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# Emotion-related self-regulation profiles in early adolescence: A cross-national study☆

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ABSTRACT

Emotionality and self-regulation are crucial for positive development, especially during early adolescence when youths experience normative increases in behavioral problems and declines in prosociality. Using Latent Profile Analysis (LPA-a person-oriented technique to identify patterns of functioning *within* individuals), we identified youths' profiles based on dimensions of mother-reported negative emotionality (NE; anger/frustration, sadness/depressive mood), and Effortful Control (EC; attentional, activation and inhibitory control) and examined concurrent associations with self- and mother-reported aggressive and prosocial behaviors. We included a cross-national sample of 530 youths ($M_{age}$ = 11.43; 49 % males) from Colombia (17 %), Italy (36 %), and United States (47 %). We identified four profiles: Adjusted (38 %; low NE; high EC)—lowest aggression, highest prosociality; Average (34 %; average NE and EC)—average aggression and prosociality; Emotional-regulated (20 %; high NE; average EC)—average aggression and high prosociality; and Emotional-dysregulated (8 %; high NE; low EC)—highest aggression, low prosociality. We highlight associations of different emotion-regulation patterns with specific behavioral responses in early adolescence.

## 1. Introduction

Adolescence is a crucial period for mental health given the emergence of more than 50 % of psychiatric disorders during the first 15 years of life, mostly in preadolescence (e.g., Paus et al., 2008). This period is also characterized by major changes, such as pervasive biological, cognitive, relational, and emotional transformations (e.g., Paus et al., 2008). Structural brain changes in the prefrontal cortex and cognitive and affect-related processes influence moral and deductive reasoning, information processing, and decision-making, which lead to increases in risk-taking (e.g., Sadeghi Bahmani et al., 2016). Pubertal development and circadian regulation affect sleep regulation and physical activity, influencing psychobiological adjustment (e.g., Sadeghi-Bahmani & Brand, 2022). Socially, parent-adolescent relationships decrease their influence on socio-emotional skills, while peer interactions significantly affect identity definition and autonomy-differentiation processes (e.g., Pinquart, 2014). All these modifications lead to substantial changes in behavior: Aggressive behaviors tend to increase, whereas prosocial behaviors, such as helping or comforting others, tend to decrease (e.g., Sadeghi Bahmani et al., 2016; Zahn-Waxler et al., 2008).

Researchers studying predictors of adolescents' adjustment have increasingly focused on temperamental characteristics of self-regulation (e.g., effortful control - EC), which reflects dispositional characteristics

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involved in modulating behavior, attention, and negative emotionality (NE; Eisenberg et al., 2010). Most studies of interactions between NE and EC as predictors of youths' adjustment have adopted a variable-centered approach, although few have focused on typological temperamental patterns in adolescence, and very few have analyzed relations between temperamental patterns and maladjustment (e.g., Caspi et al., 2005; Magnusson, 2003). A typological approach might be more meaningful in terms of development and functioning because it allows the analysis of inter-individual differences in the structure of individual characteristics and how their organization can predict specific behaviors (e.g., Caspi et al., 2005). However, the few researchers who have adopted this latter perspective usually have studied broad dimensions of NE and EC (e.g., Hirvonen et al., 2018; Lahdelma et al., 2021); studies considering specific sub-domains of these temperamental components are lacking.

Based on the vulnerability model (see Tackett, 2006), which posits how temperamental characteristics predict individuals' susceptibility to psychopathology and behavioral problems, in our cross-national study, we reasoned that youths' temperamental patterns could represent protective or risk factors for maladaptive behaviors, such as aggression or low prosociality (e.g., Muris et al., 2007). We focused on distinct sub-domains of NE (i.e., anger/frustration, sadness/depressive mood) and EC (i.e., attentional, activation, and inhibitory control) to identify patterns of youths' temperamental functioning, and examined if temperamental characteristics predicted adjustment differently, depending on the broader pattern of functioning in which they are integrated (Magnusson, 2003).

Specifically, adopting LPA, an advanced person-centered technique, we investigated temperamental patterns based on mothers' reports of specific sub-domains of youths' NE and EC. In a preliminary step, we analyzed possible gender and country (i.e., Colombia, Italy, and United States) differences in temperamental patterns by investigating possible effects of these two background variables on the identification and invariance of patterns, since no previous studies have done so. Furthermore, we examined concurrent associations between profiles and self- and mother-reported aggressive and prosocial behaviors. We used multiple informants to capture different facets of youths' contextual functioning because of situational variability in youths' aggressive and prosocial behavior, and to account for reporter biases that can occur when the same reporter provides data on multiple aspects of functioning (De Los Reyes, 2011).

