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# Pathways from Maternal Harsh Discipline Through Rumination to Anxiety and Depression Symptoms: Gender and Normativeness of Harsh Discipline as Moderators

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## Abstract

This study examined gender-specific longitudinal pathways from harsh parenting through rumination to anxiety and depression symptoms among early adolescents from three countries and six subgroups. Participants were 567 mothers, 428 fathers, and 566 children (T1: $M_{age} = 10.89$; 50% girls) from Medellín, Colombia ($n = 100$); Naples, Italy ($n = 95$); Rome, Italy ($n = 99$); Durham, North Carolina, United States (Black $n = 92$, Latinx $n = 80$, and White $n = 100$). Parent reported maternal and paternal harsh parenting were measured at T1. Adolescent reported rumination was measured at T2 ($M_{age} = 12.58$) and anxiety and depression symptoms were measured at T1 and T3 ($M_{age} = 13.71$). Rumination mediated the pathway from maternal harsh discipline to girls' anxiety and depression symptoms, controlling for baseline anxiety and depression symptoms. The more harsh discipline mothers used, the more their daughters ruminated, which in turn was associated with increased anxiety and depression symptoms. Exploratory moderated mediation analyses indicated that the strength of the mediational pathway from maternal harsh discipline through girls' rumination to anxiety and depression symptoms decreased as the normativeness of harsh parenting increased. Mediational pathways for boys and for paternal harsh discipline were not significant. Our findings expand knowledge on specific contexts in which rumination is a mechanism for understanding pathways to anxiety and depression symptoms.

**Keywords** Rumination · Anxiety and depression symptoms · Harsh parenting · Normativeness · Adolescence

Global costs associated with mental health disorders are projected to reach over $6.0 trillion in 2030, a steep increase from $2.5 trillion in 2010 (Bloom et al., 2011). Lifetime prevalence rates for internalizing disorders are among the highest of all mental health disorders, and prevalence rates for many mental health disorders, especially internalizing disorders, increase in adolescence (Kessler et al., 2005; Lee et al., 2014). Ineffective emotion regulation is a core mechanism underpinning the development of internalizing symptoms during adolescence (e.g., Schäfer et al., 2017). Understanding risk factors that trigger maladaptive emotion-relevant processes when dealing with internalizing tendencies (e.g., rumination) is critical for curbing psychological maladjustment and enhancing adaptation in adolescence. Given high costs associated with mental health disorders, it is vital to understand pathways to internalizing symptoms among diverse adolescents.

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## Adolescence: A Turning Point for Emotion Regulation

Adolescence is marked by heightened emotional responsivity systems coupled with still maturing self-regulation abilities—a combination that can make it challenging for adolescents to manage strong emotional experiences (Ahmed et al., 2015). As a likely consequence of this, early adolescence is characterized by increased variability in emotional states that stabilize in late adolescence and beyond (Maciejewski et al., 2015). Notable between person differences in initial levels of mood variability and rate of mood stabilization, which probably are partly due to poor emotion regulation (Maciejewski et al., 2015), appear to characterize some adolescents at risk for internalizing symptomology.

Emotion regulation is "people's attempts to influence emotions, defined as time-limited, situationally bound, and valenced (positive or negative) states" (McRae & Gross, 2020, p. 1). It includes internal and external processes involved in avoiding, initiating, maintaining, and modulating the occurrence, intensity, and expression of emotions and related physiological processes, cognitions, and behaviors in the service of accomplishing social competency (Eisenberg & Spinrad, 2004). The ability to adaptively regulate one's emotions related to internalizing symptoms declines from early to middle adolescence but increases thereafter into middle adulthood (Zimmermann & Iwanski, 2014). These findings pinpoint early adolescence as a particularly important developmental period for examining emotion-related processes involved in internalizing symptoms.

## Rumination and Internalizing Symptoms

Within the domain of emotion regulation, rumination has been one of the most frequently studied predictors of internalizing symptoms among community samples of adolescents (Schäfer et al., 2017). Rumination is an internally passive, perseverative, and unproductive process in which the person dwells on their negative mood, including its meaning, what caused it and what might occur because of it (Nolen-Hoeksema et al., 2008). Meta-analytic investigators have reported medium to large positive effect sizes for the rumination-internalizing symptoms relation in non-clinical samples of adolescents (Rood et al., 2009; Schäfer et al., 2017). Longitudinal effect sizes between rumination and increased internalizing symptoms are moderate (Rood et al., 2009). Most investigations of the rumination-internalizing symptoms association have focused on sadness rumination to the exclusion of hostile rumination (e.g., Caprara et al., 2007). However, among adolescents, major depressive disorder can be characterized by irritability, anger, and/or being easily frustrated instead of or concomitant with sad, low moods (American Psychiatric Association, 2013). As such, the current study examined rumination about both sadness and anger as longitudinal predictors of internalizing symptoms among youth from three countries and six regional/racial/ethnic subgroups. To better understand the rumination to internalizing symptoms relation, this study also investigated an important environmental-contextual risk factor that could trigger this relation—harsh parenting.

## Linking Harsh Parenting to Rumination and Internalizing Symptoms

It is well-established that parenting behaviors are important predictors of youths' emotion regulation (Eisenberg, 2020). Harsh parenting, including physical (e.g., corporal punishment) and nonphysical (e.g., verbal and psychological aggression) behaviors, is related to children's difficulties regulating their emotions (Chang et al., 2003; Sarıtaş et al., 2013). Specific to rumination, Hilt et al. (2012) found that preschoolers who experienced more negative parenting practices were more likely to ruminate as adolescents. There is also a wealth of evidence indicating that high levels of negative parenting behaviors are related to more internalizing symptoms in adolescents, with meta-analytic findings indicating small to medium effect sizes (McLeod et al., 2007a, b). Thus, harsh parenting is a likely predictor of both rumination and internalizing symptoms.[1]

Scholars have posited that rumination is an individual difference risk factor linking environmental risk factors, such as negative parenting, to internalizing symptoms (Nolen-Hoeksema & Watkins, 2011). Empirical evidence is consistent with this proposition, finding that steeper increases in rumination longitudinally mediated the positive relation between fewer positive maternal parenting behaviors and depressive symptoms in non-clinical adolescents (Gaté et al., 2013). Aggressive maternal parenting behaviors were not a significant predictor of change in rumination or in depressive symptoms likely because aggressive maternal behaviors were quite mild in the study. Although there are solid theoretical and burgeoning empirical reasons to investigate rumination as a mediator of the relation between harsh discipline and internalizing symptoms, to our knowledge such an investigation has yet to be conducted. Thus, the current study sought to examine whether harsh parenting predicted internalizing symptoms via rumination using a three-wave

[1] It is important to note that harsh parenting is not entirely causal and may reflect preexisting emotion regulation difficulties among children. However, an examination of the bi-directional relation between child emotion regulation and harsh parenting is beyond the scope of the current study.

longitudinal design. We investigated this mediational pathway in adolescents from three countries and six regional/racial/ethnic groups. The diversity within our sample is a critical source of variability in harsh discipline that provides a robust examination of the mediational pathway of interest among diverse youth who are currently underrepresented in the literature. Furthermore, the diversity within our sample allows us to examine a potential moderator more robustly—the normativeness of harsh discipline—that might influence the strength of that mediated pathway.

