

Developmental Trends in Emotion Regulation: A Systematic Review with Implications for Community Mental Health

Jennine S. Rawana, Gordon L. Flett, Meghan L. McPhie, Hien T. Nguyen, and
Sarah Jane Norwood
York University

ABSTRACT

The ability to regulate how emotions are experienced is central to psychological well-being. Developmental changes in emotion regulation (ER) strategies are unclear in the literature. Thus, a systematic review of the research literature was conducted in order to (a) describe normative ER development across childhood, adolescence, and emerging adulthood, (b) describe the patterns and processes of specific ER strategies, and (c) identify and describe the influence of specific individual factors on ER. Fifty-five studies were identified that examined key ER strategies across development. The findings highlight the importance of facilitating adaptive ER strategies among children and youth.

Keywords: emotional regulation, childhood development, adolescent development, adaptive behaviour, community mental health

RÉSUMÉ

La régulation des émotions est essentielle au bien-être psychologique. Les études existantes ne présentent pas un portrait clair du développement des stratégies de régulation des émotions (RE). En conséquence, le présent article passe les études scientifiques systématiquement en revue afin de (a) décrire le développement normatif de la RE au cours de l'enfance, l'adolescence, et l'âge adulte émergent, (b) décrire les modèles et les processus reliés à des stratégies précises de RE, et (c) identifier et décrire l'influence sur la RE de

Jennine S. Rawana, Department of Psychology, York University; Gordon L. Flett, Department of Psychology, York University; Meghan L. McPhie, Department of Psychology, York University; Hien Nguyen, Department of Psychology, York University; Sarah Jane Norwood, Department of Psychology, York University.

Correspondence concerning this article should be addressed to Jennine S. Rawana, Department of Psychology, York University, Toronto, ON M3J 1P3. E-mail: rawana@yorku.ca

facteurs individuels spécifiques. On a identifié 55 études qui examinent des stratégies essentielles de RE aux différentes étapes du développement. Les données démontrent l'importance d'encourager l'utilisation de stratégies adaptatives de RE chez les enfants et les jeunes.

Mots clés : régulation des émotions, développement des enfants, développement des jeunes, comportement adaptatif, santé mentale communautaire

The ability to regulate how emotions are experienced and expressed, particularly within social relationships and challenging situations, is fundamental for healthy development across the lifespan (Zeman, Cassano, Perry-Parrish, & Stegall, 2006). Effectively managing one's emotions (e.g., anger, fear, elation, and contentment), characterized by adaptive changes in emotional states, results in a reduction of negative emotions and seems to be related to resilience in the face of adversity (Cole, Michel, & O'Donnell-Teti, 1994). An inability to regulate one's emotions and associated deficits in coping and resilience contributes to significant negative mental health outcomes, such as substance use, eating disorders, and depression (see, for example, Aldao, Nolen-Hoeksema, & Schweizer, 2010). In the research literature, emotion regulation refers to strategies by which emotions are managed and include initiating, maintaining, and modifying the occurrence, intensity, or duration of feelings make up what is called emotion regulation (ER; Gross & Thompson, 2007). There are two main types of ER strategies, antecedent-focused and response-focused (Gross, 1998). Antecedent-focused strategies are strategies that are used at the forefront, before the emotional response is completely carried through (e.g., asking a friend to spend time with you to help manage your emotions before you write an exam), whereas response-focused strategies are employed after the emotional reaction has occurred (e.g., asking a friend for support to manage emotions after an exam; Schmidt, Tinti, Levine, & Testa, 2010). To date, the majority of research on ER has been conducted with infants and adults with less focus on children and youth (Calkins, 2004). Further, the majority of research on childhood, adolescence, and emerging adults focuses on response-focused strategies. Indeed, childhood, adolescence, and emerging adulthood (ages 18–25; Arnett, 2007) are key developmental periods in which to study ER because as young people transition into adulthood, they have numerous opportunities in family, peer, school, and employer relationships to develop and solidify their lifelong ER strategies.

To begin to address the gap in understanding the development of emotion regulation strategies across ages, a systematic review was conducted to (a) identify normative development of emotion regulation across three age groups: children (7–12 years), adolescents (13–17 years), and emerging adults (18–25 years), (b) describe the patterns and processes of emotion regulation and resilience (i.e., adaptive emotion regulation strategies) broadly in children, adolescents, and emerging adults, and (c) identify and describe the impact of specific individual factors on emotion regulation, particularly diversity issues, such as gender and culture and ethnicity differences. The current study adopted a developmental psychopathology perspective, which provides a useful framework for exploring how a child's success or difficulty in completing a number of age- and stage-relevant tasks at the appropriate points in development (e.g., forming close friendships, developing adaptive ER strategies) can determine subsequent adjustment or maladjustment (Masten, Burt, & Coatsworth, 2006; Masten & Coatsworth, 1998). The theory also provides a model for exploring how

a child's risk and protective factors (e.g., maladaptive and adaptive ER skills, respectively) can influence outcomes, such as psychological adjustment and well-being.

RESULTS

After a comprehensive search strategy (e.g., key search terms such as emotion regulation, limited to ages 7–25 years old, excluding behavioural regulation strategies and non-normative populations), 55 articles were included in the review; 41 described cross-sectional studies and 14 described longitudinal studies. This current article describes a synopsis of the results of the systematic review; for full details of the study findings, please see Rawana, Flett, Nguyen, Norwood, & McPhie (2011).

