

Parenting Practices, Maternal Depression and Behavior Problems: Associations, Prediction and Moderation

Alessandra Turini Bolsoni-Silva¹ 

Fernanda Aguiar Pizeta^{2,3} 

Sonia Regina Loureiro³ 

Abstract: There are gaps in the ways in which maternal depression, educational practices and children's behavior problems are associated. The objective was to verify: (a) associations between maternal depression, parenting practices and behavior problems in this sample; (b) the isolated and combined predictive effect of maternal depression and both positive and negative parenting practices on behavior problems; and (c) the possible moderating effect of positive parenting practices in the relation between maternal depression and behavior problems. Participants were 101 biological mothers who responded to validated self-report instruments. Data were treated by univariate and multivariate regression analyses, and moderation analyses were conducted. Associations were found between negative parenting, current maternal depression and behavior problems. And the moderation of positive practices in reducing the negative impact of depression on children's behaviors was identified. Teaching positive practices is suggested to minimize risk factors for behavioral problems.

Keywords: depression, mother-child relationships, child behavior

Práticas Parentais, Depressão Materna e Problemas Comportamentais: Associações, Predição e Moderação

Resumo: Constituem lacunas os modos como se associam depressão materna, práticas educativas e problemas comportamentais infantis. Objetivou-se verificar: (a) associações entre depressão materna, práticas parentais e problemas de comportamento nesta amostra; (b) efeito preditivo isolado e combinado da depressão materna e das práticas parentais positivas e negativas para os problemas de comportamento; e (c) possível efeito moderador das práticas positivas para a relação entre depressão materna e problemas de comportamento. Participaram 101 mães biológicas de crianças que responderam a instrumentos de autorrelato validados. Os dados foram tratados por análises de regressão uni e multivariada, sendo conduzidas análises de moderação. Verificou-se associações entre parentalidade negativa, depressão materna e problemas comportamentais; com moderação das práticas positivas na redução do impacto negativo da depressão. Sugere-se o ensino de práticas positivas para minimizar fatores de risco para problemas comportamentais.

Palavras-chave: depressão, relações mãe-criança, comportamento infantil

Prácticas de Crianza, Depresión Materna y Problemas de Conducta: Asociaciones, Predicción y Moderación

Resumen: Las formas en que se asocian depresión materna, prácticas educativas y problemas de conducta de niños son lagunas. El objetivo fue verificar: (a) asociaciones entre depresión materna, prácticas de los padres y problemas de conducta en esta muestra; (b) efecto predictivo aislado y combinado de depresión materna y prácticas parentales positivas y negativas para los problemas de conducta; y (c) posible efecto moderador de las prácticas positivas para la relación entre la depresión materna y los problemas de conducta. Participaron 101 madres biológicas de niños que respondieron a instrumentos de autoinforme validados. Los datos fueron tratados mediante análisis de regresión univariante y multivariante, realizándose análisis de moderación. Se verificaron asociaciones entre prácticas educativas negativas, depresión materna y problemas de conducta; con moderación de prácticas positivas para reducir el impacto negativo de la depresión. Se sugiere enseñar prácticas positivas para minimizar los factores de riesgo para problemas de conducta.

Palabras clave: depresión, relaciones madre-hijo, comportamiento infantil

¹ Universidade Estadual Paulista "Júlio de Mesquita Filho", Bauru-SP, Brazil

² Tribunal de Justiça do Estado de São Paulo, Ribeirão Preto-SP, Brazil

³ Universidade de São Paulo, Ribeirão Preto-SP, Brazil

Correspondence address: Alessandra Turini Bolsoni-Silva. Universidade Estadual Paulista "Júlio de Mesquita Filho". Av. Luís Edmundo Carrijo Coube, 14-01 - Vargem Limpa, Bauru-SP, Brazil. CEP 17.033-360. E-mail: bolsoni.silva@unesp.br

The family is the child's primary developmental context and can be a supportive or adverse environment insofar it may either favor a child's socialization or developmental problems. These problems configure a negative developmental outcome and are one of the main reasons children are referred to health services (Autuori & Granatdo, 2017). Various family conditions promoting child developmental outcomes are addressed in the literature,

among which parenting practices that unfold on a parenting style continuum, ranging from positive to negative (González-Cámara et al., 2019). Negative practices are featured as parents' control actions in interactions with children who demonstrate aggressive, coercive and guilty induction behaviors. Positive practices, on the other hand, are featured by signals of affection, attention, support and sensibility to children's needs, activity monitoring or supervision and the establishment of boundaries (González-Cámara et al., 2019).

