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Sabrina Suffren, Jean-Pascal Lemelin, Chantal Cyr, Annie Bernier, Karine Dubois-Comtois. Environmental mediating mechanisms in the associations between parental depressive symptoms and preschoolers internalizing problems: results from a cross-sectional study. European Journal of Developmental Psychology, 2024, pp.1-19. 10.1080/17405629.2024.2353398. hal-04599644

HAL Id: hal-04599644

https://univ-montpellier3-paul-valery.hal.science/hal-04599644

Submitted on 3 Jun 2024

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Environmental mediating mechanisms in the associations between parental depressive symptoms and preschoolers internalizing problems: results from a cross-sectional study

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ABSTRACT

Children with a parent who suffers from depression are more likely to develop internalizing problems themselves. Moreover, poverty is an additional risk factor for child internalizing problems. According to models of intergenerational transmission of depression, various environmental mechanisms may account for this transmission. However, very few studies have included multiple mediators, as well as both parents in low-income samples. In this study of low- income families, we measured parental depressive symptoms, child internalizing problems, and examined three potential mediators: parent-child interaction quality, spouse's depressive symptoms, and coparenting conflict. Results indicated that the transmission of paternal depressive symptoms to child internalizing problems was entirely accounted for by these three mediators. The transmission of maternal depressive symptoms to child internalizing problems was mediated partially by coparenting conflict, but this link remained largely direct. These results underscore the need to consider both parents and coparenting conflict in clinical interventions targeting internalizing problems among preschoolers.

KEYWORDS

Depression; preschool; intergenerational transmission; low income; mediation

INTRODUCTION

Depressive disorders and symptoms in one or both parents have been identified as important risk factors for the development of internalizing problems in children, including preschoolers (Avenevoli & Merikangas, 2006; Hopkins et al., 2013; Klein et al., 2015). This link is particularly strong when parental depression occurs during the child's first years of life (Goodman, 2020). These internalizing behavioral problems tend to increase during the preschool period (between 3 and 6 years old) and the presence of internalizing behavioral problems during the preschool period has been identified as a risk factor for the emergence of an internalizing disorder in subsequent developmental periods (Hopkins et al., 2013; Klein et al., 2015). Poverty is an additional risk factor for child internalizing problems in the preschool period. Poverty has been associated with a higher rate of depression among parents, more inter- parental conflict and poorer quality of parent-child relationships (Hopkins et al., 2013; Simon & Evans, 2014), two important factors also linked to the emergence of child internalizing behaviors. Preschool-age children living in poverty are therefore more at risk of developing internalizing behaviors. Moreover, in a meta-analytic review, associations between parental depression and child behavioral problems have shown to be stronger in low-income than in high-income families (Goodman et al., 2011). However, very few studies have examined the link between parental depressive symptoms and preschoolers' internalizing problems in low-income families. Furthermore, the family ecology mechanisms through which this parent-to-child link takes place are still ill understood (Ahun & Coté, 2019).

Different theoretical models propose environmental factors that may be involved in the link between parental depressive symptoms and child internalizing problems (Barker et al., 2017; Goodman, 2020). Potential environmental mediating variables proposed in these models include the family environment (e.g., (co)parental

conflicts), parent-child relation- ship quality, and spouse's mental health. Although the factors proposed to explain the link between parental depressive symptoms and child internalizing behaviors are the same for both parents, their relative importance may vary across fathers and mothers (Bögels & Phares, 2008). However, most studies on the association between parental and child depression have considered the presence of depressive disorders or symptoms in mothers only, and much less is known about fathers. Yet, one parent's mental health issues are likely to have an impact on the other parent's functioning. Paternal and maternal depressive symptoms are often comorbid, with the risk of severe paternal depressive symptoms being substantially higher in the context of maternal depression (Areias et al., 1996).