Children (Ages 7–12)

The results from the current review suggest that the majority of research on ER is focused on middle childhood to pre-adolescence. Of the 55 studies identified, 20 examined ER during these developmental stages. The bulk of the studies defined ER as one's ability to control affect expression, impulsivity, or awareness of emotional states. From a developmental perspective, the research indicates that young people become more efficient in their ability to regulate emotions, particularly when using increasingly complex cognitive strategies. In middle childhood and pre-adolescence, some cognitive strategies for managing emotion exist but may look qualitatively different from strategies employed by adolescents and emerging adults. For example, an important developmental precursor to metacognitive ER strategies is the awareness of emotions, a skill that is important for school-aged children to develop. Emotional awareness is the ability for one to recognize one's own emotional states as well as the emotions of others. As children mature, their ER strategies broaden and a natural shift occurs from primarily external, behaviourally oriented strategies to those that are more internal and cognitive (Aldwin, 1994; Band & Weisz, 1988; Garnefski, Boon, & Kraaj, 2003; Harris, Olthof, & Meerum Terwogt, 1981; Stegge, Meerum Terwogt, Reijntjes, & Tijen, 2004). By the age of 8 or 9, most children are able to regulate their emotions using cognitions or thoughts about themselves, their feelings, or others (Harris, 1989; Saarni, 1999). In pre-adolescence, the research supports the emergence of more sophisticated cognitive strategies for regulating emotions, such as expressive suppression, which is a maladaptive ER strategy involving an individual suppressing his/her emotions or "burying" them inside. A more adaptive ER strategy that emerges during this period of development is problem-focused regulation, which is when one tries to look for solutions to the problem that are at the root of the negative emotions (e.g., ending of a romantic relationship, parental divorce), as well as many others that are both adaptive and maladaptive (e.g., cognitive reappraisal, expressive suppression, distraction, cognitive reframing, emotional disengagement/engagement, internalization, and rumination). Ten studies assessed emotional awareness, largely from the perspective of the parent ($n = 7$). An additional 10 studies identified specific cognitive strategies for regulating emotions.

Studies that looked at ER as a precursor for various adaptive outcomes found that better ER was associated with lower levels of externalizing behaviours (Batum & Yagmurlu, 2007; Silk, Steinberg, & Morris, 2003), better academic functioning or learning (Rice, Levine, & Pizarro, 2007), lower levels of body dissatisfaction and disordered eating (Sim & Zeman, 2006), lower substance use (Wills, Walker, Mendoza, &

Ainette, 2006), lower levels of internalizing symptoms (i.e., depression, worry, fearfulness; Garnefski, Rieffe, Jellesma, Terwogt, & Kraaij, 2006; Silk et al., 2003), more secure mother-child attachment (Contreras, Kerns, Wiemer, Gentzler, & Tomich, 2000), and greater peer competence (Contreras et al., 2000). As an outcome, studies found that better emotion regulators were characterized by secure attachment with mothers (Kerns, Abraham, Schlegelmilch, & Morgan, 2007), lower use of emotion-dismissing strategies (Lunkenheimer, Shields, & Cortina, 2007), consistent use of similar strategies across emotions (Georges, 2001), and avoiding the use of aggressive strategies (Georges, 2001). Emotion regulation was also examined as a mediator of various relationships. For example, Suveg, Payne, Thomassin, & Jacob (2010) found that ER mediated the relationships between maternal socialization strategies, meta-emotional philosophy, and child adjustment. Emotion regulation also explained the links between affect dysfunction and borderline personality symptoms (Gratz et al., 2009), performance approach and academic performance (Tyson, 2008), body dissatisfaction and bulimic behaviours (Sim & Zeman, 2005), violence exposure and internalizing problems (Kliewer et al., 2004), and academic competence and depressive symptoms (Dearing, 2004). An interesting study by Perez and Gauvain (2005) found that mothers tended to offer more emotional support or guidance to children who were emotionally intense but were also more likely to employ adaptive ER strategies, such as cognitive reframing and distraction.

With respect to specific cognitive strategies for ER, studies found that the types of strategies used by children were related to different outcomes. Garnefski and colleagues (2006) found that higher levels of depression were associated with greater use of self-blame, other blame, and catastrophizing strategies, but lower use of positive refocusing and replanning strategies. Worry was related to greater use of self-blame, rumination, and acceptance, but lower use of positive refocusing and positive reappraisal. Fearfulness was associated with greater use of self-blame and rumination, but lower use of positive reappraisal. Study findings also suggest that not only do the strategies for ER change with age but so does the effectiveness of specific strategies. Rice and colleagues (2007) found that children aged 7 to 10 who were instructed to emotionally disengage, rather than emotionally engage, were better able to learn educational information. Furthermore, children who reported using cognitive disengaging strategies, rather than behavioural strategies, were able to learn best. Similarly, Georges (2001) found that among children in middle childhood, competent emotion regulators tended to use more distraction strategies as well as more cognitive restructuring and support seeking. In older children (aged 12–15), regulating negative emotions by using disengagement (i.e., denial, avoidance, wishful thinking, escape, inaction) or involuntary involvement strategies (i.e., rumination, involuntary action, impulsive action) was associated with higher levels of depression and problem behaviours (Silk et al., 2003). Moreover, older children were found to be less likely to use expressive suppression and cognitive reappraisal than younger children (Gullone, Hughes, King, & Tonge, 2010).

Adolescents (Ages 13–17)

Adolescence is a particularly important life-stage in which to examine developmental changes. Specifically, adolescence is marked by significant changes in biological (e.g., puberty), interpersonal (e.g., dating relationships), and cognitive (e.g., brain maturation) development. Emotion regulation, the ability to manage how emotions are managed and expressed, has a widespread influence on adolescent functioning. The results from the current review indicate that adolescence is a fundamental period for the development

of ER. Of the 55 studies, 24 investigated ER during this developmental period. Most of the studies reviewed identified specific strategies for regulating emotions, such as self-blame, other-blame, catastrophizing, rumination, expressive suppression, denial, and distraction. For example, some individuals who endure an event that elicits negative emotions may blame themselves for the experience (i.e., self-blame) while others may be more likely to blame others for the experience (i.e., other-blame). Some studies included positive (or adaptive) ER strategies, such as cognitive reappraisal, planning, positive refocusing, putting into perspective, and acceptance. Overall, rumination, an ER strategy that involves involuntarily thinking about the feelings and thoughts associated with the negative event, was the most commonly identified maladaptive ER strategy in the studies reviewed.

