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Early maternal autonomy support as a predictor of child internalizing and externalizing behavior trajectories across early childhood

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Abstract

This study investigated the contribution of early maternal autonomy support in the prediction of developmental patterns of change in child internalizing and externalizing behavior problems from 2 to 7 years of age. The participants were 130 mother-child dyads drawn from a community sample. Data were collected at four-time points. Maternal sensitivity and autonomy support were assessed observationally at 12 and 15 months, respectively, child temperament was reported by both parents at 2 years, and child internalizing and externalizing behaviors were reported by both parents at 2, 4, and 7 years. The results indicated that, over and above child temperament and maternal sensitivity, mothers who supported their child's autonomy to a greater degree had children whose trajectories of internalizing behavior increased less and trajectories of externalizing behavior decreased more. These findings suggest that maternal autonomy support may be an important target for prompt intervention to promote healthier child behavioral and emotional adjustment trajectories.

KEYWORDS
externalizing behavior, internalizing behavior, maternal autonomy support, trajectories

1 | INTRODUCTION

Internalizing and externalizing behavior problems in early childhood constitute central indicators of developmental difficulties (Rubin et al., 2011) and have been associated with several other important aspects of children's functioning, such as their cognitive development (Weyandt et al., 2014), school achievement (Sayal et al., 2015), sleep (Lycett et al., 2015), and social competence (Kalvin et al., 2016). Children who show more internalizing behavior, such as anxiety and depression, or externalizing behavior like aggression and attention problems, find it more difficult to make friends at school (Fanti & Henrich, 2010), have lower academic achievement (Van der Ende et al., 2016) and hold more negative perceptions of themselves (Muris et al., 2003).

The developmental trajectories of behavior problems during early childhood through the early school years is an important question, notably because that period includes a salient developmental transition, namely school entry. Developmental scientists agree that school entry may be the most significant developmental milestone of early childhood (Melhuish et al., 2015) and young children's internalizing and externalizing difficulties during this period are some of the main factors influencing their school adaptation (Duncan & Magnuson, 2011). Therefore, it is important to understand how internalizing and externalizing behavior problems develop during early childhood through the early school years as well as the factors that contribute to these developments.

To our knowledge, seven studies have assessed within-person changes in child internalizing and externalizing behavior from toddlerhood through early school years (between 18 months and 9 years). Overall, these studies found an increase in child internalizing behavior (Capaldi et al., 2012; Gilliom & Shaw, 2004; Karevold et al., 2011; Mathiesen et al., 2009) and a decrease in externalizing behavior over time (Capaldi et al., 2012; Gilliom & Shaw, 2004; Mathiesen et al., 2009; Meunier et al., 2011; Miner & Clarke-Stewart, 2008; Yoon et al., 2017). Only one study found that internalizing behavior remained stable between 2 and 5 years of age (Yoon et al., 2017). These patterns of change could be associated with cognitive and social development. For example, increases in internalizing behavior may reflect improvements in the capacity to remember and anticipate negative events (Kaslow et al., 2000), whereas decreases in externalizing behavior could be related to growth in verbal problem-solving skills (Tremblay, 2000) and gradual integration of social norms (Maccoby, 1984).

Overall, developmental changes in child internalizing and externalizing behavior from toddlerhood through the early school years are well documented. However, the modifiable factors that predict individual differences in these developmental trends are still poorly understood. Studies have identified that parental factors such as stress, depressive symptoms, harsh discipline, and maternal sensitivity (Capaldi et al., 2012; Mathiesen et al., 2009; Miner & Clarke-Stewart, 2008) are associated with developmental changes in child internalizing and externalizing behavior. Building on this body of work, this study examines an increasingly studied aspect of maternal behavior, namely maternal autonomy support, as a predictor of individual differences in trajectories of child internalizing and externalizing behavior problems.

1.1 | Maternal autonomy support

Mother-child interactions constitute one of the primary contexts of child socialization in early childhood and higher-quality maternal behavior is associated with less behavior problems among children (Yap & Jorm, 2015). Autonomy support is one aspect of maternal behavior that appears likely to be useful in understanding the development of child internalizing and externalizing behavior problems. In toddlerhood, maternal autonomy support represents the degree to which mothers acknowledge children's perspective, provide guidance that is commensurate to their developmental needs to enable agency, encourage independent problem-solving, self-initiation, and choices (Joussemet et al., 2005; McCurdy et al., 2020). For example, autonomy-supportive mothers encourage their toddlers in the pursuit of

problem-solving tasks, give useful hints and suggestions when children are at a loss, follow children's pace, give them the opportunity to make choices, and ensure that children play an active role in task completion.

Autonomy support is a key concept of Self-Determination Theory (Deci & Ryan, 2000), which posits that humans have a fundamental psychological need for autonomy (i.e., volition) and that if this need is satisfied, healthy emotional and social development will be facilitated. It is proposed that children who feel a sense of ownership and agency over their thoughts and actions, because their need for autonomy is supported, will more naturally integrate social norms (Joussemet et al., 2008) and autonomously engage in various activities that in turn will enable them to develop perceptions of competence and higher self-esteem (Bean & Northrup, 2009). Toddlerhood may be a sensitive period for autonomy support because self-concept, self-regulation, and the need for exploration are salient during this developmental stage (Andreadakis et al., 2020) and parental autonomy support is likely to support optimal development in these areas (Reeve, 2009; Roth & Assor, 2012; Whipple et al., 2011). Overall, parental autonomy support may provide children with a set of socioemotional resources that are likely to be instrumental in subsequent years as children mature and face increasingly complex developmental tasks. In doing so, autonomy support would promote child psychosocial adjustment. In line with these claims, meta-analytic data (based on 36 studies) show that maternal autonomy support is positively related to several aspects of child socioemotional functioning, such as autonomous motivation, psychological health, perceived competence, and positive attitudes toward school (Vasquez et al., 2016).

There are, however, limitations to this body of work. Most saliently from a methodological and developmental perspective, the majority of relevant studies are cross-sectional, addressing concurrent associations between maternal autonomy support and child adjustment, which limits interpretation of the results and might inflate effect sizes. We could find five studies that addressed prospective links between early parental autonomy support and later child internalizing and externalizing behavior. These studies converge to suggest that higher parental autonomy support is related to a lower risk for child subsequent internalizing and externalizing behavior problems (Duineveld et al., 2017; Grolnick et al., 2000; Joussemet et al., 2005; Matte-Gagné et al., 2015; Van der Bruggen et al., 2010).

These longitudinal studies, however, also have limitations. First, only two assessed maternal autonomy support using an observational procedure (Matte-Gagné et al., 2015; Van der Bruggen et al., 2010). Observational parenting measures reduce the biases associated with subjective parental self-reports, which are often tainted by social desirability, recall bias (Locke & Prinz, 2002; Perepletchikova & Kazdin, 2004), and the general quality of the parent-child relationship (Meins et al., 2001). Second, these studies, albeit longitudinal, have used one or two assessments of child adjustment problems, which does not allow to characterize developmental growth. To our knowledge, no study has yet examined the predictive links between maternal autonomy support and developmental trajectories of child internalizing and externalizing behavior problems. Given that both internalizing and externalizing problems show significant developments in early childhood (e.g., Mathiesen et al., 2009; Miner & Clarke-Stewart, 2008), this is an important gap. Finally, no study has tested the predictive associations between maternal autonomy support and subsequent growth in child internalizing and externalizing behavior while considering initial differences in emotional and behavioral child characteristics or while controlling for other aspects of maternal behavior.

