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Emotion regulation strategy use in children and adolescents: The explanatory roles of personality and attachment

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ABSTRACT

Emotion Regulation (ER) is a fundamental aspect of healthy psychological functioning. A sample of 682 children and adolescents aged between 10 and 18 years, participated in this study, which examined the roles of the Five-Factor Model (FFM) of personality and parental attachment in the use of the ER strategies of Reappraisal and Suppression. Higher scores on Extraversion and Openness predicted more Reappraisal use, while higher scores on all FFM variables predicted less Suppression use, with the exception of Neuroticism which was positively related to Suppression use. Regarding attachment, higher Communication predicted more Reappraisal and less Suppression use while higher Alienation predicted less Reappraisal and more Suppression use. The current findings contribute to our understanding of factors underlying the use of specific ER strategies.

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1. Introduction

Functional regulation of emotions is of considerable importance for the etiology, expression, and course of psychological disorders (Cole, Michel, & Teti, 1994; Gross & Munoz, 1995; Southam-Gerow & Kendall, 2002). In contrast, poor Emotion Regulation (ER) is implicated in more than half of the axis I, and all of the axis II disorders, included in the Diagnostic and Statistical Manual of Mental Disorders (Gross & Levenson, 1993). Despite this, there is a paucity of research examining ER during the later childhood and adolescent years with most research being focussed on the periods of infancy, early childhood, or adulthood (Gross, 1998; Thompson, 1994). Given that adolescence represents one of the peak risk periods for the development of psychopathology (Betts, Gullone, & Allen, 2009; Lewinsohn, Joiner, & Rohde, 2001), further examination of ER during this period is warranted.

ER involves extrinsic and intrinsic processes responsible for managing one's emotions toward goal accomplishment (Thompson, 1994) and include the manipulation of both positive and negative emotions. Processes aimed not only at reducing the intensity and frequency of an emotional response, but also at generating and sustaining an emotional response (Cole et al., 1994).

The few studies that have examined ER during late childhood and adolescence have not been based on a sound theoretical framework, with few exceptions (e.g. Gullone, Hughes, King, &

Tonge, 2010). Gross (1998) process-oriented model is of relevance as it provides a detailed framework through which to conceptualise ER.

This model proposes that the generation of emotions occurs over time, thus ER strategies can be categorised on the basis of their temporal location along the emotion generative process. At the broadest level, strategies are classified as *antecedent-focussed* referring to those strategies that are employed before an emotional response has become fully activated, or *response-focussed*, referring to those adopted after an emotional response has already been generated.

Two ER strategies have been operationalised among the many proposed in the model. They are *Cognitive Reappraisal* (CR), an antecedent-focused strategy which involves reinterpreting an emotion eliciting event in order to change its emotional impact and *Expressive Suppression* (ES) which is a response-focused strategy that involves actively inhibiting the observable expression of emotional experience (Gross & Thompson, 2007). These two strategies have been related to various psychological outcomes.

Noting that there may be situations where these findings do not apply, studies among young adults have found CR to be a healthy, adaptive strategy while ES has been found to be predictive of poorer mental health (John & Gross, 2004). Reappraisers, for example are more likely to deal with stressful situations by reinterpreting the situation proactively. They consequently experienced and expressed more positive affect and less negative affect, and reported greater self-esteem and life satisfaction compared to infrequent users of CR (Gross & John, 2003). In contrast, suppressors expressed less positive affect and less negative affect compared

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to non-suppressors. Importantly, they *experienced* more negative affect and less positive affect, and reported lower self-esteem and life satisfaction compared to individuals who rarely use ES (Gross & John, 2003).

Regarding gender and age differences in use of CR and ES, research has consistently found that males report greater use of ES than females, while CR has not been found to differ by gender (Flynn, Hollenstein, & Mackey, 2010; Gross & John, 2003; Gullone et al., 2010). Regarding age differences, in a sample of 9–15 year olds, Gullone et al. (2010) found that older children reported less use of both CR and ES than younger children.

This study is concerned with examining the individual differences and interpersonal correlates that are associated with ER strategy use during the childhood and adolescent years. Such understanding has important implications for an individual's affective experiences and interpersonal functioning. Two constructs that are of particular importance for the development of ER include personality and attachment (Cassidy, 1994; John & Gross, 2004; Southam-Gerow & Kendall, 2002).