In their theoretical model entitled 'Proposed environmental mechanisms of risk transmission from fathers to children', Baker (2018) put forward spouse's mental health and parental conflicts as important mediators in the intergenerational transmission of depressive symptoms. However, very few empirical studies have tested this model. In middle- income children aged 5 to 8 years old, maternal overt marital conflict behaviors (i.e., insult, threat, pursuit, and defensiveness during a problem-solving discussion) mediated link between paternal depressive symptoms and child internalizing symptoms (Keller et al., 2008). In middle-income preschoolers, marital conflicts partially mediated the relations between maternal and paternal depressive symptoms and child overall behavioral problems (Hanington et al., 2012) and internalizing problems (Cummings et al., 2005). As a marker of parental conflicts, parental disagreement over child rearing (i.e., coparenting conflict) has been linked to greater parental and child internalizing problems (Jones et al., 2003; Teubert & Pinguart, 2010; Tissot et al., 2016). Although low coparenting support has been found to mediate the association between maternal depressive symptoms and preschoolers' externalizing problems in middle-income families (Tissot et al., 2016), to our knowledge, no study has considered coparenting conflict in the relation between parental depressive symptoms and preschoolers' internalizing problems specifically. Finally, one study has examined the simultaneous contributions of spouse's depressive symptoms and parental conflicts (as mediators), in a model testing the relation between parental depressive symptoms and preschoolers' global behavioral problems, for fathers and mothers separately (Gutierrez-Galve et al., 2015). In this study, paternal depressive symptoms' association with child behavioral problems was partially mediated by maternal depression and parental conflicts. Also, maternal depressive symptoms' relation to child behavioral problems was partially mediated by parental conflicts, but not by paternal depression. Thus, parental conflicts similarly mediated the transmission of depressive symptoms in the mother-child and father-child dyads, whereas spousal depression played a different role for mothers and fathers. Of note, however, none of these studies focused specifically on low-income families. Moreover, in Gutierrez-Galve et al.'s study, the authors assessed preschoolers' global behavioral problems, although it is acknowledged that transmission mechanisms may differ across externalizing and internalizing symptoms (Hopkins et al., 2013). In addition, parental conflicts, and not coparenting conflicts, were assessed. Finally, an important limitation of the last study was the lack of an assessment of parentchild interactions quality (Gutierrez-Galve et al., 2015).

Several studies have linked paternal and maternal internalizing disorders or symptoms to less positive parent-child interactions and increased internalizing problems in young children (e.g., Fisher, 2017; Sethna et al., 2018). In their ecological transactional model of child depression, Cicchetti and Toth (1998) suggested that more distal factors (e.g., parental depression) are indirectly linked to child internalizing problems through more proximal factors such as parent-child interactions. Many empirical studies have confirmed this hypothesis in community samples. For instance, in a middle-income/low-risk group, the link between maternal psychosocial distress and child internalizing problems at 8.5 years of age was

found to be mediated by the quality of mother-child interactions (Dubois-Comtois et al., 2013). Furthermore, in a high-risk group (families living in areas with high rates of child poverty or high proportions of ethnic minorities), father-child conflicts in the preschool period were found to mediate the association between paternal depression at 9 months and child behavioral problems at school age (even after adjust- ing for SES; Nath et al., 2016). In preschoolers (3–4 years old) from low- income families, the link between maternal depression and child behavioral problems was mediated by maternal warmth (Baker, 2018). However, most of these studies focused on children overall behavioral problems, without distinguishing between internalizing and externalizing problems. Furthermore, the mediating role of father-child interaction quality has never been examined in preschoolers. Finally, none of these previous studies considered several mediators simultaneously.

Given that the associations between parental depression and child behavioral problems have been found to be stronger in low-income than high-income families (Goodman et al., 2011), and that the first years of life constitute a period of vulnerability for the development of internalizing problems (Goodman, 2020), we specifically addressed the link between parental depressive symptoms and child internalizing problems in a cohort of preschoolers from low-income families. We examined associations for fathers and mothers separately and focused on three potential parallel mediators, namely parent-child interaction quality, spousal depressive symptoms and coparenting conflict. Based on past research, we expected mediating effects of parent-child interaction quality, spousal depressive symptoms, and coparenting conflict in the associations between maternal and paternal depression and child internalizing problems. On an exploratory basis, we also examined, separately for fathers and mothers, the extent to which the mediation by coparenting conflicts and quality of the parent-child relationship was moderated by the other parent's depressive symptoms.

