Maternal socialization profiles, child gender, and later child regulation and internalizing symptoms

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ABSTRACT

We investigated main and interactive longitudinal associations of mothers' responses to children's emotions (emotion socialization) and child gender with children's emotion regulation and internalizing symptoms, applying person- and variable-centered analyses. Participants were 320 Australian mothers of children (M_{age} = 7.4 years; 51% boys) who completed surveys two times. There were no longitudinal associations of four maternal socialization profiles with child regulation or symptoms, but there were profile differences; mothers with a punishing/minimizing profile had children with the poorest regulation, low involved mothers had children who were most regulated, and coaching/accepting mothers had children with the highest anxiety. Additionally, girls had higher anxiety and less depressive symptoms than boys. In variable-centered analyses, mothers higher in emotion-focused responses had children who increased in anxiety symptoms over time. Also, mothers higher in emotion minimization had girls who decreased in regulation and increased in depressive symptoms over time, with the reverse found for boys.

Introduction

Children's emotional development is based in part on how parents respond to their children's emotions, referred to as a process of parent emotion socialization (Breaux, McQuade, Harvey, & Zakarian, 2018; Cui et al., 2020; Hastings, Klimes-Dougan, Kendziora, Brand, & Zahn-Waxler, 2014; Hurrell, Hudson, & Schniering, 2015). In the parent emotion socialization literature, parent responses can be supportive or unsupportive, with supportive responses described as those that support the child to engage in problem-solving or the appropriate expression of emotion (Eisenberg, Fabes, Guthrie, & Reiser, 2002; Zimmer-Gembeck, Rudolph, Kerin, & Bohadana-Brown, 2022). In contrast, unsupportive responses are described as those that exhibit hostility about emotional displays or minimize the emotion. However, most past research does not consider that parents rarely use one response in isolation when attending to their children's negative emotions. Instead, a parent can often engage in complex patterns of supportive and unsupportive responses. To directly consider this possibility, parental (usually maternal) responses have been profiled using a person-centered approach (Howe & Zimmer-Gembeck, 2022; Miller-Slough, Dunsmore, Zeman, Sanders, & Poon, 2018; Sosa-Hernandez, Sack, Seddon, Bailey, & Thomassin, 2020; Wang, Liang, Zhou, & Zou, 2019). In this past research (mostly cross-

sectional), multiple profiles of parent emotion socialization have been found and profiles have been associated with differences in children's internalizing symptoms and regulation. The aim of the present research was to extend a prior cross-sectional study (Howe & Zimmer-Gembeck, 2022) to investigate whether children's (age 6 to 8 years) patterns of emotion regulation and internalizing symptoms across two time points were a function of maternal socialization profile, while also testing unique and moderating effects of child gender.

Emotion socialization as related to children's regulation and symptoms

Mothers' responses to children's negative emotions provide a rich tapestry of opportunities for children to learn socially acceptable ways to manage, regulate, and express their emotions (Eisenberg, Cumberland, & Spinrad, 1998). In accordance with these views, supportive parent emotion socialization has been related to more effective child emotion regulation and fewer internalizing symptoms (Breaux et al., 2018; Cui et al., 2020; Hastings et al., 2014; Hurrell et al., 2015). Conversely, non-supportive parent emotion socialization has been related to children's higher emotional lability, dysregulation of emotion, and internalizing symptoms.

Although such past research using a variable-oriented approach has

been informative, previous studies of parent emotion socialization in relation to children's emotional adjustment suggest there is benefit in using a person-centered approach. In this research, three or four parent profiles, which incorporated multiple emotion socialization practices, have been identified that differentiate parents from each other. These studies have varied in whether they focus on both parents or on just mothers or fathers. One study examined maternal and paternal as a composite of family socialization (Miller-Slough et al., 2018), two studies examined parent socialization (either maternal or paternal) (McKee et al., 2022; Sosa-Hernandez et al., 2020), two studies examined maternal socialization only (Howe & Zimmer-Gembeck, 2022; Trevethan et al., 2021), and one study examined paternal socialization only (Wang et al., 2019). Regarding the specific parent profiles, all past studies used the same measure of emotion socialization (the Coping with Children's Negative Emotions Scale; Fabes, Poulin, Eisenberg, & Madden-Derdich, 2002). All studies identified a coaching/accepting profile (high in supportive and low in unsupportive responses) and all except one study found a punishing/minimizing profile (high in unsupportive and low in supportive responses) (the exception was McKee et al.). Notably, three of the six studies (Howe & Zimmer-Gembeck; McKee et al.; Wang et al.) identified the same four parent profiles, which consisted of a coaching/accepting, a punishing/minimizing, a low involved (low on all socialization), and a blended profile (average supportive and unsupportive socialization). Regarding the differences in children's emotional functioning between profiles, unanimous across the studies was the finding that parents with a coaching/accepting profile reported better child emotion regulation compared to parents in the other profiles, and parents in the punishing/minimizing profile consistently had children who were the most emotionally dysregulated. However, parent profile differences in child internalizing symptoms were inconsistent, with some studies reporting fewer and others reporting more child internalizing symptoms when parents were in a coaching/accepting profile. Additionally, one study reported children had the least anxiety symptoms when their mothers had a blended socialization profile (Howe & Zimmer-Gembeck).

While attention to person-centered studies of parent emotion socialization is on the rise, to our knowledge there has only been one study that has examined parent emotion socialization profiles in relation to children's emotion regulation and internalizing symptoms *longitudinally*. In this one study (McKee et al., 2022, children ages 3 to 12 years), mothers and fathers reported their children's emotion regulation and internalizing symptoms, with associations examined across a 4-month period. When T1 parent emotion socialization profiles were compared, parents with a punishing/minimizing profile had children with the highest T2 emotion dysregulation and internalizing symptoms, whereas parents with a coaching/accepting profile had children with the lowest T2 emotion dysregulation and internalizing symptoms. Although emotion socialization profiles were measured at T1 and child emotion regulation and symptoms were measured four months later at T2, there was no analysis of change in regulation and symptoms across the two time points.