Of note, efforts to regulate one's emotions early in life have been proposed to be influenced by individual differences in temperament (Rothbart, Ahadi, & Evans, 2000; Southam-Gerow & Kendall, 2002). In a study of 9–12 year old children, Jaffe, Gullone, and Hughes (2010) found temperamental-based dimensions to be associated with the use of CR and ES. Specifically, children with a lower tendency to experience positive mood and to respond flexibly to changes in their environment were more likely to use the ES strategy to regulate their emotions. A weaker tendency to approach novel objects, persons, or situations, predicted ES use while a stronger tendency predicted CR use (Jaffe et al., 2010).

Temperamental tendencies predict the development of distinct personality traits (Caspi, 1998). Of relevance, the FFM of personality provides a comprehensive representation of personality structure (Graziano & Ward, 1992) and several authors have reported associations between the FFM traits and specific ER strategies (Hasking et al., 2010; John & Gross, 2004; Wang, Shi, & Li, 2009). In young adults, Extraversion has been associated with greater ES use, and lower levels of Neuroticism with greater CR use (Gross & John, 2003; Wang et al., 2009). Wang et al. (2009) reported a positive relationship between Extraversion and CR. Less Extraverted individuals are more likely to feel self-conscious in social situations and consequently may use ES to distance themselves from potential rejection. In contrast, individuals higher in Extraversion, and lower in Neuroticism, are less likely to feel overwhelmed by negative affect, affording them greater opportunity to reappraise a stressful situation (Gross & John, 2003).

A recent study carried out by Hasking et al. (2010) with adolescents investigated the importance of the FFM traits and ER for self-injury. They found small to moderate relationships between all of the five FFM traits and ER strategies, with the exception of Neuroticism. These traits were positively related to CR and negatively related to ES. Importantly, Hasking et al. (2010) found these relationships to be larger for adolescents compared to those reported in previous research with adult samples.

While intrinsic factors such as personality undoubtedly influence ER strategy use, extrinsic factors also play an important role (Southam-Gerow & Kendall, 2002). An important extrinsic factor is the parent–child attachment bond (Bowlby, 1969; Calkins & Hill, 2007). According to attachment theorists, an infant's expression and ER develop from the strategies used to maintain the attachment relationship (Bretherton, 1985; Cassidy, 1994).

Securely attached children develop the expectation that their emotion signals will be attended to sensitively and predictably. Consequently, they openly express their emotions and are able to manage them flexibly depending upon their environment (Cassidy, 1994). In contrast, insecurely attached infants develop expectations

that their emotion signals will only be attended to selectively or unpredictably. Consequently, they show impairment in affective communication and are likely to develop maladaptive ER strategies such as minimisation or exaggeration (Cassidy, 1994).

Previous research examined the relationship between ER and the quality of attachment in an adolescent sample (Biesecker, 2001). Based on the Inventory for Parent and Peer Attachment (IPPA) (Armsden & Greenburg, 1987), it was demonstrated that higher levels of Trust and Communication, and lower levels of Alienation predicted the use of more adaptive ER, while lower levels of Trust and Communication, and higher levels of Alienation, predicted the use of maladaptive ER (Biesecker, 2001).

The aim of the current study was to examine the predictive roles of the FFM personality traits and the quality of attachment for the use of CR and ES in late childhood and adolescence. Following examination of gender and age differences, we tested the hypotheses that:

- Higher levels of Extraversion, Openness, Agreeableness, and Conscientiousness, and lower levels of Neuroticism would predict greater use of CR, while lower levels of Extraversion, Openness, Agreeableness, and Conscientiousness would predict greater use of ES.
- Higher levels of Trust and Communication, and lower levels of Alienation, would predict greater use of CR, while lower levels of Trust and Communication, and higher levels of Alienation would predict greater use of ES.

2. Method

2.1. Participants

The sample comprised 306 males and 376 females aged between 10 and 18 years ($M = 13.56$ years, $SD = 2.30$), who were drawn from the sample of a larger longitudinal study (Gullone et al., 2010). Participants were recruited either through their respective schools in Victoria, Australia, or through having previously participated in the longitudinal study. The sample was broken down into three age-groups (1. 268 10–12 years; 2. 232 13–15 years; 3. 182 16–18 years), for examination of developmental differences.