METHOD

Participants and procedure

The sample included 81 low-income families with 3-to-5-year-old children. Children's mean age was 51 months (SD = 8.56) and 48% were boys. Participants were recruited from a list of about 300 lowincome families (i.e., receiving social security benefits) provided by the government [deleted for blinded manuscript]. Children had no developmental disorders and were living with their two biological parents. Of the 300 families, about a third could not be reached (incorrect phone numbers or families did not return the calls); about a third declined to participate; and about a third agreed to participate. Information on families who refused to participate had to be destroyed once the sample was formed, limiting the description of these families. When the families met the criteria and agreed to participate in the study, a home visit with a research assistant was scheduled to review the research objectives and complete the project's measures. Informed consent was obtained from all parents of children included in the study. If parents were unable to complete all questionnaires during the home visit, they were asked to return them by mail using a prepaid envelope.

Of the 81 families included in the sample, 8.6% earned a yearly income under 8,000\$ CAN; 37% earned between 8,000\$ and 14,999\$; 21% between 15,000\$ and 21,999\$; 14% between 22,000\$ and 28,999\$, and finally 4% earned between 36,000\$ and 42,999\$. In Quebec, the median income of a two-parent family with one child was 81,810\$ in 2016 (Institut de la statistique du Québec, 2019). Mean paternal and maternal education levels were 11.3 and 10.9 years, respectively. The research protocol was approved by the [deleted for blinded manuscript] University research ethics committee.

Measures

Parental depressive symptoms

Fathers and mothers completed the 6-item Brief Symptom Inventory self-reported depression subscale (BSI; Derogatis & Melisaratos, 1983). Raw scores were transformed into T-scores and, consistent

with the BSI manual, parents with scores greater than or equal to a T-score of 63 were considered in the clinical range. The BSI has good psycho- metric properties (Boulet & Boss, 1991). In the current sample, Cronbach's alphas were satisfactory for both fathers and mothers (.75 and .82).

Child internalizing problems

Fathers and mothers completed the Child Behavior Checklist (CBCL) for ages 1.5 to 5. The CBCL 1.5–5 includes a 36-item internalizing problems scale, scored on a 3-point Likert scale (not true, somewhat or sometimes true, very true or often true) and transformed into T-scores. The CBCL/1.5–5 has excellent psychometric properties (Heubeck, 2000). Cronbach's alphas were .63 and .75 respectively for father- and mother-reported internalizing problems. Both scales were strongly inter-correlated (r = .65, p < .001) and therefore averaged to obtain a more accurate measure of child internalizing problems and reduce the number of main analyses.

Parent-child interaction quality

Father-child and mother-child interactions were evaluated from separate 8-min videotaped free-play sequences with the same set of toys, counterbalanced for order. The quality of father-child and mother-child interactions was rated separately from the videotaped sequences using the Parent-Child Interaction Scale for the Preschool and School Periods (Moss et al., 1998). An overall 7-point rating scale (from high quality [i.e., harmonious, reciprocal] to poor quality [i.e., indifferent or conflictual]) was used to capture global aspects of parent-child interactive behaviors. Higher scores (4 to 7) are considered more optimal, suggesting balanced and harmonious interactions (with genuine interest in the other and sustained pleasure) and scores from 1 to 3 represent dysfunctional interactions, indicating intrusive, hostile or disengaged interactions (including poor communication and role reversal). Parent-child interactions were coded by two independent observers, who were blind to other family data and study objectives. The coders were trained by an expert coder and were found reliable on an independent sample before coding the current sample. Interrater reliability (intraclass correlations) calculated on 30% of the current sample cases ranged from .77 to .84.

Coparenting conflict

The Conflict about discipline subscale of the Family Experiences Questionnaire (FEQ; Frank et al., 1988) was separately administered to mothers and fathers to assess their perception of conflicts around child discipline. This subscale includes 10 items scored on a 4-point scale (1 = strongly disagree to 4 = strongly agree). The FEQ has good psycho- metric properties (Frank et al., 1988). Cronbach's alphas were satisfactory for paternal and maternal scores (.83 and .80, respectively). Maternal and parental scores were moderately correlated (r = .44, p < .001). Therefore, we averaged these scores to reflect both parents' perceptions, obtain a more accurate measure of coparenting conflict, and reduce the number of subsequent analyses.

