Child & Youth Care Forum
https://doi.org/10.1007/s10566-022-09685-x

ORIGINAL PAPER

The interplay between expressive suppression, emotional self-efficacy and internalizing behavior in middle adolescence

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Accepted: 22 February 2022

Abstract

Background Maladaptive emotion regulation strategies are predictive of negative outcomes in adolescence which, in turn, may impact on later well-being.

Objective The current study aimed at testing the moderating role of emotional self-efficacy on the relation between expressive suppression and the engagement in internalizing behavior, controlling for gender effect.

Method A total of 526 adolescents (M_{age} = 14.7 years, age range = 14–17 years) filled out self-report questionnaires evaluating expressive suppression, emotional regulatory self-efficacy, and internalizing behavior, respectively.

Results Suppressors with lower positive emotion self-efficacy were more likely to engage in internalizing behavior than suppressors with higher positive emotion self-efficacy.

Conclusions Despite several limitations, the study provided preliminary insights on the role played by emotional self-efficacy in the relation between expressive suppression and internalizing behavior in middle adolescence.

Keywords Expressive suppression · Emotional self-efficacy · Internalizing behavior · Emotion regulation · Adolescence

Introduction

Adolescence is the period of gradual transition from childhood to adulthood characterized by extensive changes in neurological, physical, social and emotional domains (Meeus,

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Published online: 23 March 2022

2019). From a neurological point of view, the brain undergoes structural changes involving regions and systems that are considered pivotal for the regulation of behavior and emotion, and for the perception and evaluation of risk and reward (Steinberg, 2005). From a physical point of view, body changes which begin during puberty continue into adolescence (e.g. increases in height, the development of secondary sexual characteristics), inspiring curiosity but also anxiety among teens (Dahl, Allen, Wilbrecht, & Suleiman, 2018). From a social-emotional point of view, the reliance on parents for support decreases, while that on peer group gradually increases (for a review, see Roach, 2018).

Interestingly, these profound changes can trigger vulnerability for teens, including mental health problems (Pace, D'Urso, & Zappulla, 2019; Passanisi, Craparo, & Pace, 2017; Steinberg, 2005). As estimated by the World Health Organization (2020), up to 50% of mental health conditions appear before the age of 14 years, with suicide representing one of the three leading causes of death among older adolescents. Worrisomely, findings from Youth Risk Behavior Survey (Centers for Disease Control and Prevention, 2019) revealed an approximately 10-point increase in the percentage of American high school students who experienced persistent feelings of sadness or hopelessness from 2009 to 2019.

Suicidal ideation, shyness, somatic complaints, withdrawal, anxiety, and depression are broadly clustered into internalizing behavior (Bongers, Koot, van der Ende, & Verhulst, 2003). Although biological origins have been widely recognized as a basis for understanding the development of internalizing behavior, there is a growing interest in the role played by environmental factors (e.g., transmission via modeling process) in interaction with genetics (for a meta-analysis, see Ahmadzadeh et al., 2021).

With a few exceptions in some studies documenting decreases (Hatoum, Rhee, Corley, Hewitt, & Friedman, 2018) or stability over time (Sirin et al., 2015), internalizing behavior tends to increase during adolescence (Maciejewski, van Lier, Branje, Meeus, & Koot, 2017), showing a peak in mid-to-late adolescence (Petersen et al., 2018).

Emotion regulation and internalizing behavior in adolescence

Emotion regulation refers to the ability to manage one's own emotional response and "encompasses up- and down-regulation of positive and negative emotions in accordance with regulation-related goals" (McRae & Gross, 2020, p. 1). In adolescence, emotions – particularly negative emotional states – tend to become more frequent, intense and highly volatile compared to those observed in adulthood, resulting in a reduced efficacy in their regulation (Somerville, Jones, & Casey, 2010). If on one hand adolescents are required to manage highly emotional situations, such as school pressures, on the other hand circuitries implicated in emotional processes – prefrontal cortex, striatum and amygdala – are yet involved in a profound maturation. Specifically, the imbalance between faster changes of subcortical regions and a slower maturation of frontal cortical brain areas in adolescence contribute to heightened vulnerability to risk-taking and problems in regulation of emotion and behavior (Andrews, Ahmed, & Blakemore, 2021; Crone & Dahl, 2012).