The study of McKee et al. (2022) is novel and provides evidence of the usefulness of parent-centered analyses of emotion socialization within a longitudinal design. Yet, the study highlights several opportunities to further contribute to this area of research, which we address in the present study. First, the study included a large age range of children (3–12 years). Because there can be important differences in children's emotional development and parent socialization between preschool, school age children, and those in the transition to adolescence (Mirabile, Oertwig, & Halberstadt, 2018), we limited the age of children to middle childhood (6 to 8 years). Second, the 4-month lag between times of measurement was brief and may not have been sufficient to allow substantial change in children's regulation or symptoms, limiting their ability to predict any change over time. To address this, the time between measures in the present study was extended to over a year, with an average time to follow-up of 15.6 months.

Child gender, socialization of emotion, and emotion regulation and symptoms

In addition to the above study design improvements, we placed more attention on child gender in the present study, given that gender is often described as an important correlate of parents' emotion socialization and of children's emotion regulation and internalizing symptoms (Bender, Reinholdt-Dunne, Esbjørn, & Pons, 2012; Merrell & Dobmeyer, 1996). Parents' responses to their children's emotions have been found to differ depending on the gender of the child (Cassano, Perry-Parrish, & Zeman, 2007; Garside & Klimes-Dougan, 2002). Parents have been found to use more emotional expressions when discussing emotional events with their daughters compared to sons (Adams, Kuebli, Boyle, & Fivush, 1995; Fivush, Brotman, Buckner, & Goodman, 2000) and tend to be more unsupportive of sons' negative emotions compared to daughters (Garside & Klimes-Dougan; Klimes-Dougan et al., 2007; McNeil & Zeman, 2021). Further, parents report more supportive emotion socialization responses with daughters compared to sons, such as encouraging their child to express sadness and help them problem solve ways to address the source of their discomfort (Cassano et al.). There are also gender differences in how children express and regulate their emotions that are apparent from preschool age (Chaplin & Aldao, 2013) through to adulthood (Zimmermann & Iwanski, 2018). Girls have been found to use more emotion regulation strategies when they are sad or anxious and girls report more expression of emotion and social support seeking to regulate their emotions when compared to boys (Sanchis-Sanchis, Grau, Moliner, & Morales-Murillo, 2020). However, it should be noted that these gender differences tend to be small during childhood (Chaplin & Aldao; Sanchis-Sanchis et al.).

Evidence of gender differences raises the possibility that maternal emotion socialization responses may have different associations with emotion regulation and internalizing symptoms according to the gender of the child. However, we could not locate any past study that examines this possibility during middle childhood. Thus, we addressed this gap by considering whether child gender moderates the longitudinal relationship between maternal emotion socialization and child emotion regulation and internalizing symptoms, while also considering the unique longitudinal associations of gender with child regulation and symptoms.

Person-centered and variable-centered approaches

Our primary aim in this study was to use a person-centered approach to consider how maternal socialization profiles relate to patterns of children's emotion regulation and internalizing symptoms across two time points. Person-centered approaches essentially treat the individual as the unit of analysis by identifying subgroups who share a set of characteristics that are also distinct from other identified subgroups (Muthén & Muthén, 2000). In the context of maternal socialization, a person-centered approach was used to identify profiles of mothers based on their pattern of socialization. In comparison, variable-centered analyses allow for specificity, permitting testing of how isolated variables relate to, influence and, in the context of a longitudinal design, predict later outcomes. Thus, person-centered and variable-centered approaches can provide supplementary information and using the two approaches to complement each other has been recommended (Laursen & Hoff, 2006). Therefore, we used both person-centered and variable-centered analyses in this study.

The present study

In summary, the present study extends on a previous person-centered cross-sectional study that examined the relationship between maternal emotion socialization profiles and child emotion regulation and anxiety and depressive symptoms in 6- to 8-year-old children (Howe & Zimmer-Gembeck, 2022). The primary aim was to test associations between maternal emotion socialization behaviors with change in children's

emotion regulation and internalizing symptoms over two time points, while also considering children's gender. Maternal emotion socialization profiles identified in our previous study (Howe & Zimmer-Gembeck, 2022) were maintained for use in this study.

We focused on children in the middle childhood years (age 6 to 8 years at T1) in this study. This age period represents cognitive, emotional, and social growth that provides opportunity for a more complex understanding and capacity for emotion regulation (Eisenberg & Morris, 2002). During this age period, children's advancing cognitive capacities allow them to consciously engage and participate in emotion regulation processes for the first time (Skinner & Zimmer-Gembeck, 2016). At the same time, children start to understand that internal experiences of emotions do not always match external expressions of emotions, they become better at masking their emotions, and they begin to grapple with motivations for masking feeling states and modulating their expressed emotions. While mothers are still critical to the socialization of children across these years (Sanders, Zeman, Poon, & Miller, 2015), children between the ages of 6 to 8 also begin to have more autonomy from parents' direct guidance (Shipman, Zeman, Fitzgerald, & Swisher, 2003). Saarni (1988) found that 7-year-olds preferred expressing their emotions to parents rather than peers, but this pattern begins to reverse in the years following, eventually becoming a preference for peers over parents as children get older. Therefore, examining maternal socialization and child regulation and symptoms during this age period is important so that researchers can moved towards a more comprehensive picture of the maternal socialization responses associated with emotional regulation and symptom progression from early childhood through adolescence.

As a complement to these analyses, we also used variable-centered analyses to examine specific maternal emotion socialization behaviors, child gender, and their interaction as correlates of children's time 2 (T2) emotion regulation and internalizing symptoms, after controlling for baseline (T1) regulation and symptoms. The following hypotheses were tested:

Hypothesis 1 (person-centered analyses). (a) Children whose mothers have a coaching/accepting profile (high supportive and low unsupportive responses) will have higher emotion regulation relative to children with mothers in the other profiles, which will increase over time; (b) Children of mothers with a punishing/minimizing profile (high unsupportive and low supportive responses) will have lower emotion regulation relative to children with mothers in the other profiles, which will decrease over time; (c) Children of mothers with a blended profile will have lower anxiety symptoms compared to children with mothers in other profiles, which will decrease over time.

Hypothesis 2 (child gender comparisons). Boys will be lower in emotion regulation and girls will be higher in anxiety and depressive symptoms.

Hypothesis 3 (variable centered analyses). (a) Supportive maternal socialization responses will be associated with an increase in children's emotion regulation and a decrease in children's anxiety and depressive symptoms; (b) Unsupportive maternal responses will be associated with a decrease in children's emotion regulation and an increase in children's anxiety and depressive symptoms.