## Normativeness of Harsh Parenting

Harsh parenting practices have been related to more internalizing symptoms in diverse samples of adolescents, including several samples included in the current study (e.g., Lansford et al., 2014). The positive relation between rumination and internalizing symptoms also appears consistent across youth from different countries and races (e.g., Argentina, Andrés et al., 2016; Belgium, Verstraeten et al., 2009; Germany, Winkeljohn Black & Pössel, 2013; Hungary, Kocsel et al., 2019; Latinx, Young, 2016; Netherlands, Broeren et al., 2011; Spain, Orgilés et al., 2018). Evidence on the relation between harsh parenting and rumination among nationally, regionally, and racially/ethnically diverse samples is scarce. Related studies found that rumination is a significant mediator of the relation between parenting behaviors related to harsh parenting and depressive symptoms. Lo and colleagues (2021) found that greater parent demandingness predicted more rumination, which was associated with more depressive symptoms among Hong Kong Chinese adolescents. Less trust in parents was associated with greater rumination, which was related to more depressive symptoms among Dutch adolescents (Ruijten et al., 2011). And more parental emotional abuse predicted higher levels of rumination which in turn predicted more depressive symptoms among Spanish adolescents (Padilla Paredes & Calvete, 2014). Although these studies are not direct tests of harsh parenting per se, they offer preliminary evidence that it is plausible that rumination mediates the relation between harsh parenting and anxiety and depression symptoms among diverse adolescents.

Normativeness theory postulates that harsh parenting behaviors will have more harmful effects on youth psychological adjustment when such behaviors are viewed as less normative (Deater-Deckard & Dodge, 1997). Consistent with this theory, the strength of the relation between negative parenting and internalizing symptoms has been stronger within contexts where such parenting behavior is viewed as not aligning with norms. Specfically, Lansford et al. (2005) found that the negative prediction of anxiety symptoms by corporal punishment was amplified in contexts where corporal punishment was less normative. Gershoff et al. (2010) found that the negative relations of both corporal punishment and expressing disappointment with anxiety symptoms were stonger in contexts where those parenting behaviors were perceived as less normative. Furthermore, Lansford et al. (2018) found that the negative relation of psychological control with internalizing symptoms was stronger within cultural contexts in which psychological control was less normative. Evidence of the role of normativeness in the context of parenting behaviors and internalizing symptoms indicates that norms regarding harsh parenting likely influence the strength of the pathway from harsh parenting through rumination to internalizing symptoms, but this remains to be tested.

## Gender-Specific Pathways

There are several empirical reasons to examine child gender-specific pathways from parenting through rumination to anxiety and depression symptoms. Substantial evidence indicates that adolescent girls ruminate more (e.g., Rood et al., 2009) and experience more internalizing symptoms (e.g., Hilt et al., 2017; Michl et al., 2013) than do boys in a variety of countries (Broeren et al., 2011; Di Giunta et al., 2020; Hampel & Petermann, 2005), with some exceptions (Broderick & Korteland, 2004; Hamlat et al., 2015). Importantly, rumination explains gender differences in growth in depressive symptoms (Hilt et al., 2010). To our knowledge, there are no investigations of child gender-specific pathways from harsh parenting through rumination to anxiety and depression symptoms among adolescents. Although in one study, rumination mediated the relation between fewer positive maternal parenting practices and more internalizing symptoms only among girls (Gaté et al., 2013). This preliminary evidence suggests mediational effects will be stronger and potentially only significant among girls.

Beyond child gender-specific effects, researchers have called for investigations of the separate effects of mothers' and fathers' parenting on adolescents' psychological adjustment (e.g., Rothenberg et al., 2020). Evidence on the nature of parent–child relationships suggests that children's relationship with their mothers may be different from their relationship with their fathers (e.g., Smetana et al., 2006). Theorists have proposed that, on average, fathers engender more "activation relationships" (e.g., encouraging taking chances, trying new things) whereas mothers engendger more "attachment relationships" (e.g., ensuring security and comfort, discussing emotions) with their children (Paquette, 2004). Bögels & Phares (2008) theoretically linked these differing roles of fathers and mothers to youth's anxiety coping, suggesting that mothers influence child coping with anxiety through care and close interpersonal relationships whereas

fathers influence child coping with anxiety through challenge, risk taking, and independence. It is therefore important to examine the potential differential impact fathers' and mothers' parenting behaviors might have on youth internalizing symptoms.

Meta-analyses examining the relation of parenting with internalizing symptoms found that parent and child gender did not moderate the strength of that relation. (McLeod et al., 2007a, b). However, more specific investigations of harsh parenting, internalizing symptoms, rumination, and normativeness highlight the importance of examining both parent and child gender specific effects. Investigations relating harsh discipline to adolescents' internalizing symptoms and emotion regulation suggest both parent and child gender-specific effects. First, fathers use more harsh discipline with their sons than with their daughters (Chang et al., 2003), and this finding appears across countries, several of which are included in the current study (Di Giunta et al., 2020). Second, maternal (but not paternal) harsh discipline longitudinally predicted youths' internalizing symptoms in a diverse sample of adolescents from some countries and races included in the current study (Di Giunta et al., 2020). Chang et al. (2003) found that the relation between mothers' harsh discipline and child emotion regulation ($r = 0.33$-$0.38$) was stronger than the analogous relation for fathers ($r = 0.21$-$0.24$). Finally, Rothenberg et al. (2020) found that normativeness of behavioral control did not moderate the negative relation of paternal behavioral control to future child internalizing symtpoms; however, the negative relation of maternal behavioral control with future child internalizing symptoms occured only when behavioral control was less normative. Taken together, existing evidence suggests that the mediational pathway from harsh parenting through rumination to internalizing symptoms is likely strongest in mother-daughter relationships and normativeness of harsh parenting likely moderates mediational pathways specifically for maternal harsh discipline.