Researchers have identified and described different emotion regulation strategies in adolescence, encompassing reappraisal, rumination, suppression, concealing, adjusting, and distraction (Lougheed & Hollenstein, 2012; McRae & Gross, 2020). One way to classify emotion regulation strategies is based on antecedent and response (John & Gross, 2004). An

antecedent-focused strategy intervenes before the complete activation of emotion response has been generated. An example of antecedent-focused strategy is cognitive reappraisal, which is commonly defined as the attempt to attribute a different meaning at an emotion-eliciting event, thus changing its emotional impact. Conversely, expressive suppression is considered a response-focused strategy because it is active when emotion is already underway and after emotion response tendencies (e.g., behavioral, experiential and physiological responses) have already been generated. Specifically, expressive suppression refers to the attempt to inhibit or silence ongoing emotion-expressive behavior, only modifying the behavioral aspect of emotion response and without reducing the emotion experience in terms of subjective sufferance and physiological activation (e.g., increase in cardiac and electrodermal activity). Hence, negative emotions continue to persist, although their behavioral expression is suppressed. Consequently, individuals engaging in expressive suppression have to effortfully manage emotion response tendencies that continually come into view, requiring them great efforts with negative effects on their social functioning (Cutuli, 2014; John & Gross, 2004).

Emotion regulation is considered a transdiagnostic risk factor in the development of internalizing behavior in adolescence (Brenning, Soenens, Vansteenkiste, De Clercq, & Antrop, 2021). With a few exceptions (Lougheed & Hollenstein, 2012), research has focused on the impact of a specific emotion regulation strategy on internalizing spectrum disorders. The role of rumination on internalizing behavior in youth, particularly on depression and anxiety symptoms, had been clearly identified; by contrast, the role of expressive suppression has appeared less clear (for a meta-analysis, see Schäfer, Naumann, Holmes, Tuschen-Caffier, & Samson, 2017). Whether some studies documented the association between the habitual use of expressive suppression and internalizing behavior (Eastabrook, Flynn, & Hollenstein, 2014; Laghi, Lonigro, Pallini, & Baiocco, 2018; Zahniser & Conley, 2018), other studies failed in demonstrating such association (Brenning et al., 2020; Shapero, Abramson, & Alloy, 2016).

Regulatory emotional self-efficacy and internalizing behavior in adolescence

Beyond emotion regulation strategies, self-efficacy has been found to be a protective factor against maladjustment in adolescence (Caprara et al., 2008). As theorized by Bandura (2001) in social learning theory, self-efficacy refers to beliefs that people hold on their own ability to manage and control events that affect their life. Far from being a static concept, self-efficacy is dynamically built in the interaction with environment. The levels of satisfaction derived from daily activities impact on the sense of mastery – self-efficacy – thus influencing levels of effort, vulnerability to stress and perseverance for similar activities in the future (Bandura, 2001).

Regulatory emotional self-efficacy is a specific aspect of self-efficacy and entails subjective self-appraisal of one's own emotional competence in emotion regulation (Caprara et al., 2008). Theoretically speaking, emotional self-efficacy positively contributes to social engagement, and predicts the amount of efforts, perseverance and resilience towards adversity. However, these issues have been poorly examined from an empirical perspective. Studies with adolescents confirmed that emotional self-efficacy, particularly dealing with

negative emotions, is negatively associated with internalizing symptoms, firstly anxiety and depression, and shield them from the development of emotional problems (Alessandri, Vecchione, & Caprara, 2015; Caprara, Steca, Cervone, & Artistico, 2006; Muris, Mayer, Reinders, & Wesenhagen, 2011). Recently, Calandri, Graziano, Cattellino, and Testa (2021) confirmed that low emotional self-efficacy is related to higher loneliness and depressive symptoms in a group of early adolescents.

Objective of the study

To date, the relation between expressive suppression and internalizing behavior in adolescence is far from being fully conclusive. Perhaps, the identification of moderators can contribute to further understand this relation. In the current study, we focused on the moderator role of regulatory emotional self-efficacy. Recent studies (Alessandri et al., 2015; Calandri et al., 2021; Caprara et al., 2003) demonstrated that regulatory emotional self-efficacy plays a significant role on internalizing behavior. Hence, we were interested in verifying whether negative emotion self-efficacy (NE self-efficacy) and positive emotion self-efficacy (PE self-efficacy) could act as moderators between expressive suppression and the engagement in internalizing behavior, controlling for gender effect. In light of what past studies already demonstrated (as described before), it was hypothesized that expressive suppression would positively predict internalizing behavior. Moreover, perceived difficulties in emotion regulation – regulatory emotional self-efficacy – were expected to have an enhancing effect on the relation between expressive suppression and internalizing behavior.