Studies also found changes in ER strategies across adolescence. One study by Vukman and Licardo (2010) found developmental differences in self-reported ER, in which there was a decrease in ER from age 14 to the age of 17–18 years and then a slow increase to the age of 22 years. The same study found gender differences in ER. In general, girls were found to regulate their emotion more than boys; however, these differences seemed to disappear across development. In terms of one's regulative emotional self-efficacy beliefs, a study by Schillinger (2002) found that older adolescents had stronger efficacy beliefs in their ability to regulate negative emotions in comparison to their younger counterparts.

Generally, most of the studies reviewed examined ER as a predictor or correlate of a particular outcome. Outcomes tended to be maladaptive in nature, such as internalizing problems (e.g., depression and anxiety), externalizing problems, and substance use. A study by Tortella-Feliu, Balle, and Sesé (2010) found that negative ER strategies (e.g., self-blame, rumination, catastrophizing, and blaming others) were associated with an increase in anxiety symptoms. Studies have found that adaptive ER strategies are associated with lower levels of depression and impulsivity (d'Acremont & Van der Linden, 2007), whereas maladaptive strategies were related to higher scores for depression and impulsivity (d'Acremont & Van der Linden, 2007; Garnefski et al., 2003). Furthermore, a study by Betts, Gullone, and Allen (2009) found that adolescents with high levels of depressive symptoms reported significantly more frequent use of expressive suppression and less frequent use of positive reappraisal than matched adolescents with low levels of depressive symptoms. Finally, Garnefski, Kraaij, and Etten (2005) found that adolescents who were classified as having internalizing problems scored significantly higher on cognitive ER measures of self-blame and rumination compared to those adolescents who were classified as having externalizing problems. Rawana and Ahola Kohut (2012) have also found that rumination, catastrophizing, and a lack of planning were associated with depressive symptoms among adolescents.

Several studies looked at the relationship between stress and ER. For example, studies have found that negative ER strategies can be elicited by post-traumatic stress symptoms (Marsee, 2008) and stress due to health threats, loss, or relational stress (Garnefski et al., 2003). Low ER was found to be associated with a "fighting the stressor" coping strategy as opposed to a "coming to terms" coping strategy when adolescents were faced with a social stressor (Boekaerts, 2002).

In contrast to internalizing problems, such as depression, several of the studies examined behavioural outcomes or correlates of ER, such as substance use, self-injurious behaviour, and eating disorder symptoms. A study conducted by Wills and colleagues (2006) found that rumination and suppression in response to anger and sadness was positively related to substance use. Furthermore, good emotional control was

inversely related to substance use (Wills et al., 2006). Contrary to expectations in the literature, a study by Zimmermann (2010) found that emotional dysregulation was not associated with normative risk behaviours (e.g., substance use) in a sample of non-clinical adolescents. This, however, may be reflective of the use of a non-clinical sample rather than a high-risk clinical sample of adolescents. Interestingly, ER was not found to be related to non-suicidal self-injury (Hasking, Coric, Swannell, Martin, & Frost, 2010) or eating disorder symptoms (McEwen & Flouri, 2009).

Thus far, the majority of the studies described examined negative outcomes of poor ER; however, a few studies looked at positive outcomes. These positive outcomes were broadly related to academic achievement and good social relationships. In one study, different age groups (14–15, 17–18, and 22–23) of adolescents were examined in terms of their ER abilities and subsequent academic achievement (Vukman & Licardo, 2010). The authors found that emotional self-regulation had a significant positive association with school performance only for the 14–15-year-old group (Vukman & Licardo, 2010). Another study by Vorbach (2002) found that adolescents who were able to regulate their emotional reactions to others more successfully had higher quality friendships. Furthermore, emotion control was also found to be associated with proactive prosocial behaviour (e.g., being warm and friendly; Vorbach, 2002). The role of ER during homework sessions has also been examined (Xu, 2005). Xu (2005) found that girls reported using homework ER strategies more often than boys, and that those youth who received more help from family members reported more frequently controlling and monitoring their emotions during homework sessions.

The previous studies discussed examined ER as a predictor or correlate of a particular outcome. A number of studies that were reviewed looked at ER ability as the outcome, including the influence of peer victimization, attachment, and parenting style, on the ability to successfully regulate one's emotions. McLaughlin, Hatzenbuehler, and Hilt (2009) found that peer victimization was associated with increases in emotion dysregulation over time and subsequent changes in internalizing symptoms. In terms of parenting style, a study by Roth, Assor, Niemiec, Ryan, and Deci (2009) found that parental conditional negative regard (CNR) and parental conditional positive regard (CPR) were predictive of ER, in that CNR predicted resentment toward parents and subsequent dysregulation of negative emotions, while CPR predicted feelings of internal compulsion, which then led to suppression regulation of negative emotions. Furthermore, youth who perceived their parents as affectionate and caring, and not too over controlling, had more adaptive, integrated regulation of negative emotions (Roth et al., 2009). Biesecker (2001) looked at adolescents' attachment to parents and peers and found that adolescents' positive feelings regarding their relationships with their fathers and peers predicted better ER (Biesecker, 2001).

