ORIGINAL MANUSCRIPT

WILEY

The structure of emotion regulation strategies in adolescence: Differential links to internalizing and externalizing problems

Lysanne W. te Brinke[1] (iD) | **Ankie T. A. Menting**[1] | **Hilde D. Schuiringa**[1] | **Janice Zeman**[2] | **Maja Deković**[3]

[1]Department of Developmental Psychology, Utrecht University, Utrecht, the Netherlands

[2]Department of Psychological Sciences, College of William and Mary, Williamsburg, VA, USA

[3]Department of Clinical Child and Family Studies, Utrecht University, Utrecht, the Netherlands

Correspondence
Lysanne W. te Brinke, Department of Developmental Psychology, Utrecht University, 80125, 3508 TC Utrecht, the Netherlands.
Email: L.W.teBrinke@uu.nl, TeBrinke@essb.eur.nl

Present address
Lysanne W. te Brinke, Developmental Neuroscience in Society, Erasmus University Rotterdam, Rotterdam, the Netherlands

Funding information
ZonMw, Grant/Award Number: 729300014

Abstract

Emotion regulation is a multi-modal construct, that includes both adaptive and maladaptive cognitive-behavioral processes. However, many classifications of regulation strategies do not take this multi-modality into account. In this study, two classification systems were integrated. Participants were 336 adolescents (56% boys, M_{age} = 15.41, SD = 1.45). Anger regulation strategies were measured with a questionnaire that assessed general strategies, and a vignette measure that assessed contextual strategies. Confirmatory factor analyses supported a 4-factor classification that consisted of cognitive maladaptive, behavioral maladaptive, cognitive adaptive, and behavioral adaptive strategies. The four categories of regulation strategies were differentially associated with age, and gender and psychological problem differences were found. Adolescents with internalizing problems reported using a cognitive regulation style, adolescents with externalizing problems a behavioral regulation style, and adolescents with comorbid internalizing and externalizing problems a maladaptive regulation style. These findings highlight the multi-modal nature of emotion regulation and may provide opportunities for treatment modifications.

1 | INTRODUCTION

The capacity to regulate emotions effectively is crucial to socio-emotional well-being (Gross & John, 2003), and deficiencies in emotion regulation are related to both internalizing and externalizing problems (Aldao et al., 2016). To examine associations between emotion regulation strategies and socio-emotional well-being, emotion regulation strategies are traditionally classified into a 2-factor model in which adaptive and maladaptive strategies are distinguished, or a 2-factor model in which cognitive and behavioral strategies are distinguished (Naragon-Gainey et al., 2017). These different classification systems reflect that emotion regulation is a multi-modal construct that includes both adaptive and maladaptive cognitive-behavioral processes (Cole et al., 2004; Thompson, 2019). However, these separate 2-factor classifications do not fully take this multi-modality into account. In the current study we, therefore, propose an alternative 4-factor model to classify emotion regulation strategies, and examine this model in adolescence.

An outcome-oriented method to classify emotion regulation strategies is based on the distinction between *adaptive* and *maladaptive* strategies (Aldao et al., 2010; Naragon-Gainey et al., 2017). The adaptiveness of emotion regulation strategies is defined as the degree to which strategies allow individuals to successfully function in their environment (Bridges et al., 2004). Adaptive regulation strategies serve goal-directed behaviors whereas maladaptive regulation strategies hinder goal-directed behaviors (Roberton et al., 2012). Strategies that are considered *adaptive* (e.g., problem solving, distraction) are generally negatively related to negative affect and psychological problems (Aldao et al., 2010). In contrast, strategies that are classified as *maladaptive* (e.g., rumination, withdrawal) are generally positively related to negative affect and psychological problems (Aldao et al., 2010). This two-factor classification system is frequently used in empirical research (Cracco et al., 2017; Kovacs et al., 2019; van Beveren et al., 2019). In addition, questionnaires exist that explicitly measure both maladaptive and adaptive regulation strategies (e.g., Cracco et al., 2015).

A process-oriented method to classify emotion regulation strategies differentiates strategies based on whether they involve *cognition* or *behavior* (Cole et al., 2019; Naragon-Gainey et al., 2017). Cognitive regulation strategies (e.g., problem solving, rumination) involve cognitive change whereas behavioral regulation strategies (e.g., distraction, withdrawal) involve behavioral change. Gross's (1998, 2015) process model of emotion regulation describes emotion regulation as a sequential process, in which cognitive and behavioral processes are employed at different points in time. Specifically, cognitive processes (i.e., plans are made to take action) *precede* behavioral processes (i.e., action is taken) (Garnefski et al., 2001). In accordance with this line of reasoning, the distinction between cognitive and behavioral strategies has also been made in several emotion regulation taxonomies (Larsen, 2000; Parkinson & Totterdell, 1999) and measures (Garnefski et al., 2001; Kraaij & Garnefski, 2019). For example, the Behavioral Emotion Regulation Questionnaire (Kraaij & Garnefski, 2019) has recently been developed as an addition to the Cognitive Emotion Regulation Questionnaire (Garnefski et al., 2001).

Although both classification systems are used frequently they have, to our knowledge, not been integrated into one system that takes both dimensions into consideration. This is unfortunate, as it is likely that the integration of these two classification systems is particularly useful for clinical practice. Over the last decade, there has been a shift from focal treatment approaches (targeting single disorders) toward transdiagnostic treatment approaches (targeting multiple disorders) (Marchette & Weisz, 2017), and emotion regulation has been identified as an important transdiagnostic factor underlying both internalizing and externalizing psychopathology (Aldao et al., 2016; Beauchaine & Cicchetti, 2019). Transdiagnostic treatments that focus on emotion regulation seem promising (Berking & Lukas, 2015; Loevaas et al., 2019), but differ in their relative focus on cognitive versus behavioral strategies, without knowing their

differential effects. Moving toward an integrated classification system, could, therefore, help in the fine-tuning of such transdiagnostic interventions. For example, knowledge about cognitive versus behavioral emotion regulation profiles for different psychological problems may allow clinicians to capitalize on strengths (i.e., enhanced focus on preferred cognitive/behavioral *adaptive* strategies), and/or compensate for weaknesses (i.e., diminished focus on preferred cognitive/behavioral *maladaptive* strategies) for adolescents (Rude & Rehm, 1991).

Recent empirical research on the structure of emotion regulation strategies provides some initial support for the necessity to integrate the outcome- and process-oriented classification systems. A study that assessed emotion regulation strategies in daily life with a person-centered approach demonstrated that well-being was highest for individuals who used a profile that was labeled as "*multiple active strategies*", and mainly consisted of behavioral adaptive strategies such as social sharing and situation modification (Grommisch et al., 2020). In addition, a study that examined the structure of emotion regulation strategies with a variable-centered approach, found support for a model in which cognitive and behavioral regulation were distinguished (Adrian et al., 2019). This study took, however, only maladaptive strategies into account. In contrast, a meta-analytic study examining the underlying structure of emotion regulation strategies found that both 2-factor classifications (adaptive-maladaptive and cognitive-behavioral) did not show acceptable model fit (Naragon-Gainey et al., 2017); an integrated 4-factor solution was not directly tested. Thus, it is not clear yet whether the structure of emotion regulation strategies can indeed be characterized by a combination of the adaptive-maladaptive and cognitive-behavioral dimensions.