Positive practices are considered to be associated with the promotion of child social skills and a lower risk of problems (Charrois et al., 2019). And, alternatively, it is known that negative practices, as the main interaction strategy, increase the occurrence of behavior problems (Cicchetti & Handley, 2019).

Vafaenejad et al. (2018) conducted a systematic review to examine the psychological factors affecting parenting and identified variables related to both parents and children. The factors related to the parents include mental health, traumatic experiences during childhood, and self-efficacy, whereas the factors related to children include cognitive and problem behaviors and child psychopathologies. In a wide review about childhood maltreatment, behavior problems and substance use, Cicchetti and Handley (2019) noted that negative parenting practices, especially mistreatment, aggressiveness, and neglect, configure risk conditions to child development, favoring adverse outcomes, including problem behaviors as precursors of the substance abuse on adolescence. According to the World Health Organization [WHO] (2022), depression stands out among mental health problems as a highly prevalent disorder, more common among women than men. Brazil ranks third in the world with the highest rates of occurrence of the disorder. Additionally, the negative impact of depression on child development and parenting is widely reported. Saputra et al. (2017) conducted a predictive cross-sectional study with several contextual and mental health variables and found that parenting, maternal depression, low academic competence, and coercive family relationships can impact the mental health in school-aged children. Zubizarreta et al. (2019) conducted a predictive study and found that punitive parenting style has been associated with an increase in externalizing and internalizing problems, and negative affectivity moderated this association. Internalizing problems refer to emotional problems such as anxiety and depression, while externalizing problems refer to disruptive problems such as oppositional-defiant conduct (Achenbach & Rescorla, 2001). In addition, Bödeker et al. (2019) verified that positive practices, when they favor a cozy and affectionate environment, attenuate the negative impact of maternal depression. A recent systematic review reports associations between maternal depression and negative parenting styles and children's diverse problem behaviors (González-Cámara et al., 2019).

Shaw et al. (2016) conducted a longitudinal study and verified that maternal depression and children's problem behaviors have reciprocal and independent effects so that both depression and risky neighborhoods influenced the

development of problem behaviors during childhood and adolescence. Conners-Burrow et al. (2016) conducted a large longitudinal study and verified that living with mild maternal depressive symptoms in early childhood was associated with problem behaviors at 11 years of age. These results suggest that even less severe symptomatology directly impacts developmental outcomes among children.

Various studies report associations between maternal depression and negative parenting and child behavior problems, especially aggressive (Kuckertz et al., 2018), hostile (Ahun et al., 2017), and inconsistent maternal behaviors (Fuentes-Balderrama et al., 2020). On the other hand, positive parenting is identified as a condition that mitigates the impact of maternal depression on child behavior, reinforcing the importance of a welcoming and affectionate environment conducive to child development and adaptive behavior (Bödeker et al., 2019). Furthermore, exposure to harmful parenting practices, including physical punishment and severe criticism, was associated with an increased risk of problem behaviors during childhood and adolescence. On the contrary, parental affection and sensitiveness were associated with a lower risk of problem behaviors (Charrois et al., 2019), showing the adverse influence of negative practices and the protective effect of positive practices.

Note, however, that the literature has not reached a consensus regarding the protective effect of positive practices. For example, contrary to Charrois et al. (2019), some studies report that positive parenting did not minimize problem behaviors or favored psychosocial functioning. In turn, Zalewski et al. (2017) discuss the need to address contextual variables that may have favored these outcomes. In this sense, the literature addressing the impact of multiple variables on child behavioral outcomes presents a gap regarding the process and role these variables play in explanatory variables to guide maternal-infant mental health practices.