1.2 | Maternal sensitivity

Aspects of maternal behavior other than autonomy support are associated with child behavior problems. In particular, maternal autonomy support shares some characteristics with another important parenting behavior, namely maternal sensitivity, which refers to mothers' capacity to accurately perceive and interpret their child's cues and needs (Ainsworth et al., 1974). For example, being autonomy supportive requires that mothers be sensitive to their children's need for autonomy and internal frame of reference. Empirical work supports this proposition in showing moderate positive links between sensitivity and autonomy support (Bernier et al., 2014), with both being related to children's socioemotional functioning (Kok et al., 2013; Vasquez et al., 2016). Albeit associated, these two aspects of parenting also show important conceptual distinctions. Maternal sensitivity mostly (although not uniquely) describes

how mothers respond to child affect (Leerkes et al., 2012), whereas maternal autonomy support focuses on enabling child agency, for instance when confronting difficult tasks (Joussemet et al., 2005), and promoting internalization of parental demands (Koestner et al., 1984). Therefore, sensitive mothers could soothe an upset child but not necessarily support his or her autonomy while doing so. In line with this, sensitivity and autonomy support have been observed to predict unique portions of children's socioemotional functioning (Sirois & Bernier, 2018; Whipple et al., 2011). Controlling for sensitivity thus allowed us to test our predictions specific to maternal autonomy support, and ensure that any found associations did not represent a halo effect of a more competent mother in the broader sense.

1.3 | Child temperament

There is wide consensus that socialization is a bidirectional process embedded in complex transactions between children and their environments (Sameroff, 2009). Baseline child characteristics, such as temperament, may influence both parenting and later child adjustment problems, leading to statistical associations between parenting and child outcomes that are in fact explained by an underlying effect of child characteristics. Temperament is one of the most reliable predictors of child behavior problems (Krieger & Stringaris, 2016), with anger proneness and activity level usually associated with higher externalizing behavior (Lahey et al., 2008; Smeekens et al., 2007) and social fear with higher internalizing behavior (Mathiesen et al., 2009). Studies also show that similar associations between temperament and patterns of change in internalizing and externalizing behaviors are observed at the intra-individual level (Gilliom & Shaw, 2004; Karevold et al., 2011; Mathiesen et al., 2009). Controlling for child temperament thus makes for a more stringent test of the prospective links between early maternal autonomy support and later developments in child behavior problems.

1.4 | The current study

The aim of this study was to assess the predictive associations between maternal autonomy support assessed observationally in toddlerhood and subsequent growth in child internalizing and externalizing behavior from 2 to 7 years of age, while controlling for maternal sensitivity and child temperament. Both parents' perceptions of child baseline behavioral and emotional tendencies (temperament) were assessed at the first time point of the trajectories (2 years) and covaried in all models. Both parents also reported on their child's internalizing and externalizing behavior at 2, 4 and 7 years of age. It was expected that maternal autonomy support would be uniquely associated with more positive trajectories of child adjustment over time. More specifically, previous studies show that internalizing behavior increases while externalizing behavior decreases from toddlerhood through early school years (e.g., Mathiesen et al., 2009; Miner & Clarke-Stewart, 2008); accordingly, we expected that greater maternal autonomy support would predict a lesser increase in internalizing behavior and a greater decrease in externalizing behavior.

2 | METHOD

2.1 | Participants and procedure

The 130 families (63 girls) included in this report were part of a larger study taking place in a Canadian metropolitan area (Bernier et al., 2020). They were recruited from random birth lists. Criteria for participation were a full-term pregnancy and the absence of developmental delays. Sociodemographic information was reported by mothers upon recruitment (8 months). At that time, mothers were between 20 and 45 years old ($M = 31.4$) and fathers were between 22 and 55 years old ($M = 33.7$). Mothers had 16.2 years of education on average (varying from 8 to 18 years)

and fathers, 15.7 years (from 11 to 19 years). The families' average income fell in the CDN$60,000 to CDN$79,000 bracket, consistent with the population average for the years of data collection (Statistics Canada, 2020). The majority of mothers and fathers were Caucasian (91.5%; 83.1%) and French-speaking (87.7%; 79.2%).

Data were collected at five time points. Maternal sensitivity was assessed during a 1.5-hr home visit when children were aged 12 months (T1; $M = 12.60$; $SD = 1.28$). The home visit consisted of a series of child-focused or mother-child tasks. Extensively trained home visitors (Pederson & Moran, 1995) observed mother-child interactions throughout and rated maternal sensitivity immediately thereafter. Maternal autonomy support was measured at 15 months (T2; $M = 15.5$ months; $SD = 0.8$) while mother-child dyads were asked to complete puzzles that were designed to be too difficult for the toddlers, producing a challenging problem-solving task that would require some adult assistance. This interaction was videotaped and later coded for maternal autonomy-supportive behavior as described below.

When children were 2 (T3; $M = 25.3$ months; $SD = 1.1$), 4 (T4; $M = 48.8$ months; $SD = 0.8$), and 7 years old (T5; $M = 85.1$ months; $SD = 2.8$), mothers and fathers completed the Child Behavior Checklist (CBCL; T. Achenbach, 1991; T. M. Achenbach & Rescorla, 2000) to assess child internalizing and externalizing behavior problems. To control for parental perceptions of children's baseline behavioral and emotional tendencies (temperament) at the beginning of these trajectories, mothers and fathers also completed the Toddler Behavior Assessment Questionnaire at T3. Parents were invited to fill the questionnaires separately and to return them by mail with provided pre-paid envelopes.

Participants included in the current study had valid scores on maternal sensitivity (T1), autonomy support (T2), child temperament (T3), and at least one of the three behavior problem assessments (T3 to T5). Of the 130 children, all had valid CBCL scores at 2 years, 89 at 4 years, and 91 at 7 years. Attrition analyses suggested that families with missing data did not differ from those who participated in all assessments on family socioeconomic status (SES; obtained by averaging standardized scores of maternal and paternal education and family income) nor on any main study variable (maternal sensitivity, autonomy support, child temperament, as well as internalizing or externalizing behaviors at other time points; all *ps* > .05). Missing data were handled using the robust full-information maximum likelihood estimator, which allows for the estimation of model parameters using all available data (Enders, 2010).

2.2 | Measures

2.2.1 | Maternal behavior Q-Sort (MBQS)

A trained research assistant noted maternal behaviors throughout the T1 home visit described above and then sorted the 90 items of the MBQS into nine piles, ranging from "very unlike" to "very similar" to the observed mother's behaviors. The observer's sort was then correlated with a criterion sort representing the prototypically sensitive mother, which is provided by the developers of the instrument. This correlation constitutes the sensitivity score. A little over twenty percent (20.8%) of visits were conducted by two research assistants who then completed the MBQS independently. Agreement between the two raters' sorts was very good, intraclass correlation (ICC) = .85 (Pederson & Moran, 1995).