2.2. Measures

2.2.1. Emotion regulation

A revised version of the 10-item *Emotion Regulation Questionnaire* (Gross & John, 2003) was used to assess the use of two ER strategies; Cognitive Reappraisal and Expressive Suppression. The ERQ for Children and Adolescents (ERQ-CA) was used to optimise completion by children and adolescents (Gullone & Taffe, in press). The items are responded to on a 5-point Likert response scale ranging “strongly disagree” to “strongly agree”. Gullone and Taffe (in press) reported good internal consistency for the ERQ-CA strategies (i.e. CR scale: alpha coefficients ranged from .82 to .86; ES scale, the alpha coefficients ranged from .69 to .79. Sound convergent and construct validity for the ERQ-CA was also reported (Gullone, in press).

2.2.2. Personality

The traits of the FFM of Personality were assessed with the *Big-Five Questionnaire for Children* (BFQ-C; Barbaranelli, Caprara, Rabasca, & Pastorelli, 2003), a 65-item self-report measure for children. Items are rated on a 5-point Likert scale from “almost never” to “almost always”. In the current study minor revisions in item wording were made to the BFQ-C to enhance comprehension by an Australian sample (e.g. “I have a great deal of fantasy” was changed to “I

often daydream or fantasise"). Traits scale internal consistencies range from $\alpha = .80$ for Conscientiousness to .99 for Emotional Instability (Barbaranelli et al., 2003). Moderate convergent validity with academic achievement, internalising and externalising behaviour has also been reported for the BFQ-C (Barbaranelli et al., 2003).

To align terminology with previous research, the "Emotional Instability" factor will be referred to as Neuroticism, the "Intellect/Openness" factor will be referred to as Openness, and the "Energy/Extraversion" factor will be referred to as Extraversion.

2.2.3. Attachment

The IPPA (Armsden & Greenburg, 1987) was used to measure adolescents' perceptions of the affective and cognitive dimensions of relationships with parents based on the three IPPA dimensions of: degree of mutual Trust, quality of Communication, and extent of Alienation.

A revised version of the IPPA for children (IPPA-R; Gullone & Robinson, 2005) was used to enhance completion by a younger sample. Revisions included simplification of wording (e.g. "I feel my parents are successful as parents" was changed to "My parents are good parents") as well as shortening the Likert scale to three-points. Adequate to good internal consistency was reported for each of the subscales (Parent form $\alpha = .78$ Trust, .82 Communication, and .79 Alienation by Gullone and Robinson (2005). Adequate convergent validity was also reported, with moderate correlations between the factors of the IPPA-R and the Coopersmith Self-esteem Inventory (Coopersmith, 1981), as well as with the factors of the Parental Bonding Instrument (Parker, Tupling, & Brown, 1979).

2.3. Procedure

Approvals were obtained from the university ethics committee, the Department of Education, and the Catholic Education Office. Explanatory statements and consent forms were mailed to parents of children who had previously participated in the longitudinal study. A number of new schools were also contacted. Consenting parents whose children also gave consent were included in the study. Questionnaires were completed at school in a group setting or individually at home.

3. Results

3.1. Data screening

Examination of missing data revealed that 1.7% of total data were missing. Participants with more than 5% missing data from any one measure were excluded from subsequent analyses. Data for participants with less than 5% missing from any one measure were imputed using the 'Expectation Maximisation (EM)' method. Variable scores in excess of ± 3.29 were deemed to be outliers and were removed. Overall, 30 participants deemed to have excess missing data and 12 participants identified as outliers were removed reducing the sample size from 724 to 682.

The Extraversion, Trust and Communication variables were negatively skewed, and the Alienation variable was positively skewed. Considering the large sample size, the multiple regression analyses were deemed to be robust to these normality violations.

3.2. Descriptive statistics

Means and standard deviations for the study variables were calculated for the total sample, as well as each age-group and sex. Descriptive statistics are presented in Table 1 which shows that males reported higher ES scores, as well as lower Agreeableness and Conscientiousness scores compared to females. A MANOVA

with the ER strategies as the dependent variables showed a significant main effect only for sex ($F_{(2,675)} = 9.20, p < .001$). Univariate analyses revealed that ES differed significantly by sex ($F_{(1,676)} = 17.69, p < .001$) with males being more likely to use this strategy compared to females.