Statistical analyses

Descriptive statistics and bivariate correlations among study variables were first computed. Because most variables were not distributed, we used Spearman's nonparametric correlations. Secondly, we conducted two mediation analyses using Model 4 of Hayes (2013) PROCESS macro to examine the mediating role of three parallel mediators: parent-child interactions quality, spouse's depressive symptoms, and coparenting conflict in the link between parent depressive symptoms and child internalizing problems. Indirect effects were tested using 10,000 bootstrapped samples. Effects were considered significant if the 95% biascorrected confidence intervals did not include 0. Thirdly, we conducted moderated mediation exploratory analysis using Model 8 of Hayes (2013) PROCESS macro. With the two mediators above: coparenting conflict and parent-child interactions quality in the link between parent depressive symptoms and child internalizing problems, we entered into this model spouse's depressive symptoms as a potential moderator. Indirect effects were tested using 10,000 bootstrapped samples. Effects were considered significant if the 95% bias-corrected confidence intervals did not include 0

RESULTS

Missing data

Among the 81 families who participated in this study, all parents (fathers and mothers) took part in the home visit. However, 22 parents did not complete the CBCL and the coparenting conflict scale (parents did not return the questionnaires despite multiple reminders). There were no missing data for the BSI (completed during the home visit) or parent- child interactions. An analysis of the dataset with Little's Missing Completely at Random (MCAR) Test indicated that data were missing completely at random, χ^2 (238) = 236.20, p = .52. Missing data were there- fore estimated by means of the Expectation Maximization (EM) algorithm available in SPSS (Cox et al., 2014; Tabachnick & Fidell, 2013). This imputation method has already been used in prior studies with the same sample (reference deleted for blinded manuscript). To ensure that the results were not biased by the missing data, we repeated the analyses while excluding the 22 families with missing data. The results were similar; therefore, we report the results with the imputed data below.

Descriptive and correlation analyses

Among the 81 participating families, 22 (33%) fathers and 29 (37%) mothers suffered from depressive symptoms in the clinical range. Of the 81 children, 19 (23%) had clinically significant scores on the internalizing problems subscale. Spearman bivariate correlations between study variables are presented in Table 1. Child age was positively associated with father-child interactions quality and negatively associated with maternal depression. Maternal education was positively associated with paternal education. Given that maternal education was highly correlated with paternal education, only maternal education was used as a covariate in subsequent analyses. Consequently, child age and maternal education were covaried in all models.

Table 1. Spearman bivariate correlations between all variables (N = 81).

Variables		1	2	3	4	5	6	7	8	9
1.	Child age (months)	0.55	.003	.066	058	267*	.301**	015	027	102
2.	Paternal education (years)		-	.659**	039	262*	.085	.357**	.017	087
3.	Maternal education (years)			-	243*	349**	.07	.465**	.105	150
4.	Paternal depression				-	.522**	254*	262*	.357**	.527**
5.	Maternal depression					_	232*	284*	.381**	.384**
6.	Father-child interaction quality						-	.194	449**	223
7.	Mother-child interaction quality							_	176	.025
8.	Child internalizing behaviour								-	.425**
9.	Coparental conflict									

^{*}p < .05; **p < .01.

Mediation models

Bias-corrected bootstrapping mediation tests indicated that paternal depressive symptoms predicted child internalizing problems through father-child interaction quality (β = .09, 95% CI [.005; .18]), maternal depressive symptoms (β = .14, 95% CI [.05; .26]) and coparenting conflict (β = .14, 95% CI [.02; .27]). After accounting for these three mediators, the direct effect between paternal depressive symptoms and child internalizing problems was no longer significant, indicating full mediation. The total standardized effect of paternal depressive symptoms on child internalizing problems was β = .40 (95% CI [.19; .62]) and partitioned into three significant indirect effects: 23% (.09/.40) was explained by father-child interaction quality, 35% (.14/.40) by maternal depressive symptoms, and 35% (.14/.40) by coparenting conflict see Figure 1(a).