Emotion regulation was found to mediate the relationship between maternal warmth and conduct problems, stress and internalizing problems, and sexual minority status and internalizing symptoms. Two studies (Eisenberg et al., 2005; Walton & Flouri, 2010) found that ER mediated the relationship between paternal and maternal warmth and externalizing problems (e.g. conduct problems), with greater paternal or maternal warmth predicting lower levels of externalizing problems. A study by Hatzenbuehler, McLaughlin, and Nolen-Hoeksema (2008) found that specific ER strategies (rumination and emotional awareness) mediated the relationship between sexual minority status in youth and internalizing symptoms (e.g., depression and anxiety). Specifically, deficits in ER were predictive of the emergence of depression and anxiety symptoms over time in sexual minority youth. Emotion regulation was also examined as a mediator of the relationship

between stress and later internalizing symptoms. McLaughlin and Hatzenbuehler (2009) found that emotion dysregulation mediated the relationship between stress and internalizing symptoms, specifically anxiety more so than depression.

From reviewing the literature on ER during adolescence, it is evident that its influence is widespread. Emotion regulation has been examined as a predictor, correlate, mediator, and outcome. Adaptive ER during adolescence has been demonstrated repeatedly in the literature to be an important skill for maintaining healthy development including interpersonal relationships, academic achievement, and overall psychological well-being.

Emerging Adults (Ages 18–25)

The results of the current review indicate that the research literature has focused less on normative ER strategies among emerging adults (EAs) than among children or adolescents. Of the 55 studies identified, only eight studies described ER in this age group. The majority of these studies conceptualized ER strategies as either adaptive (e.g., positive reappraisal, social support) or maladaptive (e.g., problem-focused, emotional suppression). Within these eight studies four main areas were covered, including emotional self-efficacy, and the relation between emotion regulation and memory, relationships, and stressful life events. Two of the studies focused on the way in which one cognitively appraised a stressful event, such as taking a test. One article found that students who felt confident in their abilities to manage problems that emerged during tests (e.g., able to solve trickier questions) reported using more adaptive ER strategies and lower levels of anxiety (Davis, DiStefano, & Schutz, 2008). In contrast, participants who reported a lack of confidence during the test reported more anxiety and the use of maladaptive ER strategies (Davis et al., 2008). The second article had a similar focus but examined ER strategies as an outcome rather than a predictor (Schmidt et al., 2010). This study by Schmidt and colleagues (2010) reported similar findings to Davis et al. (2008), as participants who assessed the event in a negative manner engaged in maladaptive ER strategies, whereas individuals who had a positive outlook on the event reported greater use of adaptive ER strategies. Of note, an additional study by Rudolph, Flett, and Hewitt (2007) noted relationships between maladaptive cognitive emotion regulation strategies and socially prescribed perfectionism (e.g., people around me expect me to succeed at everything I do).

Two of the eight studies examined relationships and ER strategies. Fischer, Forthum, Pidcock, and Dowd (2007) examined ER as a mediator between problems within the parent–youth relationship and problems with alcohol use separately for young men and women, and the results indicated that ER mediated this relation for young men only. Different romantic relationship patterns were also assessed, and investigators found that ER mediated the relationship between problems with peers and later romantic experiences (i.e., when one has different romantic partners; Dhariwal, Connolly, Paciello, & Caprara, 2009).

One article examined ER and memory, postulating that the way in which one regulates their emotion would impact upon their memory (Richards & Gross, 2000). Consistent with this idea, they found that individuals who suppressed their emotions had poorer memory. Interestingly, three of the eight studies focused on the extent to which individuals perceive themselves as able to effectively regulate their emotions (e.g., regulative emotional self-efficacy), which appears to be a facet of ER unique to this developmental period. In

a longitudinal study, deficits in regulative emotional self-efficacy were found to contribute to depression and delinquency both concurrently and across time. Furthermore, the ability to manage negative emotions was associated with lower levels of depression concurrently (Caprara, Gerbino, Paciello, Di Giunta, & Pastorelli, 2010). Similarly, Allessandri, Caprara, Eisenberg, and Steca (2009) found that one's self-efficacy in expressing positive affect was predictive of self-efficacy in managing negative emotions over time. Furthermore, in the same study, empathic self-efficacy mediated the relationship between initial levels of regulative emotional self-efficacy and later prosociality. In other words, when an individual feels as though they are capable of regulating their emotions and feel empathic toward others they are more likely to be kind to others (Alessandri et al., 2009). In a longitudinal study examining negative mood regulation expectancies, individuals who believed that they would be able to regulate their negative emotions in order to feel better were less likely to avoid stressful situations and report depressive symptoms over time (Catanzaro, Wasch, Kirsch, & Mearns, 2000). Within the same study, the belief that one is capable of regulating one's negative feelings was associated with fewer physical symptoms concurrently, but not longitudinally (Catanzaro et al., 2000).

In two of the three studies that examined regulative emotion self-efficacy there were interesting findings with respect to gender. Vittorio Caprara and colleagues (2010) found that women did not perceive themselves to be as capable as men in managing their negative emotions. Similarly, Allessandri and colleagues (2009) found that men perceived themselves to be more competent at managing their negative emotions than women. In the same study, women scored higher than men on self-efficacy in expressing positive affect.