3.3. Correlations

Pearson's Product Moment correlation analyses assessed the inter-correlations between the ER, FFM and attachment variables. As shown in Table 1, the overall pattern of inter-correlations is consistent with previous research and the hypothesised relationships with the exception that a non-significant relationship was found between Openness and ES.

3.4. Multiple regression analyses

To examine the prediction of CR scores from the FFM and attachment variables, a hierarchical multiple regression analysis was performed and the regression model was found to be significant ($F_{(10,671)} = 12.84, p < .001$). The independent variables explained 15% of the variation in CR. Entered at step one, age (as a continuous variable) and sex (male = 0 and female = 1) were not significant predictors. Entered at step two, the FFM variables together were found to explain 14.9% of the variance in CR (F change $_{(5,674)} = 23.63, p < .001$). Entered at step 3, the attachment variables together explained a further significant 1.1% of the variance in CR (F change $_{(3,671)} = 2.90, p < .05$). Table 2 shows that each of Extraversion ($\beta = .09$), Openness ($\beta = .15$) and Communication ($\beta = .13$) made a significant unique contribution to CR.

To examine the prediction of ES scores from FFM and attachment variables, a second hierarchical multiple regression analysis was performed. The model was significant ($F_{(10,671)} = 20.87, p < .001$) with entry of all independent variables explaining around one quarter of the variation in ES. Age and sex, entered as step one explained 2.5% of the variance in ES (F change $_{(2,679)} = 9.71, p < .001$). FFM variables, entered at step two explained a further significant 14.9% of variance in ES use (F change $_{(5,674)} = 24.44, p < .001$). Attachment variables, entered at step three also reached significance and explained a further 6% of variance in ES (F change $_{(3,671)} = 17.67, p < .001$).

As shown in Table 2, Sex ($-\beta = .16$), Extraversion ($\beta = -.26$), Agreeableness ($\beta = -.12$), Conscientiousness ($\beta = .15$), Neuroticism ($\beta = .10$), Openness ($\beta = .10$), Communication ($\beta = -.20$), and Alienation ($\beta = .15$) were found to make significant unique contributions to ES. As can be seen, although Conscientiousness did not make a significant unique contribution when entered in step two of the analysis, following the entry of attachment variables in step three its contribution became significant.

4. Discussion

The main aim of this study was to examine the roles of the FFM personality traits and parental attachment in the use of two specific ER strategies. We also aimed to replicate previously reported age and gender trends for the two ER strategies. Overall, the results were supportive of our predictions.

The previously reported finding of a gender difference in the use of ES was supported (Gullone et al., 2010; John & Gross, 2004) with boys reporting greater use of ES compared to girls. However, in contrast to our prediction, no significant age differences were found. Previous research by Gullone and colleagues (2010) reporting a significant age difference was based on a predominantly younger sample aged 9–15 years. Gullone and colleagues also found that stability was more characteristic at an older age. It

Table 1
Correlations, means, and standard deviations for all emotion regulation, personality, and parental attachment variables.

	1	2	3	4	5	6	7	8	9	10	Overall (N = 682) M(SD)	Males (n = 306) M(SD)	Females (n = 376) M(SD)	10–12 yrs (n = 268) M(SD)	13–15 yrs (n = 232) M(SD)	16–18 yrs (n = 182) M(SD)
Emotion regulation																
1. Reappraisal	0.84										21.55(3.84)	21.59(3.98)	21.51(3.73)	21.73(3.82)	21.35(3.71)	21.52(4.03)
2. Suppression	-0.12	0.74									10.50(2.88)	11.03(2.79)	10.08(2.88)	10.40(2.73)	10.65(2.90)	10.47(3.05)
Personality																
3. Extraversion	0.27	-0.33	0.78								49.74(5.94)	49.85(5.99)	49.65(5.95)	50.35(5.66)	48.99(5.85)	49.80(6.46)
4. Agreeableness	0.30	-0.28	0.46	0.67							49.90(6.89)	47.70(6.73)	51.70(6.48)	50.54(7.65)	49.66(6.30)	49.28(6.34)
5. Conscientiousness	0.31	-0.13	0.37	0.65	0.88						45.81(7.86)	44.82(7.88)	46.62(7.75)	47.23(8.28)	45.27(7.40)	44.42(7.48)
6. Neuroticism	-0.22	0.23	-0.27	-0.42	-0.42	0.86					31.30(7.46)	31.22(7.32)	31.37(7.58)	30.00(7.97)	32.23(7.36)	32.02(6.53)
7. Openness	0.32	-0.07	0.40	0.52	0.63	-0.25	0.76				47.33(6.46)	47.44(6.57)	47.23(6.42)	48.21(6.32)	46.62(6.52)	46.93(6.56)
Parental attachment																
8. Trust	0.18	-0.25	0.23	0.30	0.34	-0.28	0.23	0.62			26.46(3.66)	26.69(3.45)	26.27(3.80)	27.35(3.14)	25.96(3.75)	25.79(3.98)
9. Communication	0.25	-0.32	0.32	0.36	0.39	-0.27	0.31	0.78	0.61		20.89(4.11)	20.98(3.86)	20.82(4.31)	22.08(3.54)	20.01(4.25)	20.26(4.31)
10. Alienation	-0.21	0.31	-0.25	-0.30	-0.35	0.44	-0.21	-0.69	-0.66	0.77	9.45(2.62)	9.27(2.47)	9.60(2.74)	8.74(2.36)	9.91(2.72)	9.92(2.65)