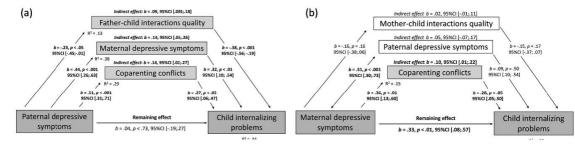


Figure 1. Mediation models by parent-child interactions quality, spouse's depressive symptoms and coparenting conflict concerning child internalizing problems, with the following predictors: (a) paternal depressive symptoms and (b) maternal depressive symptoms. All standardized regression coefficients, p values and 95% confidence inter- vals were reported for direct and indirect effects. Mediators in grey are significant.

bootstrapping mediation Bias-corrected indicated tests depressive symptoms predicted child internalizing problems through coparenting conflict ($\beta = .10, 95\%$ CI [.01; .22]). Mother-child interaction quality and paternal depressive symptoms were not significant mediators. After accounting for these three mediators, the direct effect of maternal depressive symptoms on child internalizing problems remained significant (β = .33, 95% CI [.08; .57]). The total standardized effect of maternal depressive symptoms on child internalizing problems was β = .50 (95% CI [.27;.72]) and partitioned into one significant direct effect and one significant indirect effect: 66% (.33/.50) of the total effect was directly explained by maternal depressive symptoms, 20% (.10/.50) by coparenting conflict see Figure 1(b).

Exploratory moderated mediation models

To evaluate the conditional indirect effects of parental depressive symptoms on child internalizing problems through parent-child inter- action quality and coparenting conflict as a function of different levels of the spouse's depressive symptoms, we used the bootstrap method for analysis. Indirect effects at three levels of the spouse's depressive symptoms (16th, 50th and 84th percentiles) were com- puted using the 95% CIs of the bootstrap method. The

conditional indirect effect on child internalizing problems arose from paternal depressive symptoms through father-child interaction quality when maternal depressive symptoms were high (84th percentile) (β = .11, 95% CI [.006; .21]) but not when maternal depressive symptoms were below or at average (16th and 50th percentiles). The conditional indirect effect on child internalizing problems arose from paternal depressive symptoms through coparenting conflict at all levels of maternal depressive symptoms (β = .18, 95% CI [.01; .43]; β = .14, 95% CI [.01; .30]; β = .09, 95% CI [.003; .23]). The conditional indirect effects on child internalizing problems from maternal depressive symptoms through mother-child interaction quality and coparenting conflict were not significant for any of the paternal depressive symptoms levels.

DISCUSSION

This study explored three potential parallel mediators of the link between parental depressive symptoms and child internalizing problems, in a sample of preschool-age children from low-income households. Parallel mediators included mother-child and father-child interactions quality, spousal depressive symptoms and coparenting conflict. Results are discussed below for each of the three mediators.

Coparenting conflict

Coparenting conflict was a significant mediator of the association between paternal and maternal depressive symptoms and child internalizing problems. In low-risk families, research shows that coparenting conflict is associated with more internalizing problems in children (Teubert & Pinquart, 2010). However, whereas coparenting support has been observed to mediate the link between parental internalizing symptoms and preschoolers' behavioral problems among low-risk families, coparenting conflict has not (Tissot et al., 2016). This suggests that coparenting conflict may operate differently in low- versus high- risk families. In high-risk populations, including low-income families, economic pressures may result in high parental depressive levels that create an additional

burden on the parenting role. This pressure can limit the partners' capacity to express emotional support (Majdandžić et al., 2012) and coordinate with one another, leading to more conflicts in the coparenting relationship. These conflicts, in turn, are likely to exacerbate children's internalizing problems (Lamela & Figueiredo, 2016). Indeed, conflicts can create an insecure, hostile, or threatening environment for the child, who may feel forced to take one parent's side or be confused by conflicting views around discipline. In contrast, in lower-risk families, parents are likely to have access to more resources (e.g., social support, professional help) to help them cope with their depressive symptoms and thus, hinder the process from depressive symptoms to coparenting conflict and in turn to child internalizing symptoms. Alternatively, coparenting conflicts can affect children through their effect on parenting behaviors. Indeed, coparental conflicts can decrease parents' motivation for childrearing (Liu et al., 2021), lead them to adopt more negative behaviors towards the child, or conversely, to establish a maladaptive alliance with the child (Majdandžić et al., 2012). This may be less so in lowrisk families, for whom protective factors are more likely to buffer the negative impact of coparenting conflict on parenting.