### 1.1. Negative emotionality and effortful control during adolescence

Temperamental characteristics, such as NE or EC, appear to affect youths' adjustment (e.g., Rothbart & Bates, 2006). NE refers to reactivity and proneness to experience negative emotions, including the domain of anger, which includes frustration and hostility, and the domain of sadness, which includes distress, worry, and lowered mood (Rothbart & Bates, 2006). EC includes three sub-domains: maintaining attentional focus or shifting one's focus to deal with task demands, effortfully initiating behaviors when they are appropriate, and effortfully suppressing inappropriate responses (respectively, attentional, activation, and inhibitory control, e.g., Rothbart & Bates, 2006). EC modulates emotionality by influencing how emotions are regulated and expressed (Eisenberg et al., 2010). These characteristics are crucial in youths' formative stages because they affect the emergence and maintenance of emotional and behavioral problems (Muris et al., 2007).

Studies on adolescents' temperamental patterns of broad NE and EC supported three or four profiles. In U.S. preadolescents, four self-reported temperamental profiles were identified within cluster analysis (Laible et al., 2010): (1) *Adjusted*—low NE and high EC; (2) *Moderate*—average NE and EC; (3) *Partially dysregulated*—low overall NE and EC; and (4) *Dysregulated*—high NE and low EC. In Finnish preadolescents, the first three self-reported patterns were confirmed within an LPA framework, and an additional "reserved" type (i.e., with average NE and high EC) profile was found (Hirvonen et al., 2018). Another Finnish study identified three mother-reported preadolescent profiles within cluster analysis (Lahdelma et al., 2021): An adjusted, an over-controlled (with high NE and average EC), and an under-controlled (with average NE and low EC). Overall, previous research supported three different patterns characterized by (1) adaptive self-regulation and negative emotions, (2) poor self-regulation and high negative emotions, and (3) impairments in either emotionality or self-regulation.

Previous variable-centered studies evidenced similarities of temperamental characteristics across different countries and genders, such as their manifestation or their associations with specific maladaptive problems (e.g., Chen et al., 2012). However, researchers have also documented some differences across cultures and gender in emotion-related self-regulative temperamental characteristics (e.g., Oakland & Mata, 2007). Despite these findings, to our knowledge, no researchers have examined the role of these background characteristics in the identification of patterns based on NE and EC. Despite differences in the manifestation of mean levels of temperamental characteristics across countries, we focused on the overall structure of temperamental functioning rather than specific indicators, hypothesizing the presence of a similar temperamental structure across countries, beyond possible differences in terms of country prevalence. Thus, we tested whether youths' gender and country predicted the identification of temperamental profiles and if patterns were invariant across gender and country.

### 1.2. Relations of NE and EC to youths' aggressive and prosocial behaviors

Previous research indicates that aggression typically increases during adolescence (e.g., Zahn-Waxler et al., 2008). Thus, understanding individual differences in emotionality and self-regulation is crucial for understanding mechanisms that exacerbate aggression. Youths who frequently experience negative emotions such as anger or frustration but do not have adequate self-regulatory skills appear more prone to aggression (e.g., Oldehinkel et al., 2007). Conversely, when adolescents frequently experience negative emotions but possess adequate self-regulative abilities, they may be better able to regulate their aggressive tendencies (e.g., Eisenberg et al., 2010). Studies adopting a person-centered perspective have confirmed these propositions. Dysregulated youths tend to be more aggressive, even if their emotional experience is not pervasively compromised (Laible et al., 2010), and dysregulated youths engage in more conduct problems (Hirvonen et al., 2018).

NE and EC are also associated with positive behaviors such as prosociality, which involves helping, sharing, and taking care of others (e.g., Eisenberg et al., 2010). These behaviors are relevant during adolescence because they might protect youths from maladjustment (e.g., Caprara et al., 2014). Highly emotional youths with low self-regulatory skills may become overwhelmed by their negative emotions and thus less attentive to others' needs and less likely to help others (Eisenberg et al., 2006). In contrast, emotionally sensitive youth may better control their negative emotions, appear more attentive to others' needs, and more empathic with others (e.g., Eisenberg et al., 2006). Person-centered findings confirmed that dysregulated adolescents are less prosocial, whereas adolescents with impairments in NE but adequate self-regulation are more prosocial (Laible et al., 2010).