Method

Participants and settings

The final sample was constituted by 526 adolescents (208 girls; mean age = 14.7 years; SD = 0.82 years; age range = 14–17 years). They attended the first (n = 354) and the second (n = 172) grades of two high schools in a middle-class district of Rome (Italy), which previously collaborated with us. Adolescents spoke Italian as their first language and none of them, as referred by teachers, had deficits in cognition, language, and learning nor were receiving special education program. Racial and/or ethnic information was not collected.

Procedure

An overview of the research topic was sent to the principals of the schools and, if they were agreed, we sent an information sheet containing research project and consent form to parents. The total pool before consents were signed comprised 600 students. Once written parental consent was received, adolescents who orally expressed their willingness at participating were enrolled in the study (n = 531). A single testing session occurred, lasting about 40 min. Adolescents collectively filled out paper-and-pencil questionnaires in their own

classroom. This study and its procedures were approved by the Ethics Committee of Department of Developmental and Social Psychology, Sapienza University of Rome.

Measures

Expressive suppression. The Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) consists of ten items evaluating Cognitive reappraisal and Expressive suppression. Considering the topic of the current study, we focused only on expressive suppression (e.g. *"When I am feeling negative emotions, I make sure not to express them"*). This dimension is assessed by 4 items on a Likert scale ranging from 1 to 5, following the recommendation suggested by Gullone and Taffe (2012). Cronbach's value for Expressive suppression was acceptable (α = 0.60).

Regulatory emotional self-efficacy. The scale labelled Regulatory Emotional Self-Efficacy (RESE; Caprara & Gerbino, 2001; Caprara et al., 2008) assesses beliefs relating to the perceived ability to regulate different emotions. Eight items measure one's own perceived capability to regulate negative emotions, such as anger, provocation, and rejection, and to control worry or anxiety when wrong experiences occur (e.g. *""How well can you get over irritation quickly for wrongs you have experienced?"*). The remaining seven items evaluate the one's own perceived ability to express positive emotions, such as enjoyment, enthusiasm and satisfaction after personal achievements (e.g. *""How well can you express joy when good things happen to you?"*). Participants are required to rate the strength of their self-efficacy beliefs through a five-point Likert scale, from 1 – *Not well at all* – to 5 – *Very well*. Results of Cronbach's alpha confirmed good internal consistency reliability of the RESE (α = .83 for Positive emotion; α = .80 for Negative emotion).

Internalizing behavior. The Strength and Difficulties Questionnaire (SDQ; Goodman, Meltzer & Bailey, 1998) comprises twenty-five items covering different behavioral and affective problems and sociability. In this study, we focused only on dimensions that allowed us to compute Internalizing behavior, namely emotional symptoms (e.g. *"I get a lot of headaches, stomach-aches or sickness"*) and peer problems (e.g. *"I am usually on my own. I generally play alone or keep to myself"*). Each item is evaluated through a 3-point Likert scale, with responses ranging from 0 – *Not true* – to 2 – *Certainly true*. This instrument holds good psychometric properties (Lonigro, Baiocco, Pallini, & Laghi, 2018; Tobia, Gabriele, & Marzocchi, 2013) and in the current study alpha Cronbach's values for Internalizing behavior confirmed its acceptable internal consistency (α = 0.72).

Statistical analysis

Data were analyzed with SPSS 25 for Windows. Internal consistency reliability was estimated using Cronbach's alpha coefficient. Bivariate correlations among the study variables were carried out using the Pearson product-moment. In order to verify gender-related differences, Student's t test was conducted for each variable, assuming gender as the independent variable (dummy code, 0 for boys and 1 for girls). Finally, a hierarchical multiple regression analysis was performed to test the addictive and interactive effect of emotional regulation strategies, gender and emotional self-efficacy on internalizing behavior. As suggested by Cohen et al. (2002), all variables were centered at their means before entering in the hierar-

chical regression, except for gender. On Step 1, gender was entered to account for potential confounding effects with the main variables of interest in the prediction of internalizing behavior. Expressive suppression and beliefs on emotion regulation were entered in Step 2, whereas the interaction terms were added at Step 3.