SUMMARY OF REVIEW

The current systematic review is the first known review of its kind that attempts to integrate the findings on ER across developmental stages. The findings suggest that emotion regulation, the ability to manage how emotions are managed and expressed, has a widespread influence across development. The findings of the study indicate that the majority of research on ER focused on children and adolescents, while less research focused on emerging adults (EAs). It is not surprising that much research focused on middle childhood, pre-adolescence, and adolescence given the considerable psychological and cognitive changes that occur during these stages of development. The studies reviewed suggest that ER strategies change across development. From ages 7 to 12, children develop conceptualizations of their own and others' internal states, understanding of emotional display rules, ability to anticipate consequences related to emotional expression, and a sense of agency over their own emotional states and responses (Thompson, 1991). Following this, the study findings suggest that during childhood much research has investigated the extent to which individuals are aware of their emotions and can accurately label them. During this stage of development children are developing emotional awareness, which will contribute to the development of more complex and sophisticated cognitive strategies as they enter adolescence. From pre-adolescence onward, studies investigated the different cognitive ER strategies that were used in various situations (e.g., stressful events), and how they related to various outcomes (e.g., depression, anxiety, substance use). Interestingly, among older adolescents and EAs, the literature broadens to include investigations of regulative emotional self-efficacy, which is the belief that one can manage their emotions. Thus, from a developmental perspective, children initially learn how to label their emotions, which leads to an awareness of the different strategies that one can utilize to manage those

emotions in adolescence, and this progresses into an awareness of how efficacious one is at regulating one's emotions in emerging adulthood.

Across development, ER is implicated in broad domains of functioning, including social emotional functioning, internalizing behaviours, externalizing behaviours, parental relationships, and cognitive and academic functioning. Furthermore, well-developed regulation skills contribute to individuals being more resilient and therefore protect them against the effects of negative life events. The use of maladaptive strategies was generally found to be associated with internalizing and externalizing behaviours across all ages, whereas the use of adaptive ER strategies leads to lower levels of internalizing and externalizing behaviours. These findings suggest that adaptive ER strategies have a protective role against the development of these symptoms, thereby contributing to better internal resilience, which has implications for prevention and treatment programs.

With respect to findings looking at how emotional regulation was influenced by diversity issues, such as gender, culture, and ethnicity, differences were only found with respect to gender. Within the literature focusing on middle childhood and pre-adolescence there were no gender differences noted with respect to ER development or the types of strategies used. It is likely that gender differences are more salient within the context of how ER influences adjustment in various domains, many of which involve well-established preexisting gender differences (e.g., depression, anxiety). In contrast, gender differences were noted within adolescence and emerging adulthood. Among adolescents, girls were found to be more capable at regulating their emotions; however, gender differences were less salient across development. Gender differences were also found with respect to regulative emotional self-efficacy, as boys perceived themselves to be more effective at managing their negative emotions, while girls perceived themselves to be more effective at expressing their positive emotions.

STUDY LIMITATIONS

The current review has some limitations that need to be considered. First, during the systematic review process, all non-English reports on emotion regulation were excluded, which may have contributed to the dearth of studies identified that examined cultural issues in the ER literature. Second, studies that focused on emotion regulation strategies in clinical samples were also excluded from the review; the development of ER strategies may differ among children and youth who are seeking treatment for mental health issues. Third, the current review relied solely on academic search engines, and information from the grey literature was excluded from the study. Anecdotal evidence, such as policy reports or informal research, could have informed the study findings. Finally, while the purpose of the review was to identify adaptive ER strategies that may contribute to resiliency, there were no studies identified in the systematic review that focused on ER and resilience *per se*. In other words, there is a significant gap in the research literature on the relation between resilience and emotion regulation among children, adolescents, and emerging adults. Overall, the findings suggest that in order to foster resilience among children and youth, the development of appropriate emotion awareness and identification in younger aged children is critical, followed by the acquisition and development of adaptive cognitive emotion regulation strategies in adolescence, including positive refocusing and replanning, cognitive reappraisal, acceptance, and putting things into perspective. The research also

highlights the importance of reflecting on one's ability to regulate emotions in emerging adulthood. Future research should explore a resilient personality type and the value of effortful control in relation to self-regulation of ER strategies (Eisenberg et al., 2004; Eisenberg, Spinrad, & Eggum, 2010).

IMPLICATIONS AND RECOMMENDATIONS

In summary, this systematic review examined the development of emotion regulation strategies across development (ages 7–25 years). The studies reviewed suggest that ER strategies change across development. The findings contribute to a foundation of knowledge about regulating emotions in childhood, adolescence, and emerging adulthood. A number of implications and proposed strategies for examining and improving emotion regulation across childhood, adolescence, and emerging adulthood are highlighted for researchers and community mental health practitioners.

1. There is a need for a stable, inclusive, and clear definition of emotion regulation that accounts for expected developmental shifts and tasks. This definition should be meaningful, pragmatic, and appropriate for interdisciplinary use (e.g., research and community settings).
2. A priority should be understanding emotion regulation prospectively and longitudinally to identify developmental patterns of emotion regulation. It is also recommended that studies examine both the development and implication of adaptive and maladaptive emotion regulation strategies across diverse populations in order to highlight potential gender and cultural differences that exist. Although we have gained some knowledge to date on the role of emotion regulation in optimal development, a substantial amount of research on ER still needs to be undertaken in order to effectively inform evidence-based policy on children's health and well-being, particularly access to appropriate treatment services.
3. There is also a strong need to develop innovative community-based mental health programs that incorporate the examining and fostering of pathways to adaptive ER, in turn promoting healthy psychological development and resiliency among children, adolescents, and emerging adults. Engaging young people in these programs is crucial and may include having them inform research programs, early-intervention initiatives, and knowledge dissemination. Schools provide an ideal setting to further our knowledge on ER development among children and youth; identifying barriers and fostering opportunities to accomplish this goal is a critical component of fostering healthy emotional development among Canadians.
4. Community health practitioners are encouraged to include age-appropriate assessments of adaptive and maladaptive emotion regulation strategies as part of their intake and assessment sessions with children and youth, including those with clinical and subclinical mental health symptoms. For example, young children can be assessed for their emotional awareness, whereas adolescents and emerging adults can be assessed for their adaptive (e.g., cognitive reappraisal) and maladaptive (e.g., rumination) emotion regulation strategies.
5. With respect to intervention, it is recommended that practitioners encourage young children to identify and express appropriate emotions. For older children, adolescents, and emerging adults, it is recommended that practitioners focus on strengthening an individual's adaptive emotion

regulation strategies while reducing his or her reliance on maladaptive ER strategies, thus fostering both resilience and healthy development. Parents/caregivers should be integral components of intervention programs. Promising interventions to improve emotion regulation, such as cognitive behavioural therapies and mindfulness approaches, should be explored with children and youth.