** p < .01 (two tailed).

may therefore be that the older sample in the current study diluted any significant age effects of the younger participants in the sample.

Regarding relationships with the FFM factors, higher levels of Extraversion and Openness predicted greater use of CR suggesting that individuals with a greater tendency to behave more assertively and confidently, and those who exhibit a greater creativity and breadth of interests, are more likely to use the ER strategy of CR. The present finding is consistent with previous research demonstrating that children with a tendency to approach novel stimuli are more likely to employ flexible and adaptive ER strategies (Jaffe et al., 2010).

The FFM factor of Openness is characterised by a higher acceptance of new ideas and interests, and more creativity. It seems reasonable to propose that such individuals may possess a greater ability to successfully redefine, or reinterpret a stressful situation, as opposed to becoming overwhelmed by it, hence scoring higher on CR.

While the bivariate results for the relationships between Agreeableness, Conscientiousness, and Neuroticism in the current study were in line with previous research (Hasking et al., 2010; Wang et al., 2009), these variables did not predict CR use in the multivariate analysis perhaps due to their significant correlations and shared variance with other more strongly associated traits.

Support was found for the hypothesis that higher levels of Communication would predict CR use. This finding is consistent with previous research demonstrating that caregiver-child communication plays an important role in emotion attribution and emotion coaching. As communication between caregiver and child increases, so does the mother's ability to correctly identify her child's emotion and provide appropriate emotion coaching (Waters et al., 2010). While neither Trust nor Alienation predicted the use of CR in the multivariate analysis, significant bivariate relationships consistent with previous research were found. Considering the shared variance between FFM factors and attachment variables, it can be argued that Trust and Alienation significantly predict CR, albeit to a lesser extent than is true for Communication. The findings also indicated that they are not unique predictors once variance explained by FFM traits is taken into account.

When examining relationships between the FFM factors and ES use, as expected, the results showed that lower levels of Extraversion, Openness, and Agreeableness predicted greater use of ES. The finding related to Extraversion is consistent with previous research among young adults (Gross & John, 2003; Wang et al., 2009). Also, the finding related to Openness is consistent with the conceptualisation of emotion dysregulation as being characterised by rigidity, and a lack of breadth and flexibility in response to environmental demands (Cole et al., 1994; Gross & Munoz, 1995). Children and adolescents whose interests and ways of perceiving the world are more conservative may be more likely to adopt rigid, less adaptive ER strategies such as ES.

The current finding that Neuroticism was predictive of greater ES has not been previously reported. However, it is reasonable to expect that individuals who have a tendency to feel anxious, depressive, discontent, or angry, and who tend to become overwhelmed by their emotions, are more likely to attempt to actively inhibit their display of emotions, perhaps in an attempt to suppress the emotions themselves.

Regarding relations between ER and attachment, as predicted, the current findings indicated that lower levels of Communication and higher levels of Alienation predicted greater use of ES. These findings are somewhat consistent with research that has demonstrated significant relationships between Trust, Communication, and Alienation, and maladaptive ER (Biessecker, 2001). They are also consistent with previous research by Waters et al. (2010) which showed that caregiver-child Communication plays an

Table 2
Hierarchical multiple regression analysis for FFM and attachment variables used to predict Cognitive Reappraisal and Expressive Suppression (N = 682).