### 1.3. The present study

Expanding on previous research on NE and EC, we examined specific dimensions of NE—anger/frustration and sadness/depressive mood, and EC—activation, attentional, and inhibitory control—when identifying preadolescents' profiles. Mothers' reports were used to assess temperamental characteristics manifested within the family context (Waaktaar et al., 2005). Consistent with previous research (e.g., Lahdelma et al., 2021), we expected to identify a three- or four-profile solution. We tested generalizability of profiles across adolescents' gender and countries (i.e., the U.S., Italy, and Colombia). Based on prior research, we

expected to find similar temperamental profiles across countries and gender.

We also examined concurrent associations between profiles and adolescents' aggressive and prosocial behaviors. We examined both youths' and mothers' reports to obtain different perspectives on adolescents' behavioral functioning (De Los Reyes, 2011). Based on previous studies (e.g., Eisenberg et al., 2010), we expected youths in profiles with high EC and low NE would be highly prosocial and non-aggressive. Despite NE levels, youths with impairments in EC were expected to manifest high aggression and low prosociality, whereas youths with high NE and average-to-high EC might be protected from aggressive behavior and moderately prosocial.

## 2. Method

### 2.1. Participants and procedure

Participants were drawn from a larger cross-national longitudinal study (e.g., Lansford et al., 2014). For this study, we selected all subjects for whom full information about temperament was available. We included 530 mother-child dyads, 87 from Colombia, 192 from Italy, and 251 from the United States. Youths were approximately 12 years old ($M = 12.62$, $SD = 0.67$; 50 % girls). Further details are provided in the Supplement. Our sample matched the socioeconomic status of the cities in which participants lived. Approvals by local Institutional Review Boards at universities, parental informed consent, and youths' assent were obtained in each country. Measures were administered in Italian (Italy), Spanish (Colombia and United States), and English (United States), following a preliminary forward- and back-translation and cultural adaptation procedure.

### 2.2. Measures

See the Online Supplement for sample items.

***Socio-demographic characteristics:*** Gender was coded as "0" for boys and "1" for girls; country was coded as "1" for Colombia, "2" for Italy, and "3" for USA.

***Temperament:*** Mothers rated adolescents' temperament using the Early Adolescent Temperament Questionnaire – Revised (EATQ-R; Capaldi & Rothbart, 1992) and the Children's Behavior Questionnaire (CBQ; Rothbart et al., 2001) (1 = "Almost always untrue" to 5 = "Almost always true"), assessing the following dimensions: (a) Anger-Frustration-9 items; (b) Sadness-Depressive Mood-7 items; (c) Activation Control-3 items; (d) Attentional Control-4 items; and (e) Inhibitory Control-3 items. Internal consistency was very good, except for Inhibitory Control ($\alpha = 0.57$; see Table S1). Factor structure and measurement invariance across gender and country were supported in preliminary analyses (Table S2 in Supplement).

***Aggressive Behaviors:*** Youths and mothers rated youths' aggression (0 = "not true" to 2 = "very often true") on the Youth Self-Report (YSR, Achenbach, 1991; 7 items) and Child Behavior Checklist (CBCL, Achenbach, 1991; 10 items; $\alpha_{mother} = 0.88$; $\alpha_{youth} = 0.80$ respectively).

***Prosocial Behavior:*** Three items of mother- and self-report on the Prosocial Behavior Scale (Caprara & Pastorelli, 1993) were rated (1 = "Never/Almost never" to 5 = "Almost always/Always"). Internal consistency was high for mother-report and fair for self-report ($\alpha_{mother} = 0.81$; $\alpha_{youth} = 0.65$; see Supplement).

Factor structure and measurement invariance across gender and country were supported for aggressive and prosocial behavior scales in preliminary analyses (Tables S3, S4a, and S4b in Supplement).