Classification systems of emotion regulation strategies have generally been developed for adults, but emotion regulation is particularly important during the developmental window of adolescence (Klimes-Dougan & Zeman, 2007). Across childhood and adolescence, emotion regulation processes shift from external (e.g., parent-regulated and/or behavioral strategies) to internal (e.g., self-regulated and/or cognitive strategies; Kopp, 1989; Zeman et al., 2006). By the time children reach adolescence, they are expected to effectively manage their own emotions (Eisenberg & Morris, 2002). The developmental period of adolescence is, however, also characterized by new social challenges (i.e., the need to be accepted by peers) (Klimes-Dougan & Zeman, 2007) and the experience of more intense and frequent negative emotions (Silk et al., 2003). Although adolescents are expected to become more independent and skilled in regulating their emotions, their emotional, and social world becomes increasingly nuanced and complex. Thus, adolescents who are not able to modify their emotion regulation responses to the changing demands of their social environment are potentially at risk for the development of emotion regulation difficulties. Examining the underlying structure of habitual emotion regulation strategies with an integrated classification system during adolescence, thus has the potential to provide deeper insight into processes underlying the development of emotion regulation difficulties. Therefore, the primary aim of the current study was to examine the two emotion regulation classification systems and determine empirically whether in adolescence, these systems could be integrated into a 4-factor model. We hypothesized that cognitive maladaptive (e.g., rumination), behavioral maladaptive (e.g., withdrawal), cognitive adaptive (e.g., problem solving), and behavioral adaptive (e.g., distraction) emotion regulation strategies could indeed be disentangled and that this 4-factor classification would fit the data better than both 2-factor classifications.

A second goal of the current study was to examine the association between age and the four categories of emotion regulation strategies, within the developmental period of adolescence. Previous studies that examined the association between age and regulation strategies during adolescence showed inconsistent findings. On the one hand, there is some support for a "*general maturation model*", suggesting that with increasing age, the use of adaptive regulation strategies increases (Silvers et al., 2012; Zimmermann & Iwanski, 2014) and the use of maladaptive strategies decreases (Gullone et al., 2010). On the other hand, there is also evidence for a "*maladaptive-shift model*", as 12–15-year-old adolescents were found to use more maladaptive strategies than older or younger age groups (Cracco et al., 2017) and age was found to be negatively related to adaptive mood response repertoires in a sample of 7–14 year-olds (Kovacs et al., 2019). Previous research, however, generally did not explicitly take into account the difference between cognitive and behavioral strategies whereas based on developmental theory, it can be expected that cognitive abilities increase during adolescence (Steinberg, 2005), and that age differences in regulation strategies, thus develop according to a "*cognitive maturation model*". Therefore, we

hypothesized that age would be positively related to maladaptive and adaptive cognitive regulation strategies, but negatively related to maladaptive and adaptive behavioral regulation strategies.

A third goal of this study was to examine gender differences in the four types of emotion regulation strategies. According to gender role theories, girls might use more internally focused (i.e., cognitive) responses to emotions whereas boys might be more likely to engage in behavioral avoidance, a behavioral strategy (Nolen-Hoeksema, 2012). Research among adults shows, however, that women reported higher degrees of almost all types of emotion regulation strategies than men, including cognitive maladaptive (i.e., rumination) and adaptive (i.e., reappraisal) strategies, but also behavioral strategies (i.e., distraction) (Nolen-Hoeksema, 2012; Tamres et al., 2002). With regard to cognitive strategies, these findings have also been replicated in adolescence, as adolescent girls typically reported using more rumination strategies (Jose & Brown, 2008), but also more situation specific problem solving than boys (Silk et al., 2003). However, little is known about gender differences in adolescence with regard to behavioral strategies. Therefore, we hypothesized that girls will use more adaptive and maladaptive cognitive strategies, but did not make any specific predictions regarding behavioral strategies.

The last goal of the current study was to examine whether differences between the reported use of the four categories of emotion regulation strategies would emerge for youth with different patterns of psychological problems. If differences do emerge, these findings would highlight the specificity of emotion regulation difficulties that underlie certain types of psychological difficulties. Both internalizing (anxiety and depression) and externalizing (rule-breaking and aggression) symptoms were taken into account. Given the high comorbidity rates between these psychological problems in adolescence (Merikangas et al., 2010) and the transdiagnostic importance of emotion regulation (Aldao et al., 2016; Beauchaine & Cicchetti, 2019), we examined group differences among adolescents who reported mainly internalizing, mainly externalizing, comorbid internalizing and externalizing problems, and those who do not experience clinical levels of symptoms. As this is the first study that examines these four categories of regulation strategies, there is limited direct evidence regarding group differences. Theoretically, however, according to Beck's (1967) model of depression, internalizing symptoms are characterized by cognitive processing distortions. In contrast, externalizing problems are viewed as an outward, behavioral reaction characterized by "*turning against others*" (Achenbach, 1966). Therefore, it seems plausible that adolescents with internalizing problems will report using more cognitive maladaptive strategies whereas adolescents with externalizing problems will use more behavioral maladaptive strategies. Along these lines, it could also be expected that adolescents with comorbid internalizing and externalizing problems will use both cognitive and behavioral maladaptive strategies whereas adolescents without clinical levels of psychological problems may use relatively more cognitive and behavioral adaptive strategies.

Given that this study is, to our knowledge, the first study that integrates an outcome-oriented and process-oriented classification system of emotion regulation strategies, and because emotion regulation is characterized by emotion specificity (e.g., specific emotions elicit distinct functional relations between an individual and the environment; Zeman et al., 2007), this study focuses on a specific emotion, rather than a combination of emotions and/or general negative affect. We selected the negative emotion of *anger*, because anger is relevant not only for externalizing, but also for internalizing problems (Harmon et al., 2019; Otterpohl et al., 2016; Zeman et al., 2002). In preadolescence, high levels of anger rumination are, for example, associated with elevations of both depressive and aggressive symptoms, independently of the levels of sadness regulation (Harmon et al., 2019). Thus, the operationalization that we used to test the integrated classification system of emotion regulation strategies is emotion-specific (i.e., strategy use is measured in response to feelings of anger) whereas the conceptualization of this system is emotion-general (i.e., this system is expected to be applicable to all emotions). The current study further adds to the literature by including two measurement approaches of emotion regulation strategies in response to feelings of anger; a generalized questionnaire and a contextualized vignette measure. Generalized measures of emotion regulation strategies focus on combinations of strategies that an individual uses relatively consistently across time and context (Bridges et al., 2004) whereas contextualized measures focus on specific situations (Aldao, 2013). Although it can be argued that these general emotion regulation styles are specifically important for psychological functioning, the situational context needs to be taken into account as well, because context may

influence both the selection and functionality of regulation strategies (Aldao, 2013). A daily diary study showed, for example, that the selection of regulation strategies was influenced by the emotional valence of the specific situation (Lennarz et al., 2019). Moreover, capturing context appears to be particularly important when examining associations between regulation strategies and psychopathology, because psychological disorders are characterized by rigid responses to the environment (Aldao, 2013). Therefore, the current study assessed the reported use of the four categories of emotion regulation strategies and their associations with age, gender, and different patterns of psychological problems using two measures. No measure-specific hypotheses were formulated.

2 | METHOD

2.1 | Participants

Participants were 336 adolescents (56% boys, M_{age} = 15.41 years, *SD* = 1.45, range 12–19 year of age) who were recruited from high schools in the Eastern and Middle part of the Netherlands (grades 7–12). The participating adolescents followed a pre-vocational track (16%), higher general education track (56%) or pre-university track (26%).[1] As one goal of this study was to examine group differences between adolescents who reported high versus low degrees of psychological problems, we oversampled adolescents who were likely to experience behavior problems. Specifically, a subsample of 67 participants (20% of the total sample; 73% boys) were selected based on teacher report of externalizing problems. These adolescents also participated in an experimental emotion regulation study (for more details see te Brinke et al., 2018).

2.2 | Procedure

First, adolescents attending the participating high schools and their parents, received a general information letter about the study. In this letter, the goal of the study was described as *"understanding how adolescents deal with their emotions, in order to better help adolescents who have difficulties to regulate their emotions in the future"*. Parents could then object to participation of their child in the study (three parents objected). Adolescents with parental tacit approval who wished to participate signed an informed consent form (none of the adolescents refused to sign informed consent). Participating adolescents completed the questionnaires in their classroom or individually in a quiet room, with researchers available to answer questions and monitor the 30-min session. All questionnaires were completed in the same session, and participants did not receive any incentives for completing the questionnaires. The study was approved by the Ethics Committee of the Faculty of Social and Behavioral Sciences Utrecht and the Ethics Committee of the University Medical Center Utrecht.