2.2.2 | Maternal autonomy support

Maternal autonomy support was assessed at T2, based on the videotaped mother-child problem-solving sequence described above. Maternal behavior was coded on four scales (Whipple et al., 2011) ranging from 1 = *not autonomy supportive* to 5 = *extremely autonomy supportive*. The four scales assess the extent to which the mother (1) intervenes according to the child's needs and adapts the task to create an optimal challenge for the child and facilitate agency; (2) encourages her child in the pursuit of the task, gives useful hints and suggestions, and uses verbal support; (3) takes her child's perspective and demonstrates flexibility in her attempts to keep the child on task; (4) follows her child'

space, provides the child with the opportunity to make choices, and ensures that the child plays an active role in task completion. In line with Hughes et al. (2018) who found that the four subscales loaded on one latent factor, and given their inter-correlations in this sample (ranging from .53 to .85), the subscale scores were averaged to obtain a total autonomy support score (a = .89). A randomly selected 29% of videotapes were coded independently by two raters. Interrater reliability was excellent, ICC = .86.

2.2.3 | Toddler behavior assessment questionnaire (TBAQ)

The French version of the TBAQ, validated by Lemelin et al. (2007), was used to assess mothers' and fathers' perceptions of child temperament. Using a seven-point Likert-type scale, the TBAQ evaluates five dimensions of temperament with children aged between 15 and 36 months: activity level, social fear, proneness to anger, tendency to express pleasure, and interest/persistence. Most studies focus on negative temperamental dimensions because they are better predictors of child behavior problems (e.g., Eisenberg et al., 2009; Slagt et al., 2016). Three subscales were therefore considered in the current study: activity level (locomotion in a variety of everyday situations; a = .74 and .76 for maternal and paternal reports), social fear (inhibition, distress, or withdrawal in new social situations; a = .79 and .80), and anger proneness (crying, protest, and other signs of anger in conflict situations; a = .86 and .88). Mother and father reports (rs = .34 to .58) were averaged (Goldsmith, 1996).

2.2.4 | Child behavior checklist, 1.5-5-year version (CBCL) and 4–18-year version

Given that children were aged 2 and 4 years at T3 and T4 and 7 years at T5, we used the age-appropriate version of the CBCL at each time point: the 1.5-5-year version at T3 and T4 (T. M. Achenbach & Rescorla, 2000), and the 4–18-year version at T5 (T. Achenbach, 1991). Using a three-point scale (0 = *does not apply to my child*, 1 = *sometimes true of my child*, 2 = *always or often true of my child*), mothers and fathers thus rated their child's symptoms on 100 items at 2 and 4 years and on 113 items at the age of seven. To address the difference in number of items across versions while retaining the strong psychometric properties of the CBCL for each age targeted, mean (instead of total) scores were used at each time point (dividing total scores by the number of items included), as in previous longitudinal studies (e.g., Neece et al., 2012). Thus, scores range from 0 to 2, with higher scores indicating more internalizing or externalizing problems. Responses on items referring to internalizing problems such as anxiety, depression, and social withdrawal (36 or 32 items depending on the version), and externalizing problems including aggression and opposition (24 or 35 items) were averaged into two scores for each parent at each age: child internalizing and externalizing problems. Owing to the inter-parental concordance at ages 2 (r = .57 internalizing; r = .43 externalizing), 4 (r = .50 internalizing; r = .48 externalizing), and 7 years (r = .42 internalizing; r = .45 externalizing), mother and father scores were averaged within each time point. As a result, two global scores at each age were used: internalizing problems (a = .72–.80) and externalizing problems (a = .77–.80). The psychometric properties of the two versions of the CBCL have been widely supported (see T. M. Achenbach & Rescorla, 2000).

2.3 | Analytic strategy

Descriptive statistics and bivariate correlations were first examined. Then, growth curves were fitted in Mplus (Muthén & Muthén, 2012) using a multilevel modeling (MLM) framework. The MLM framework was chosen because it can easily handle the conditions encountered in this study such as small samples, missing data, and unequally spaced time points (Burchinal et al., 2006; Hox & Van de Schoot, 2013). The trajectories of internalizing and externalizing problems were first modeled and described in terms of their intercept and slope. Whereas the intercept reflects the

mean group value at the starting point, the slope reflects the average yearly developmental change. Note, however, that the mean scores at each age and thus, the average developmental trends, should be interpreted with caution, as they are based on two different versions of the CBCL. They are reported for completeness of information, as a preliminary step for the investigation of interindividual variations in the observed trajectories. This preliminary step of analysis was deemed informative, as it allowed us to compare the observed trajectories to those documented in prior studies (e.g., Mathiesen et al., 2009; Miner & Clarke-Stewart, 2008).

We next fitted a series of models in which we tested the predictive effect of maternal autonomy support on the intercept and slope of internalizing and externalizing problems, over and above the contribution of temperamental dimensions and maternal sensitivity. Child sex and family SES were also added to the growth models as they are often associated with child behavior problems, temperament, or maternal behaviors. Two models were specified for each outcome variable. The first model (Model A; fixed linear model) included the fixed effect of child exact age in years. The second model (Model B; random linear model) included between-person variability in intercepts and slopes, which enabled us to test whether estimated baselines and trajectories varied across children. Random effects were retained if the pertinent *p*-value for the estimates were $p \leq .05$ or if the model's log likelihood (LL) differed significantly with the addition of the random terms, based on a chi-square difference test (Grimm et al., 2017). Maternal autonomy support, maternal sensitivity, child temperamental dimensions, and family SES were centered on their mean for ease of interpretation. Therefore, the intercept represents the estimated initial status for an individual with an average value on those predictors.

3 | RESULTS

3.1 | Descriptive overview

Table 1 presents the descriptive statistics for maternal autonomy support and sensitivity as well as child temperament, internalizing behavior, and externalizing behavior. All variables showed normal or near-normal distributions, although mean levels of maternal sensitivity were fairly high (.64 on a −1 to 1 scale). Inter-correlations among the key study variables as well as correlations across time points for internalizing and externalizing behavior are also presented in Table 1. In line with previous studies, the correlations between concurrent internalizing and externalizing behavior scores were moderate ($rs = .55$ to $.62$, $ps < .001$). The moderate association between child activity level and anger proneness ($r = .47$, $p < .001$) as well as the lack of significant correlations between these two dimensions and child social fear ($ps > .05$) were similar to those reported in the initial validation study (Goldsmith, 1996). As expected, maternal autonomy support and maternal sensitivity were positively related ($r = .24$, $p < .001$) and the stability of child behavior problems was stronger between closer time points (between 2–4 years and 4–7 years) than between more distant time points (2–7 years).

We also examined whether child sex and SES were related to the main variables. Child sex was unrelated to child behavior problems, temperamental dimensions, or maternal autonomy support and sensitivity, but was retained as a covariate in the main analyses to draw conservative predictions. Family SES was unrelated to child temperamental dimensions or maternal autonomy support. It was, however, negatively related to child externalizing behavior at 4 years ($r = -.23$, $p = .01$) and internalizing behavior at 2 and 4 years ($rs = -.19$, $ps < .05$). Therefore, SES was also entered as a covariate in the main analyses.