Method

Participants

Participants were 320 Australian mothers of a 6- to 8-year-old child ($M_{age} = 7.4$ years, SD = 0.89, 154 girls and 164 boys, 2 not reported) at T1. Most mothers reported that they were White (92%), whereas others were Aboriginal or Torres Strait Islander (3%), Asian (2%), or identified as other (3%). Most mothers lived with the other biological parent or a partner (77%), whereas the remaining mothers were single (23%). Most mothers reported part-time (34%) or full-time (28%) employment, with 21% stay-at-home mothers, self-employed (8%), or students (9%).

Mothers reported at least some university (57%), vocational training (33%), high school only (6%), or had not completed high school or other training (3%). Most partners (78%) had completed at least vocational training or other tertiary education, with others completing high school education or less (22%). When compared to census data for the region and the state, 22% of adults in the state reported at least some university education. Overall, the present sample overrepresented individuals with university experience. However, other demographic characteristics did not differ substantially from those of the region or the state.

Of the original sample, all participants were initially contacted 12 months following T1 and 220 (69%) completed a second survey an average of 15.6 months later (SD = 3.5; range 12.0–24.8 months, children's M_{age} at time of second survey = 8.8 years, SD = 0.92, 110 girls and 110 boys). To assess whether the participants who completed T2 differed from those who did not, we compared the two groups on demographic (child gender, age, mothers age, relationship, and employment status), and other measures (maternal emotion socialization scores, child emotion regulation and internalizing symptoms scores). There was one difference; mothers who did not complete the second survey were younger when they had their first child ($M_{years} = 26.11$, SD = 5.34) than mothers who did complete the second survey ($M_{years} = 27.37$, SD = 4.70), $t(306) = -2.13$, $p = .03$). The length of time (in months) between T1 and T2 for each of the 220 longitudinal participants was also computed to examine their correlations with all other measures, and there were no significant correlations. One-way ANOVA revealed that time between survey response did not differ between maternal socialization profiles. Finally, Little's MCAR test was not significant, $\chi^2(4) = 2.88$, $p = .580$, supporting the conclusion that the data were missing completely at random. To manage missing data, multiple imputation was used to estimate 20 imputed data sets, from which pooled means, correlations, and model statistics were calculated. Age was missing for two children and gender was missing for two children. Therefore, $n = 316$ for analyses that involved age and gender, whereas $n = 318$ for analyses that involved gender but not age.

Procedure

Participants were recruited via social media advertisements targeted to mothers of 6- to 8-year-old child living within a 150 km radius of the university area, university email contact lists, flyers posted at schools and in public places, and via word of mouth. Most mothers who completed the survey were channeled via the social media advertisements, followed by the university contact pool, then the flyers, and lastly word of mouth. Two $200 vouchers were offered for participation via a random drawing. The survey was completed online via a link provided after personal email contact. Consent and information packages were distributed via email and were also made available on the survey website. If mothers had more than one child within the 6- to 8-year age range, they were instructed to choose the eldest child when answering the questions. Follow up for the second wave of the study was made 12 months later via email, text, and telephone contact to all participants. Multiple contact attempts were made to all participants, with $5 vouchers being offered on the 4th contact, which increased in $5 increments to a $20 voucher on the 8th and final point of contact.

Measures

All measures selected have been widely used and had evidence of good or excellent reliability and validity.

Children's anxiety and depression symptoms

The 25-item Revised Children's Anxiety (15 items) and Depression (10 items) Scale – parent report short version (RCADS-25; Chorpita, Moffitt, & Gray, 2005) was used to measure depression (e.g., 'my child feels sad or empty') and anxiety symptoms (e.g., 'my child worries what others think of them'). Responses ranged from 1 = *never* to 100 = *always*.

Cronbach's α was 0.86 for depression and 0.86 for anxiety items, which is consistent with previous reports.

In the present study, we determined the proportion of children with borderline and clinical levels of depression and anxiety using USA gender-based norms for 9-year-olds (Ebesutani, Korathu-Larson, Naka-mura, Higa-McMillan, & Chorpita, 2017). Thirty girls scored in the borderline (7, 5%) or clinical (23, 14%) range for anxiety, whereas 26 girls scored in the borderline (10, 6%) or clinical range (16, 10%) for depression. Forty-four boys scored in the borderline (10, 6%) or clinical range (34, 20%) for anxiety and 43 boys scored in the borderline (14, 8%) or clinical range (29, 17%) for depressive symptoms.

Emotion regulation

The 24-item Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997) was used to measure children's emotion regulation. Parents report how often their child displays certain developmentally appropriate be-haviors, yielding measures of dysregulated negative affect and mood lability (negativity/lability scale; e.g., 'exhibits wide mood swings', 10 items); and the processes central to adaptive regulation such as empathy and emotional self- awareness (emotion regulation; e.g., 'can say when s/he is feeling sad, angry or mad, fearful or afraid', 14 items). Usually, response options range from 1 = *never* to 4 = *always*. Item responses were modified to conform to the RCADS format (range from 1 = *never* to 100 = *always*). The Cronbach's α was 0.91 for the negativity/lability items and 0.86 for the emotion regulation items.

Maternal emotion socialization

To measure maternal emotion socialization, the Coping with Chil-dren's Negative Emotions Scale (CCNES; Fabes et al., 2002) was used. The CCNES measures how parents typically respond to young children's negative affect when children experience distressing events. Parents are presented with 12 hypothetical vignettes in which the child reacts with distress or anger, and then reports their anticipated use of six possible responses, using a scale from 1 (*not at all likely*) to 7 (*very likely*). Six subscales are derived that reflect the specific types of responses parents tend to use in these situations, namely distress, punitive, minimization, expression encouragement, emotion-focused and problem-focused re-sponses. An example of a vignette and a problem-focused response is, "If my child loses some prized possession and reacts with tears, I would help my child think of places he/she hasn't looked yet". Cronbach's αs ranged from 0.73 to 0.88 in the present study.

Using T1 data from this study, four maternal socialization groups were identified in a previous study (Howe & Zimmer-Gembeck, 2022). To identify these profiles, the six parent socialization subscales were subjected to a 2-step clustering procedure. Briefly, the maternal social-ization clusters (or profiles) were 'coaching/ accepting' (characterized by above average scores on all the supportive emotion socialization subscales and also below average for non-supportive emotion, *n* = 98); 'blended' (characterized by an average level of both supportive and non-supportive emotion socialization responses, *n* = 122); 'punishing/ minimizing' (characterized by below average supportive and above average non-supportive emotion socialization, *n* = 52); and 'low involved' (characterized by mother's who were below average across all emotion socialization responses, *n* = 48). These maternal profiles were maintained for use in the present study.