2.3 | Measures

2.3.1 | Generalized emotion regulation strategies

Generalized emotion regulation strategies were assessed with the Dutch version of the Fragensbogen zur Erhebung der Emotionsregulation bei Kinder und Jugendlichen (FEEL-KJ) (Cracco et al., 2015; Grob & Smolenski, 2009). The FEEL-KJ was selected, because this validated self-report instrument measures a large variety of both cognitive and behavioral strategies that children and adolescents habitually use to regulate emotions of anger, sadness, and anxiety. In the current study, we only measured emotion regulation strategies in response to feelings of anger, similar to other studies (e.g., Otterpohl et al., 2016). Respondents rated on a 5-point scale from 1 (*never*) to 5 (*almost always*) their

general use of five maladaptive and seven adaptive strategies, each assessed with two items. To determine whether the 24 items reflected cognitive or behavioral strategies, items were independently classified by the first author and a research assistant as cognitive or behavioral, based on whether they involved thought (e.g., *"If I am angry... I think about something that makes me happy"*) or action (e.g., *"If I am angry... I do something fun"*). The raters agreed on the classification of all items. See Table 1 for the classification of items and internal consistency of the four categories. Subsequently, mean scores of the four categories were constructed, with higher scores indicating that the adolescents were more likely to report the probable use of these strategies when experiencing feelings of anger.

2.3.2 | Contextualized emotion regulation strategies

Contextualized emotion regulation strategies were measured with a vignette measure, developed for the current study. The measure was based on earlier vignettes that measured coping with anger provoking situations (Whitesell et al., 1993). In the current study, participants read two vignettes that were meant to elicit feelings of anger. Both vignettes consisted of peer provocation, as this type of psychological harm is found to be an important context in which adolescents experience anger (Matthys et al., 2001). The first vignette consisted of the following story: "*You are walking through the school hallway. All of a sudden your classmate pushes you. Your phone falls on the ground*". The second vignette consisted of the following story: "*You are playing soccer. Your classmate is able to score. Instead, he suddenly runs into you*". On average, adolescents indicated their expected level of anger with a 3.85 (*SD* = 1.45) on a scale from 1 *(not angry)* 7 *(very angry)*. Thus, the vignettes indeed seemed to elicit feelings of anger. After reading the vignettes, adolescents were presented with several context specific emotion regulation strategies and rated the likelihood of using a specific emotion regulation strategy using a 7-point scale from 1 (*definitely not likely*) to 7 (*very likely*). The cognitive adaptive strategy putting into perspective was, for example, described as "*I think... luckily my phone is not broken*" in the first vignette, and as "*I think... luckily it does not hurt too much*" in the second vignette. Per vignette, there were six cognitive strategies (three adaptive strategies: cognitive reappraisal, cognitive distraction, putting into perspective; three maladaptive strategies: self-blame, rumination, suppression), and five behavioral strategies (three adaptive strategies: relaxation, behavioral distraction, behavioral problem solving; two maladaptive strategies: direct expression, indirect expression). More details about the contextualization of regulation strategies can be found in the supplementary materials (Table S1). Mean scores for the four categories of regulation strategies were computed, with higher scores indicating that the adolescents were more likely to report the probable use of these strategies in the peer provocation scenarios. Across the vignettes, mean scores were positively correlated (cognitive maladaptive *r* = .59, behavioral maladaptive *r* = .13, cognitive adaptive *r* = .44, behavioral adaptive *r* = .48).

2.3.3 | Internalizing and externalizing problem behavior

Internalizing and externalizing problems were measured with the Dutch version of the Youth Self Report (YSR; Achenbach & Rescorla, 2001; Verhulst & van der Ende, 2001). The internalizing broadband scale consists of 32 items (e.g., *"I am often worried"*) and the externalizing broadband scale consists of 31 items (e.g., *"I argue a lot"*). Items are rated on a 3-point scale (0 = *not true*, 1 = *somewhat true*, 2 = *very true or often true*). In the current study, Cronbach's alpha was .90 for internalizing problems and .83 for externalizing problems. T-scores were constructed, with higher scores being indicative of more problems.

To examine group differences in emotion regulation strategies, groups were constructed based on the cut-off scores for the "*normative*" or "*(sub)clinical range*" (*T*-score > 60, corresponding to the 84th percentile). We identified four subgroups of adolescents: (1) Normative group (NOR; *n* = 214, 58% boys, M_{age} = 15.56 years), scores in the normative range on both internalizing and externalizing problem scales, (2) Internalizing problem group (INT; *n* = 62, 40% boys, M_{age} = 15.27 years), scores in the subclinical or clinical range of internalizing problems

TABLE 1 Descriptive statistics (*M*, *SD*) and standardized factor loadings of the generalized emotion regulation measure (*N* = 336)

	Item number	*M*	*SD*	Factor loading
Cognitive maladaptive (α = .50)				
Self-devaluation	8	2.85	1.16	0.38
	16	2.73	1.09	0.49
Rumination	10	2.60	1.18	0.65
Behavioral maladaptive (α = .73)				
Withdrawal	7	2.61	1.30	0.61
	25	2.73	1.26	0.42
Giving up	9	2.47	1.11	0.72
	30	2.25	1.13	0.56
Aggressive actions	13	2.43	1.17	0.42
	23	2.43	1.19	0.46
Cognitive adaptive (α = .80)				
Cognitive problem solving	11	3.30	1.09	0.44
	28	3.25	1.10	0.60
Humor enactment	3	2.91	1.15	0.51
	17	2.71	1.12	0.61
Forgetting	15	2.73	1.14	0.47
	20	3.58	1.08	0.43
Revaluation	12	2.85	1.15	0.51
	29	2.70	1.04	0.53
Cognitive acceptance	21	2.99	1.06	0.51
Behavioral adaptive (α = .78)				
Behavioral problem solving	1	3.30	0.93	0.46
	18	3.35	1.12	0.74
Distraction	4	3.56	1.06	0.56
	27	3.17	1.13	0.66
Behavioral acceptance	6	3.63	1.08	0.68

Note: Item numbers correspond to the original Dutch FEEL-KJ questionnaire, which also consists of the subscale external emotion regulation strategies.

and in the normative range of externalizing problems, (3) Externalizing problem group (EXT, *n* = 36, 75% boys, M_{age} = 14.89 years), scores in the subclinical or clinical range of externalizing problems and in the normative range of internalizing problems, and (4) Comorbid problem group (COM, *n* = 23, 48% boys, M_{age} = 15.26 years), scores in the subclinical or clinical range on both internalizing and externalizing problems scales. One adolescent could not be classified, due to too many missing items on the problem behavior scales.

2.4 | Analyses

In order to examine whether a 4-factor classification of generalized emotion regulation strategies is preferable over a 2-factor classification, a series of Confirmatory Factor Analyses (CFAs) was performed in Mplus 8.1.

(Muthén & Muthén, 2017), using the items of the generalized emotion regulation questionnaire. In each model, the factor structure of generalized emotion regulation strategies was specified based on the underlying theoretical model. Latent factors were allowed to correlate, but individual items were fixed to exclusively load on their hypothesized factor. Full Information Maximum Likelihood estimation was used. Model fit was evaluated with the χ^2 likelihood ratio statistic (χ^2/df ratio ≤ 5), the comparative fit index (CFI ≥ .900), and the root mean square error of approximation (RMSEA ≤ .080) (Hu & Bentler, 1999). If the model fit of the initial model was not satisfactory, re-specification of the factor structure was considered. If necessary, residuals of items were allowed to correlate, suggesting that these items covaried due to methodological rather than structural effects (Brown & Moore, 2012). Additionally, the fit of the final 4-factor and 2-factor models was compared. Because not all of these models were nested, we could not compare them with a chi-square difference test. However, ΔCFI and ΔRMSEA have been introduced as sample size insensitive means of comparing different factor models. Critical absolute values of ΔCFI and ΔRMSEA are .010 and .015, respectively (Chen, 2007). A cutoff criterium for statistical significance of the factor loadings of .30 was used, according to guidelines presented for larger-sample sizes (Hair et al., 1995). Subsequently, associations with age were examined with Pearson correlations and gender differences were examined with ANOVAs. Lastly, in order to examine differences among the four problem-behavior groups in their use of the different categories of generalized/contextualized emotion regulation strategies, MANOVAs were performed, followed by univariate F-tests and Tukey post-hoc comparisons, where appropriate.