3.2 | Describing child internalizing and externalizing behavior growth curves

In order to facilitate convergence of the growth models and interpretation of the results, with parameter estimates rounded to the third decimal in Mplus, the CBCL scores, which varied from 0 to 2, were multiplicated by 100 before

TABLE 1 Descriptive statistics, correlations across time points, and inter-correlations among all main variables

	M	Range	1	2	3	4	5	6	7	8	9	10	11
1. Internalizing behavior (2 years)[a]	.20	0–.69	–	.55****	.29***	.55****	.35***	.06	.21**	.41****	.22***	−.17*	−.01
2. Internalizing behavior (4 years)[a]	.25	0–.85		–	.48****	.39****	.57****	.23**	.25**	.35***	.21**	−.12	−.06
3. Internalizing behavior (7 years)[b]	.26	0–1.19			–	.17*	.39***	.62****	.13	.12	.14	−.01	−.11
4. Externalizing behavior (2 years)[a]	.49	0–1.25				–	.62****	.30***	.48****	.24***	.55****	−.10	−.05
5. Externalizing behavior (4 years)[a]	.49	0–1.33					–	.57****	.38****	.20*	.37****	−.11	−.20**
6. Externalizing behavior (7 years)[b]	.28	0–1.10						–	.16	.03	.10	−.03	−.18**
7. Activity level	3.61	2.31–5.63							–	.16	.47****	.02	−.14
8. Social fear	3.43	1.68–5.90								–	.17*	.02	−.11
9. Anger proneness	3.76	2.08–5.72									–	−.04	−.14
10. Maternal sensitivity	.64	−.79–.89										–	.24****
11. Maternal autonomy support	3.22	1–5											–

[a]Assessed with the 1.5-5 year version of the Child Behavior Checklist.
[b]Assessed with the 4-18-year version of the Child Behavior Checklist.
*$p < .10$.
**$p < .05$.
***$p < .01$.
****$p < .001$.

TABLE 2 Unconditional growth models of child functioning between ages 2 and 7

		Child functioning			
		Internalizing behavior		Externalizing behavior	
	Par	Model A	Model B	Model A	Model B
Fixed effects					
Initial status, π_{0i}					
Intercept	γ_{00}	23.442*** (1.430)	21.045*** (1.214)	43.270*** (2.699)	54.426*** (2.344)
Rate of change, π_{1i}					
Linear slope	γ_{10}	.000 (.356)	.967* (.383)	.000 (.794)	−4.457*** (.501)
Variance components					
Within-person (residual)	σ^2_E	170.223*** (18.043)	107.048*** (16.267)	437.707*** (61.696)	301.438*** (45.091)
In initial status	σ^2_0	116.645** (37.334)	115.288*** (32.366)	334.101*** (90.149)	556.205*** (114.688)
In rate of change	σ^2_1		9.213** (2.951)		5.427 (5.508)
Slope intercept covariance	σ_{01}		−7.737 (8.439)		−47.069* (21.603)
		−7.737 (8.439)		−47.069* (21.603)	
Goodness-of-fit	LL	−1601.551	−1584.784	−1782.962	−1744.104
	AIC	3213.102	3181.567	3575.924	3500.207
	BIC	3232.829	3205.240	3595.638	3504.827

Note. Standard errors are within parentheses. Par, parameters; LL, log likelihood; AIC, Akaike information criterion; BIC, Bayesian information criterion; Model A: fixed linear model; Model B: random linear model.
*$p < .05$.
**$p < .01$.
***$p < .001$.

running the models. Thus, the following results are to be interpreted on a scale from 0 to 200. The results of the unconditional growth models are presented in Table 2. For child internalizing behavior, the best-fitting model was a random linear model (Model B) indicating a global increase across time that however varied across children. On average, child internalizing behavior problems increased by .97 scale point (γ_{10}) per year, starting at 21.05 (γ_{00}) at 2 years. The covariance between the slope and the intercept was not significant. The best-fitting model for child externalizing behavior was also a random linear model (Model B), indicating a global decrease across time that however varied across children. On average, child externalizing behavior problems decreased by 4.46 scale point (γ_{10}) per year, starting at 54.43 (γ_{00}) at 2 years. The significant negative covariance between the slope and the intercept indicated that children with higher initial levels of externalizing behavior displayed sharper subsequent decreases ($\sigma_{01} = -47.07$, $p = .03$).

3.3 | Predicting child internalizing behavior growth curves

Table 3 shows the final models predicting internalizing and externalizing behavior trajectories. The results indicated a significant relation between child social fear and the initial status of internalizing problems, where for every one-unit

TABLE 3 Predicting the growth trajectories of child functioning

		Child functioning	
		Internalizing behavior	Externalizing behavior
Fixed effects			
Initial status π_{oi}			
Intercept	γ_{00}	21.397**** (1.153)	51.403**** (1.913)
SES	γ_{01}	−3.154* (1.625)	−6.878** (2.687)
Child sex	γ_{02}	2.437 (2.379)	−1.555 (3.952)
Activity level	γ_{03}	2.490 (2.078)	10.584*** (3.450)
Social fear	γ_{04}	7.131**** (1.524)	3.755 (2.528)
Anger proneness	γ_{05}	2.867 (1.824)	15.018**** (3.024)
Maternal sensitivity		−7.201 (4.585)	−3.042 (7.580)
Maternal autonomy support	γ_{06}	1.936* (.970)	1.772 (1.608)
Rate of change π_{1i}			
Linear slope	γ_{10}	1.282*** (.387)	−3.565**** (.522)
SES	γ_{11}	−.851 (.620)	−.073 (.822)
Child sex	γ_{12}	.327 (.792)	−.268 (1.064)
Activity level	γ_{13}	−.431 (.674)	−1.136 (.914)
Social fear	γ_{14}	−1.400*** (.509)	−.617 (.679)
Anger proneness	γ_{15}	.223 (.605)	−2.542*** (.812)
Maternal sensitivity	γ_{16}	−.708 (1.597)	−1.291 (2.132)
Maternal autonomy support	γ_{17}	−.834** (.329)	−1.293*** (.441)
Variance components			
Within-person: residual	σ^2_E	115.546**** (20.038)	272.184**** (39.239)
In initial status	σ^2_0	49.499 (30.422)	182.284** (77.037)

(Continues)

TABLE 3 (Continued)

		Child functioning	
		Internalizing behavior	Externalizing behavior
In rate of change	σ_1^2	3.000 (2614)	.699 (5.578)
Slope intercept covariance	σ_{01}	4.882 (7.489)	5.442 (17.383)
Goodness-of-fit	LL	−1152.485	−1269.601
	AIC	2344.970	2579.201
	BIC	2418.090	2652.321

Note. Standard errors are within parentheses.
Abbreviations: SES, socio-economic status; LL, log likelihood; AIC, Akaike information criterion; BIC, Bayesian information criterion.
*$p < .10$.
**$p < .05$.
***$p < .01$.
****$p < .001$.

increase in social fear, one could expect internalizing behavior estimates at 2 years to be 7.13 scale-point higher (γ_{04}; $p < .001$). The negative and significant relation between social fear and the rate of change in internalizing behavior ($\gamma_{14} = -1.40$, $p = .006$) further indicates that children showing greater social fear at 2 years displayed lesser steep increases in internalizing symptoms over time. The other dimensions of child temperament (activity level and anger proneness) as well as maternal sensitivity were not associated with the initial status nor the rate of change of internalizing behavior.