Overview of the data analysis

Descriptive statistics were calculated, and distributional properties of all measures were examined. A square root transformation was applied to T1 and T2 child anxiety and depressive symptom scores to correct moderate positive skew. These transformed measures were used in all analyses; however, raw means (*Ms*) and standard deviations (*SDs*) are displayed in Table 1 for ease of interpretation. Next, correlations were estimated between all T1 measures before conducting the primary analyses in three parts. First, we used four mixed-model ANCOVAs (with pairwise comparisons using Bonferroni correction) to compare chil-dren's emotion regulation, lability/negativity, and depressive and anx-iety symptoms across time between four maternal emotion socialization profiles identified in a previous study (see Howe & Zimmer-Gembeck, 2022) and child gender. Significant gender × maternal socialization interactions were probed using simple effect analysis. T1 child age was included as a covariate in these models. Due to the possible comorbidity of anxiety and depressive symptoms, child anxiety was included as a covariate in the model of children's depression and child depression was included as a covariate in the model of children's anxiety.

Second, linear regression analyses were used to examine variable-centered interrelations between the six measured T1 maternal emotional socialization subscales and child gender with changes in child regulation and symptoms. We regressed each of the four T2 measures of child emotion regulation and symptoms on the six T1 maternal emotion socialization responses plus child gender, and the T1 measure of the dependent variable. Also, there were six interactions to test (gender × each maternal socialization measure) for each dependent variable, resulting in a total of 24 regression models. To test interactions, we centered variables before forming interaction terms and used SPSS to estimate pooled parameter estimates. Tolerances were calculated to assess multicollinearity across all models, and all were within acceptable limits. Anxiety was covaried in the model of depression and depression was covaried in the model of anxiety.

Table 1

Means (M), Standard Deviations (SD), and Correlations between all T1 Measures (N = 320), with Correlations Between Repeated Measures Displayed on the Diagonal.

Measure	1	2	3	4	5	6	7	8	9	10	11	12
1. C Depression	0.71**											
2. C Anxiety	0.78**	0.69**										
3. C Emotion Reg	−0.63**	−0.50**	0.75**									
4. C Lability/Neg	0.62**	0.44**	−0.59**	0.79**								
5. M Problem-Focus	0.00	0.06	0.17**	−0.05	0.64**							
6. M Emotion-Focus	0.06	0.07	0.03	0.08	0.61**	0.61**						
7. M Exp Enc	−0.02	0.01	0.11	−0.01	0.53**	0.44**	0.70**					
8. M Punitive Resp	0.08	0.10	−0.18**	0.22**	−0.34**	−0.19**	−0.43**	0.67**				
9. M Distress Resp	0.15**	0.16**	−0.22**	0.21**	−0.23**	−0.06	−0.28**	0.62**	0.70**			
10. M Minimization	0.01	0.00	−0.12**	0.15**	−0.26**	−0.07	−0.37**	0.74**	0.46**	0.69**		
11. C Age[#]	0.06	0.03	0.00	−0.04	0.02	0.00	−0.11*	0.01	0.04	−0.03	–	
12. C Gender[#]	−0.08	0.04	0.11*	0.09	0.01	−0.02	0.07	−0.08	−0.03	−0.08	−0.00	–
M	20.43	23.43	71.10	38.67	5.89	5.73	5.48	2.43	2.93	2.63	7.45	0.48
SD	16.07	15.18	12.95	18.70	0.47	0.62	0.69	0.70	0.71	0.74	1.59	0.48

Note. C = child. Emotion reg = emotion regulation. M = maternal. Exp enc = expressive encouragement. Resp = responses. Neg = negativity. Gender: 0 = boys, 1 = girls. [#]*n* = 318. Correlations of measures within T2 were similar to those within T1.
*p < .05. **p < .01.

Results

Descriptive information and correlations

Means (*M*s), standard deviations (*SD*s), and correlations between T1 measures can be found in Table 1. Children with more anxiety and depressive symptoms had lower emotion regulation, higher lability/ negativity, and mothers who reported more distress in response to their children's emotions. In addition, children's emotion regulation tended to have small, and intermittently significant, associations with maternal emotion socialization. Child gender was associated with emotion regulation, specifically girls scored higher on regulation than boys. Child age was negatively associated with maternal use of expressive encouragement, so mothers of older children used this response less, relative to mothers of younger children. As shown on the diagonal in Table 1, there was strong rank stability in children's symptoms, emotion regulation difficulties, and maternal emotion socialization behaviors. Correlations of maternal and child variables across time were also calculated, and they were similar to the correlations within T1.

Person centered analyses

Estimated marginal means (*M*s) and standard errors (*SE*s) for maternal socialization profiles, child gender, and the within subject factor of time (T1, T2) are displayed in Table 2. Across the four person-centered mixed-model ANCOVAs, there was no support for the hypothesized longitudinal associations (H1), given that the time × maternal socialization profile interactions were not significant (see Table 3). However, there was a significant main effect of maternal socialization profile in the models of child emotion regulation, lability/ negativity, and anxiety symptoms. For child emotion regulation, mothers with a punishing/minimizing profile reported their children had poorer emotion regulation relative to all the other profiles. For child lability/negativity, mothers in two profiles, punishing/ minimizing and blended, reported their children had more lability/negativity (i.e., poorer emotion regulation) relative to mothers in the low involved profile. For child anxiety symptoms, mothers in the coaching/accepting profile reported more child anxiety symptoms than mothers with a blended profile.

There was a significant main effect of gender in the anxiety and depression models. Overall, girls were higher in anxiety symptoms and boys were higher in depressive symptoms (thus providing partial support for child gender differences, H2). There was no significant main effect of gender for emotion regulation or lability/ negativity, but this was qualified by a significant time x gender interaction in the model of emotion regulation. Simple effects revealed that boys' emotion regulation did not change from T1 to T2, whereas girls emotion regulation

Table 3

Results of Mixed-Model ANCOVAs of Children's Emotion Regulation and Anxiety and Depressive Symptoms ($n = 316$).