## 3. Results

### 3.1. Latent profile analysis and covariates

An extensive description of statistical procedures and preliminary results of measure and profile invariance across gender and countries are provided in the online Supplement. Using the three-step method specification within LPA (Nylund et al., 2007), we identified profiles and simultaneously controlled for adolescents' gender and country. We compared the one- to five-class models using criterion indices (see Supplement). The four- and five-class models both fit well (Table S3). However, two maladjusted classes in the five-class model showed the same pattern, and a similar pattern to a maladjusted group in the four-class model. In addition, the four-class model was more consistent with existing theory and exhibited more meaningful associations with outcomes, so we selected this latter model (Fig. 1).

The *Average* profile (34 %) scored average on all temperamental factors and average-to-low activation control. The *Adjusted* profile (38 %) scored high on all three components of EC and low on both components of NE. The *Emotional/regulated* profile (20 %) scored high on both components of NE, average on attention, average-to-high on activation control, and average-to-low on inhibitory control. The *Emotional/dysregulated* profile (8 %) scored high on both components of NE, very low on attention, and low on activation and inhibitory control. Regarding covariates, girls were more likely than boys to be in the *Emotional/regulated* ($B = 1.094$; $p < .01$) or *Emotional /dysregulated* ($B = 0.681$; $p < .05$) profiles than in the *Average* profile. Italian and Colombian youths, compared with United States youths, were more likely to be in the *Emotional/regulated* ($B = 0.361$; $p < .05$) than in the *Average* profile (Table 1). This solution was invariant across gender and countries (see Supplement).

### 3.2. Outcomes of temperamental profiles

Within the manual three-step LPA approach, we independently assessed prediction by latent classes of each outcome, separately for adolescents' and mothers' ratings of prosocial and aggressive behaviors. We considered each class as the reference group to analyze comparisons among all profiles (Table 1). For aggressive behaviors, findings from different informants substantially converged. *Adjusted* youths scored lower on self- and mother-reported aggressive behaviors compared to youths in the other profiles. *Emotional/dysregulated* youths scored higher on self- and mother-reported aggressive behavior compared to *Average* and *Emotional/regulated* youths. Finally, *Emotional/regulated* youths scored higher on self-reported aggressive behaviors but similar on mother-reported aggressive behaviors compared to *Average* youths.

Regarding prosocial behavior, *Adjusted* youths scored higher on self- and mother-reported prosocial behaviors compared to *Average* youths. Compared with *Emotional/dysregulated* and *Emotional/regulated* youths, *Adjusted* youths scored higher on mother-reported prosocial behaviors. *Emotional/dysregulated* youths scored lower on mother-reported but higher on youth-reported prosocial behaviors compared to *Average* youths. *Emotional/regulated* youths scored highest on self-reported prosocial behaviors, although they scored similarly on mother-reported prosocial behaviors when compared to *Average* youths and lower on mother-reported prosocial behaviors than *Adjusted* youths.

## 4. Discussion

Adopting a person-centered approach, our study contributed to understanding how different configurations of specific dimensions of NE and EC were associated with aggressive and prosocial behaviors (e.g., Caspi et al., 2005), and if these associations differed across genders and three different countries, two of which have seldom been examined. We considered self- and mother-reported aggression and prosociality to capture situational specificity because such behaviors, especially aggression, appear to differ at home versus other social contexts (De Los Reyes, 2011).