There was no significant relation between maternal autonomy support and the initial status of internalizing behavior problems above and beyond the effects of child sex and temperament, maternal sensitivity, and family SES. However, there was a negative association between maternal autonomy support and the rate of change in internalizing behavior ($\gamma_{17} = -.83$), which indicated that for every one-unit increase in autonomy support, the yearly growth in internalizing behavior could be expected to be .83 scale-point ($p = .01$) less. Therefore, the more mothers supported their child's autonomy, the less steep were the increases in child internalizing problems over time.

3.4 | Predicting child externalizing behavior growth curves

The results indicated significant relations between both child activity level and anger proneness and the initial status of externalizing behavior problems. For every one-unit increase in activity level and in anger proneness, one could expect externalizing behavior estimates at 2 years to be 10.58 (γ_{03}; $p = .002$) and 15.02 (γ_{05}; $p < .001$) scale-point higher. Child activity level did not interact with time ($\gamma_{13} = -1.14$, $p > .05$); thus, child externalizing problems remained consistently higher across time for children with higher activity levels at 2 years. The negative and significant relation between child anger proneness and the rate of change in externalizing behavior ($\gamma_{15} = -2.54$, $p = .002$) indicated that more anger prone children tended to display sharper decreases in externalizing problems over time. Child social fear and maternal sensitivity were not associated with the initial status nor the rate of change of externalizing problems.

There was no significant relation between maternal autonomy support and the initial status of externalizing behavior problems over and above the effects of child sex and temperament, maternal sensitivity, and family SES. However, there was a negative association between maternal autonomy support and the rate of change in externalizing behavior ($\gamma_{17} = -1.29$), which indicated that for every one-unit increase in autonomy support, the yearly decline in externalizing

behavior could be expected to be 1.29 scale-point ($p = .003$) greater. Therefore, the more mothers supported their child's autonomy, the more children displayed steep decreases in externalizing problems over time.

4 | DISCUSSION

Although developmental patterns of change in child internalizing and externalizing behavior are increasingly well characterized, the modifiable factors that predict individual differences in these trajectories are still poorly understood. This study examined the unique contribution of early maternal autonomy support to the prediction of child internalizing and externalizing behavior trajectories from 2 to 7 years of age, over and above child temperament and maternal sensitivity. Previous studies showed that internalizing behavior tends to increase and externalizing behavior tends to decrease from toddlerhood through early school years (Capaldi et al., 2012; Gilliom & Shaw, 2004; Karevold et al., 2011; Mathiesen et al., 2009; Meunier et al., 2011; Miner & Clarke-Stewart, 2008; Yoon et al., 2017) and our results showed the same patterns, despite potential variation in sample means due to our use of age-appropriate versions of the CBCL. Furthermore, temperament was linked to externalizing and internalizing behavior in ways consistent with prior findings (e.g., Karevold et al., 2011; Mathiesen et al., 2009). Confirming our hypothesis, there were unique negative associations between maternal autonomy support and the rate of change in child internalizing and externalizing behavior: the more mothers supported their child's autonomy, the less internalizing behavior increased and the more externalizing behavior decreased between ages 2 and 7. Maternal autonomy support thus seemed to increase the favorable growth of child behavioral adjustment (externalizing behavior) while acting as a protective factor against increases in emotional maladjustment (internalizing behavior).

There are different ways in which parental autonomy support may play such a developmental role. By its nature, autonomy support enables children to feel that they have control over their actions, which in turn allows them to develop intrinsic motivation and autonomously engage in activities that promote perceptions of competence and self-esteem (Bean & Northrup, 2009). Children are also more likely to internalize values and social norms if their parents exert less pressure on them to act or think in specific ways and provide explanatory rationales for why it may be personally important to engage in certain types of behavior (Reeve, 2009). In addition, parental autonomy support is associated with better capacity for emotion self-regulation in children (Roth & Assor, 2012). Overall, early parental autonomy support provides children with a set of internal resources that are likely to be instrumental in subsequent years to support their healthy adaptation to new developmental challenges as they have to become increasingly independent from their parents. As they go through preschool and early school years, children would then be able to use these intrinsic resources to self-regulate their emotional arousal and behavior instead of constantly going to their parents for external regulation (Thompson & Goodvin, 2007). Moreover, the normative decrease in externalizing behavior problems in early childhood is thought to result from advances in verbal skills that support children's ability to inhibit impulsive responses and allow them to better communicate their needs and emotions without parental help (Tremblay, 2000). Since maternal autonomy support has been shown to relate to the development of more elaborate language skills (Matte-Gagné & Bernier, 2011), it might also accelerate the decline in externalizing behavior through the promotion of child verbal skills.

Overall, early autonomy support may equip children with a set of adaptive skills that they will carry forward to meet future developmental challenges. Such skills are likely to be increasingly needed as children must gradually distance themselves from their parents and rely on their own capacities to handle daily situations. In this way, early autonomy support would protect children against the development of emotional and behavioral maladjustment in subsequent years, as children go through developmental transitions.

Although the current findings supported the hypothesis that higher maternal autonomy support would predict favorable growth in child socioemotional adjustment from 2 to 7 years of age, autonomy support was unrelated to the initial status of internalizing and externalizing behavior trajectories. From a methodological standpoint, one might

have expected maternal autonomy support, assessed at 15 months, to predict child behavior at the most proximal time point, namely 2 years (initial status). The lack of prediction may partly be due to the role of temperament: as displayed in Table 3, temperamental dimensions explained fairly large portions of variance in the intercepts, leaving relatively little variance to be predicted by maternal autonomy support. The lack of prediction with maternal sensitivity may likewise be due to the presence of other robust predictors in the models (temperament, autonomy support), as well as to the high levels of sensitivity displayed by the mothers in this sample on average.

It has been suggested that children's intrinsic characteristics are particularly manifest in toddlerhood and could, to an extent, surpass parental effects (Baer et al., 2015). In line with this, Rothbaum and Weisz's meta-analysis (1994) that examined the links between parenting and child externalizing behavior found stronger associations among older than younger children. The pattern of findings observed here, with autonomy support predicting growth but not initial levels of child behavior problems, suggests that a true developmental process is likely to be at play, such that the tools carried forward by children exposed to early autonomy support become more needed as they have to be increasingly self-reliant in adapting to new and growingly complex environments at daycare and school. In this way, the traces left by early autonomy support may interact with children's current environment to shape their ongoing adaptation and promote optimal developmental changes, be they a steeper decline in externalizing problems or a less pronounced rise in internalizing problems.