	DV: Emotion Regulation $F(3,307)$ η^2	DV: Lability/ Negativity $F(3,307)$ η^2	DV: Anxiety Symptoms $F(3,307)$ η^2	DV: Depressive Symptoms $F(3,307)$ η^2
Between subject effects				
Maternal Profile	4.04*0 .04	2.90*0 .03	3.06*0 .03	1.260 .01
Gender	2.970 .01	1.160 .00	10.16*0 .03	4.13*0 .01
Within subject effects				
Time	2.910 .01	1.730 .01	5.67*0 .02	9.15*0 .03
Time x Maternal Profile	0.620 .01	0.850 .01	1.560 .02	1.850 .01
Time x Gender	6.09*0 .02	0.530 .00	0.400 .00	1.010 .00

Note. DV = dependent variable. All models included age as a covariate. The model of anxiety symptoms includes T1 depressive symptoms as a covariate. The model of depressive symptoms includes T1 anxiety symptoms as a covariate. Between subject interactions and 3-way interactions were not significant, so they are not shown here. Gender: 0 = boys, 1 = girls.
* $p < .05$. Significance Bonferroni adjusted (the actual observed *p* value was multiplied by the number of comparisons for that model and compared to an alpha value of 0.05).

slightly increased (see Fig. 1). Regarding within subject effects, a significant main effect of time indicated a small increase in anxiety and depressive symptoms from T1 to T2.

Variable centered analyses: changes in child emotion regulation and symptoms

The results of each model regressing children's emotion regulation and anxiety and depressive symptoms at T2 on the six measured maternal emotion socialization responses (problem-focused, emotion-focused, expression encouragement, punitive, distress and minimization responses), gender, and their interaction (controlling for the respective T1 outcome, and controlling for T1 anxiety *and* depressive symptoms in the anxiety and depression models) are displayed in Table 4. Across the models, there was one significant association of T1 maternal socialization with children's T2 emotion regulation or symptoms; T1 maternal emotion-focused socialization was associated with an increase in children's anxiety symptoms at T2 relative to T1 (in contrast to H3).

Gender was not significant in any model. Yet, there were two

Table 2

Means (M) and Standard Errors (SE) for Each Child Measure of Emotion Regulation and Symptoms at T1 and T2, for each Maternal Emotion Socialization Profile, and for Boys and Girls, Controlling for Age ($n = 316$).

	Emotion Regulation		Lability/ Negativity		Anxiety Symptoms		Depressive Symptoms	
	M	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*
Time								
Time 1	70.67[a]	0.78	38.09[a]	1.13	4.61[a]	0.06	4.10[a]	0.07
Time 2	71.69[a]	0.92	38.05[a]	1.24	4.65[a]	0.09	4.29[a]	0.10
Maternal Profile								
Punishing/ Minimizing	66.18[a]	1.68	43.08[a]	2.42	4.72[a,b]	0.14	4.15[a]	0.11
Low Involved	73.45[b]	1.82	31.98[b]	2.61	4.50[a,b]	0.15	4.10[a]	0.17
Blended	71.69[b]	1.14	39.85[a]	1.64	4.47[a]	0.10	4.37[a]	0.11
Coaching/ Accepting	73.40[b]	1.28	37.36[a,b]	1.88	4.82[b]	0.10	4.15[a]	0.12
Gender								
Boys	69.98[a]	1.08	39.16[a]	1.54	4.44[a]	0.09	4.33[a]	0.10
Girls	72.38[a]	1.08	36.97[a]	1.56	4.81[b]	0.09	4.06[b]	0.10

Note. Different superscripts by time or within maternal profile or child gender indicate significantly different means. Means for anxiety symptom are after adjustment for T1 depressive symptoms and means for depressive symptom are after adjustment for T1 anxiety symptoms.
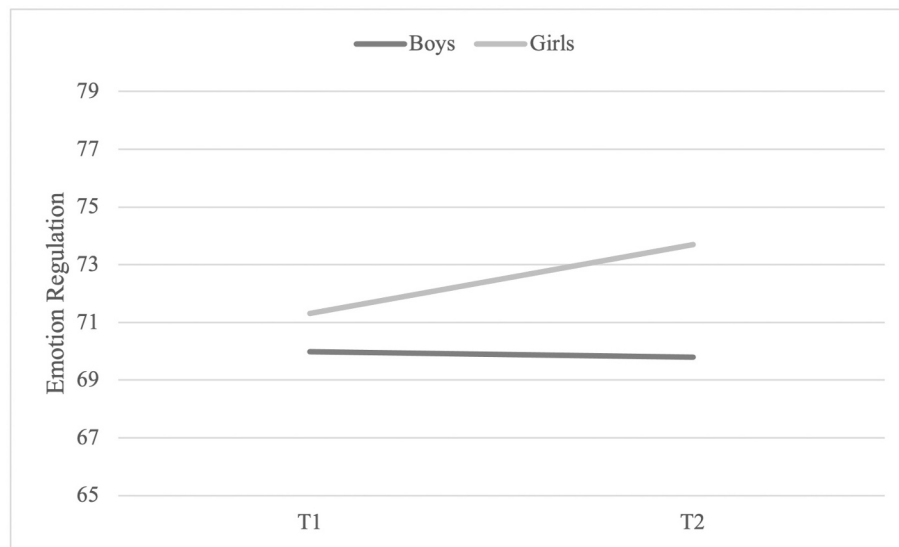
Fig. 1. Gender x Time Interaction for Emotion Regulation ($n = 316$).
Note. Emotion regulation scores have a possible range from 0 to 100.

Table 4
Results of Regressing T2 Child Measures of Emotion Regulation, Lability/Negativity, Anxiety and Depressive Symptoms on each T1 Maternal Emotion Socialization Response, Gender, and Their Interaction, Adjusting for T1 Child Measures ($n = 318$).