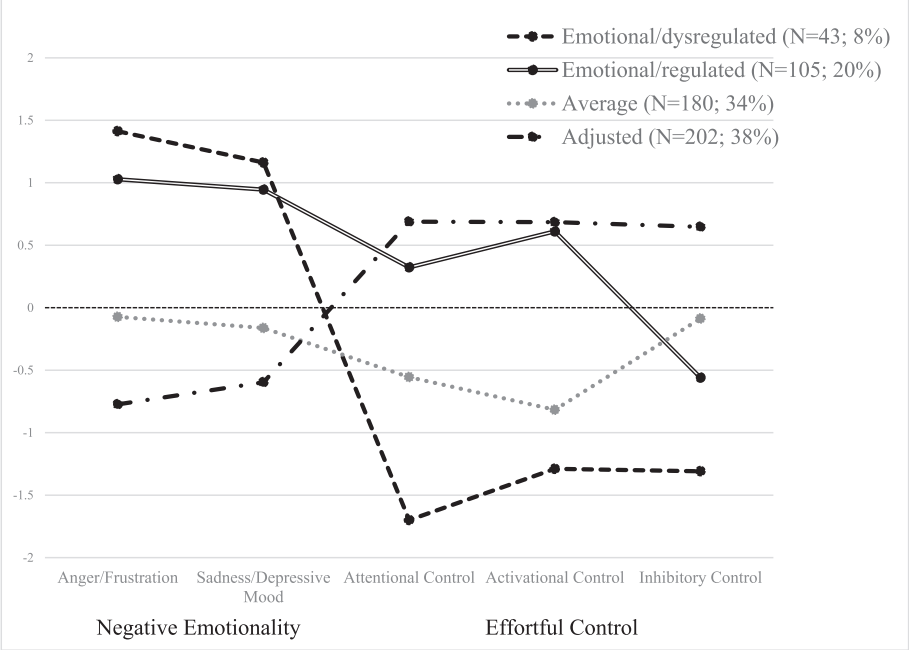


**Fig. 1.** Graphical representation of temperamental profiles for the overall sample.
Note: The graphical representation was done using Z-scores for each temperamental factor.

**Table 1**
Three-step results with covariates and outcomes: Comparisons of three profiles with Average as the reference for covariates, and comparisons of the four profiles each other for outcomes.

| | | Average vs. adjusted | Average vs. Emo/regulated | Average vs. Emo/dysregulated |
|---|---|---|---|---|
| Covariates | Gender | 0.675 | **1.094**** | **0.681*** |
| | Country | −0.099 | **0.361*** | −0.071 |

| | | Adjusted vs. Average | Emo/regulated vs. Average | Emo/dysregulated vs. Average | Adjusted vs. Emo/regulated | Adjusted vs. Emo/dysregulated | Emo/regulated vs. Emo/dysregulated |
|---|---|---|---|---|---|---|---|
| Outcomes | Aggressive-Behavior M | **−0.154***** | 0.051 | **0.578***** | **−0.206***** | **−0.732***** | **−0.526***** |
| | Aggressive-Behavior EA | **−0.165***** | **0.115*** | **0.441***** | **−0.280***** | **−0.605***** | **−0.325***** |
| | Prosocial-Behavior M | **0.894***** | −0.642 | **−1.354***** | **1.535***** | **2.248***** | 0.712 |
| | Prosocial-Behavior EA | **0.699***** | **1.482***** | **0.505**** | **−0.783***** | 0.194 | **0.977***** |

| | | Aggressive-behavior | | Prosocial-behavior | |
|---|---|---|---|---|---|
| | | M | EA | M | EA |
| Means | Adjusted | 0.035 | 0.166 | 3.994 | 4.062 |
| | Average | 0.189 | 0.331 | 3.101 | 3.363 |
| | Emotional/regulated | 0.240 | 0.446 | 2.459 | 4.845 |
| | Emotional/dysregulated | 0.766 | 0.771 | 1.747 | 3.868 |

Note: Values were estimated using a three-step specification. Positive values indicate that a person in the first profile, compared with the second profile, showed higher levels on the covariate/outcome. Negative values indicate that a person in the first profile, compared with the second profile, showed lower levels on the covariate/outcome. Bold represents significant paths. M = mother ratings; EA = early adolescent ratings; Emo = Emotional. Gender was coded as 0 for Boys and 1 for Girls. The country was coded as 1 for the United States, 2 for Colombia, and 3 for Italy. Aggressive Behaviors ranged from 0 to 2, and Prosocial Behaviors ranged from 1 to 5.
* $p < .050$.
** $p < .010$.
*** $p < .001$.

### 4.1. Early adolescents' profiles

Similar to previous findings (e.g., Laible et al., 2010), we found support for four profiles based on dimensions of NE (i.e., anger/frustration, sadness/depressive mood) and EC (i.e., attentional, activation, and inhibitory control). Two adaptive profiles were found. *Adjusted* youths were effectively able to regulate behaviors and emotional experiences, sustain attention, activate appropriate responses to

environments, and minimally experienced anger or sadness. *Average* youths were adequately able to regulate behaviors and emotional experiences, shift and maintain attention appropriately, and experienced average levels of anger and sadness. Two potentially maladaptive profiles emerged—*Emotional/dysregulated* and *Emotional/regulated*. The *Emotional/dysregulated* profile confirmed previous self-reported findings (e.g., Hirvonen et al., 2018) and was the least prevalent. These youths frequently experienced negative emotions and ineffective regulation of emotionality, behaviors, reactions to environments, and attention. Consistent with the study of Lahdelma et al. (2021) that used mother-reported temperament, *Emotional/regulated* youths frequently experienced anger and sadness but were able to activate appropriate self-regulatory behaviors, maintain their attentional focus, and adequately modulate their emotional states and behaviors. Despite *Emotional/regulated* youths showing adaptive self-regulative abilities like *Average* youths, they experienced high negative emotionality similar to *Emotional/dysregulated* youths. For *Emotional/regulated* youths, EC potentially "buffers" high negative emotionality, which could make this pattern a partially maladaptive one (e.g., Muris et al., 2007).