Univariate linear regression revealed the negative impact of the following measures on children presenting both internalizing and externalizing problems: maternal depression, negative practices excess, lack of positive practices, multiple complaints regarding the children's behaviors, poor social skills, and marital conflicts. Therefore, each of these variables predicted the outcome of internalizing and externalizing problems combined, not determining the weight of each variable in the multivariate explanatory models.

Although associations between maternal depression, rearing practices, and behavioral problems among preschoolers and school-aged children are widely studied, there are gaps concerning the mechanisms through which these variables influence child outcomes. This study thus aims to fill these gaps to consider how the variables maternal depression, positive and negative parenting practices behave in models of association and prediction of child behavior problems, what can favor the identification of relevant points that can guide practices of child mental health.

The following hypotheses are proposed: (a) maternal depression and both negative and positive parenting practices are associated with child behavior problems; (b) maternal

depression and negative practices are predictors of more behavior problems, whereas positive practices are predictors of fewer behavior problems; (c) there is a moderating effect of positive practices in the relation between maternal depression and behavior problems, as well as in the relation between negative practices and behavior problems.

The objectives were to verify: (a) associations between maternal depression, parenting practices and behavior problems in this sample; (b) the isolated and combined predictive effect of maternal depression and both positive and negative parenting practices on the behavior problems; (c) the possible moderating effect of positive parenting practices in the relation between maternal depression and behavior problems.

Method

Participants

Sample was defined by convenience. The participants were 101 biological mothers, married or in stable relationships, regardless of legal bond, of preschoolers ($n = 54$: 29 boys and 25 girls; 32 without behavior problems and 22 with at least one behavior problem) and school-aged children ($n = 47$: 27 boys and 20 girls; 24 without behavior problems and 23 with at least one behavior problem); presence/absence of behavior problems was defined from Child Behavior Checklist - CBCL (Achenbach & Rescorla, 2001), answered by mothers. The distribution of boys and girls per school year was equivalent ($X^2 = 0.444, p = 0.505$), as was the clinical profile of behavior problems identified by the CBCL (Achenbach & Rescorla, 2001) ($X^2 = 0.683, p = 0.408$). The boys and girls were evenly distributed between early childhood education centers and primary schools ($X^2 = 0.444, p = 0.505$), and the CBCL (Achenbach & Rescorla, 2001) was used to identify the children's behavior problems ($X^2 = 0.683, p = 0.408$).

Thus, the final sample was composed of 56 children without any indicator of behavior problems (non-clinical group: 26 boys and 30 girls) and 45 children with at least one indicator of behavior problem (clinical group: 30 boys and 15 girls), i.e., 23 children presented internalizing problem, seven presented externalizing problem, and 15 presented a profile that combined internalizing and externalizing problem.

Regarding demographic variables: (a) the preschoolers were aged 3.88 years on average ($SD = 1.14$), and the school-aged children were 8.23 years on average ($SD = 1.67$); (b) the mothers of the preschoolers were 29.80 years on average ($SD = 5.77$), and the mothers of the school-aged children were 34.30 years on average ($SD = 6.20$); (d) regarding the mothers' educational level, 30% attended up elementary school and 69.3% had elementary school of schooling; (e) regarding paid jobs, 42.6% of the mothers reported working outside the home; and (f) family income was distributed as follows: 9.9% reported up to one times the minimum wage (MW);

24.8% reported up to two times the MW; 29.7% reported up to three times; 14.9% reported up to four times; 10.9% reported up to five, and 9.0% reported more than six times the MW.

Twenty-nine municipal public schools (12 early childhood education centers and 17 primary schools) located in a mid-sized city in the interior of São Paulo, Brazil, were invited to participate in the study. The schools were evenly distributed between central and peripheral neighborhoods. The teachers of the participating schools were asked to nominate four children from the classroom under their responsibility: two children considered to have at least one behavior problem and two children without behavior problems. In total, 426 children (192 preschoolers and 234 school-aged children) were nominated, and their families were invited to participate. The families of 96 preschoolers and 135 school-aged children refused to participate, primarily due to lack of interest or time. Finally, the families of 96 preschoolers and 99 school-aged children agreed to participate and answered the instruments, totalizing 195 participants.