		DV: T2 Emotion Regulation		DV: T2 Lability/Negativity		DV: T2 Anxiety Symptoms		DV: T2 Depressive Symptoms	
IV:		B (SE B)	β	B (SE B)	β	B (SE B)	β	B (SE B)	β
Problem Focused (PF)	T1 DV	0.73 (0.05)**	0.73**	0.77 (0.05)**	0.79**	0.52 (0.07)**	0.53**	0.54 (0.06)**	0.59**
	A: Gender	2.46 (1.37)	0.09	−0.25 (1.70)	−0.01	0.23 (0.14)	0.07	0.01 (0.16)	0.00
	B: PF	−0.00 (1.79)	0.00	0.74 (2.74)	0.02	0.41 (0.22)	0.13	0.22 (0.25)	0.06
	A × B	0.78 (2.50)	0.02	2.32 (3.24)	0.04	−0.58 (0.30)	−0.12	−0.29 (0.31)	−0.06
	T1 Oth Symp	–		–		0.17 (0.07)*	0.19*	0.17 (0.07)*	0.16*
Emotion Focused (EF)	T1 DV	0.74 (0.05)**	0.74**	0.76 (0.05)**	0.79**	0.52 (0.07)**	0.53**	0.54 (0.06)**	0.58**
	A: Gender	2.53 (1.36)	0.09	−0.21 (1.70)	−0.01	0.23 (0.14)	0.07	0.01 (0.16)	0.00
	B: EF	2.13 (1.17)	0.10	0.29 (1.68)	0.01	0.33 (0.15)*	0.13*	0.22 (0.17)	0.08
	A × B	−2.97 (1.82)	−0.10	0.94 (2.37)	0.02	−0.32 (0.23)	−0.09	−0.21 (0.25)	−0.05
	T1 Oth Symp	–		–		0.17 (0.07)*	0.19*	0.17 (0.07)*	0.16*
Expressive Enc (EE)	T1 DV	0.73 (0.05)**	0.73**	0.77 (0.05)**	0.80**	0.53 (0.07)**	0.54**	0.54 (0.06)**	0.59**
	A: Gender	2.47 (1.39)	0.09	−0.17 (1.71)	−0.00	0.23 (0.14)	0.07	0.03 (0.16)	0.01
	B: EE	−0.41 (1.18)	−0.02	0.65 (1.59)	0.02	0.16 (0.15)	0.07	0.25 (0.16)	0.11
	A × B	1.35 (1.52)	0.05	−1.39 (2.03)	−0.04	−0.07 (0.21)	−0.02	−0.28 (0.20)	−0.08
	T1 Oth Symp	–		–		0.17 (0.07)*	0.19*	0.17 (0.07)*	0.16*
Punitive (Pun)	T1 DV	0.72 (0.05)**	0.73**	0.77 (0.05)**	0.80**	0.53 (0.07)**	0.55**	0.54 (0.06)**	0.59**
	A: Gender	2.35 (1.37)	0.09	−0.17 (1.70)	−0.00	0.21 (0.14)	0.07	0.03 (0.16)	0.01
	B: Pun	−0.58 (0.99)	−0.03	−0.86 (1.32)	0.02	−0.15 (0.13)	−0.07	0.01 (0.14)	0.01
	A × B	−0.99 (1.59)	−0.04	1.60 (2.11)	−0.04	0.23 (0.20)	0.07	0.30 (0.21)	0.08
	T1 Oth Symp	–		–		0.17 (0.07)*	0.19*	0.17 (0.07)*	0.16*
Distress (Dis)	T1 DV	0.73 (0.05)**	0.73**	0.77 (0.05)**	0.80**	0.53 (0.07)**	0.54**	0.54 (0.06)**	0.58**
	A: Gender	2.43 (1.37)	0.09	−0.18 (1.70)	−0.00	0.21 (0.14)	0.07	0.01 (0.16)	0.00
	B: Dis	−0.13 (1.08)	−0.01	−0.15 (1.43)	−0.06	0.03 (0.14)	0.02	0.09 (0.15)	0.04
	A × B	−1.13 (1.55)	−0.04	0.67 (2.10)	0.08	−0.07 (0.20)	−0.02	−0.01 (0.21)	−0.00
	T1 Oth Symp	–		–		0.16 (0.07)*	0.19*	0.17 (0.07)*	0.16*
Minimization (Min)	T1 DV	0.74 (0.05)**	0.74**	0.77 (0.05)**	0.79**	0.53 (0.07)**	0.54**	0.54 (0.06)**	0.59**
	A: Gender	2.43 (1.36)	0.09	−0.14 (1.70)	−0.01	0.21 (0.14)	0.07	0.03 (0.16)	0.01
	B: Min	1.79 (0.97)	0.11	−1.51 (1.29)	−0.01	−0.17 (0.13)	−0.09	−0.10 (0.13)	−0.05
	A × B	−3.04 (1.43)*	−0.12*	2.90 (2.00)	0.02	0.26 (0.18)	0.09	0.41 (0.19)*	0.12*
	T1 Oth Symp	–		–		0.17 (0.07)*	0.19*	0.17 (0.07)*	0.16*

Note. DV = dependent variable. Enc = encouragement. Gender: 0 = boys, 1 = girls. T1 Oth Symp: T1 depressive symptoms included as a covariate in the models of anxiety symptoms and T1 anxiety symptoms included as a covariate in the models of depressive symptoms.
Only model statistics with at least one significant independent variable other than the T1 DV are reported below.
Emotion Regulation (Min): $R^2 = 0.58$, $F(4,313) = 107.16$, $p < .001$. Anxiety Symptoms (EF): $R^2 = 0.51$, $F(4,313) = 65.96$, $p < .001$. Depressive Symptoms (Min): $R^2 = 0.53$, $F(4,313) = 69.72$, $p < .001$.
*$p < .05$. **$p < .001$.