Our findings support the generalizability (i.e., invariance) of the obtained structure of temperamental profiles (e.g., Chen et al., 2012). Regarding gender prevalence, girls showed higher probabilities than boys of belonging to the *Emotional/regulated* or the *Emotional/dysregulated* profiles, consistent with previous findings that showed higher levels of NE in girls than in boys (e.g., Rothbart & Bates, 2006). Regarding country, compared to Italian and Colombian youths, U.S. adolescents showed a lower probability of belonging to the *Emotional/regulated* profile, consistent with the finding that U.S. youths scored low on NE (e.g., Oakland & Mata, 2007). Overall, these results support the conclusion that there were similar temperamental profiles for adolescent boys and girls that lived in different countries (Chen et al., 2012), although the distribution of countries and gender across profiles sometimes varied. In interpreting country differences in the prevalence of temperamental patterns, we note that countries examined in this study have different socioeconomic characteristics that we did not consider, and that could have influenced youths' temperamental and behavioral functioning. However, our findings represent the first examination of the effects of gender and country on youths' temperamental profiles, so replication is needed to corroborate and expand these findings.

### 4.2. Early adolescents' aggression and prosociality: concurrent associations with profiles

Our findings supported associations between temperamental profiles and adolescents' concurrent aggressive and prosocial behaviors. Across informants, *Adjusted* and *Average* youths showed lower aggression and higher prosociality than other adolescents, and *Adjusted* youths were the most prosocial. These results are consistent with the adequate self-regulative abilities that characterize these profiles, which may help in modulating anger or negative emotions generally (including vicariously induced emotions), that may lead to effective focusing on others' emotional needs and feelings of empathy, which foster prosociality (e.g., Eisenberg et al., 2010).

*Emotional/dysregulated* youths were the most aggressive across informants, likely due to pervasive impairments in their emotion-related self-regulation processes. For prosocial behaviors, discordance across informants was found. Mothers perceived their *Emotional/dysregulated* offspring as poorly prosocial, whereas youths evaluated themselves as highly prosocial. This incongruence likely reflects reporter bias or could represent situational discrepancies in youths' behavior, such as dysregulated youths tending to enact positive behaviors with close friends outside the home beyond mothers' knowledge (e.g., Waaktaar et al., 2005).

For *Emotional/regulated* youths, we found discrepancies across informants for both aggressive and prosocial behaviors. Mothers perceived *Emotional/regulated* youths as averagely aggressive and scarcely prosocial, whereas youths perceived themselves as high on both aggression and prosociality. These discrepancies could reflect informants' unique perspectives on youths' behaviors, which represent subjective and situational variability of individual behavioral responses (De Los Reyes, 2011). *Emotional/regulated* youths may be more sensitive to external social contexts, due to their high NE, so their own and others' emotions would be more salient to them, which in turn could increase their accuracy in reporting their inclinations toward others' needs (Eisenberg et al., 2006). At the same time, their emotional sensitivity may affect their at-home aggressive behaviors due to more conflictual relations with parents, which may be better captured by mothers' reports (De Los Reyes, 2011). Perhaps mothers perceived *Emotional/regulated* youths as highly aggressive because their offspring's aggressive tendencies are more salient than their positive social behaviors, whereas *Emotional/regulated* youths may underestimate their own aggressive responses because they felt more capable of regulating them than was actually true (e.g., Eisenberg et al., 2010). Lastly, *Emotional/regulated* youths possessed adequate self-regulation levels, which could make them aware of their own empathy-related negative emotions. Consequently, they may be better equipped than most peers to modulate their own empathic concerns (Eisenberg et al., 2001). They are unlikely to be overwhelmed by negative emotions and become self-focused; consequently, they may be prone to sympathetic concern and prosociality, and less inclined to act aggressively (Eisenberg et al., 2006). However, the variation in results for prosocial behavior across informants could also reflect a tendency of more impaired adolescents to deny their behavioral and emotional difficulties and perceive their behaviors as more positive than they truly are (Oldehinkel et al., 2007).