Results

Intercorrelation among the study variables

In order to screen outliers, a common method based on z-scores was adopted. All values exceed four standard deviations in absolute value were considered outliers (for details, see Thompson, 2006). Preliminary analyses revealed five outliers, which were excluded from the analyses. According to Curran et al. (1996), the skewness and kurtosis of study variables were within the range proposed (values less than |2| for univariate skewness and kurtosis). Thus, these variables were used for the following analyses. Moreover, the dataset contained no missing data; thus, missing data management was not required.

As shown in Table 1, gender was positively associated with scores on PE self-efficacy and scores on internalizing behavior, whereas it was negatively associated with scores on NE self-efficacy. These results mean that girls had higher rates on internalizing behavior and PE self-efficacy, and lower rates on NE self-efficacy compared to boys. Expressive suppression scores were negatively related to PE self-efficacy and positively correlated with scores on NE self-efficacy and internalizing behavior. PE self-efficacy and NE self-efficacy were positively related each other, and both were negatively associated with internalizing behavior.

Gender differences

Student's t analysis revealed statistically significant gender-related differences on internalizing behavior, $t(524) = -4.946$, $p = .000$, PE self-efficacy, $t(524) = -4.036$, $p = .000$, and NE self-efficacy scores, $t(524) = 3.253$, $p = .001$. Specifically, girls obtained higher mean scores on internalizing behavior and PE self-efficacy compared to boys, who, conversely, obtained higher mean scores on NE self-efficacy. No significant gender difference in the

Table 1 Relations among the Key Study Variables

	1.	2.	3.	4.	5.
1. Gender	-				
2. Expressive suppression	0.04	-			
3. PE Self-efficacy	0.17^{***}	-0.13^{**}	-		
4. NE Self-efficacy	-0.14^{**}	0.12^{**}	0.34^{***}	-	
5. Internalizing behavior	0.21^{***}	0.22^{***}	-0.16^{***}	-0.32^{***}	-
Mean	-	11.26	3.97	2.99	5.80
Standard deviation	-	3.31	0.90	0.85	3.54

Note. PE = Positive Emotion; NE = Negative Emotion. For gender, 0 = Boys; 1 = Girls

$^{*}p < .05$, $^{**}p < .01$; $^{***}p < .001$

scores on Expressive suppression was found, $t(524) = -0.929$, $p = .354$. Descriptive statistics are shown in Table 2.

Predictors of internalizing behavior

Table 3 shows results from hierarchical regression analysis considering internalizing behavior as the outcome variable. The regression at Step 1 was significant ($p < .001$), explaining about 4% of variance. Specifically, gender is a positive predictor of internalizing behavior. The addition of expressive suppression and regulatory emotional self-efficacy at Step 2 significantly and statistically improved the prediction, accounting for 19% of variance ($p < .001$). In details, internalizing behavior was positively predicted by expressive suppression and negatively by NE self-efficacy. Gender remained a significant and positive predictor of the criterion variable. At Step 3, the moderator role of regulatory emotional

Table 2 Means and Standard Deviation on Study Measures by Gender

Measures	Boys		Girls	
	M	SD	M	SD
Expressive Suppression	11.15	3.32	11.43	3.28
PE Self-Efficacy	3.85	0.97	4.17	0.75
NE Self-Efficacy	3.09	0.87	2.85	0.80
Internalizing behavior	5.19	3.29	6.72	3.72

Note. M = Mean; SD = Standard Deviation; PE = Positive Emotion; NE = Negative Emotion

Table 3 Hierarchical Regression Analysis of Variables Predicting Internalizing Behavior

Independent Variables	ΔR^2	*b*	SE	β	t
Step 1	0.04^{***}				
Gender		1.53	0.31	0.21	4.946^{***}
Step 2	0.19^{***}				
Gender		1.22	0.30	0.17	4.102^{***}
Expressive Suppression		0.26	0.04	0.25	6.055^{***}
PE Self-Efficacy		−0.22	0.17	−0.06	-1.281
NE Self-Efficacy		-1.250	0.18	−0.30	-6.91^{***}
Step 3	0.21^{*}				
Gender		1.141	0.30	0.16	3.835^{***}
Expressive Suppression		0.19	0.06	0.18	3.445^{**}
PE Self-Efficacy		−0.210	0.17	−0.05	-1.204
NE Self-Efficacy		-1.30	0.18	−0.31	-7.167^{***}
Gender X Expressive Suppression		0.15	0.09	0.09	1.641
Expressive Suppression X PE Self-Efficacy		−0.12	0.05	−0.12	-2.731^{**}
Expressive Suppression X NE Self-Efficacy		0.09	0.05	0.09	$1.942^{\dagger}$

Note. PE = Positive Emotion; NE = Negative Emotion.