6. Public health approaches to preventing and treating mental health programs are critical to the long-term reduction of children's mental health issues. Public health approaches also highlight the importance of fostering the healthy development of children as the foundation for life-long well-being. Undertaking research on the individual and social determinants of the development of effective ER can inform prevention programs and policies.

REFERENCES

- Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review, 30*, 217–237. doi: 10.1016/j.cpr.2009.11.004
- Aldwin, C. (1994). *Stress, coping, and development: An integrative approach*. New York, NY: Guilford.
- Alessandri, G., Caprara, G. V., Eisenberg, N., & Steca, P. (2009). Reciprocal relations among self-efficacy beliefs and prosociality across time. *Journal of Personality, 77*, 1229–1259. doi:10.1111/j.1467-6494.2009.00580.x
- Arnett, J. J. (2007). Emerging adulthood: What is it, and what is it good for? *Child Development Perspectives, 1*, 68–73. doi:10.1111/j.1750-8606.2007.00016.x
- Band, E.B., & Weisz, J. (1988). How to feel better when it feels bad: Children's perspectives in coping with everyday stress. *Developmental Psychology, 24*, 247–253. doi:10.1037/0012-1649.24.2.247
- Batum, P., & Yagmur, B. (2007). What counts in externalizing behaviors? The contributions of emotion and behavior regulation. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues, 25*, 272–294. doi:10.1007/BF02915236
- Betts, J., Gullone, E., & Allen, J. S. (2009). An examination of emotion regulation, temperament, and parenting style as potential predictors of adolescent depression risk status: A correlational study. *British Journal of Developmental Psychology, 27*, 473–485. doi:10.1348/026151008X314900
- Biesecker, G. E. (2001). Attachment to parents and peers and emotion regulation in middle adolescence. *Dissertation Abstracts International: Section B: The Sciences and Engineering, 62*, 2971.
- Boekaerts, M. (2002). Intensity of emotions, emotional regulation, and goal framing: How are they related to adolescents' choice of coping strategies? *Anxiety, Stress & Coping: An International Journal, 15*, 401–412. doi:10.1080/1061580021000056546
- Calkins, S. D. (2004). Temperament and emotion regulation: Multiple models of early development. In M. Beauregard (Ed.), *Consciousness, emotional self-regulation, and the brain* (pp. 35–60). Amsterdam, Netherlands: John Benjamins.
- Caprara, G. V., Gerbino, M., Paciello, M., Di Giunta, L., & Pastorelli, C. (2010). Counteracting depression and delinquency in late adolescence: The role of regulatory emotional and interpersonal self-efficacy beliefs. *European Psychologist, 15*, 34–48. doi:10.1027/1016-9040/a000004
- Catanzaro, S. J., Wasch, H. H., Kirsch, I., & Mearns, J. (2000). Coping related expectancies and dispositions as prospective predictors of coping responses and symptoms. *Journal of Personality, 68*, 757–788. doi:10.1111/1467-6494.00115
- Cole, P. M., Michel, M. K., & O'Donnell-Teti, L. O. (1994). The development of emotion regulation and dysregulation: A clinical perspective. *Monographs of the Society for Research in Child Development, 59*, 73–100. doi:10.2307/1166139
- Contreras, J. M., Kerns, K. A., Weimer, B. L., Gentzler, A. L., & Tomich, P. L. (2000). Emotion regulation as a mediator of associations between mother-child attachment and peer relationships in middle childhood. *Journal of Family Psychology, 14*, 111–124. doi:10.1037/0893-3200.14.1.111