3 | RESULTS

3.1 | Disentangling emotion regulation strategies

Means and standard deviations of the generalized emotion regulation items are presented in Table 1. First, the internal consistencies and item-item correlations were examined. One rumination item (item 24: *"I do not get it out of my head"*) negatively affected the internal consistency, was not significantly correlated to the other rumination item ($r = .10$), and had a factor loading below cutoff in the 4-factor model. Therefore, this item was dropped from the analyses. Next, a 4-factor model (cognitive maladaptive, behavioral maladaptive, cognitive adaptive, behavioral adaptive) was examined. This initial model did not show acceptable model fit ($\chi^2(224) = 993.95$, $p < .001$, CFI = .699, RMSEA = .101). Therefore, modification indices were examined and the residuals of 12 item pairs were allowed to correlate. This resulted in a final 4-factor model that showed acceptable model fit ($\chi^2(212) = 462.38$, $p < .001$, CFI = .902, RMSEA = .059).

Next, a 2-factor model was examined in which items loaded on a maladaptive and adaptive factor, with the residuals of the same item pairs allowed to correlate. Model fit indices were, however, below critical points for acceptable model fit ($\chi^2(240) = 806.48$, $p < .001$, CFI = .790, RMSEA = .084). Next, a 2-factor model in which items loaded on a cognitive and behavioral factor was examined. The fit of this model was also below critical points for acceptable model fit ($\chi^2(217) = 641.05$, $p < .001$, CFI = .834, RMSEA = .076).

Lastly, the model fit of the 4-factor model was compared to both 2-factor models. The final 4-factor model fitted the data better than the final 2-factor maladaptive/adaptive model (ΔCFI = .112, and ΔRMSEA = .017) and the final 2-factor cognitive/behavioral model (ΔCFI = .068, and ΔRMSEA = .025). Thus, as expected, cognitive maladaptive, behavioral maladaptive, cognitive adaptive, and behavioral adaptive emotion regulation strategies could be disentangled and this 4-factor classification of generalized emotion regulation strategies fit the data better than the 2-factor classifications. Factor loadings of the final model are presented in Table 1. Descriptive statistics and correlations among the four categories of emotion regulation strategies, as measured with both the generalized and contextualized measure are presented in Table 2. All four generalized categories of emotion regulation strategies were positively associated with the corresponding contextualized categories of emotion regulation strategies.

TABLE 2 Correlations between generalized and contextualized emotion regulation strategies, and age (N = 336)

	1.	2.	3.	4.	5.	6.	7.	8.
Generalized emotion regulation								
1. Cognitive maladaptive								
2. Behavioral maladaptive	.11*							
3. Cognitive adaptive	.46**	−.22**						
4. Behavioral adaptive	.24**	−.45**	.70**					
Contextualized emotion regulation								
5. Cognitive maladaptive	.31**	.16**	.29**	.14*				
6. Behavioral maladaptive	−.20**	.18**	−.30**	−.19**	−.28**			
7. Cognitive adaptive	.34**	−.02	.46**	.30**	.61**	−.46**		
8. Behavioral adaptive	.20**	.16**	.17**	.16**	.58**	−.12*	.43**	
9. Age	.14*	−.11*	.21**	.16**	.20**	−.46**	.25**	.13*
Mean (*SD*)	2.73	2.49	3.00	3.40	2.52	2.12	3.84	2.67
	(0.81)	(0.78)	(0.67)	(0.78)	(1.09)	(1.32)	(1.16)	(0.93)

*p < .05; **p < .01; ***p < .001.

3.2 | Associations with age

Correlations between the four categories of emotion regulation strategies and age are displayed in Table 2. Age was, as expected, positively correlated with both maladaptive and adaptive cognitive emotion regulation strategies. Moreover, age was negatively related with behavioral maladaptive strategies. Contrary to our expectations, age was also positively correlated with behavioral adaptive strategies. These results were similar for the generalized and contextualized measure.

3.3 | Gender differences

Gender differences are displayed in Table 3. As expected, girls scored significantly higher in cognitive maladaptive and adaptive regulation strategies (as assessed with both the generalized and contextualized measures). For behavioral strategies, findings were mixed. Boys scored significantly higher than girls on contextualized behavioral maladaptive strategies, but lower on generalized behavioral maladaptive strategies. Moreover, boys scored significantly higher on generalized behavioral adaptive strategies whereas the difference in contextualized behavioral adaptive strategies was not significant.

3.4 | Problem behavior group differences

In order to examine differences in the four categories of emotion regulation strategies among the four problem-behavior groups, two MANOVAs were performed. For the generalized measure, the results showed that there was a significant overall difference in emotion regulation strategies among the four groups, Wilks λ = 0.73; $F(12, 868.10)$ = 9.23, p < .001, η^2 = 0.10. Univariate F-tests showed significant differences among the four groups in cognitive maladaptive ($F(3, 335)$ = 14.36, p < .001, η^2 = 0.12), behavioral maladaptive ($F(3, 335)$ = 18.47, p < .001, η^2 = 0.14), cognitive adaptive ($F(3, 335)$ = 5.65, p = .001, η^2 = 0.05), and behavioral adaptive strategies ($F(3,

TABLE 3 Gender differences in generalized and contextualized emotion regulation strategies (N = 336)

	Boys	Girls			95% ΔCI		
	M (SD)	M (SD)	F	p	LL	UL	η^2
Generalized emotion regulation							
Cognitive maladaptive	2.60 (0.81)	2.89 (0.79)	11.11	.001	−0.47	−0.12	0.03
Behavioral maladaptive	2.33 (0.76)	2.68 (0.75)	17.53	<.001	−0.51	−0.19	0.05
Cognitive adaptive	2.93 (0.67)	3.09 (0.67)	4.83	.029	−0.31	−0.02	0.01
Behavioral adaptive	3.48 (0.77)	3.30 (0.79)	4.68	.031	0.02	0.35	0.01
Contextualized emotion regulation							
Cognitive maladaptive	2.26 (0.96)	2.84 (1.19)	24.02	<.001	−0.80	−0.34	0.07
Behavioral maladaptive	2.49 (1.37)	1.64 (1.07)	38.38	<.001	0.58	1.12	0.10
Cognitive adaptive	3.57 (1.16)	4.18 (1.06)	24.60	<.001	−0.85	−0.37	0.07
Behavioral adaptive	2.59 (0.91)	2.76 (0.94)	2.90	.089	−0.37	0.03	0.01

Note: ΔCI, confidence interval for the difference between boys and girls; LL, lower limit; UL, upper limit.

335) = 7.19, p < .001, η^2 = 0.06). For the contextualized measure, the overall difference was also significant, Wilks λ = 0.80; F(12, 693.48) = 6.56, p < .001, η^2 = 0.07. Univariate F-tests showed significant group differences in cognitive maladaptive (F(3, 335) = 12.45, p < .001, η^2 = 0.10), behavioral maladaptive (F(3, 335) = 13.81, p < .001, η^2 = 0.11), and cognitive adaptive strategies (F(3, 335) = 11.15, p = .001, η^2 = 0.09), but not in behavioral adaptive strategies (F(3, 335) = 2.18, p = .091, η^2 = 0.02).

Descriptive statistics and the results of post-hoc Tukey analyses are displayed in Table 4. Results indicated that, as expected, adolescents in the internalizing problem (INT) group scored significantly higher on generalized and contextualized cognitive maladaptive strategies than adolescents in the normative (NOR), and externalizing problem (EXT) group. Contrary to our expectations, the INT group scored also significantly higher on cognitive adaptive strategies compared to the EXT and comorbid problem (COM) group. The EXT group scored, as expected, significantly higher on generalized and contextualized behavioral maladaptive strategies than the NOR group, and significantly higher on contextualized behavioral maladaptive strategies than the INT group.

The COM group scored, as expected, significantly higher on generalized (but not contextualized) cognitive maladaptive strategies compared to the NOR and EXT groups, and significantly higher on both generalized and contextualized behavioral maladaptive strategies compared to the NOR and INT groups. Regarding adaptive strategies, the COM group scored significantly lower on generalized and contextualized cognitive adaptive strategies than the INT group. Lastly, the COM group scored significantly lower on generalized behavioral adaptive strategies compared to the NOR and INT groups.