$^{\dagger}p < .06$; $^{*}p < .05$, $^{**}p < .01$; $^{***}p < .001$

self-efficacy was tested. Results showed an increase of the prediction, accounting for about 21% of variance ($p < .05$). The inspection of Step 3 revealed that gender and expressive suppression positively predicted internalizing behavior. Conversely, NE self-efficacy and the interaction term expressive suppression X PE self-efficacy were negative predictors of internalizing behavior[1].

The simple slope analysis revealed that at low levels of PE self-efficacy there was a significant positive relation between expressive suppression and internalizing behavior ($\beta = 0.284$, $p < .001$), whereas at high levels of PE self-efficacy the same relation was not significant ($\beta = 0.078$, $p = .278$). Figure 1 shows the results of the simple slope analysis for PE self-efficacy. In regard to the moderator role of NE self-efficacy, only a trend towards statistical significance was obtained ($p = .053$), thus simple slope analysis was not carried out.

Discussion and conclusions

The aim of the current study was to test the interplay between expressive suppression, regulatory emotional self-efficacy and internalizing behavior. Specifically, we were interested in verifying the moderating role of PE and NE self-efficacy on the relation between expressive suppression and internalizing behavior. Gender was inserted as a control variable because past evidence has demonstrated girls showing higher levels of internalizing behavior compared with boys (Zahn-Waxler, Shirtcliff, & Marceau, 2008). The same result was confirmed in our study.

As expected, expressive suppression positively predicted internalizing behavior. This result is consistent with the findings synthetized in the meta-analysis carried out by Compas and colleagues (2017), in which a greater use of emotional suppression is associated with higher levels of internalizing problems. Interestingly, this association is significant for adolescents, whereas it is not observed among children. The same findings were confirmed and

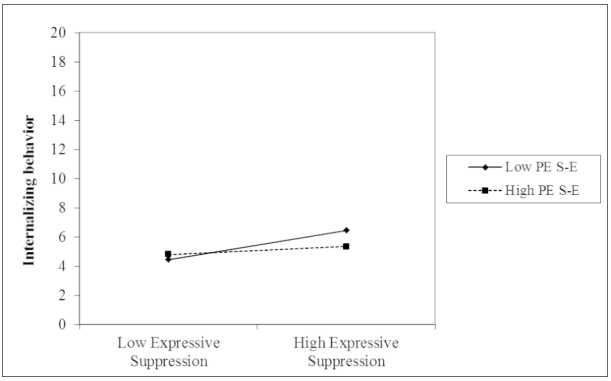

Fig. 1 *The Moderating Role of Emotional Self-Efficacy on the Relation between Expressive Suppression and Internalizing behavior*

[1] At Step 4, we tested the following interaction terms: Gender X PE self-efficacy X Expressive Suppression, Gender X NE self-efficacy X Expressive Suppression, PE self-efficacy X NE self-efficacy X Expressive Suppression. Results were not significant, $p = .123$. Step 4 was not reported in Table 3.

extended by another meta-analytic work (Schäfer et al., 2017), in which adolescents showing internalizing symptoms are more prone to use maladaptive emotional strategies (e.g., rumination, suppression and avoidance) compared to healthy counterparts.

In regard to regulatory emotional self-efficacy, only NE self-efficacy appeared to negatively impact on internalizing behavior. Past evidence has confirmed that low levels of self-efficacy in managing negative emotions are strongly associated with behavioral problems (Alessandri et al., 2015; Caprara et al., 2003; Caprara et al., 2008; Muris et al., 2011). In our study, we did not focus on specific negative emotions, thus we are not able to identify which of them has a higher weight on internalizing behavior. However, most scholars agree that self-efficacy beliefs about anger regulation are involved in both internalizing and externalizing problems in adolescence (Di Giunta et al., 2018).

In regard to PE self-efficacy, no impact on internalizing behavior was observed. This result is inconsistent with a robust research tradition addressing that high levels of positive emotions are considered as protective factors against internalizing problems in childhood, adolescence and adulthood (Rieffe & de Rooij 2012; Sendzik, Schäfer, Samson, Nauman, & Tuschen-Caffier, 2017). Indeed, this research tradition is based on a psychopathological perspective considering internalizing problems in terms of clinical disorders, especially anxiety and depressive symptoms. In our study, we focused on internalizing behavior among healthy adolescents. Thus, future studies need to understand whether PE self-efficacy may impact differently in clinical and healthy adolescent groups.