## The Current Study

Using longitudinal data from adolescents in three countries and six regional/racial/ethnic groups, we tested the hypothesis that rumination mediates the positive relation of harsh discipline with anxiety and depression symptoms (i.e., mediation hypothesis). We expected higher levels of harsh discipline would predict higher levels of rumination which, in turn, would predict more depression and anxiety symptoms. We hypothesized this mediation pathway would be strongest among mother-daughter relationships. We further hypothesized that the strength of mediational pathways would be moderated by the normativeness of harsh discipline such that the strength of the mediation effect would decrease as the normativeness of harsh parenting increased (i.e., moderated-mediation hypothesis), especially for maternal harsh discipline pathways.

## Method

### Participants

Participants were recruited from three countries already participating in the longitudinal Parenting Across Cultures Study (e.g., Lansford et al., 2014). These three countries—Italy, the United States (U.S.), and Colombia—were selected because individuals within these countries represented a variety of sociodemographic characteristics, including race, ethnicity, religion, parental education levels, and child well-being. Samples within each of these countries, however, were convenience samples and not necessarily nationally representative.

Participants included 567 mothers ($M = 39.90$ years, $SD = 7.09$), 428 fathers ($M = 42.51$ years, $SD = 7.46$), and 566 children (283 girls and 283 boys) from Medellín, Colombia (100 adolescents, 100 mothers, 95 fathers); Naples, Italy (95 adolescents, 95 mothers, 83 fathers); Rome, Italy (99 adolescents, 99 mothers, 69 fathers); Durham, North Carolina, U.S. [White (100 adolescents, 102 mothers, 72 fathers), Black (92 adolescents, 93 mothers, 49 fathers), and Latinx (80 adolescents, 78 mothers, 60 fathers)].

We gathered data from participants at three time points when youth were 10 ($M = 10.89$ years, $SD = 0.70$), 12 ($M = 12.58$ years, $SD = 0.68$), and 13 ($M = 13.71$ years, $SD = 0.67$) years old. See Supplemental Fig. 1 for sample sizes reported separately for mothers, fathers, and adolescents at each time point. The average education level for mothers and fathers was approximately 12 years and ranged from ~ 10 years in Colombia to ~ 16 years in White parents in the U.S. Table 1 provides details about mother and father education levels as well as details about marital status, family income, and work status separately for the six samples. The overall retention rate of adolescents across the three timepoints of the current study was 94%. Retention rates of adolescents separately by group were: 85% in Medellín, 100% in Naples, 98% in Rome, 98% in U.S. Black, 93% in U.S. White, and 90% in U.S. Latinx.

### Procedure

Via local schools, youth were sent letters about the study to take home for their parents' review and approval. Parents who signed and returned letters were contacted via telephone. Details about participant response rates in the Parenting Across Cultures Study are available elsewhere (e.g., Lansford et al., 2010, 2014). Enrollment of participants continued until target sample sizes in each site were

reached. Families with children at private and public schools as well as high-, middle-, and low-income serving schools were sampled so that samples were economically diverse, ranging from low to high income within each site.

We used procedures of translation and back-translation as well as meetings to resolve ambiguities at the item level to ensure the linguistic, conceptual, and cultural equivalence of English, Spanish, and Italian versions of the measures (Erkut, 2010). Our testing protocols were approved by institutional review boards within each country. Both parental consent and adolescent assent were obtained before administering interviews. Interviews took place in locations determined by parents. Parents and adolescents chose to complete questionnaires in writing or out loud, with interviewers reading each question out loud and recording answers. Adolescent interviews took approximately 1½ hours, and parent interviews took approximately 30 min. Parents and youth were compensated a nominal amount for their participation in accordance with local IRBs.

## Measures

**Harsh Discipline** Mothers and fathers completed the Discipline Interview (Lansford et al., 2005) to measure the frequency and normativeness of harsh discipline. Parents rated how frequently they used psychological aggression (five items; e.g., telling child they should be ashamed) and physical discipline (two items; e.g., spanking) using a five-point scale (1 = *never* to 5 = *almost every day*). Use of psychological aggression was significantly correlated with use of physical discipline (i.e., $r_{\text{mothers}} = 0.45$, $r_{\text{fathers}} = 0.46$ across all sites); thus, total scores were created by averaging across all seven items. Reliability across all sites was good ($\alpha = 0.80$ for mothers and $\alpha = 0.77$ for fathers).

Normativeness of harsh discipline included seven questions (paralleling frequency items described above) that asked mothers and fathers to report how frequently other parents in their community use each harsh discipline strategy. Normativeness of psychological aggression

**Table 1** Socio-demographic information separately by group

| | Colombia | Italy | | United States | | |
|---|---|---|---|---|---|---|
| | | Rome | Naples | White | Black | Latinx |
| Marital status (%) | | | | | | |
| Married | 69.4 | 75.5 | 83 | 81.3 | 37.2 | 55.7 |
| Remarried | 0 | 0 | 2.2 | 2 | 1.2 | 2.9 |
| Divorced | 0 | 1.1 | 1.1 | 7.2 | 9.3 | 7.1 |
| Separated | 3.4 | 11.1 | 6.8 | 2.1 | 7 | 7.1 |
| Widowed | 0 | 2 | 2.3 | 2.2 | 1.2 | 0 |
| Cohabiting | 22.7 | 3.1 | 2.3 | 2 | 7 | 18.6 |
| Never married | 4.5 | 7.2 | 2.3 | 3.2 | 37.1 | 8.6 |
| Education level [Mean(SD)] | | | | | | |
| Mothers | 10.64(5.21) | 13.52(4.00) | 10.46(4.44) | 16.69(3.07) | 13.69(2.25) | 10.11(4.13) |
| Fathers | 9.67(4.91) | 13.80(3.69) | 11.39(4.65) | 16.86(3.22) | 13.71(2.59) | 9.72(4.47) |
| Family income in Euros/Dollars; Colombian Pesos (%) | | | | | | |
| Up to 5,000; Up to 5,000,000 | 22.7 | 5.1 | 18.0 | 1.1 | 8.2 | 6.1 |
| 5,000 – 10,000; 5,000,000 – 10,000,000 | 33.0 | 4.1 | 18.0 | 1.1 | 5.9 | 7.6 |
| 11,000 – 15,000; 11,000,000 – 16,000,000 | 13.6 | 8.2 | 16.9 | 1.1 | 7.1 | 21.2 |
| 16,000 – 29,000; 17,000,000 – 24,000,000 | 4.5 | 29.6 | 23.6 | 6.3 | 29.4 | 40.9 |
| 30,000 – 40,000; 25,000,000 – 30,000,000 | 3.4 | 21.4 | 7.9 | 6.3 | 17.6 | 12.1 |
| 41,000 – 50,000; 31,000,000 – 40,000,000 | 3.4 | 8.2 | 5.6 | 7.4 | 8.2 | 3.0 |
| 51,000 – 60,000; 41,000,000 – 50,000,000 | 2.3 | 6.1 | 5.6 | 10.5 | 9.4 | 3.0 |
| 61,000 – 70,000; 51,000,000 – 60,000,000 | 4.5 | 7.1 | 2.2 | 12.6 | 1.2 | 1.5 |
| 71,000 – 80,000; 61,000,000 – 70,000,000 | 5.7 | 4.1 | 1.1 | 53.7 | 2.4 | 4.5 |
| Above 81,000; Above 71,000,000 | 6.8 | 6.1 | 1.1 | 1.1 | 10.6 | 6.1 |
| Work Status: Mothers | | | | | | |
| % working | 50.0 | 78.8 | 42.1 | 75.5 | 65.6 | 63.8 |
| % of those working who work full time | 45.9 | 61.5 | 52.5 | 56.8 | 58.8 | 40.6 |
| Work Status: Fathers | | | | | | |
| % working | 92.9 | 92.6 | 90.2 | 95.5 | 83.0 | 87.7 |
| % of those working who work full time | 81.7 | 98.9 | 90.5 | 94.3 | 73.5 | 65.1 |