The NOR group scored significantly lower than all three other groups on generalized behavioral maladaptive strategies, and lower than the EXT and COM group on contextualized behavioral maladaptive strategies. In addition, they scored significantly lower than the INT group on both generalized and contextualized cognitive maladaptive strategies, and lower than the COM group on generalized cognitive maladaptive strategies. Moreover, as expected, the NOR group scored significantly higher on both generalized and contextualized cognitive adaptive strategies than the EXT group, and significantly higher than the COM group on generalized behavioral adaptive strategies.

3.5 | Interaction between gender and problem behavior

Because both gender differences and problem behavior group differences were found in the four categories of emotion regulation strategies, two post-hoc MANOVAs were performed. In these analyses, both the main effects

TABLE 4 Means, standard deviations (in brackets) and post-hoc Tukey differences between problem behavior groups in generalized and contextualized emotion regulation strategies (N = 335)

	NOR	INT	EXT	COM	Post-hoc Tukey[1]
Generalized emotion regulation					
Cognitive maladaptive	2.60 (0.75)	3.23 (0.74)	2.42 (0.91)	3.06 (0.79)	**INT > NOR***** **INT > EXT***** COM > NOR* COM > EXT*
Behavioral maladaptive	2.29 (0.74)	2.70 (0.64)	2.74 (0.71)	3.32 (0.77)	INT > NOR*** **EXT > NOR**** **COM > NOR***** **COM > INT**** COM > EXT**
Cognitive adaptive	3.04 (0.67)	3.16 (0.56)	2.67 (0.73)	2.73 (0.72)	**NOR > EXT*** **INT > EXT**** **INT > COM***
Behavioral adaptive	3.52 (0.77)	3.34 (0.68)	3.23 (0.81)	2.79 (0.81)	NOR > COM* INT > COM*
Contextualized emotion regulation					
Cognitive maladaptive	2.41 (1.02)	3.22 (1.19)	2.06 (0.91)	2.41 (1.07)	**INT > NOR***** **INT > EXT***** INT > COM**
Behavioral maladaptive	1.94 (1.17)	1.84 (1.14)	3.17 (1.60)	2.87 (1.56)	**EXT > NOR***** EXT > INT*** **COM > NOR**** **COM > INT****
Cognitive adaptive	3.83 (1.12)	4.39 (1.05)	3.08 (1.24)	3.58 (0.93)	**NOR > EXT**** **INT > EXT***** **INT > COM*** INT > NOR**
Behavioral adaptive	2.60 (0.89)	2.94 (0.99)	2.63 (0.99)	2.70 (0.88)	

Note: Group differences that are found in both generalized and contextualized emotion regulation strategies are displayed in bold.

Abbreviations: NOR, normative group; INT, internalizing problem group; EXT, externalizing problem group; COM, Comorbid problem group.

[1]Only significant differences are displayed.

***$p < .001$; **$p < .01$; *$p < .05$.

of gender and problem behavior, and the interaction term (gender X problem behavior group) were included as independent variables. The results showed that the multivariate gender X problem group interaction effects were not significant, both for the generalized measure (Wilks λ = 0.95; F(12, 857.52) = 1.33, p = .195, η^2 = 0.02) and the contextualized measure (Wilks λ = 0.97; F(12, 857.52) = 0.87, p = .576, η^2 = 0.01).

4 | DISCUSSION

In the current study, two commonly used classification systems of emotion regulation strategies were integrated into one system. The results demonstrated that the emotion regulation strategies of adolescents, as measured in response to feelings of anger, could be classified into four categories, consisting of cognitive maladaptive, behavioral maladaptive, cognitive adaptive, and behavioral adaptive strategies. Thus, by building on earlier research from the adaptive-maladaptive dimension (Cracco et al., 2017; Kovacs et al., 2019; Otterpohl et al., 2016; van Beveren et al., 2019; Zimmermann & Iwanski, 2014) and cognitive-behavioral dimension (Adrian et al., 2019; Garnefski et al., 2001; Kraaij & Garnefski, 2019; Larsen, 2000; Parkinson & Totterdell, 1999), the current study showed that the underlying structure of emotion regulation strategies in adolescence could by reflected by four distinguishable categories.

These four categories of emotion regulation strategies, as measured in response to feelings of anger with both a generalized questionnaire and a contextualized vignette-based measure, were found to be differentially associated with age. As expected, older adolescents reported using more cognitive maladaptive and cognitive adaptive regulation strategies whereas younger adolescents reported using more behavioral maladaptive regulation strategies. Contrary to our expectations, however, older adolescents also reported using more behavioral adaptive regulation strategies. Thus, there seemed to be a discrepancy in the association between age and cognitive versus behavioral regulation strategies, which highlights the need to separate cognitive and behavioral regulation processes during the developmental period of adolescence. Regarding cognitive strategies, the findings of the current study seem to fit with a *"cognitive maturation model"*, implying that the positive association between age and cognitive regulation is an outcome of general maturation in cognitive skills during adolescence (Steinberg, 2005), in which both cognitive adaptive and maladaptive strategies are reported less often by early than late adolescents (Garnefski & Kraaij, 2006). Regarding behavioral strategies, the current study's findings are consistent with a *"general maturation model"*, with expanding repertoires of adaptive strategies, and attenuating repertoires of maladaptive strategies (Cracco et al., 2017; Kovacs et al., 2019). It should be noted, however, that the cross-sectional design of the current study might have obscured developmental transitions. Moreover, the findings of this study are restricted to the developmental stage of adolescence whereas the development and functionality of specific emotion regulation strategies may be different in childhood or adulthood. In childhood, parental socialization may particularly impact the development of (behavioral) regulation strategies (Zeman et al., 2006). A comparison of meta-analytic research focusing on adolescence (Schäfer et al., 2017) and adulthood (Aldao et al., 2010) furthermore suggests that the functionality of specific (cognitive) regulation strategies (i.e., acceptance, rumination) is different in youth compared to adults. Future research could build on these findings using a longitudinal design to examine the development and change in the use of the four categories of emotion regulation strategies across developmental stages.

The current study found gender differences in the four categories of regulation strategies. As expected, girls reported using more cognitive maladaptive and adaptive regulation strategies in response to feelings of anger than boys. This finding is consistent with research demonstrating that adolescent girls use more cognitive regulation strategies (e.g., rumination) than boys (Jose & Brown, 2008). However, the current study also found that boys used more contextualized behavioral maladaptive and generalized behavioral adaptive strategies than girls. Although previous research among adolescents did not directly examine gender differences in behavioral regulation strategies, this finding is in contrast to research among adults showing that women report higher degrees of almost all types of emotion regulation strategies than men (Tamres et al., 2002). However, in that body of research, regulation strategies were primarily cognitive in nature, and behavioral regulation strategies were rarely assessed. Thus, disentangling cognitive and behavioral strategies may provide a more nuanced picture of gender differences in emotion regulation strategies.

The four categories of regulation strategies were also found to differentiate adolescents on the basis of type of psychological problems. Specifically, adolescents with internalizing symptoms were found to regulate

feelings of anger with a "*cognitive regulation style*" whereas adolescents with externalizing symptoms use a "*behavioral regulation style*". At the same time, adolescents with comorbid internalizing and externalizing symptoms reported using a mixed "*maladaptive regulation style*", and adolescents who did not experience clinical levels of these symptoms reported using a mixed "*adaptive regulation style*". These results are in accordance with research demonstrating that adolescents with internalizing problems employ a variety of cognitive maladaptive strategies (Garnefski et al., 2005; van den Heuvel et al., 2020) and that in adolescence, cognitive strategies (i.e., rumination) might be critically important for internalizing problems (Schäfer et al., 2017). Moreover, children with externalizing problems have been characterized by low levels of behavioral control and high levels of impulsivity (Eisenberg et al., 2001), thus highlighting the role of behavioral predictors of externalizing problems. Lastly, adolescents with an adaptive anger regulation profile experience relatively few internalizing and externalizing problems (Otterpohl et al., 2016). Thus, the current study provides evidence for the importance of using an integrated classification system of assessing anger regulation strategies given that four psychological problem-related profiles of regulation strategies can be distinguished.