4.1 | Limits

This study presents some methodological limitations. First, in order to retain the strong psychometric properties of the CBCL by using age-appropriate versions at each time point, we had to use two different versions of the CBCL, one with 100 items (at 2 and 4 years) and one with 113 items (at 7 years). Although we dealt with this by using mean (instead of total) scores, the mean trajectories of child behavior problems could partly reflect the slight variation between the two versions of the questionnaire. However, the mean decrease in externalizing behavior and increase in internalizing behavior trajectories in early childhood are already well documented (e.g., Mathiesen et al., 2009; Miner & Clarke-Stewart, 2008); therefore, the objective of this study was not to describe these trajectories but instead to predict between-person variability around the slope, which is not affected by this limitation. Second, the low-risk nature of the sample (mostly white middle-class families) limited variation in the lower-end of maternal autonomy-supportive and sensitive behaviors, and the higher-end of child behavior problems. Results may be different in higher risk populations. For instance, children from lower SES homes may have less autonomy-supportive mothers on average, and variation in the lower-end of maternal autonomy support may have a greater (or lesser) impact on child adjustment than that documented here (Ensminger et al., 2003). Finally, only maternal behaviors were considered. An assessment of paternal autonomy support would have provided a useful complement, especially considering that Vasquez and colleagues' meta-analysis (2016) showed that relations between parental autonomy support and child functioning were stronger when assessments reflected both parents' autonomy-supportive behavior rather than only mothers' or fathers'.

These limitations are to be considered in the context of the study's methodological strengths, notably the longitudinal design and the growth curve analyses. Maternal autonomy support was assessed in the families' homes with a well-validated observational measure. Then, over a 5-year period, child internalizing and externalizing behavior problems were assessed by both parents, and with good convergence. Moreover, both parents' perceptions of child baseline emotional and behavioral characteristics (temperament) were assessed at the first time point of the behavior problem trajectories and covaried in all models, along with early maternal sensitivity, making for stringent analyses. Overall, the results presented here are likely to represent reliable and conservative estimates of the relation between maternal autonomy support and child subsequent adjustment problems.

5 | CONCLUSION

The results observed in this study suggest that maternal autonomy support assessed as early as 15 months of age may have unique and long-lasting consequences for children's adjustment problems into their early school years. These findings suggest that maternal autonomy support, which has been shown to be responsive to training (Joussemet et al., 2014; Meuwissen & Carlson, 2019), may be an important target for prompt intervention so as to promote children's optimal socioemotional development.

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CONFLICT OF INTEREST DISCLOSURE

There is no conflict of interest to disclose.

ETHICS APPROVAL

The study was approved by the research ethics committee of the Faculty of Arts and Sciences, University of Montreal.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

PERMISSION TO REPRODUCE MATERIAL FROM OTHER SOURCES

Non applicable.

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REFERENCES

Achenbach, T. (1991). *Child behavior checklist/4-18*. University of Vermont.

Achenbach, T. M., & Rescorla, L. A. (2000). *Manual for the ASEBA preschool forms and profiles (vol. 30)*. University of Vermont.

Ainsworth, M. D. S., Bell, S. M., & Stayton, D. F. (1974). Infant-mother attachment and social development: Socialization as a product of reciprocal responsiveness to signals. In (M. P. M. Richards Ed.), *The integration of a child into a social world* (pp. 99–135). Cambridge University Press.

Andreadakis, E., Laurin, J. C., Joussemet, M., & Mageau, G. A. (2020). Toddler temperament, parent stress, and autonomy support. *Journal of Child and Family Studies*, *29*, 3029–3043. https://doi.org/10.1007/s10826-020-01793-3

Baer, J., Schreck, M., Althoff, R. R., Rettew, D., Harder, V., Ayer, L., Albaugh, M., Crehan, E., Kuny-Slock, A., & Hudziak, J. J. (2015). Child temperament, maternal parenting behavior, and child social functioning. *Journal of Child and Family Studies*, *24*, 1152–1162. https://doi.org/10.1007/s10826-014-9924-5

Bean, R. A., & Northrup, J. C. (2009). Parental psychological control, psychological autonomy, and acceptance as predictors of self-esteem in Latino adolescents. *Journal of Family Issues*, *30*, 1486–1504. https://doi.org/10.1177/0192513x09339149

Bernier, A., Beauchamp, M. H., & Cimon-Paquet, C. (2020). From early relationships to preacademic knowledge: A sociocognitive developmental cascade to school readiness. *Child Development*, *91*, e134–e145. https://doi.org/10.1111/cdev.13160

Bernier, A., Matte-Gagné, C., Bélanger, M. È., & Whipple, N. (2014). Taking stock of two decades of attachment transmission gap: Broadening the assessment of maternal behavior. *Child Development*, *85*, n/a-n/a. https://doi.org/10.1111/cdev.12236

Burchinal, M. R., Nelson, L., & Poe, M. (2006). Growth curve analysis: An introduction to various methods for analyzing longitudinal data. *Monographs of the Society for Research in Child Development 71*, 65–87. https://doi.org/10.1111/j.1540-5834.2006.00405.x

Capaldi, D. M., Pears, K. C., Kerr, D. C., Owen, L. D., & Kim, H. K. (2012). Growth in externalizing and internalizing problems in childhood: A prospective study of psychopathology across three generations. *Child Development*, *83*, 1945–1959. https://doi.org/10.1111/j.1467-8624.2012.01821.x

Deci, E. L., & Ryan, R. M. (2000). The "what" and" why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*, 227–268. https://doi.org/10.1207/s15327965pli1104_01

Duineveld, J. J., Parker, P. D., Ryan, R. M., Ciarrochi, J., & Salmela-Aro, K. (2017). The link between perceived maternal and paternal autonomy support and adolescent well-being across three major educational transitions. *Developmental Psychology*, *53*, 1978–1994. https://doi.org/10.1037/dev0000364

Duncan, G. J., & Magnuson, K. (2011). The nature and impact of early achievement skills, attention skills, and behavior problems. In (G. J. Duncan & R.J. Murnane Eds.), *Whither opportunity? Rising inequality, schools, and children's life chances* (pp. 47–70). Russell Sage Foundation.

Eisenberg, N., Valiente, C., Spinrad, T. L., Cumberland, A., Liew, J., Reiser, M., Zhou, Q., & Losoya, S. H. (2009). Longitudinal relations of children's effortful control, impulsivity, and negative emotionality to their externalizing, internalizing, and co-occurring behavior problems. *Developmental Psychology*, *45*, 988–1008. https://doi.org/10.1037/a0016213

Enders, C. K. (2010). *Applied missing data analysis*. Guilford Press.

Ensminger, M. E., Fothergill, K. E., Bornstein, M. H., & Bradley, R. H. (2003). A decade of measuring SES: What it tells us and where to go from here. In (M. H. Bornstein & R. H. Bradley Eds.), *Socioeconomic status, parenting, and child development*. Routledge.