was significantly correlated with normativeness of physical discipline (i.e., $r_{mothers} = 0.58$, $r_{fathers} = 0.63$ across all sites); thus, total scores were created by averaging across all seven items. Reliability across all sites was very good ($\alpha = 0.84$ for mothers and $\alpha = 0.86$ for fathers). Huang et al. (2011) established configural and metric invariance of the Discipline Interview across 13 national/regional/racial/ethnic groups within nine countries (six of these groups are included in this study). Furthermore, there is evidence in support of the validity of the Discipline Interview when it has been used to measure the frequency and normativeness of parenting practices across countries and regional/racial/ethnic groups (e.g., Di Giunta et al., 2020; Lansford et al., 2005).

**Rumination** To measure depressive rumination, adolescents completed a 13-item subscale from the Children's Response Styles Questionnaire (CRSQ; Abela et al., 2002), which asks how frequently (0 = *never or almost never* to 3 = *always or almost always*) they respond to feeling down by passively thinking about their sadness and loneliness and dwelling on negative perceptions of themselves and their situation. Total scores were created by averaging across all 13 items. Reliability was very good in the entire sample ($\alpha = 0.86$) as well as for girls ($\alpha = 0.87$) and boys ($\alpha = 0.85$) separately. Tests demonstrating measurement invariance within our sample are presented in the Supplemental Material.

To measure hostile rumination, adolescents completed the 8-item Hostile Rumination Scale (HRS; Caprara, 1986), which asks how characteristic (i.e., 0 = c*ompletely false for me* to 5 = *completely true for me*) it is of them to dwell on angry and resentful feelings and to desire retribution. In factor analyses, we found that one item loaded similarly on two factors (see Supplemental Material), so we dropped that item. Thus, total scores were created by averaging across seven items. Reliability was good in the entire sample ($\alpha = 0.70$) as well as for girls ($\alpha = 0.70$) and boys ($\alpha = 0.70$) separately. Total scores for depressive and hostile rumination were highly correlated with each other (boys $r = 0.38$, $p = < 0.001$; girls $r = 0.34$, $p = < 0.001$) so we aggregated hostile and depressive rumination (z-scores) into one measure reflecting rumination about negative emotions. Tests demonstrating measurement invariance within our sample are presented in the Supplemental Material.

**Anxiety and Depression Symptoms** On the Youth Self-Report (YSR; Achenbach, 1991), youth rated how well 14 items assessing anxiety and depression symptoms described them using a three-point scale (0 = *not true* to 2 = *very true/often true*). Total scores were created by averaging across all 14 items. Reliabilities were good at T1 (boys $\alpha = 0.80$; girls $\alpha = 0.81$) and T3 (boys $\alpha = 0.84$; girls $\alpha = 0.86$). There is good cross-cultural evidence and cross-language equivalence for the YSR (e.g., Achenbach & Rescorla, 2006).

## Data Analytic Plan

We used M*plus* 8 (Muthén & Muthén, 1998–2017) to conduct four path analyses testing for longitudinal mediation and for moderated mediation based on guidelines set forth by Preacher et al. (2007). The first two models estimated relations from mothers' harsh parenting (when children were 10 years old) to anxiety and depression symptoms (at age 13) through daughters' rumination (at age 12; path model 1) and sons' rumination (at age 12; path model 2). Models 3 and 4 estimated analogous relations using fathers' (rather than mothers') harsh parenting. We then tested whether normativeness of harsh discipline moderated the four mediation pathways by including an interaction term between parent harsh discipline and normativeness of harsh discipline (separately for mothers and fathers) as a predictor in each model. Models were examined using the total sample because we were interested in investigating normativeness of harsh discipline as a possible explanation for variability across site/race/ethnicity. All models controlled for mother/father education level (dependent on the model examined; McLeod et al., 2007a, b) and stability of anxiety and depression symptoms from ages 10 to 13. All variables were standardized prior to analyses. In all models, we used full-information maximum likelihood (FIML) to account for missing data due to attrition across time-points (~6% for youth).

Estimates for each indirect effect were calculated using methods outlined by MacKinnon et al. (2002). To examine the significance of each indirect effect, we estimated 95% confidence intervals around each effect using a bootstrapping method with 1000 resamples. Significant indirect effects were identified when confidence intervals did not include zero. We tested for moderated mediation following procedures outline by Preacher et al. (2007; Model 2) for testing conditional indirect effects whereby $a_1$ paths (i.e., maternal and paternal harsh discipline predicting daughters' and sons' rumination) are moderated by W (i.e., normativeness of harsh discipline for mothers and fathers). To estimate each conditional indirect effect, we used the product of coefficients method (i.e., $a_3b_1$) and examined whether mediation was present at three conditional levels of the moderator variable—1 standard deviation below the mean, at the mean, and 1 standard deviation above the mean. We examined conditional indirect effects at all levels of the moderator regardless of the significance of the $a_3$ path since moderated mediation can occur in the absence of a significant interaction effect between the moderator and the IV because "a mediator operates at some levels of the moderator but direct effects occur at other levels" (Wegener & Fabrigar, 2000, p.437).