Contrary to our hypotheses, the current study found that adolescents with internalizing problems not only reported using high levels of cognitive maladaptive strategies, but also high levels of cognitive *adaptive* strategies. This unexpected finding might indicate that adolescents with internalizing symptoms tend to *overregulate* their feelings. This interpretation builds on research showing that a multiple regulation profile (high maladaptive and adaptive strategies), is primarily associated with internalizing problems (Otterpohl et al., 2016), and that up until mid-adolescence, depressed children report a larger repertoire of (cognitive) adaptive strategies than their non-depressed peers (Kovacs et al., 2019). At the same time, this finding also highlights the *cognitive* nature of internalizing psychological problems, consistent with Beck's (1967) model of depression. Thus, adolescents with internalizing symptoms do not only experience specific cognitive functioning (Wagner et al., 2015) and cognitive processing distortions (Epkins, 2010), but also seem to manage anger in a cognitive, overregulated way. The current study examined, however, relative differences (i.e., mean-score) among the four categories of emotion regulation strategies, rather than absolute differences (i.e., total-score). Future research could build on these findings, and examine whether the total number of cognitive strategies that adolescents with internalizing problems have at their disposal is also larger in comparison to adolescents who do not experience internalizing problems.

It should be noted that labeling strategies as adaptive or maladaptive can be somewhat misleading, given that adaptive strategies might also be related to increased, rather than decreased, risks for internalizing psychological problems. This labeling problem has been identified previously, as no psychological process is inherently always adaptive (Moretti et al., 1985; Thompson, 2019). Moreover, social and cultural expectations may influence the adaptiveness of regulation strategies (Butler et al., 2007). In non-western cultures, specific regulation strategies (i.e., suppression) might, for example, enhance, rather than decrease, the degree to which individuals are able to successfully function in their environment. According to Aldao (2013), it is critical to capture the context in which emotion regulation strategies are used. The results of the current study illustrate that both the generalized and contextualized use of adaptive strategies might not only be associated with positive outcomes, but also with negative outcomes. This indicates that, even though the conceptual distinction between adaptive and maladaptive strategies remains relevant, the labels may need qualifying.

In addition, the results of the current study highlight the importance of measuring both generalized and contextualized emotion regulation strategies. Overall, generalized strategies were positively associated with the corresponding contextualized strategies, which is consistent with research showing that the habitual use of an emotion regulation strategy predicts the use of this strategy in specific situations (Peters et al., 2020). However, the current study also found differences between the two measurement approaches. First, the associations between generalized and contextualized strategies appeared to be weaker for behavioral strategies than for cognitive strategies. Second, boys reported using more behavioral maladaptive strategies in specific situations than girls whereas the general use of these strategies was endorsed more by girls than boys. An explanation for these measurement approach differences might be that behavioral (maladaptive) strategies are more context-dependent than cognitive strategies. Therefore, it appears

to be especially important to focus not only on the habitual, but also on context-specific use of regulation strategies for researchers or clinicians who aim to measure the use of behavioral regulation strategies. Third, adolescents who experienced both internalizing and externalizing problems scored higher on generalized cognitive maladaptive strategies than adolescents with only externalizing or no clinical levels of problems, but these differences were not found for the reported use of these strategies in specific situations. As the generalized measure examined the emotion regulation strategies that individuals habitually use relatively consistently across time and context, it is possible that this difference in measurement approaches is a reflection of the inability of adolescents with comorbid psychological problems to flexibly adjust their strategy use to specific contexts. This explanation is consistent with the notion that it is not the ability to use specific emotion regulation strategies, but the flexibility in adapting one's regulatory responses across different situations that is particularly important for psychological well-being (Aldao et al., 2015).

4.1 | Strengths and limitations

One of the unique aspects of this study was the use of two different emotion regulation measures, which enabled us to examine both the generalized, habitual use of emotion regulation strategies and the contextualized, situational use of these strategies. Using these two measurement approaches (questionnaires and vignettes) also enabled us to replicate some of our findings. In addition, we specifically focused on adolescence, which is a developmental period that has received considerably less empirical attention in the emotion regulation literature than other age groups (Klimes-Dougan & Zeman, 2007). Adolescence is an important period for cognitive-emotional development (Steinberg, 2005) and an age at which youth are specifically at-risk for developing psychological problems that may persist into and through adulthood (Kessler et al., 2005). Thus, the findings from this study help to illuminate important facets of emotion regulation that are associated with psychosocial adaptation during an important developmental period.

The findings must, however, be interpreted with limitations in mind. The current study only examined emotion regulation strategies in response to feelings of anger. Although emotion regulation is characterized by emotion-specificity (Zeman et al., 2019) , future research should examine if these findings can be generalized to other emotions, because inclusion of other types of negative emotions (e.g., sadness, fear) may provide a more nuanced understanding of emotion-regulation profiles. Another limitation is that the questionnaire that measured generalized emotion regulation strategies was not specifically designed to distinguish cognitive and behavioral strategies. Some categories consisted of relatively few items (e.g., three items for the cognitive maladaptive category), which could have led to low internal consistency. As such, differences in generalized cognitive maladaptive strategy use should be interpreted with caution. Besides, the evaluation of psychopathology and emotion regulation was based solely on self-report. Although this method may be the most appropriate for measuring internal constructs such as internalizing psychological problems and cognitive regulation strategies (Moretti et al., 1985), this single-reporter approach could have resulted in shared method variance. In addition, there appeared to be conceptual overlap between some items from the emotion regulation and psychological problem questionnaires. For example, "*aggressive actions*" and "*withdrawal*" were included as behavioral maladaptive strategies in the generalized emotion regulation questionnaire whereas these items also tap into aspects of externalizing (i.e., aggressive behavior) and internalizing problems (i.e., depressive symptoms). We share this shortcoming with several other studies that examine associations between regulation strategies and psychological problems, as most measures of emotion regulation include aspects such as direct expression of negative emotionality (Eisenberg et al., 2001). Nevertheless, this conceptual overlap is problematic, as this could result in overestimation of associations between emotion regulation and psychological problems. Lastly, the sample consisted of a disproportionate share of higher educated adolescents in relation to the general population, and information about SES or other indicators of sample representativeness were not available. This may limit the generalizability of our findings to less educated samples.

4.2 | Conclusion and clinical implications

In conclusion, the results from this study empirically demonstrate that both cognitive and behavioral strategies that adolescents use to regulate feelings of anger, are used in adaptive and maladaptive ways. As such, emotion researchers and practitioners might also need to take possible differences between these regulation processes into account. Moreover, the finding that adolescents with internalizing symptoms use a cognitive regulation style whereas adolescents with externalizing symptoms use a behavioral regulation style, might have implications for the treatment and possible prevention of the emotional aspects that are present in adolescent psychological problems. For example, incorporating the knowledge learned from this study into aspects of transdiagnostic treatments seems promising. The current findings suggest that for adolescents who experience specific internalizing or externalizing symptoms, a focus on either cognitive or behavioral emotion regulation might be more effective than a combined treatment. Thus, aligning treatment with the symptom-specific regulation styles of adolescents, might possibly be a way to individualize transdiagnostic treatments.

ORCID

Lysanne W. te Brinke 🆔 https://orcid.org/0000-0001-6182-6920

ENDNOTE

[1] In the general population, approximately 47.5% of high school students follow a higher general education or pre-university track (CBS, 2018).

REFERENCES

Achenbach, T. M. (1966). The classification of children's psychiatric symptoms: A factor-analytic study. *Psychological Monographs*, *80*, 1–37. https://doi.org/10.1037/h0093906

Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA school-age forms & profiles: An integrated system of multi-informant assessment*. University of Vermont.