Fanti, K. A., & Henrich, C. C. (2010). Trajectories of pure and co-occurring internalizing and externalizing problems from age 2 to age 12: Findings from the National Institute of Child Health and Human Development Study of Early Child Care. *Developmental Psychology*, *46*, 1159–1175. https://doi.org/10.1037/a0020659

Gilliom, M., & Shaw, D. S. (2004). Codevelopment of externalizing and internalizing problems in early childhood. *Development and Psychopathology*, *16*, 313–333. https://doi.org/10.1017/s0954579404044530

Goldsmith, H. H. (1996). Studying temperament via construction of the Toddler Behavior Assessment Questionnaire. *Child Development*, *67*, 218–235. https://doi.org/10.2307/1131697

Grimm, K. J., Ram, N., & Estabrook, R. (2017). *Growth modeling: Structural equation and multilevel modeling approaches*. Guilford Press.

Grolnick, W. S., Kurowski, C. O., Dunlap, K. G., & Hevey, C. (2000). Parental resources and the transition to junior high. *Journal of Research on Adolescence*, *10*, 465–488. https://doi.org/10.1207/sjra1004_05

Hox, J., & Van de Schoot, R. (2013). Robust methods for multilevel analysis. In (M. A. Scott, J. S. Simonoff, & B. D. Marx Eds.), *The SAGE handbook of multilevel modeling*. Sage.

Hughes, C., Lindberg, A., & Devine, R. T. (2018). Autonomy support in toddlerhood: Similarities and contrasts between mothers and fathers. *Journal of Family Psychology*, *32*, 915–925. https://doi.org/10.1037/fam0000450

Joussemet, M., Koestner, R., Lekes, N., & Landry, R. (2005). A longitudinal study of the relationship of maternal autonomy support to children's adjustment and achievement in school. *Journal of Personality*, *73*, 1215–1236. https://doi.org/10.1111/j.1467-6494.2005.00347.x

Joussemet, M., Landry, R., & Koestner, R. (2008). A self-determination theory perspective on parenting. *Canadian Psychology*, *49*, 194–200. https://doi.org/10.1037/a0012754

Joussemet, M., Mageau, G. A., & Koestner, R. (2014). Promoting optimal parenting and children's mental health: A preliminary evaluation of the how-to parenting program. *Journal of Child and Family Studies*, *23*, 949–964. https://doi.org/10.1007/s10826-013-9751-0

Kalvin, C. B., Bierman, K. L., & Gatzke-Kopp, L. M. (2016). Emotional reactivity, behavior problems, and social adjustment at school entry in a high-risk sample. *Journal of Abnormal Child Psychology*, *44*, 1527–1541. https://doi.org/10.1007/s10802-016-0139-7

Karevold, E., Coplan, R., Stoolmiller, M., & Mathiesen, K. S. (2011). A longitudinal study of the links between temperamental shyness, activity, and trajectories of internalising problems from infancy to middle childhood. *Australian Journal of Psychology*, *63*, 36–43. https://doi.org/10.1111/j.1742-9536.2011.00005.x

Kaslow, N. J., Adamson, L. B., & Collins, M. H. (2000). A Developmental psychopathology perspective on the cognitive components of child and adolescent depression. In (A. J. Sameroff, M. Lewis & S. M. Miller Eds.), *Handbook of developmental psychopathology* (pp. 491–510). Springer.

Koestner, R., Ryan, R. M., Bernieri, F., & Holt, K. (1984). Setting limits on children's behavior: The differential effects of controlling vs. informational styles on intrinsic motivation and creativity. *Journal of Personality*, *52*, 233–248. https://doi.org/10.1111/j.1467-6494.1984.tb00879.x

Kok, R., Linting, M., Bakermans-Kranenburg, M. J., van IJzendoorn, M. H., Jaddoe, V. W., Hofman, A., Verhulst, F. C., & Tiemeier, H. (2013). Maternal sensitivity and internalizing problems: Evidence from two longitudinal studies in early childhood. *Child Psychiatry and Human Development*, *44*, 751–765. https://doi.org/10.1007/s10578-013-0369-7

Krieger, F. V., & Stringaris, A. (2016). Temperament and vulnerability to externalizing behavior. In (T. P. Beauchaine et S. P. Hinshaw Eds.), *The Oxford handbook of externalizing spectrum disorders* (pp. 170–183). Oxford University Press.

Lahey, B. B., Van Hulle, C. A., Keenan, K., Rathouz, P. J., D'Onofrio, B. M., Rodgers, J. L., & Waldman, I. D. (2008). Temperament and parenting during the first year of life predict future child conduct problems. *Journal of Abnormal Child Psychology*, *36*, 1139–1158. https://doi.org/10.1007/s10802-008-9247-3

Leerkes, E. M., Weaver, J. M., & O'Brien, M. (2012). Differentiating maternal sensitivity to infant distress and non-distress. *Parenting*, *12*, 175–184. https://doi.org/10.1080/15295192.2012.683353

Lemelin, J. P., Tarabulsy, G. M., Provost, M. A., Fournier, M., Robitaille, J., Hémond, I., & Tessier, R. (2007). Questionnaire d'évaluation du comportement de l'enfant: Version canadienne française du Toddler Behavior Assessment Questionnaire. *Canadian Journal of Behavioural Science*, *39*, 291–300. https://doi.org/10.1037/cjbs2007021

Locke, L. M., & Prinz, R. J. (2002). Measurement of parental discipline and nurturance. *Clinical Psychology Review*, *22*, 895–929. https://doi.org/10.1016/s0272-7358(02)00133-2

Lycett, K., Sciberras, E., Mensah, F. K., & Hiscock, H. (2015). Behavioral sleep problems and internalizing and externalizing comorbidities in children with attention-deficit/hyperactivity disorder. *European Child and Adolescent Psychiatry*, *24*, 31–40. https://doi.org/10.1007/s00787-014-0530-2

Maccoby, E. E. (1984). Socialization and developmental change. *Child Development*,*55*, 317–328. https://doi.org/10.2307/1129945

Mathiesen, K. S., Sanson, A., Stoolmiller, M., & Karevold, E. (2009). The nature and predictors of undercontrolled and internalizing problem trajectories across early childhood. *Journal of Abnormal Child Psychology*, *37*, 209–222. https://doi.org/10.1007/s10802-008-9268-y

Matte-Gagné, C., & Bernier, A. (2011). Prospective relations between maternal autonomy support and child executive functioning: Investigating the mediating role of child language ability. *Journal of Experimental Child Psychology*, *110*, 611–625. https://doi.org/10.1016/j.jecp.2011.06.006

Matte-Gagné, C., Harvey, B., Stack, D. M., & Serbin, L. A. (2015). Contextual specificity in the relationship between maternal autonomy support and children's socio-emotional development: A longitudinal study from preschool to preadolescence. *Journal of Youth and Adolescence*, *44*, 1528–1541. https://doi.org/10.1007/s10964-014-0247-z

McCurdy, A. L., Williams, K. N., Lee, G. Y., Benito-Gomez, M., & Fletcher, A. C. (2020). Measurement of parental autonomy support: A review of theoretical concerns and developmental considerations. *Journal of Family Theory and Review*, *12*, 382–397. https://doi.org/10.1111/jftr.12389

Meins, E., Fernyhough, C., Fradley, E., & Tuckey, M. (2001). Rethinking maternal sensitivity: Mothers' comments on infants' mental processes predict security of attachment at 12 months. *Journal of Child Psychology and Psychiatry*, *42*, 637–648. https://doi.org/10.1111/1469-7610.00759