**Table 2** Descriptive statistics for study variables averaging across all samples

| Time Variable (Reporter) | N | Min, Max | Mean | SD | Skew | Kurtosis |
|---|---|---|---|---|---|---|
| T1 Mother education level | 569 | 0, 27 | 12.62 | 4.61 | -0.04 | -0.17 |
| T1 Father education level | 414 | 1, 27 | 12.35 | 4.86 | 0.03 | -0.38 |
| T1 Harsh discipline (mother-daughter) | 285 | 1.00, 5.00 | 2.39 | 0.77 | 0.44 | -0.23 |
| T1 Harsh discipline (mother-son) | 282 | 1.00, 4.57 | 2.45 | 0.74 | 0.37 | -0.45 |
| T1 Harsh discipline (father-daughter) | 215 | 1.00, 3.86 | 2.03 | 0.62 | 0.64 | -0.13 |
| T1 Harsh discipline (father-son) | 213 | 1.00, 4.86 | 2.09 | 0.67 | 0.84 | 1.32 |
| T1 Normativeness of harsh discipline (mother-daughter) | 284 | 1.00, 5.00 | 2.90 | 0.85 | 0.01 | -0.32 |
| T1 Normativeness of harsh discipline (mother-son) | 282 | 1.00, 5.00 | 2.93 | 0.80 | 0.22 | -0.37 |
| T1 Normativeness of harsh discipline (father-daughter) | 212 | 1.00, 5.00 | 2.69 | 0.84 | 0.36 | -0.24 |
| T1 Normativeness of harsh discipline (father-son) | 212 | 1.00, 4.71 | 2.73 | 0.81 | 0.08 | -0.44 |
| T1 Anxiety & depression symptoms (girls) | 283 | 0.00, 1.57 | 0.44 | 0.32 | 0.86 | 0.74 |
| T1 Anxiety & depression symptoms (boys) | 283 | 0.00, 1.50 | 0.38 | 0.30 | 0.91 | 0.47 |
| T2 Depressive Rumination (girls)[a] | 268 | 0.08, 2.92 | 1.19 | 0.59 | 0.43 | -0.51 |
| T2 Depressive Rumination (boys)[a] | 276 | 0.08, 2.54 | 1.06 | 0.54 | 0.32 | -0.44 |
| T2 Hostile Rumination (girls)[a] | 267 | 0.00, 4.71 | 2.46 | 0.97 | -0.16 | -0.17 |
| T2 Hostile Rumination (boys)[a] | 276 | 0.00, 5.00 | 2.18 | 0.98 | -0.04 | -0.27 |
| T3 Anxiety & depression symptoms (girls) | 261 | 0.00, 1.79 | 0.56 | 0.39 | 0.65 | 0.08 |
| T3 Anxiety & depression symptoms (boys) | 273 | 0.00, 1.43 | 0.36 | 0.30 | 0.96 | 0.56 |

[a]For analyses, depressive rumination and hostile rumination scores were standardized within gender and then averaged to create a composite measure of negative rumination

## Results

### Descriptive Statistics and Correlations

Table 2 shows descriptive statistics for study variables within the full sample reported separately for mothers, fathers, girls, and boys. All variables demonstrated univariate normality (i.e., univariate skewness < 2.0, kurtosis < 7.0). Supplementary Table S1 reports descriptive statistics for study variables separately by group. Table 3 displays zero-order correlations among study variables for the total sample. Correlations reported separately by group are available in Supplementary Tables S2-S7. Supplementary Table S8 provides means and standard deviations for primary T1 predictor variables separately by group and gender.

### Longitudinal Mediation–Maternal Harsh Discipline

More maternal harsh discipline at T1 was associated with higher levels of rumination at T2 among girls ($\beta = 0.15$, $p = 0.02$), but not boys ($\beta = 0.03$, $p = 0.56$) and higher levels of anxiety and depression symptoms at T3 among girls ($\beta = 0.14$, $p = 0.01$), but not boys ($\beta = 0.03$, $p = 0.58$). Rumination at T2 was significantly associated with anxiety and

**Table 3** Correlations among study variables for the total sample

| Variable (reporter) | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| (1) T1 Mother education | - | 0.74** | -0.15* | -0.05 | -0.18** | -0.07 | -0.10 | -0.10 | 0.004 |
| (2) T1 Father education | 0.77** | - | -0.15* | -0.08 | -0.24** | -0.08 | -0.20** | -0.22** | -0.09 |
| (3) T1 Harsh discipline (mother) | -0.14* | -0.05 | - | 0.49** | 0.56** | 0.22** | 0.27** | 0.25** | 0.22** |
| (4) T1 Harsh discipline (father) | 0.07 | 0.04 | 0.40** | - | 0.24** | 0.38** | 0.24** | 0.12 | 0.16* |
| (5) T1 Normativeness of harsh discipline (mother) | -0.20** | -0.17* | 0.59** | 0.20** | - | 0.36** | 0.21** | 0.16** | 0.21** |
| (6) T1 Normativeness of harsh discipline (father) | 0.12 | 0.09 | 0.24** | 0.55** | 0.10 | - | 0.14* | 0.08 | 0.12 |
| (7) T1 Anxiety & depression symptoms (adolescent) | 0.10 | 0.14* | -0.02 | -0.02 | -0.01 | -0.01 | - | 0.43** | 0.46** |
| (8) T2 Rumination[a] (adolescent) | 0.03 | 0.07 | 0.02 | 0.01 | 0.01 | -0.06 | 0.40** | - | 0.51** |
| (9) T3 Anxiety & depression symptoms (adolescent) | 0.12 | 0.18* | -0.001 | -0.002 | 0.07 | 0.02 | 0.47** | 0.43** | - |

Correlations for girls are in the top half of the table. Correlations for boys are in the bottom half of the table

[a]Composite score including hostile and sadness rumination

***$p \leq 0.001$; **$p \leq 0.01$; *$p \leq 0.05$

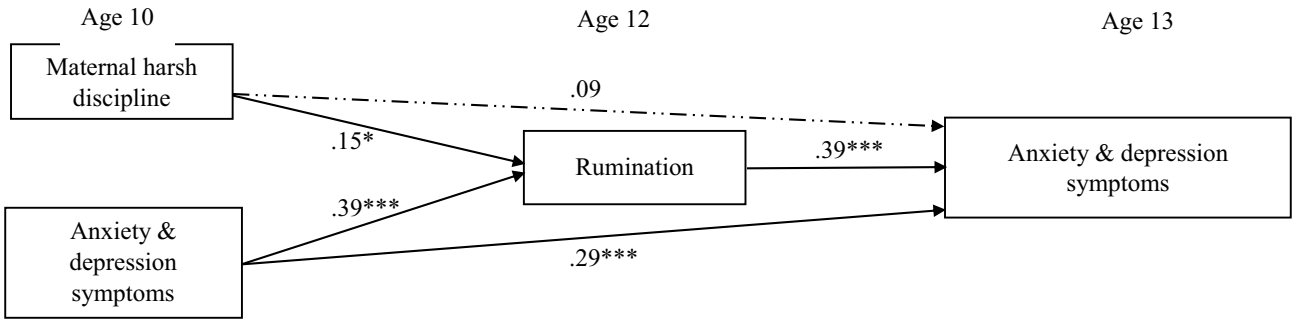


**Fig. 1** Mediation model among girls for mother-reported harsh discipline through rumination to anxiety and depressive symptoms. Model also controls for maternal education level (not displayed for the sake of clarity). Standardized estimates are displayed. ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$. Dashed lines are not significant