Adrian, M., Jenness, J. L., Kuehn, K. S., Smith, M. R., & McLaughlin, K. A. (2019). Emotion regulation processes linking peer victimization to anxiety and depression symptoms in adolescence. *Development and Psychopathology*, *31*, 999–1009. https://doi.org/10.1017/S0954579419000543

Aldao, A. (2013). The future of emotion regulation research: Capturing context. *Perspectives on Psychological Science*, *8*, 155–172. https://doi.org/10.1177/1745691612459518

Aldao, A., Gee, D. G., De Los Reyes, A., & Seager, I. (2016). Emotion regulation as a transdiagnostic factor in the development of internalizing and externalizing psychopathology: Current and future directions. *Development and Psychopathology*, *28*, 927–946. https://doi.org/10.1017/S0954579416000638

Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review*, *30*, 217–237. https://doi.org/10.1016/j.cpr.2009.11.004

Aldao, A., Sheppes, G., & Gross, J. J. (2015). Emotion regulation flexibility. *Cognitive Therapy and Research*, *39*, 263–278. https://doi.org/10.1007/s10608-014-9662-4

Beauchaine, T. P., & Cicchetti, D. (2019). Emotion dysregulation and emerging psychopathology: A transdiagnostic, transdisciplinary perspective. *Development and Psychopathology*, *31*, 799–804. https://doi.org/10.1017/S095457941 9000671

Beck, A. T. (1967). *Depression: Clinical, experimental, and theoretical aspects*. Harper & Row.

Berking, M., & Lukas, C. A. (2015). The Affect Regulation Training (ART): A transdiagnostic approach to the prevention and treatment of mental disorders. *Current Opinion in Psychology*, *3*, 64–69. https://doi.org/10.1016/j.copsyc.2015.02.002

Bridges, L. J., Denham, S. A., & Ganiban, J. M. (2004). Definitional issues in emotion regulation research. *Child Development*, *75*, 340–345. https://doi.org/10.1111/j.1467-8624.2004.00675.x

Brown, T. A., & Moore, M. T. (2012). Confirmatory factor analysis. In R. H. Hoyle (Ed.), *Handbook of structural equation modeling* (pp. 361–379). The Guilford Press.

Butler, E. A., Lee, T. L., & Gross, J. J. (2007). Emotion regulation and culture: Are the social consequences of emotion suppression culture-specific? *Emotion*, *7*, 30–48. https://doi.org/10.1037/1528-3542.7.1.30

CBS. (2018). *Cijfers—Onderwijs [Numbers—Education]*. https://longreads.cbs.nl/trends18/maatschappij/cijfers/onderwijs/

Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling*, *14*, 464–504. https://doi.org/10.1080/10705510701301834

Cole, P. M., Marin, S. E., & Dennis, T. A. (2004). Emotion regulation as a scientific construct: Methodological challenges for child development research. *Child Development*, *75*, 317–333. https://doi.org/10.1111/j.1467-8624.2004.00673.x

Cole, P. M., Ramsook, K. A., & Ram, N. (2019). Emotion dysregulation as a dynamic process. *Development and Psychopathology*, *31*, 1191–1201. https://doi.org/10.1017/S0954579419000695

Cracco, E., Goossens, L., & Braet, C. (2017). Emotion regulation across childhood and adolescence: Evidence for a maladaptive shift in adolescence. *European Child & Adolescent Psychiatry*, *26*, 909–921. https://doi.org/10.1007/s0078 7-017-0952-8

Cracco, E., van Durme, K., & Braet, C. (2015). Validation of the FEEL-KJ: An instrument to measure emotion regulation strategies in children and adolescents. *PLoS ONE*, *10*, 1–18. https://doi.org/10.1371/journal.pone.0137080

Eisenberg, N., Cumberland, A., Spinrad, T. L., Fabes, R. A., Shepard, S. A., Reiser, M., Murphy, B. C., Losoya, S. H., & Guthrie, I. K. (2001). The relations of regulation and emotionality to children's externalizing and internalizing problem behavior. *Child Development*, *72*, 1112–1134. https://doi.org/10.1111/1467-8624.00337

Eisenberg, N., & Morris, A. S. (2002). Children's emotion related regulation. In H. Reese & R. Kail (Eds.), *Advances in child development and behavior* (Vol. *30*). Academic Press.

Epkins, C. C. (2010). Cognitive specificity in internalizing and externalizing problems in community and clinic-referred children. *Journal of Clinical Child Psychology*, *29*, 199–208. https://doi.org/10.1207/S15374424jccp2902

Garnefski, N., & Kraaij, V. (2006). Relationships between cognitive emotion regulation strategies and depressive symptoms: A comparative study of five specific samples. *Personality and Individual Differences*, *40*, 1659–1669. https://doi.org/10.1016/j.paid.2005.12.009

Garnefski, N., Kraaij, V., & Spinhoven, P. (2001). Negative life events, cognitive emotion regulation and emotional problems. *Personality and Individual Differences*, *30*, 1311–1327. https://doi.org/10.1016/S0191-8869(00)00113-6

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. https://doi.org/10.1016/j.adolescence.2004.12.009

Grob, A., & Smolenski, C. (2009). *Fragebogen zur Erhebung der Emotionsregulation bei Kindern und Jugendlichen (FEEL-KJ) [Questionnaire for the measurement of emotion regulation in children and adolescents]*. Huber.

Grommisch, G., Koval, P., Hinton, J. D. X., Gleeson, J., Hollenstein, T., Kuppens, P., & Lischetzke, T. (2020). Modeling individual differences in emotion regulation repertoire in daily life with multilevel latent profile analysis. *Emotion*, *20*, 1462–1474. https://doi.org/10.1037/emo0000669

Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology*, *2*, 271–299. https://doi.org/10.1017/S0048577201393198

Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry*, *26*, 1–26. https://doi.org/10.1080/1047840X.2014.940781

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, *85*, 348–362. https://doi.org/10.1037/0022-3514.85.2.348

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. https://doi.org/10.1111/j.1469-7610.2009.02183.x

Hair, J. F., Anderson, R. E., Tantham, R. L., & Black, W. C. (1995). *Multivariate data analysis with readings*. Prentice Hall.

Harmon, S. L., Stephens, H. F., Repper, K. K., Driscoll, K. A., & Kistner, J. A. (2019). Children's rumination to sadness and anger: Implications for the development of depression and aggression. *Journal of Clinical Child and Adolescent Psychology*, 48, 622–632. https://doi.org/10.1080/15374416.2017.1359788

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55. https://doi.org/10.1080/10705519909540118

Jose, P. E., & Brown, I. (2008). When does the gender difference in rumination begin? Gender and age differences in the use of rumination by adolescents. *Journal of Youth and Adolescence*, 37, 180–192. https://doi.org/10.1007/s10964-006-9166-y

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey replication. *Archives of General Psychiatry*, 62, 593–768. https://doi.org/10.1001/archpsyc.62.6.593

Klimes-Dougan, B., & Zeman, J. (2007). Introduction to the special issue of social development: Emotion socialization in childhood and adolescence. *Social Development*, 16, 203–209. https://doi.org/10.1111/j.1467-9507.2007.00380.x

Kopp, C. B. (1989). Regulation of distress and negative emotions: A developmental view. *Developmental Psychology*, 25, 343–354. https://doi.org/10.1037/0012-1649.25.3.343

Kovacs, M., Lopez-Duran, N. L., George, C., Mayer, L., Baji, L., Kiss, E., Vetró, Á., & Kapornai, K. (2019). The development of mood repair response repertoires: I. Age-related changes among 7- to 14-year-old depressed and control children and adolescents. *Journal of Clinical Child and Adolescent Psychology*, 48, 143–152. https://doi.org/10.1080/15374416.2017.1399399

Kraaij, V., & Garnefski, N. (2019). The Behavioral Emotion Regulation Questionnaire: Development, psychometric properties and relationships with emotional problems and the Cognitive Emotion Regulation Questionnaire. *Personality and Individual Differences*, 137, 56–61. https://doi.org/10.1016/j.paid.2018.07.036

Larsen, R. J. (2000). Toward a science of mood regulation. *Psychological Inquiry*, 11, 129–141. https://doi.org/10.1207/s15327965pli1103_01

