ER

strategies [129–131], but research on the neural mechanisms of ERC remains limited. To the best of our knowledge, Shafir et al. (2016) examined differences in late positive potentials (LPP) when individuals chose between distraction and cognitive reappraisal under varying emotional intensity [8], while Yan et al. (2025) investigated P2 and LPP differences in the choice between these two strategies under different motivational intensity [132]. The neural mechanisms of ERC is related to both the neural mechanisms of ER strategies and the neural mechanisms of decision-making. Future researches can examine the neural mechanisms of ERC with reference to the neural mechanisms of both.

Fifth, a scoping review can be employed to systematically identify second- and third-order factors influencing ERC. In the current study, the determination of these factors relied primarily on empirical judgment; this approach may have resulted in the omission of certain factors and even introduced selection bias. Future research should adopt scoping review methodologies [133–135] to comprehensively map these second- and third-level factors, thereby significantly enhancing the transparency and systematic rigor of the research.

Sixth, further investigation can be performed into the specific effects of different components of cognitive ability on emotion regulation choice. The Cattell-Horn-Carroll theory of Cognitive Abilities classifies cognitive ability into 16 broad cognitive abilities. Existing research on the relationship between cognitive ability and emotion regulation choice has mostly treated cognitive ability as a unitary variable. Future studies may further explore the unique roles played by different cognitive ability components in emotion regulation choice.

Seventh, future research can examine the effects of more specific emotions on ERC. From an evolutionary perspective, emotion is characterized by the context specificity of its emergence and the adaptive functions it serves. Given the diversity of situational contexts, a variety of discrete emotions exists. The present study only investigates the influences of five emotions—happiness, fear, anger, sadness, and disgust—on ERC. Accordingly, subsequent studies may further explore how more nuanced and context-specific emotions shape ERC.

## 8 Conclusions

Previous studies have tended to classify the influencing factors of ERC in a relatively broad way and lack a solid theoretical foundation. According to the Action Control Theory of Emotion Regulation, the Extended Process Model of Emotion Regulation, the Process-specific Timing Framework Theory, the Selection, Optimization, and Compensation model of Emotion Regulation, and the Emotion as Social Information Theory, a framework of four first-order influencing factors is constructed, including the emotion to be regulated, emotion regulation goals, emotion regulation resources, and psychosocial context. Compared with previous research, this classification system is more comprehensive and systematic.

This study provided a detailed introduction to the influence of various second-order and third-order factors on ERC, many of which have not been addressed or have been inadequately covered in previous reviews. These factors include the nature of the emotion, emotional intensity, hedonic and instrumental goals, cognitive factors (including cognitive resources, executive function, and cognitive abilities), personality traits (Big Five personality traits, self-esteem, and attachment), time constraints, social support, and interpersonal context. Gender and age influence ERC through differences in goals and cognitive factors. This study not only advances the understanding of ERC in others, but also provides practical guidance for people such as clients in choosing appropriate emotion regulation strategies. Future research could further explore the effects of interactions among different factors on ERC, as well as the neural mechanisms underlying such selection.

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## Abbreviations

ER	emotion regulation
ERC	emotion regulation choice

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