depression symptoms at T3 for girls (β = 0.42, $p < 0.001$) and boys (β = 0.30, $p < 0.001$). All reported results controlled for T1 anxiety and depression symptoms and maternal education level. The indirect effect from maternal harsh discipline through rumination to anxiety and depression symptoms was not significant for boys (β = 0.01, 95% CI = -0.02, 0.05). Among girls, T1 maternal harsh discipline was no longer related significantly to T3 anxiety and depression symptoms when T2 rumination was included in the model (β = 0.09, $p = 0.10$). The indirect effect from maternal harsh discipline through rumination to anxiety and depression symptoms was significant for girls (β = 0.06, 95% CI = 0.01, 0.11).[2] Standardized estimates for the full mediation model are displayed in Fig. 1.[3] To test the specificity of our findings to internalizing symptoms, we examined externalizing and aggressive symptoms total scores on the YSR as other possible outcomes (in two separate models with parallel covariates). Neither of these models was significant.

## Longitudinal Mediation–Paternal Harsh Discipline

Paternal harsh discipline at T1 was not significantly associated with T2 rumination or T3 anxiety and depression symptoms for girls (βs = 0.04 and 0.07, *ps* = 0.60 and 0.29) or boys (βs = 0.03 and 0.01, *ps* = 0.55 and 0.83) after controlling for T1 anxiety and depression symptoms and paternal education level. Thus, we did not test for mediation.

## Longitudinal Moderated Mediation–Maternal Harsh Discipline

Significant variability in the normativeness of maternal harsh discipline across the six samples might explain when the indirect effect from maternal harsh discipline through rumination to anxiety and depression symptoms among girls occurred. To test for moderation, we added an interaction term between T1 normativeness of maternal harsh discipline and frequency of maternal harsh discipline to the previously significant mediational model (see Fig. 2). T1 frequency of maternal harsh discipline remained a significant predictor of T2 rumination after controlling for the normativeness of maternal harsh discipline and its interaction with normativeness of maternal harsh discipline (β = 0.17, $p = 0.02$). The interaction term was not a significant predictor of rumination in this model (β = -0.06, $p = 0.27$). However, because we hypothesized that the strength of the indirect effect would be decrease as normativeness of harsh parenting increased, we explored three specific levels of the moderator (i.e., -1 SD, 0, + 1 SD) to test our hypothesis. The indirect effect from maternal harsh discipline to anxiety and depression symptoms via rumination remained significant at mean levels of normativeness of maternal harsh discipline (β = 0.07, 95% CI = 0.02, 0.14) as previously identified in the mediation analysis and at levels of normativeness one standard deviation below the mean (β = 0.10, 95% CI = 0.02, 0.20), but not at levels of normativeness one standard deviation above the mean (β = 0.04, 95% CI = -0.02, 0.11). To illustrate the nature of these findings (see Fig. 3), we plotted the conditional indirect effect (solid line) along with corresponding bootstrapped 95% confidence intervals (dashed lines). Figure 3 demonstrates that the strength of the mediation effect decreases as the normativeness of harsh parenting increases.[4]

[2] Controlling for social desirability did not change the significance of this mediational effect.

[3] We also tested for non-linear (i.e., quadratic) effects of harsh parenting in all our models. Findings were not significantly altered with the inclusion of this term, so we report only linear effects of harsh parenting.

[4] Controlling for social desirability did not change the overall pattern of these moderated mediation effects.

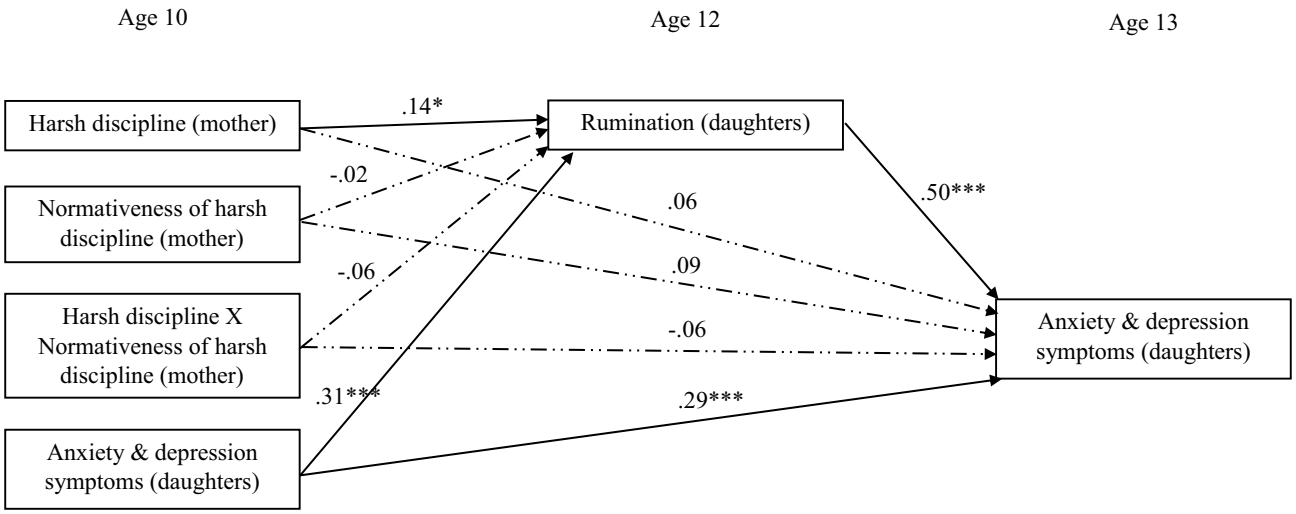


**Fig. 2** Path diagram of moderated mediation analyses. Standardized estimates are displayed. Model controlled for maternal education (not displayed for the sake of clarity). ***$p < 0.001$, * $p < 0.05$

## Discussion

Increasing global costs of mental health disorders indicate a need to understand pathways leading to psychological maladjustment among diverse early adolescents, particularly during a developmental period most amenable to intervention. As such, the current study examined gender-specific longitudinal pathways from harsh parenting through rumination to anxiety and depression symptoms among early adolescents from three countries and six subgroups. Using normativeness theory, we further tested when these longitudinal pathways occurred. To our