Lennarz, H. K., Hollenstein, T., Lichtwarck-Aschoff, A., Kuntsche, E., & Granic, I. (2019). Emotion regulation in action: Use, selection, and success of emotion regulation in adolescents' daily lives. *International Journal of Behavioral Development*, 43, 1–11. https://doi.org/10.1177/0165025418755540

Loevaas, M. E. S., Sund, A. M., Lydersen, S., Neumer, S.-P., Martinsen, K., Holen, S., Patras, J., Adolfsen, F., & Reinfjell, T. (2019). Does the transdiagnostic EMOTION intervention improve emotion regulation skills in children? *Journal of Child and Family Studies*, 28, 805–813. https://doi.org/10.1007/s10826-018-01324-1

Marchette, L. K., & Weisz, J. R. (2017). Practitioner review: Empirical evolution of youth psychotherapy toward transdiagnostic approaches. *Journal of Child Psychology and Psychiatry*, 58, 970–984. https://doi.org/10.1111/jcpp.12747

Matthys, W., Maassen, G. H., Cuperus, J. M., & van Engeland, H. (2001). The assessment of the situational specificity of children's problem behaviour in peer-peer context. *Journal of Child Psychology and Psychiatry*, 42, 413–420. https://doi.org/10.1017/S002196300100703X

Merikangas, K. R., He, J.-P., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., Benjet, C., Georgiades, K., & Swendsen, J. (2010). Lifetime prevalence of mental disorders in US adolescents: Results from the National Comorbidity Survey Replication-Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, 49, 980–989. https://doi.org/10.1016/j.jaac.2010.05.017

Moretti, M. M., Fine, S., Haley, G., & Marriage, M. B. (1985). Childhood and adolescent depression: Child-report versus parent-report information. *Journal of the American Academy of Child Psychiatry*, 24, 298–302. https://doi.org/10.1016/S0002-7138(09)61090-6

Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide* (8th ed.). Author.

Naragon-Gainey, K., McMahon, T. P., & Chacko, T. P. (2017). The structure of common emotion regulation strategies: A meta-analytic examination. *Psychological Bulletin*, 143, 384–427. https://doi.org/10.1037/bul0000093

Nolen-Hoeksema, S. K. (2012). Emotion regulation and psychopathology: The role of gender. *Annual Review of Clinical Psychology*, 8, 161–187. https://doi.org/10.1146/annurev-clinpsy-032511-143109

Otterpohl, N., Schwinger, M., & Wild, E. (2016). Exploring the interplay of adaptive and maladaptive strategies: Prevalence and functionality of anger regulation profiles in early adolescence. *The Journal of Early Adolescence*, 36, 1042–1069. https://doi.org/10.1177/0272431615593174

Parkinson, B., & Totterdell, P. (1999). Classifying affect-regulation strategies. *Cognition & Emotion*, 13, 277–303. https://doi.org/10.1080/026999399379285

Peters, B. J., Overall, N. C., Cameron, L. D., Hammond, M. D., Low, R. S. T., & Girme, Y. U. (2020). Do habitual emotional suppression measures predict response-focused situational suppression during social interactions? *Emotion*, 20, 1005–1019. https://doi.org/10.1037/emo0000620

Roberton, T., Daffern, M., & Bucks, R. S. (2012). Emotion regulation and aggression. *Aggression and Violent Behavior*, 17, 72–82. https://doi.org/10.1016/j.avb.2011.09.006

Rude, S. S., & Rehm, L. P. (1991). Response to treatments for depression: The role of initial status on targeted cognitive and behavioral skills. *Clinical Psychology Review*, *11*, 493–514. https://doi.org/10.1016/0272-7358(91)90001-B

Schäfer, J. Ö., Naumann, E., Holmes, E. A., Tuschen-Caffier, B., & Samson, A. C. (2017). Emotion regulation strategies in depressive and anxiety symptoms in youth: A meta-analytic review. *Journal of Youth and Adolescence*, *46*, 261–276. https://doi.org/10.1007/s10964-016-0585-0

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. https://doi.org/10.1046/j.1467-8624.2003.00643.x

Silvers, J. A., McRae, K., Gabrieli, J. D. E., Gross, J. J., Remy, K. A., & Ochsner, K. N. (2012). Age-related differences in emotional reactivity, regulation, and rejection sensitivity in adolescence. *Emotion*, *12*, 1235–1247. https://doi.org/10.1037/a0028297

Steinberg, L. (2005). Cognitive and affective development in adolescence. *Trends in Cognitive Sciences*, *9*, 69–74. https://doi.org/10.1016/j.tics.2004.12.005

Tamres, L. K., Janicki, D., & Helgeson, V. S. (2002). Sex differences in coping behavior: A meta-analytic review. *Personality and Social Psychology Review*, *6*, 2–30. https://doi.org/10.1207/s15327957pspr0601_1

te Brinke, L. W., Schuiringa, H. D., Menting, A. T. A., Deković, M., & De Castro, B. O. (2018). A cognitive versus behavioral approach to emotion regulation training for externalizing behavior problems in adolescence: Study protocol of a randomized controlled trial. *BMC Psychology*, *6*, 1–12. https://doi.org/10.1186/s40359-018-0261-0

Thompson, R. A. (2019). Emotion dysregulation: A theme in search of definition. *Development and Psychopathology*, *31*, 805–815. https://doi.org/10.1017/S0954579419000282

van Beveren, M. L., Mueller, S. C., & Braet, C. (2019). Emotion dysregulation, temperamental vulnerability, and parental depression in adolescents: Correspondence between physiological and informant-report measures. *Development and Psychopathology*, *31*, 1023–1035. https://doi.org/10.1017/S0954579419000567

van den Heuvel, M. W. H., Stikkelbroek, Y. A. J., Bodden, D. H. M., & van Baar, A. L. (2020). Coping with stressful life events: Cognitive emotion regulation profiles and depressive symptoms in adolescents. *Development and Psychopathology*, *32*, 985–995. https://doi.org/10.1017/s0954579419000920

Verhulst, F. C., & van der Ende, J. (2001). *Handleiding voor de CBCL/6-18, YSR en TRF [Dutch manual for CBCL/6-18, YSR, and TRF]*. Erasmus Universiteit Rotterdam, Sophia Kinderziekenhuis.

Wagner, S., Müller, C., Helmreich, I., Huss, M., & Tadić, A. (2015). A meta-analysis of cognitive functions in children and adolescents with major depressive disorder. *European Child and Adolescent Psychiatry*, *24*, 5–19. https://doi.org/10.1007/s00787-014-0559-2

Whitesell, N. R., Robinson, N. S., & Harter, S. (1993). Coping with anger-provoking situations: Young adolescents' theories of strategy use and effectiveness. *Journal of Applied Developmental Psychology*, *14*, 521–545. https://doi.org/10.1016/0193-3973(93)90005-G

Zeman, J., Cameron, M., & Price, N. (2019). Sadness in childhood and adolescence: Experience, socialization, and regulation. In V. LoBue, K. Perez-Edgar, & K. Buss (Eds.), *Handbook of emotional development* (pp. 227–256). Springer.

Zeman, J., Cassano, M., Perry-Parrish, C., & Stegall, S. (2006). Emotion regulation in children and adolescents. *Journal of Developmental & Behavioral Pediatrics*, *27*, 155–168. https://doi.org/10.1097/00004703-200604000-00014

Zeman, J., Klimes-Dougan, B., Cassano, M., & Adrian, M. (2007). Measurement issues in emotion research with children and adolescents. *Clinical Psychology: Science and Practice*, *14*, 377–401. https://doi.org/10.1111/j.1468-2850.2007.00098.x

Zeman, J., Shipman, K., & Suveg, C. (2002). Anger and sadness regulation: Predictions to internalizing and externalizing symptoms in children. *Journal of Clinical Child and Adolescent Psychology*, *31*, 393–398. https://doi.org/10.1207/S15374424JCCP3103

Zimmermann, P., & Iwanski, A. (2014). Emotion regulation from early adolescence to emerging adulthood and middle adulthood: Age differences, gender differences, and emotion-specific developmental variations. *International Journal of Behavioral Development*, *38*, 182–194. https://doi.org/10.1177/0165025413515405

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

Table S1