When paternal depressive symptoms were added as a moderator to the mother-to-child transmission model, coparenting conflict was no longer a significant mediator of the mother-to-child transmission. It is therefore possible that conflicts in the coparenting relationship are linked specifically to fathers' but not mothers' depressive symptoms. This last result should be replicated with a larger sample, since these latter analyses were exploratory.

Parent-child interactions quality

The quality of father-child relationships explained 23% of the total effect between paternal depressive symptoms and child internalizing problems. In high-risk populations, including low-income families, economic pressures may result in parental depressive symptoms that create dysfunctions in the parent-child relationship. In daily interactions, depressive fathers may exhibit less warmth and more hostility towards their child. These behaviors can cause children to perceive themselves as less valued and competent and to perceive the environment as more hostile or threatening (Majdandžić et al.,

2012). Moreover, fathers with depressive symptoms may be less equipped to fully engage with their children on an emotional level and help regulate their emotional experiences. Children may then have poorer abilities to regulate stress and negative emotions and learn to deal with hostile behaviors by withdrawing to decrease their stress response (Kemmis-Riggs et al., 2020). When maternal depressive symptoms were added as a moderator to the father-tochild trans- mission model, the quality of father-child relationships was a significant mediator of the father-to-child transmission only when maternal depressive symptoms were high. The quality of the father-child relationship therefore seems to be a factor to take into account specifically when both parents present depressive symptoms. Once again, this latter result should be interpreted with caution and these results should be replicated. The absence of mediation by mother-child interaction quality in the link between maternal depressive symptoms and child internalizing problems in this sample was unexpected. Indeed, past studies have often found that mother-child relationship quality mediated the association between maternal and child internalizing problems in low-risk samples (Baker, 2018; Nath et al., 2016). In the present study, parentchild relationship quality was measured through observations during a free-play session between parent and child. In this assessment, the criteria that were taken into account included the dyads' ability to communicate appropriately, coordinate towards a common goal, express and manage emotions appropriately, and enjoy being together. The fact that parent-child dyads were observed in a freeplay situation enhanced the ecological validity of the measure, but may have contributed to differences in results between the current and previous studies. First, for mothers, more significant links have been found between self-reported parenting and child outcomes compared to observed parenting (Hastings et al., 2008). This pattern of findings is consistent with our results, given that we directly observed parent-child interaction and the associations were not significant for mothers. Second, it is possible that the task used (free play) was not stressful enough for mothers to show insensitive, detached, non-communicative behaviors, or even tension towards their child (Dubois- Comtois et al., 2015). On the other hand, parental overcontrol and autonomy support have often been linked to child internalizing problems. Maternal autonomy support has been linked to less child internalizing problems (Sirois et al., 2022; Tanaka et al., 2023). Maternal overcontrol (but not paternal overcontrol) appears to be a significant mediator of the link between maternal and child anxiety (Borelli et al., 2015). It is therefore possible that certain aspects of parenting, not measured in this could explain the mother-to-child transmission internalizing problems. These aspects of parenting should be considered in future studies. Alternately, it could be that the link between mother-child interaction quality and child internalizing problems is mediated by other factors such as child temperament (Hopkins et al., 2013). Indeed, parental support has been linked to child internalizing problems via its effect on child tempera- mental negative affect and effortful control. Moreover, parental hostility has been linked to child internalizing problems via its effect on child temperamental effortful control (Hopkins et al., 2014). Future research is needed on the role of child temperament with the factors examined here.