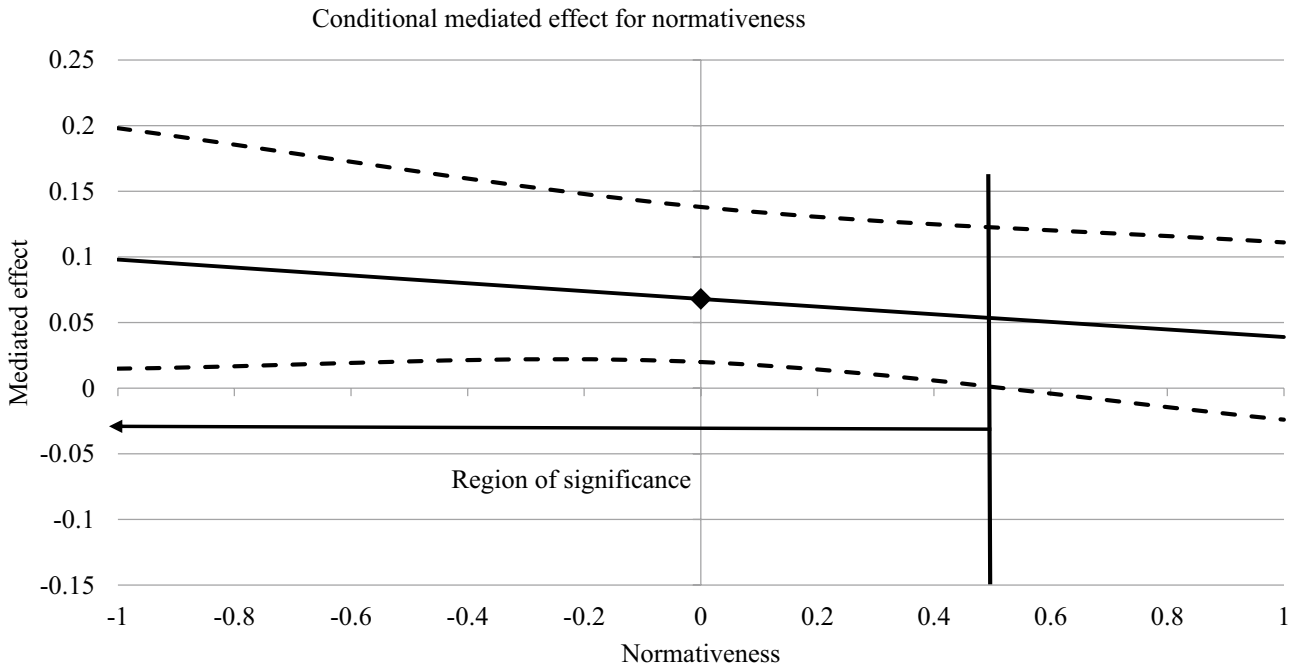


**Fig. 3** Graph of the conditional indirect effect from maternal harsh discipline through girls' rumination to depressive and anxiety symptoms as moderated by normativeness of maternal harsh discipline. Bootstrapped 95% confidence intervals are in dashed lines. The Y axis displays the strength of the indirect effect from maternal harsh discipline through girls' rumination to anxiety and depression symptoms. The X axis displays values of the normativeness of maternal harsh discipline at the mean (0), one standard deviation above the mean (1), and one standard deviation below the mean (-1)

knowledge, this is the first study to examine these pathways among such a diverse sample of early adolescents and their parents.

We found partial support for our hypothesized mediational pathways; specifically, the pathway from maternal harsh discipline used when daughters were 10 years old, through daughters' rumination at age 12, to anxiety and depression symptoms at age 13 was significant. The harsher the discipline mothers used in early adolescence, the more their daughters ruminated, which in turn was associated with increased anxiety and depression symptoms. These findings support evidence that rumination is an important mechanism for understanding how harsh parenting is related to anxiety and depression symptoms among adolescent girls from a variety of countries and racial/ethnic groups. Our results support the generalizability of existing findings that rumination is an important proximal risk factor for mental health symptoms and a key link connecting more distal risk factors, such as parenting, to psychological maladjustment in early adolescence (Gaté et al., 2013; Nolen-Hoeksema & Watkins, 2011), at least for mother-daughter relationships and internalizing symptoms.

Our findings add to the growing evidence on the uniqueness of mother-daughter relationships within the context of emotion regulation. We highlight two factors that may jointly explain our findings—the nature of children's relationship with their mother is likely different from their relationship with their father (Smetana et al., 2006) and gender differences in rumination. Maternal parenting has been conceptualized as typically engendering "attachment relationships" by ensuring feelings of security and comfort, discussing emotions, reassuring and calming children, and building interpersonal intimacy (Paquette, 2004). When mothers use harsh discipline (e.g., physically punishing, making threats, inducing shame), children may experience heightened negative emotional arousal because these parenting behaviors are antithetical to their expectations of security, comfort, and intimacy building behaviors from their mothers. Girls are more likely to ruminate in response to this negative arousal (e.g., Hilt et al., 2017), perhaps attempting to understand the meaning of their mother's harsh discipline, why their mother acted that way (e.g., because of something about their mother or something about themselves), and what might happen as a result. Girls' increased use of rumination is later associated with increased anxiety and depression symptoms. This potential interpretation of our findings aligns with emerging evidence on positive parenting, which indicates that stronger perceptions of support from mothers but not fathers predict better emotion regulation one year later among daughters but not sons (Van Lissa et al., 2019), and more positive maternal parenting behaviors are associated with less rumination and, consequently, fewer anxiety and depression symptoms only among girls (Gaté et al., 2013). Girls' emotion regulation skills and consequent anxiety and depression symptoms may therefore be linked with maternal parenting behaviors that jeopardize "attachment relationships" as well as maternal parenting behaviors that promote such relationships.

The finding that maternal harsh discipline was not significantly related to rumination or anxiety and depression symptoms among boys raises several empirical questions worth investigating. Given our outcomes were measured two (i.e., rumination) and three (i.e., anxiety and depression symptoms) years after maternal harsh discipline, it is possible that the effects of maternal harsh discipline on boys' rumination and anxiety and depression symptoms are not as long-lasting as the effects on girls. Moreover, adolescent boys' rumination and anxiety and depression symptoms may be better predicted by maternal parenting behaviors not investigated in the current study, or mother's use of harsh discipline with their sons may be associated with emotion dysregulation and psychological adjustment outcomes not measured in this study. Investigating these questions in future research will be critical given our finding that boys who ruminated more at age 12 experienced more anxiety and depression symptoms at age 13 after controlling for their initial levels of anxiety and depression symptoms at age 10.