significant interaction effects, with child gender × maternal minimization of emotion significant in the models of emotion regulation and depressive symptoms. Inspection of the slopes of these interactions (see Figs. 2 and 3, respectively) show that T1 maternal minimization was associated with a decrease in girls' emotion regulation and an increase in girls' depressive symptoms (partial support for H3). In contrast, for boys, T1 maternal minimization of emotion was associated with an increase in emotion regulation and a decrease in depressive symptoms.
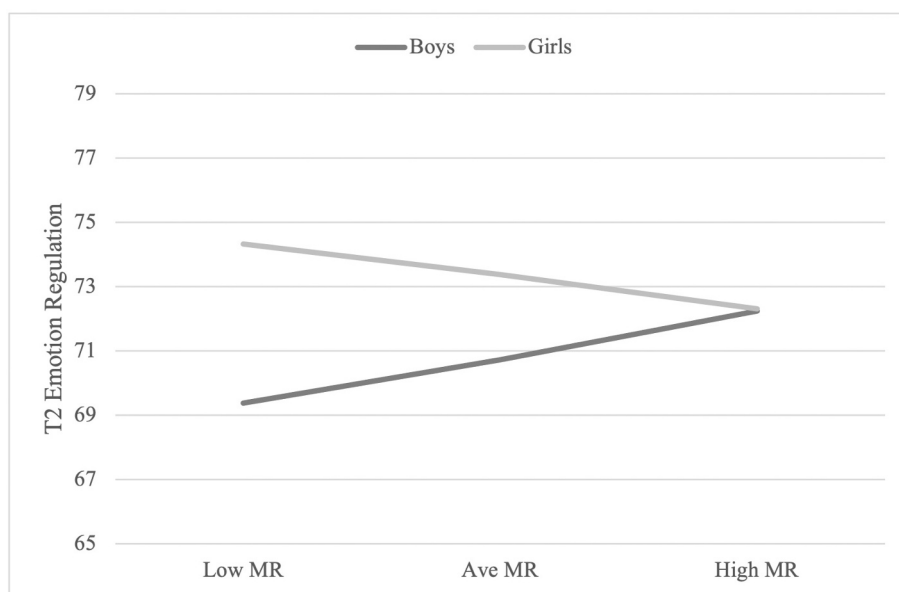
Fig. 2. Gender x Maternal Minimization Response (T1) Interaction for Emotion Regulation at T2 ($n = 318$).
Note. MR = Minimization Responses. Ave = Average. Emotion regulation scores have a possible range from 0 to 100.
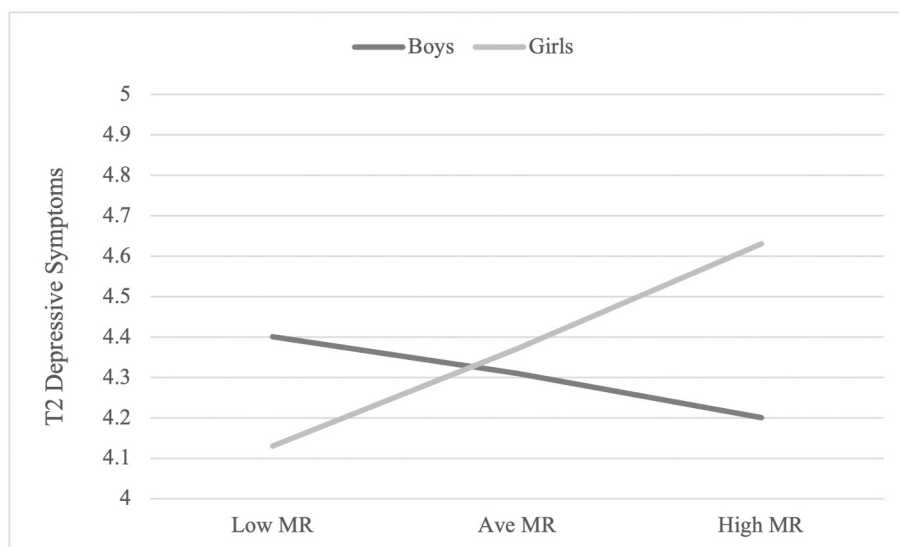

Fig. 3. Gender x Maternal Minimization Response (T1) Interaction for Child Depressive Symptoms at T2 ($n = 318$).
Note. MR = Minimization Responses. Ave = Average.

Supplemental analyses

Supplemental to the above analyses, given that relationships between maternal and child emotional behavior can be bidirectional (Johnco et al., 2021), we also addressed the possibility that T1 child regulation and symptom would be associated with T2 maternal socialization behaviors, while also examining potential gender interactions. The results of these analyses are provided as supplementary analyses and can be accessed *here*.

Discussion

The aim of the current study was to examine longitudinal associations and interactions between maternal emotion socialization and child gender with children's emotion regulation and anxiety and depressive symptoms during middle childhood. Person-centered and variable-centered analyses were used to provide a nuanced and complementary examination of these associations. The person-centered analyses identified maternal socialization profile differences in child emotion regulation, lability/negativity, and anxiety symptoms. Anxiety and depressive symptoms also differed by child gender, with girls higher in anxiety and lower in depressive symptoms than boys. Children's emotion regulation from T1 to T2 also differed by child gender, with girls' regulation increasing, whereas boys' regulation did not. The variable-centered analyses supplemented these findings showing longitudinal associations between specific supportive and unsupportive maternal socialization behaviors and children's regulation, and anxiety and depressive symptoms, with most of the significant associations differing by child gender.

Maternal emotion socialization profiles and child gender

In contrast to what we expected, T1 maternal profiles were not significantly associated with longitudinal changes in child emotion regulation or internalizing symptoms. However, consistent with past person-centered analyses, there were differences in children's emotion regulation, lability/negativity, and anxiety symptoms between the four maternal emotion socialization profiles. Children had the lowest level of emotion regulation when mothers had a punishing/minimizing profile compared to all other profiles, and higher lability/negativity compared to mothers with a low involved profile. Mothers with a coaching/accepting profile reported higher child anxiety than mothers with a blended profile. These differences between profiles align with previous person-centered, cross-sectional studies, that report parents with a pattern of high unsupportive and low supportive responses have children with poorer emotion regulation (Howe & Zimmer-Gembeck, 2022; Wang et al., 2019). Yet, the findings further contribute to the literature by providing evidence that these differences remain during middle childhood.

Although the differences in child outcomes across maternal socialization profiles tended to conform to general expectations, there were two curious findings. First, the differences between the maternal socialization profiles suggest that a pattern of high support and coaching does not appear to be consistently the most positive for children's regulation and internalizing symptoms. In contrast to what we expected and to previous cross sectional studies of adolescents and children across a wider age group (McKee et al., 2022; Wang et al., 2019), mothers that reported a coaching/accepting socialization approach had children who did not differ in regulation relative to children with mothers who were uninvolved or mixed in their support. Furthermore, children who had mothers with a coaching/accepting profile were reported to be higher in anxiety relative to mothers who provide both supportive and unsupportive socialization responses.

Second, the low involved profile is not clearly a problem for children. Children who had mothers in the low involved socialization profile showed signs of good emotion regulation (i.e., they were lowest in lability/negativity). This may seem counterintuitive considering there is strong evidence that neglectful and uninvolved parenting is associated with poor child outcomes (Briere, Runtz, Eadie, Bigras, & Godbout, 2017; Khaleque, 2015). However, one reason could be mothers in this group engage in less socialization than mothers in other profiles because they have fewer opportunities to respond to their child's negative emotions, as their child expresses negativity less frequently. Finally, we found no significant difference in children's depressive symptoms between the four maternal socialization profiles.