- d'Acremont, M., & Van der Linden, M. (2007). How is impulsivity related to depression in adolescence? Evidence from a French validation of the cognitive emotion regulation questionnaire. *Journal of Adolescence*, 30, 271–282. doi:10.1016/j.adolescence.2006.02.007
- Davis, H. A., DiStefano, C., & Schutz, P. A. (2008). Identifying patterns of appraising tests in first-year college students: Implications for anxiety and emotion regulation during test taking. *Journal of Educational Psychology*, 100, 942–960. doi:10.1037/a0013096
- Dearing, K. F. (2004). Examining the role of emotion regulation in the relation between social competence and depression in children. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 65, 2619.
- Dhariwal, A., Connolly, J., Paciello, M., & Caprara, G. V. (2009). Adolescent peer relationships and emerging adult romantic styles: A longitudinal study of youth in an Italian community. *Journal of Adolescent Research*, 24, 579–600. doi:10.1177/0743558409341080
- Eisenberg, N., Spinrad, T. L., & Eggum, N. D. (2010). Emotion-related self-regulation and its relation to children's maladjustment. *Annual Review of Psychology*, 6, 495–525. doi:10.1146/annurev.clinpsy.121208.131208.
- Eisenberg, N., Spinrad, T. L., Fabes, R. A., Reiser, M., Cumberland, A., Shepard, S. A., Valiente, C., Losoya, S. H., Guthrie, I. K., Thompson, M., & Murphy, B. (2004). The relation of effortful control and impulsivity to children's resiliency and adjustment. *Child Development*, 75, 25–46.
- Eisenberg, N., Zhou, Q., Spinrad, T. L., Valiente, C., Fabes, R. A., & Liew, J. (2005). Relations among positive parenting, children's effortful control, and externalizing problems: A three-wave longitudinal study. *Child Development*, 76, 1055–1071. doi:10.1111/j.1467-8624.2005.00897.x
- Fischer, J. L., Forthum, L. F., Pidcock, B. W., & Dowd, D. A. (2007). Parent relationships, emotion regulation, psychosocial maturity and college student alcohol use problems. *Journal of Youth and Adolescence*, 36, 912–926. doi:10.1007/s10964-006-9126-6
- Garnefski, N., Boon, S., & Kraaij, V. (2003). Relationships between cognitive strategies of adolescents and depressive symptomatology across different types of life event. *Journal of Youth and Adolescence*, 32, 401–408. doi:10.1023/A:1025994200559
- Garnefski, N., Kraaij, V., & van Etten, M. (2005). Specificity of relations between adolescents' cognitive emotion regulation strategies and internalizing and externalizing psychopathology. *Journal of Adolescence*, 28, 619–631. doi:10.1016/j.adolescence.2004.12.009
- Garnefski, N., Rieffe, C., Jellesma, F., Meerum Terwogt, M., & Kraaij, V. (2007). Cognitive emotion regulation strategies and emotional problems in 9–11-year-old children: The development of an instrument. *European Child & Adolescent Psychiatry*, 16, 1–9. doi:10.1007/s00787-006-0562-3
- Georges, V. C. (2001). Emotion regulation strategies of children who are poor or competent regulators of emotions. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, 62, 1731.
- Gratz, K. L., Tull, M. T., Reynolds, E. K., Bagge, C. L., Latzman, R. D., Daughters, S. B., & Lejuez, C. W. (2009). Extending extant models of the pathogenesis of borderline personality disorder to childhood borderline personality symptoms: The roles of affective dysfunction, disinhibition, and self- and emotion-regulation deficits. *Development and Psychopathology: Special Issue: Precursors and Diverse Pathways to Personality Disorder in Children and Adolescents: Part 2*, 21, 1263–1291. doi:10.1017/S0954579409990150
- Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology*, 2, 271–299. doi:10.1037/1089-2680.2.3.271
- Gross, J. J., & Thompson, R. A. (2007). Emotion regulation: Conceptual foundations. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 3–24). New York, NY: Guilford Press.
- Gullone, E., Hughes, E. K., King, N. J., & Tonge, B. (2010). The normative development of emotion regulation strategy use in children and adolescents: A 2-year follow-up study. *Journal of Child Psychology and Psychiatry*, 51, 567–574. doi:10.1111/j.1469-7610.2009.02183.x
- Harris, P. L. (1989). *Children and emotion*. New York, NY: Blackwell.
- Harris, P. L., Olthof, T., & Meerum Terwogt, M. (1981). Children's knowledge of emotion. *Journal of Child Psychology and Psychiatry*, 22, 246–261. doi:10.1111/j.1469-7610.1981.tb00550.x
- Hasking, P. A., Coric, S. J., Swannell, S., Martin, G., Thompson, H. K., & Frost, A. D. J. (2010). Brief report: Emotion regulation and coping as moderators in the relationship between personality and self-injury. *Journal of Adolescence*, 33, 767–773. doi:10.1016/j.adolescence.2009.12.006