Spousal depressive symptoms

Maternal depressive symptoms mediated the link between paternal depressive symptoms and child internalizing problems. These results are congruent with those of Gutierrez-Galve et al. (2015), who proposed that paternal depression limits fathers' ability to provide mothers with support to care for their children. It is also possible that depressed fathers may experience parental distress and less parental efficacy. Both these factors are associated with increased maternal depression, which in turn may exacerbate child internalizing problems. Conversely, paternal depressive symptoms did not mediate the link between maternal depressive symp- toms and child internalizing problems, which is also congruent with the results by Gutierrez-Galve et al. (2015). It could be that the link between mother and child depression is more direct, considering that mothers are generally more involved than fathers in the care of children during the first years of a child's life (Tissot et al., 2016). Accordingly, maternal depression may directly influence children's internalizing problems, whereas paternal depression may influence it mostly through other fac- tors, including maternal factors.

The direct effects of parental depressive symptoms

The fact that the link between paternal depressive symptoms and child internalizing problems became non-significant when the three mediators were taken into account in the model is an important result of this study. Relations between paternal depressive symptoms and child internalizing problems were fully explained by the three tested mediators, mostly through maternal depressive symptoms and coparenting conflict, which each explained 35% of the total effect. In contrast, the direct effect of maternal depressive symptoms on child internalizing problems remained significant, explaining 66% of the total effect. This direct effect, not explained by the mediators considered here, might reflect genetic transmission and/or epigenetic modifications (Hopkins et al., 2013). It could also be that the link between maternal and child internalizing problems in lowincome families is mediated by other factors not considered in the current study. Indeed, in mediation models, maternal depressive symptoms have been associated with more difficult temperament lower effortful (emotional negativity, control temperament), which, in turn, predicts greater child internalizing behaviors (Affrunti & Woodruff-Borden, 2015, Hopkins et al., 2014; Hummel & Kiel, 2015; Mian et al., 2011). On the other hand, maternal (but not paternal) depression has been associated with maternal negative cognitive style, which predicts greater child negative interpretative bias, which, in turn, predicts greater child internalizing behaviors (Affrunti & Ginsburg, 2012; Pereira et al., 2013). Future research is needed on the roles of these different factors and their interplay with the factors examined here.

Study limitations

The main limitation of this study was the cross-sectional design. Indeed, the duration, timing (e.g., prenatal/postnatal), and chronicity of parental depressive episodes can influence child outcomes (Goodman, 2020) and this was not considered in this study. In addition, just as parents may influence children, children may also influence their parents; however, with a cross-sectional design, directionality cannot be tested (Davidov et al., 2015). Therefore, reverse causality cannot be ruled out, and the current results should

be interpreted with caution. Hence, future research should employ longitudinal designs with multiple time points to test causal models. Another limitation is that we had to destroy the data of the families who declined to participate; therefore, a selection bias may have occurred, which reduces generalizability.

Moreover, child internalizing problems were reported by parents, and parental depressive symptoms can bias parents' ratings of their child's symptoms (Fjermestad et al., 2017). As well, given that there were only two informants (who lived together and assessed the child based on his or her behavior at home), shared method variance may have inflated some of the links observed here. In order to reduce this bias, we averaged maternal and paternal reports of child internalizing problems and used an observational measure of parent-child interaction quality. Future studies should use a multi-informant approach (e.g., parental and teacher reports and observations). A last limitation is the lack of assessment of child characteristics, for instance temperament, which can be an important risk factor for the development of internalizing problems (Affrunti & Woodruff-Borden, 2015).

Implications for practice

Clinical interventions aimed at reducing internalizing behaviors in preschoolers from low-income households should focus not only on the mother-child relationship but also on the father-child relationship and general family functioning. Family therapy may be very important in this respect, as it allows parents and children to all be considered. Moreover, the current results suggest that coparenting conflicts could also be a relevant intervention target in order to prevent the development of child internalizing behaviors. However, more studies with longitudinal designs are needed before implementing interventions based on the results of this study. Indeed, given the cross-sectional design used here, directionality cannot be tested and reverse causality cannot be ruled out.

Acknowledgments

The authors thank all the families who agreed to participate in this study.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This research was supported by a project grant from Social Sciences and Humanities Research Council of Canada [430-2012-0648] and Fonds de Recherche en Santé du Québec (FRQS). Financial support from the Centre de Recherche Universitaire sur les Jeunes et les Familles (CRUJeF) also contributed to the realization of this research.

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