Interestingly, PE self-efficacy in interaction with expressive suppression predicted internalizing behavior. Specifically, suppressors with lower PE self-efficacy were more likely to engage in internalizing behavior than suppressors with higher PE self-efficacy. Although no literature has specifically analyzed the combined role of expressive suppression and PE self-efficacy in predicting internalizing behavior, Dryman (2018) has argued that the tendency to hide positive emotions may damper not only the experience of positive effect but also the expression and sharing of this affect with others, contributing to experience negative mood. Extending this issue, we may hypothesize that adolescents who are prone to hide their emotions and feel themselves as inadequate in expressing positive emotions would be more vulnerable towards social avoidance, shyness, withdrawal and, overall, internalizing behavior. Future investigation needs to verify this hypothesis.

As a whole, the results of our study add to research literature addressing the role of emotion regulation, confirming its key role on well-being in adolescence (Young, Sandman, & Craske, 2019). It is broadly demonstrated that emotion regulation abilities develop considerably during adolescence (Somerville et al., 2010). As documented by neurobiological research (for a review, see Andrews et al., 2021), the progressive development of prefrontal area gradually allows adolescents to regulate negative emotion and manage impulsive tendencies that are implicated in reward and approach system. Nevertheless, this profound brain development parallels other important changes that can constitute stressors for adolescents, such as the decreased reliance on parents for emotional support, the re-definition of personal identity, the increasing importance of romantic relationships, higher academic pressures and peer influence (Casey, Duhoux, & Malter Cohen, 2010). Hence, emotion regulation is pivotal to cope with changes and stressors occurring in adolescence. In light of this issue, intervention approaches targeting adolescents have received much attention in the last years (for a meta-analytic review, see Eadeh, Breaux, & Nikolas, 2021). For instance, Smyth and Arigo (2009) reviewed the effects of different psychosocial interventions on emotion regula-

tion strategies, finding that school-based programs appear to be more effective in promoting students' emotion knowledge, emotion regulation, and emotional competence compared to standard academic curricula. Taking into account our results, emotional regulatory self-efficacy may be included into emotion regulation programs to prevent negative outcomes in adolescence. Specifically, the promoting of self-confidence in positive emotion expression and negative emotion managing may encourage adolescents to share different experiences with peer, thus contrasting social avoidance and withdrawal.

The study presents several limitations. First, data were collected from high school students without considering information about their race/ethnicity. About 71% of the studies included in a recent systematic review (Weiss, Thomas, Schick, Reyes, & Contractor, 2021) found significant racial and ethnic differences in emotion regulation strategies, with non-White racial and ethnic groups engaging more frequently in suppression of emotional experience compared to White individuals. Thus, the absence of information on race/ethnicity in our study do not allow us to generalize our results nor to exclude at all a different role of emotional self-efficacy in the relation between emotion regulation strategies and internalizing behavior. Likewise, adolescents' clinical status was not investigated; thus, we cannot exclude a possible impact of this limit on our results. Second, our data were obtained through self-report measures, raising vulnerability for participant response bias. Thus, future research approach combining self-report and ecological momentary assessments may be more informative. Furthermore, the use of the SDQ to assess internalizing behavior presents some criticisms. This instrument is a brief behavioral screening questionnaire; hence, it did not allow us to further speculate on internalizing spectrum symptoms. Again, in the current study, internal consistency value of the internalizing behavior dimension was barely acceptable. Nevertheless, expressive suppression was evaluated through the ERQ, which reserves only 4 items for this dimension. Thus, in future studies it would be worthwhile to examine the relation between different internalizing outcomes (e.g. depression, anxiety, suicidal ideation, somatic compliance) and the subtypes of suppression (e.g., suppression of expression of emotion and suppression of emotional or cognitive content/experience). Finally, the cross-sectional nature of our study did not allow us to speculate on the development of negative outcomes during early, middle and late adolescence.

Acknowledgements Special thanks to adolescents who were involved in this study.

Funding sources This work was partially supported by Sapienza to Fiorenzo Laghi (Grant Number: RM11916B7AD32B81).

Declarations

Declaration of competing interest None.

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