- Hatzenbuehler, M. L., McLaughlin, K. A., & Nolen-Hoeksema, S. (2008). Emotion regulation and internalizing symptoms in a longitudinal study of sexual minority and heterosexual adolescents. *Journal of Child Psychology and Psychiatry*, 49, 1270–1278. doi:10.1111/j.1469-7610.2008.01924.x
- Kerns, K. A., Abraham, M. M., Schlegelmilch, A., & Morgan, T. A. (2007). Mother-child attachment in later middle childhood: Assessment approaches and associations with mood and emotion regulation. *Attachment & Human Development*, 9, 33–53. doi:10.1080/14616730601151441
- Lunkenheimer, E. S., Shields, A. M., & Cortina, K. S. (2007). Parental emotion coaching and dismissing in family interaction. *Social Development*, 16, 232–248. doi:10.1111/j.1467-9507.2007.00382.x
- Marsee, M. A. (2008). Reactive aggression and posttraumatic stress in adolescents affected by hurricane Katrina. *Journal of Clinical Child and Adolescent Psychology*, 37, 519–529.
- Masten, A. S., Burt, K. B., & Coatsworth, J. D. (2006). Competence and psychopathology in development. In D. Cicchetti, & D. J. Cohen (Eds.), *Developmental psychopathology, vol. 3: Risk, disorder, and adaptation* (2nd ed., pp. 696–738). Hoboken, NJ: John Wiley & Sons.
- Masten, A. S. & Coatsworth, J. D. (1998). The development of competence in favorable and unfavorable environments. *American Psychologist*, 53, 205–220. doi:10.1037/0003-066X.53.2.205
- McEwen, C., & Flouri, E. (2009). Fathers' parenting, adverse life events, and adolescents' emotional and eating disorder symptoms: The role of emotion regulation. *European Child & Adolescent Psychiatry*, 18, 206–216. doi:10.1007/s00787-008-0719-3
- McLaughlin, K. A., & Hatzenbuehler, M. L. (2009). Mechanisms linking stressful life events and mental health problems in a prospective, community-based sample of adolescents. *Journal of Adolescent Health*, 44, 153–160. doi:10.1016/j.jadohealth.2008.06.019
- McLaughlin, K. A., Hatzenbuehler, M. L., & Hilt, L. M. (2009). Emotion dysregulation as a mechanism linking peer victimization to internalizing symptoms in adolescents. *Journal of Consulting and Clinical Psychology*, 77, 894–904. doi:10.1037/a0015760
- Perez, S. M., & Gauvain, M. (2005). The role of child emotionality in child behavior and maternal instruction on planning tasks. *Social Development*, 14, 250–272. doi:10.1111/j.1467-9507.2005.00301.x
- Rawana, J. S. & Ahola Kohut, S. (2012). Eating attitudes, coping styles, and peer victimization among adolescents with seasonal and nonseasonal depression symptoms. *Cognitive Therapy and Research*, 36, 199–209. Advance online publication. doi:10.1007/s10608-010-9333-z
- Rawana, J. S., Flett, G. L., Nguyen, H., Norwood, S. J., & McPhie, M. (2011). *Developmental trajectories of emotion regulation among children, adolescents and emerging adults: Executive summary and report*. Toronto: Ontario Ministry of Children and Youth Services.
- Rice, J. A., Levine, L. J., & Pizarro, D. A. (2007). “Just stop thinking about it”: Effects of emotional disengagement on children's memory for educational material. *Emotion*, 7, 812–823. doi:10.1037/1528-3542.7.4.812
- Richards, J. M., & Gross, J. J. (2000). Emotion regulation and memory: The cognitive costs of keeping one's cool. *Journal of Personality and Social Psychology*, 79, 410–424. doi:10.1037/0022-3514.79.3.410
- Roth, G., Assor, A., Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The emotional and academic consequences of parental conditional regard: Comparing conditional positive regard, conditional negative regard, and autonomy support as parenting practices. *Developmental Psychology*, 45, 1119–1142. doi:10.1037/a0015272
- Rudolph, S. G., Flett, G. L., & Hewitt, P. L. (2007). Perfectionism and deficits in cognitive emotion regulation. *Journal of Rational-Emotive and Cognitive-Behavior Therapy*, 25, 343–357. doi: 10.1007/s10942-007-0056-3
- Saarni, C. (1999). *Developing emotional competence*. New York, NY: Guilford.
- Schillinger, S. M. (2002). Emotion management from late childhood through adolescence: The school as social context. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 63, 3045.
- Schmidt, S., Tinti, C., Levine, L. J., & Testa, S. (2010). Appraisals, emotions and emotion regulation: An integrative approach. *Motivation and Emotion*, 34, 63–72. doi:10.1007/s11031-010-9155-z
- Silk, J. S., Steinberg, L., & Morris, A. S. (2003). Adolescents' emotion regulation in daily life: Links to depressive symptoms and problem behavior. *Child Development*, 74, 1869–1880. doi:10.1046/j.1467-8624.2003.00643.x
- Sim, L., & Zeman, J. (2005). Emotion regulation factors as mediators between body dissatisfaction and bulimic symptoms in early adolescent girls. *Journal of Early Adolescence*, 25, 478–496. doi:10.1177/0272431605279838

- Sim, L., & Zeman, J. (2006). The contribution of emotion regulation to body dissatisfaction and disordered eating in early adolescent girls. *Journal of Youth and Adolescence*, 35, 219–228. doi:10.1007/s10964-005-9003-8
- Stegge, H., Meerum Terwogt, M., Reijntjes, A., & Van Tijen, N. (2004). Implicit theories on the (non)expression of emotion: A developmental perspective. In I. Nyklicek & A. Vingerhoedts (Eds.), *The sixth volume of the series biobehavioral perspectives on health and disease prevention*. New York, NY: Harwood Academic Publishers.
- Suveg, C., Payne, M., Thomassin, K., & Jacob, M. L. (2010). Electronic diaries: A feasible method of assessing emotional experiences in youth? *Journal of Psychopathology and Behavioral Assessment*, 32, 57–67. doi:10.1007/s10862-009-9162-0
- Thompson, R. A. (1991). Emotional regulation and emotional development. *Educational Psychology Review*, 3, 269–307.
- Tortella-Feliu, M., Balle, M., & Sesé, A. (2010). Relationships between negative affectivity, emotion regulation, anxiety, and depressive symptoms in adolescents as examined through structural equation modeling. *Journal of Anxiety Disorders*, 24, 686–693. doi:10.1016/j.janxdis.2010.04.012
- Tyson, D. F. (2008). *Explaining discrepant findings for performance-approach goals: The role of emotion regulation during test-taking* (ProQuest Information & Learning). *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 69, 1990. (Electronic; Print). (2008-99180-295)
- Vorbach, A. M. (2002). The relationship between emotional competence and social competence among early adolescents. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 63, 1578.
- Vukman, K. B., & Licardo, M. (2010). How cognitive, metacognitive, motivational and emotional self-regulation influence school performance in adolescence and early adulthood. *Educational Studies*, 36, 259–268. doi:10.1080/03055690903180376
- Walton, A., & Flouri, E. (2010). Contextual risk, maternal parenting and adolescent externalizing behaviour problems: The role of emotion regulation. *Child Care, Health & Development*, 36, 275–284. doi:10.1111/j.1365-2214.2009.01065.x
- Wills, T. A., Walker, C., Mendoza, D., & Ainette, M. G. (2006). Behavioral and emotional self-control: Relations to substance use in samples of middle and high school students. *Psychology of Addictive Behaviors*, 20, 265–278. doi:10.1037/0893-164X.20.3.265
- Xu, J. (2005). Homework emotion management reported by high school students. *School Community Journal*, 15, 21–36.
- Zeman, J., Cassano, M., Perry-Parrish, C., & Stegall, S. (2006). Emotion regulation in children and adolescents. *Journal of Developmental and Behavioral Pediatrics*, 27, 155–168.
- Zimmermann, G. (2010). Risk perception, emotion regulation and impulsivity as predictors of risk behaviours among adolescents in Switzerland. *Journal of Youth Studies*, 13, 83–99. doi:10.1080/13676260903173488