### 4.3. Limitations and future directions

Our study is cross-sectional, so further studies should analyze the predictive role of temperament profiles for adolescents' adjustment longitudinally. In addition, we used a convenience sample of data available from only three countries, and the age range was narrow. Colombian youths represented less than 20 % of the sample, which represents a major limitation of this study influencing the stability of the factor structures of our constructs, so further studies should consider representative and more homogeneous cultural subsample sizes. Regarding statistical limitations, mother-reported inhibitory control and self-reported prosocial behaviors showed weak internal consistencies, but this could be due to the few items on both scales. Moreover, for self- and mother-reported aggressive behavior measures, we found only partial metric invariance, so future studies should clarify whether the results on aggressive behavior can be generalized. Additionally, we considered only mother-reported temperamental dimensions of their youths. Future studies should consider adolescents' and fathers' reports. Further studies are needed to clarify variations in profiles in additional countries and subcultures, as well as the effect of gender and county on associations between such profiles and adjustment over time. Lastly, future research is needed to verify these patterns and analyze differences between mothers' and adolescents' perceptions of behaviors.

## 5. Conclusion

Our results support the view that temperamental characteristics can represent protective or vulnerability factors for behavioral problems and prosocial behaviors (Muris et al., 2007). To date, this was the first study to examine the generalizability of profiles across gender and under-examined countries, and one of the few studies to consider the specific sub-dimensions of NE and EC within a person-oriented perspective. Our findings corroborated previous research that examined broad indicators and extended previous research on aggressive behaviors and prosociality. The inclusion of mothers' and youths' reports on youths' behavioral responses represents a strength of our work because of issues of reporter bias and the specificity of youths' behavior in different social

contexts. Our findings also emphasize the importance of promoting self-regulation and adolescents' emotional skills as focal to prevention and intervention efforts because of their role in the development of behavioral problems and social competencies.

## CRediT authorship contribution statement

Favini Ainzara (Department of Psychology, Sapienza University of Rome, Italy) contributed to the entire part of the study, including the conceptualization of the study and analyses, data preparation and analysis, and writing.

Gerbino Maria (Department of Psychology, Sapienza University of Rome, Italy) contributed to study conceptualization, data analysis and report writing.

Pastorelli Concetta (Department of Psychology, Sapienza University of Rome, Italy) contributed to study conceptualization, data collection, and report writing.

Di Giunta Laura (Department of Psychology, Sapienza University of Rome, Italy) contributed to study conceptualization, data collection and preparation, and report writing.

Iselin Anne-Marie R. (Psychology Department, Elon University, USA) contributed to study conceptualization, data collection and preparation, and report writing.

Lansford Jennifer E. (Center for Child and Family Policy, Duke University, USA) contributed to study conceptualization, data collection and preparation, and report writing.

Eisenberg Nancy (Psychology Department, Arizona State University, USA) contributed to study conceptualization, and report writing.

Uribe Tirado Liliana Maria (Psychology Department, Universidad San Buenaventura, Colombia) contributed to data collection and preparation, and report writing.

Bacchini Dario (Psychology Department, Federico II Second University of Naples, Italy) contributed to data collection and preparation, and report writing.

Lunetti Carolina (Department of Psychology, Sapienza University of Rome, Italy) contributed to study conceptualization, data collection and analysis, and report writing.

Basili Emanuele (Department of Psychology, Sapienza University of Rome, Italy) contributed to data collection and analysis, and report writing.

Thartori Eriona (Department of Psychology, Sapienza University of Rome, Italy) contributed to study conceptualization, data collection and analysis, and report writing.

Cirimele Flavia (Department of Psychology, Sapienza University of Rome, Italy) contributed to data collection and analysis, and report writing.

Fiasconaro Irene (Department of Psychology, Sapienza University of Rome, Italy) contributed to data collection, and report writing.

Remondi Chiara (Department of Psychology, Sapienza University of Rome, Italy) contributed to data collection, and report writing.

## Data availability

The data that has been used is confidential.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.paid.2023.112298.

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