Variable	Reappraisal	B	SE B	β	t	Suppression	B	SE B	β	t
Age		-0.04	0.06	-0.02	-0.61		0.04	0.05	0.03	0.85
Sex		-0.07	0.3	-0.01	-0.22		-0.96	0.22	-0.17	-4.36**
	R = .03 Adjusted R ² = -.01 R ² change = -.01					R = .17 Adjusted R ² = .03 R ² change = .03				
Step 2										
Age		0.05	0.06	0.03	0.75		0.01	0.04	0.01	0.27
Sex		-0.33	0.3	-0.04	-1.11		-0.8	0.22	-0.14	-3.63**
Extraversion		0.07	0.03	0.11	2.62**		-0.14	0.02	-0.3	-7.28**
Agreeableness		0.05	0.03	0.09	1.65		-0.06	0.02	-0.15	-2.73**
Conscientiousness		0.05	0.03	0.1	1.79		0.03	0.02	0.09	1.79
Neuroticism		-0.04	0.02	-0.07	-1.79		0.06	0.02	0.15	3.84**
Openness		0.09	0.03	0.15	3.19**		0.04	0.02	0.1	2.09*
	R = .39 Adjusted R ² = .14 R ² change = .15					R = .42 Adjusted R ² = .17 R ² change = .14				
Step 3										
Age		0.07	0.06	0.04	1.2		-0.05	0.04	-0.04	-1.07
Sex		-0.29	0.3	-0.04	-0.97		-0.92	0.21	-0.16	-4.32**
Extraversion		0.06	0.03	0.09	2.14*		-0.12	0.02	-0.26	-6.42**
Agreeableness		0.04	0.03	0.08	1.46		-0.05	0.02	-0.12	-2.23*
Conscientiousness		0.04	0.03	0.08	1.42		0.06	0.02	0.15	2.9**
Neuroticism		-0.03	0.02	-0.06	-1.28		0.04	0.02	0.1	2.41*
Openness		0.09	0.03	0.15	3.11**		0.04	0.02	0.1	2.17*
Trust		-0.08	0.06	-0.08	1.25		0.03	0.05	0.04	0.74
Communication		0.12	0.06	0.13	2.1*		-0.14	0.04	-0.2	-3.52**
Alienation		-0.09	0.08	-0.06	1.06		0.16	0.06	0.15	2.85**
	R = .40 Adjusted R ² = .15 R ² change = .01					R = .49 Adjusted R ² = .23 R ² change = .06				

* p < .05.
** p < .01 (one tailed).

important role in a parent's emotion attribution and emotion coaching of a child.

Although our hypothesis that lower Trust would be predictive of greater ES use was supported through a significant bivariate relationship, the multivariate analysis was not supportive. This may be because entry of the attachment variables followed that of the FFM factors which were predominantly significantly predictive thereby reducing the remaining variance available to the attachment variables. Despite this, however, Trust appears to be a less significant predictor of ES use when compared to Communication and Alienation.

While this study makes a significant contribution to ER research during the child and adolescent developmental periods, a number of limitations need acknowledgement. First, we only examined the ER strategies of CR and ES given that they are the only two thus far to have been operationalised within the Gross (1998) model. Although these two strategies effectively illustrate the broad temporal dichotomy within Gross (1998) framework (antecedent/response), they are but two of a myriad of potential ER strategies. Also, the current results are based solely on self-report. While self-report tools tap into valuable internal information not available from the reports of other informants, future research should build on this by adopting a multi-method approach. Future research should also consider the assessment of other commonly used ER strategies to attempt a more comprehensive examination of the development of ER strategy use.

Notwithstanding these limitations, the current findings make a significant contribution to the area by demonstrating that specific FFM traits and dimensions of attachment are predictive of CR and ES use in older children and adolescents. It is important to note that the attachment variables contributed to ER after controlling for personality. Such findings provide evidence that the way in which individuals manage their emotions is not solely determined

by predominantly predispositional factors such as personality, but also by interactions with caregivers. Such knowledge can inform the development of intervention programs aiming to promote psychological adjustment and well-being.

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