In the person-centered analyses, there were child gender differences in anxiety and depressive symptoms, with girls higher in anxiety and lower in depressive symptoms than boys. Girls are often reported to be higher in anxiety symptoms than boys throughout childhood (Ohannessian, Milan, & Vannucci, 2017), whereas research that has examined gender differences in childhood depression often report more symptoms in boys than girls (Kessler, Avenevoli, & Ries Merikangas, 2001; Nolen-Hoeksema, Girgus and Seligman, 1991), although this difference usually reverses around adolescence.

Gender differences were also noted in the pattern of emotion regulation from T1 to T2, whereby girls' emotion regulation increased but boys showed no significant change. This longitudinal finding is consistent with previous reports of gender differences in cross-sectional studies of emotion regulation during late childhood, with girls having better emotion regulation than boys (Sanchis-Sanchis et al., 2020). Additionally, there were some time effects overall, with children's anxiety and depressive symptoms found to increase slightly over time, which is also supportive of findings in previous longitudinal research (Shanahan, Calkins, Keane, Kelleher, & Suffness, 2014).

Specific maternal emotion socialization responses and child gender

Variable-centered analyses complemented the person-centered approach by placing the lens on associations between the six measured forms of maternal socialization in combination with child gender and changes in child emotion regulation and symptoms from T1 to T2 (an average of 15.6 months later). These analyses were useful given that, in contrast to the null longitudinal findings relating to maternal socialization profiles using a person-centered approach, there were several significant longitudinal associations. In these models, we found that mothers who reported more emotion-focused responding, which is considered supportive for children, had children who increased in anxiety symptoms. Additionally, we found differences in the relationship between mother's minimization of emotion, which is considered an unsupportive response, and boys and girls later emotion regulation and depressive symptoms.

These findings suggest mothers that comfort, soothe and help their child feel better by coaching them in emotion-focused regulation strategies have children who increased (rather than decrease) in child anxiety symptoms over time. This finding is not consistent with previous studies that report positive associations between supportive socialization and child emotional adjustment (although these are usually studies of adolescents; Cui et al., 2020; Hastings et al., 2014). The early school years may pose a unique period from which the socioemotional benefits of supportive socialization should be considered. For instance, Mirabile et al. (2018) found that emotion related benefits of supportive socialization reversed in early school age children (older than 6 years). It could be that providing a high level of support for emotional responses could inadvertently create a reliance from the child on the mothers' actions to soothe their upset, which becomes less accessible once a child attends school. There may then be an uptick in anxiety as children face more challenging situations on their own and mother-child interactions decline in frequency during the day.

Interestingly, we found child gender moderated the relationship between maternal minimization of their children's emotion and changes in children's emotion regulation and depressive symptoms from T1 to T2. Specifically, for girls, mothers' minimization of their emotion was associated with a decline in emotion regulation and an increase in depressive symptoms. This is consistent with the evidence that minimization of emotion is associated with emotion dysregulation, as these responses can invalidate children's experience and diminish their opportunities to identify, understand, and ultimately express emotions in a socially appropriate way (Eisenberg, Fabes, & Murphy, 1996). However, unexpectedly, maternal minimization was associated with an increase in boys' emotion regulation and a decrease in boys' depressive symptoms, suggesting minimization may have benefitted boys in some way. One plausible reason for the counterintuitive finding for boys could be the unique developmental period of middle childhood. In the early school years, socially acceptable expectations around ways to express emotions undoubtably become stricter as children transition from social situations with family to novel teacher and peer relations that often exist under the microscope of the classroom. In addition to this, most western cultures hold ingrained gender-related display rules for emotions (see Brody, 2000), which expects boys to express negative emotions less than girls (Brody & Hall, 2008). Consequently, boys are sometimes perceived more harshly for their expression of negative emotions (Thomassin & Seddon, 2019), which may result in greater social and cultural pressure for boys to reduce their expression of these emotions. Therefore, maternal minimization may indirectly encourage behaviors consistent with these gendered-display rules such as discouraging boys attending to (and potentially ruminating on) their negative emotions which could lead to the adaptive outcomes noted in the present study. However, this inference is given with caution, and future research that explores this relationship and potential precursors and moderators are necessary.

Alternatively, boys may simply get better at internalizing their negative emotions in front of their mothers during middle childhood to

avoid their mothers' minimizing behaviors. Research has found that boys are more likely to perceive others as less accepting and understanding of their negative emotions than girls (Zeman & Garber, 1996), this perception might become magnified as boys get older which may encourage them to hide those emotions. As the present study only used mothers' report of their child's regulation and symptoms, there is the limitation of reporter bias. Future research that examines longitudinal associations with maternal minimization responses and boys' own report of regulation and depressive symptoms would address this.

Limitations and future research

There are important study limitations worth noting that provide opportunities for future research. First, all measures were reported by mothers, therefore reports and results were susceptible to social desirability, self-presentation bias, and shared method variance. In addition, while this study was longitudinal, there were only two time points. Gathering data at two time points means that our analyses were more focused on difference between T1 to T2, and not on change trajectories. Future research that takes a triangulation method of investigation, such as child self-report measures and observation of parent-child interactions to evaluate socialization behaviors over more than two time points would help address these limitations. A more extended longitudinal study could also be designed to distinguish when maternal socialization may be especially pertinent for change in child regulation and symptoms. Finally, participants in this study were demographically representative of the region from which they were drawn, yet they were also culturally and ethnically homogenous (reflecting the region). Therefore, generalizability of the findings may be limited.

Conclusions

In conclusion, results from the present study lend support to the complementary nature of using both person-centered and variable-centered analyses of longitudinal data. In this instance, the findings revealed significant differences in children's emotion regulation and anxiety symptoms between maternal socialization profiles, and complementary detail in the longitudinal associations between maternal socialization and children's regulation and symptoms. Furthermore, variable-centered findings identified novel longitudinal associations between child regulation, symptoms, and maternal socialization behaviors across middle childhood, which emphasize the complex dynamic between a child's emotional development and maternal socialization, and the significance of considering child gender in shaping these relationships. Notably, this study also draws attention to middle childhood as a time of life when typical associations between mothers' supportive and unsupportive socialization and children's emotional outcomes may not be consistent with associations found in earlier childhood or adolescence. Future research is important to test such developmental patterns.

Funding

Compliance with ethical standards

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of Griffith University (Date: 04/2017/ No. 2017/203).

Declaration of Competing Interest

None.

Data availability

Data will be made available on request.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi. org/10.1016/j.appdev.2023.101521.

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