Melhuish, E., Ereky-Stevens, K., Petrogiannis, K., Ariescu, A., Penderi, E., Rentzou, K., Tawell, A., Slot, P., Broekhuizen, M., & Leseman, P. (2015). A review of research on the effects of Early Childhood Education and Care (ECEC) upon child development. Retrieved from: http://ecec-care.org/resources/publications

Meunier, J. C., Roskam, I., Stievenart, M., Van de Moortele, G., Browne, D. T., & Kumar, A. (2011). Externalizing behavior trajectories: The role of parenting, sibling relationships and child personality. *Journal of Applied Developmental Psychology*, *32*, 20–33. https://doi.org/10.1016/j.appdev.2010.09.006

Meuwissen, A. S., & Carlson, S. M. (2019). An experimental study of the effects of autonomy support on preschoolers' self-regulation. *Journal of Applied Developmental Psychology*, *60*, 11–23. https://doi.org/10.1016/j.appdev.2018.10.001

Miner, J. L., & Clarke-Stewart, K. A. (2008). Trajectories of externalizing behavior from age 2 to age 9: Relations with gender, temperament, ethnicity, parenting, and rater. *Developmental Psychology*, *44*, 771–786. https://doi.org/10.1037/0012-1649.44.3.771

Muris, P., Meesters, C., & Fijen, P. (2003). The self-perception profile for children: Further evidence for its factor structure, reliability, and validity. *Personality and Individual Differences*, *35*, 1791–1802. https://doi.org/10.1016/s0191-8869(03)00004-7

Muthén, L. K., & Muthén, B. O. (2012). *Mplus user's guide* (7th edn.). Authors.

Neece, C. L., Green, S. A., & Baker, B. L. (2012). Parenting stress and child behavior problems: A transactional relationship across time. *American Journal on Intellectual and Developmental Disabilities*, *117*, 48–66. https://doi.org/10.1352/1944-7558-117.1.48

Pederson, D. R., & Moran, G. (1995). A categorical description of infant-mother relationships in the home and its relation to Q-sort measures of infant-mother interaction. *Monographs of the Society for Research in Child Development*, *60*, 111–132. https://doi.org/10.1111/j.1540-5834.1995.tb00207.x

Perepletchikova, F., & Kazdin, A. E. (2004). Assessment of parenting practices related to conduct problems: Development and validation of the Management of Children's Behavior Scale. *Journal of Child and Family Studies*, *13*, 385–403. https://doi.org/10.1023/b:jcfs.0000044723.45902.70

Reeve, J. (2009). *Understanding motivation and emotion* (5th ed.). John Wiley et Sons.

Roth, G., & Assor, A. (2012). The costs of parental pressure to express emotions: Conditional regard and autonomy support as predictors of emotion regulation and intimacy. *Journal of Adolescence*, *35*, 799–808. https://doi.org/10.1016/j.adolescence.2011.11.005

Rothbaum, F., & Weisz, J. R. (1994). Parental caregiving and child externalizing behavior in nonclinical samples: A meta-analysis. *Psychological Bulletin*, *116*, 55–74. https://doi.org/10.1037/0033-2909.116.1.55

Rubin, K. H., Bukowski, W. M., & Laursen, B. (2011). *Handbook of peer interactions, relationships, and groups*. Guilford Press.

Sameroff, A. (2009). *The transactional model*. American Psychological Association.

Sayal, K., Washbrook, E., & Propper, C. (2015). Childhood behavior problems and academic outcomes in adolescence: Longitudinal population-based study. *Journal of the American Academy of Child & Adolescent Psychiatry*, *54*, 360–368. https://doi.org/10.1016/j.jaac.2015.02.007

Sirois, M. S., & Bernier, A. (2018). Mother–child relationships and children's psychosocial functioning: The specific roles of attachment security and maternal behavior. *Parenting*, *18*, 172–189. https://doi.org/10.1080/15295192.2018.1465305

Slagt, M., Dubas, J. S., Deković, M., & Van Aken, M. A. (2016). Differences in sensitivity to parenting depending on child temperament: A meta-analysis. *Psychological Bulletin*, *142*, 1068–1110. https://doi.org/10.1037/bul0000061

Smeekens, S., Riksen-Walraven, J. M., & Van Bakel, H. J. (2007). Multiple determinants of externalizing behavior in 5-year-olds: A longitudinal model. *Journal of Abnormal Child Psychology*, *35*, 347–361. https://doi.org/10.1007/s10802-006-9095-y

Statistics Canada (2020). *Distribution of total income by census family type and age of older partner, parent or individual*. Retrieved from https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1110001201

Thompson, R. A., & Goodvin, R. (2007). Taming the tempest in the teapot. In (C. A. Brownell & C. B. Kopp Eds.), *Socioemotional development in the toddler years: Transitions and transformations* (pp. 320–341). Guilford Press.

Tremblay, R. E. (2000). The development of aggressive behavior during childhood: What have we learned in the past century? *International Journal of Behavioral Development*, *24*, 129–141. https://doi.org/10.1080/016502500383232

Van der Ende, J., Verhulst, F. C., & Tiemeier, H. (2016). The bidirectional pathways between internalizing and externalizing problems and academic performance from 6 to 18 years. *Development and Psychopathology*, *28*, 855–867. https://doi.org/10.1017/s0954579416000353

Van der Bruggen, C. O., Stams, G. J. J., Bögels, S. M., & Paulussen-Hoogeboom, M. C. (2010). Parenting behaviour as a mediator between young children's negative emotionality and their anxiety/depression. *Infant and Child Development*, *19*, n/a-n/a. https://doi.org/10.1002/icd.665

Vasquez, A. C., Patall, E. A., Fong, C. J., Corrigan, A. S., & Pine, L. (2016). Parent autonomy support, academic achievement, and psychosocial functioning: A meta-analysis of research. *Educational Psychology Review*, *28*, 605–644. https://doi.org/10.1007/s10648-015-9329-z

Weyandt, L. L., Willis, W. G., Swentosky, A., Wilson, K., Janusis, G. M., Chung, H. J., Turcotte, K., & Marshall, S. (2014). A review of the use of executive function tasks in externalizing and internalizing disorders. In (S. Goldstein & J. A. Naglieri Eds.), *Handbook of executive functioning* (pp. 69–87). Springer.

Whipple, N., Bernier, A., & Mageau, G. A. (2011). Broadening the study of infant security of attachment: Maternal autonomy-support in the context of infant exploration. *Social Development*, *20*, 17–32. https://doi.org/10.1111/j.1467-9507.2010.00574.x

Yap, M. B. H., & Jorm, A. F. (2015). Parental factors associated with childhood anxiety, depression, and internalizing problems: A systematic review and meta-analysis. *Journal of Affective Disorders*, *175*, 424–440. https://doi.org/10.1016/j.jad.2015.01.050

Yoon, S., Yoon, D., Wang, X., Tebben, E., Lee, G., & Pei, F. (2017). Co-development of internalizing and externalizing behavior problems during early childhood among child welfare-involved children. *Children and Youth Services Review*, *82*, 455–465. https://doi.org/10.1016/j.childyouth.2017.10.016

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