Paternal harsh discipline was not significantly related to either sons' or daughters' rumination or anxiety and depressive symptoms (after controlling for baseline anxiety and depression symptoms and father education). Prior research has also not found significant relations between paternal harsh discipline and anxiety and depression symptoms among older adolescents (ages 14 to 15) from the countries we examined (Di Giunta et al., 2020). To our knowledge, our study was the first to examine the relation between paternal harsh discipline and rumination. Focusing on paternal harsh discipline may not have adequately probed the uniqueness of father's relationships with their children. Paternal parenting behaviors have been conceptualized as typically engendering "activation relationships" by encouraging taking chances and trying new things, increasing arousal, engaging in more physical interactions, and using more action-related language (Paquette, 2004). Parenting behaviors, such as overcontrolling behaviors, that are associated with anxiety and depression symptoms (e.g., Yap & Jorm, 2015) and more representative of "activation relationships" may be better predictors of children's emotion regulation. For instance, Van Lissa et al. (2019) found that more paternal behavioral control was related longitudinally to worse emotion regulation among both adolescent boys and girls. Furthermore, focusing on rumination may not have appropriately captured emotion regulation deficits or skills associated with paternal "activation relationships." Emotion regulation skills, such as problem solving or distraction, are possible outcomes that may better align with paternal

"activation relationships." Because boys may be encouraged to use problem solving or distraction emotion regulation strategies more than girls (e.g., Eisenberg et al., 1998), it would be particularly interesting to investigate whether paternal parenting behaviors are predictive of specific types of emotion regulation differentially for boys and girls as suggested by prior theory (e.g., Deater-Deckard & Dodge, 1997) and our mother-daughter specific effects.

Rumination is one possible explanation for *how* maternal harsh discipline is related to anxiety and depression symptoms among adolescent girls. Because we had a highly diverse sample of early adolescents, we were also interested in exploring *when* that mediational pathway might occur by examining the normativeness of harsh discipline. Within contexts where maternal harsh discipline was highly normative, the negative relation for daughters who experienced more maternal harsh discipline was attenuated. Daughters ruminated less and consequently reported fewer anxiety and depression symptoms several years after experiencing maternal harsh discipline when that harsh discipline was more normative. Although exploratory, our finding is partially consistent with evidence supporting normativeness theory which posits that the degree of harm incurred by harsh parenting practices is higher within contexts where such practices are viewed as less normative.

Several limitations warrant discussion. We only examined parenting effects on children and rumination's effect on anxiety and depression symptoms, yet there are likely bidirectional relations among these variables that will be important to understand (Van Lissa et al., 2019). Mothers and fathers reported only about their own use of harsh discipline. Mother reports about fathers' use of harsh discipline (and vice versa) would offer an important perspective not examined in the current study. Moreover, our assessment of the normativeness of harsh parenting asked mothers and fathers to report about how frequently other parents in their community used each behavior (rather than mothers and fathers specifically). Examining parent-specific normativeness of harsh parenting could be important to examine in future studies. Relatedly, examining inter-informant agreement between child and parent reports of the frequency and normativeness of harsh discipline would be another interesting avenue for research. While normativeness is an excellent starting point for understanding when mediational pathways occurred, there are likely other important variables that could influence the pathway from maternal harsh discipline through girls' rumination to anxiety and depression symptoms. For example, children's temperament, such as negative affect, influences the strength of the relation between negative parenting behaviors and higher rumination (Hilt et al., 2012), and inhibitory control has been shown to moderate the relation between positive parenting and rumination (Schweizer et al., 2018).

We only examined harsh parenting; however, parents likely use a mix of both positive and negative parenting behaviors simultaneously. Future research could examine the moderating effects of positive parenting behaviors on pathways found in our study. Harsh parenting has been linked to both internalizing and externalizing symptoms among adolescents; however, our study focused only on predicting internalizing symptoms. Future research should examine similarities and differences in mechanisms that can explain why and when harsh parenting predicts externalizing symptoms relative to internalizing symptoms. It is also worth noting that our findings may not generalize to single parent households given the high rate of married, remarried, and cohabiting relationships between parents in this study. Finally, mediation and moderated mediation require more power than examining direct effects so we cannot rule out the possibility of having made Type II errors.

Our results suggest that mother-daughter relationships may be especially fruitful targets for interventions focused on reducing internalizing symptoms among early adolescents from a wide-range of different backgrounds. The ability to mitigate the harmful effects of negative maternal parenting behaviors through empirically based parenting interventions is well-established; moreover, given our findings, the effectiveness of such interventions may be further enhanced by considering how well maternal parenting behaviors "fit" within the context surrounding each family. It is likely even more important for interventions to target adolescent girls' rumination given it linked negative maternal parenting behaviors to internalizing symptoms. Our findings align well with calls for prevention efforts via emotion regulation to thwart the onset of mental health symptoms (Sheppes et al., 2015) and suggest further that such efforts could have positive effects for nationally and racially/ethnically diverse adolescents.

Explicating pathways to internalizing symptoms among diverse adolescents is a critical step toward enhancing the effectiveness of interventions worldwide. Through longitudinal analyses during the period of early adolescence, we found that harsh maternal discipline predicted daughters' maladaptive rumination in response to negative emotions, which was associated with increased internalizing symptoms, especially when that harsh discipline was out of the bounds of normative parenting behaviors. Intervention and prevention efforts mitigating negative parenting behaviors while considering norms and enhancing adolescents' emotion regulation abilities during early adolescence could ultimately have far-reaching effects that enhance the psychological well-being of children around the world.

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**Authors' Contributions** Authors contributed to this study and manuscript in the following ways: Conceptualization and methodology: Anne-Marie Iselin, Laura DiGiunta, Jennifer E. Lansford, Kenneth A. Dodge, Nancy Eisenberg, Concetta Pastorelli, Liliana Maria Uribe Tirado, and Dario Bacchini. Material preparation, data collection, and data curation: Laura DiGiunta, Carolina Lunetti, Jennifer E. Lansford, Concetta Pastorelli, Liliana Maria Uribe Tirado, Dario Bacchini, Eriona Thartori, Irene Fiasconaro, Giulia Gliozzo, Ainzara Favini, Emanuele Basili, Flavia Cirimele, Chiara Remondi, and Ann T. Skinner. Formal analysis and investigation: Anne-Marie Iselin, Laura DiGiunta, and Carolina Lunetti. Writing – original draft presentation: Anne-Marie Iselin. Writing – reviewing and editing: Anne-Marie Iselin, Laura DiGiunta, Carolina Lunetti, Jennifer E. Lansford, Nancy Eisenberg, and Ann T. Skinner. All authors read and approved the final manuscript.

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**Availability of Data, Material, and Code** De-identified data, materials, and code from analyses are available from the first author.

## Compliance with Ethical Standards

**Conflict of Interest/Competing Interests** The authors have no relevant financial or non-financial interests to disclose.

**Ethics Approval** All procedures performed in this study were in accordance with the ethical standards of institutional research committees affiliated with all data collection sites and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

**Consent to Participate and Publish** Parents provided informed consent and adolescents provided assent to participate in the study and publish their data.

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