Because the study's objectives involved the assessment of mothers who were married or in a stable relationship, 62 participants were excluded because they belonged to a single-parent family [i.e., single mothers (22), widowed (1), divorced (13), single fathers (13)], or were raised by grandparents/aunts/uncles (13)]. Additionally, 27 mothers were excluded for not completing part of the instruments addressing parenting and child behavior, and another five cases were outliers. Therefore, the final sample consisted of 101 mothers with children attending early childhood education centers or primary schools.

Instruments

Roteiro de Entrevista de Habilidades Sociais Educativas Parentais [Parenting Social Skills Interview Guide - RE-HSE-P (Bolsoni-Silva et al., 2016). The Brazilian Federal Council of Psychology approved this semi-structured interview as a psychological test to describe the interaction established between parents and children, including measures of positive parenting practices (positive social skills) and negative parenting practices, including the frequency and diversity of interactions. The interviews were recorded and coded according to the manual. At the end of the interviews, information concerning the mothers' education, marital status, socioeconomic status, and whether they had a paid job was also collected. The alpha obtained for the reference sample was 0.87 and has two factors, one concerning positive aspects of interaction (social rearing skills, child social skills, and contextual variables) and one concerning negative aspects (negative parenting practices and problem behaviors). The first factor's alpha was 0.827, and the second was 0.646 (Bolsoni-Silva et al., 2016). In this study, the frequency of positive practices and the diversity of negative practices are coded quantitatively and provide a total score related to the frequency of positive practices and diversity of negative practices. This instrument also collected sociodemographic data.

Child Behavior Checklist - CBCL (Achenbach & Rescorla, 2001). The instrument’s preschool (from 1 ½ to 5 years old) and school (from 6 to 18 years old) versions were used to measure behavior problems. Based on the report of families, the CBCL investigates the frequency of 113 answers that indicate behavior problems (internalizing, externalizing, and total), in addition to problems/disorders subscales. The outcome of this study was the Total Score of Total Problem Behaviors. Psychometric studies identified satisfactory test-positivity and morbidity criteria for clinical and non-clinical profiles (Bordin et al., 2013). The clinical profiles for internalizing, externalizing, or combined problems were considered in this study as development outcomes for children (dependent variable). An ordinal classification was adopted for the combined outcomes for each child, including the absence of clinical profile, presence of clinical profile for internalizing or externalizing problems, considering the borderline and clinical classifications provided by the instrument, and the presence of clinical profiles for internalizing and externalizing problem combined. In a Brazilian sample (Rocha et al., 2013), precision data gauged by Chronbach’s alpha for the total score was 0.95 (non-clinical and clinical samples) for internalizing indicators, 0.83 for non-clinical samples and 0.86 for clinical samples. About externalizing indicators, the score was 0.82 for non-clinical samples and 0.92 for clinical samples.

Patient Health Questionnaire (PHQ-9) is directed to mothers. It was proposed and validated by Kroenke et al. (2001) and Spitzer et al. (1999) to assess current depressive symptoms. In Brazil, Osório et al. (2009) verified that a cut-off point equal to or higher than 10 was the most adequate for screening depression. with 1.00 sensitivity (S), 0.98 specificity (E), 0.97 positive predictive value, 1.00 negative predictive value, 0.999 diagnostic efficacy. The alpha of this study’s database was 0.848.

Procedures

Data collection. Schools were contacted after the Department of Early Childhood Education approved the project. The objectives were presented to the schools’ principals or pedagogical coordinators, or in their absence, to the teachers, who signed informed consent forms. A total of 38 teachers from early childhood education centers and 37 from primary schools participated. They were asked to nominate four children attending the classroom under their responsibility: two children considered to have at least one problem behavior and two children without problem behaviors. Thus, the families of the children nominated by the teachers were invited, and those who agreed to participate signed free and informed consent forms. A previously trained interviewer held face-to-face interviews in a single session in the families’ preferred setting (at their homes, school, or university). The sessions lasted one hour on average.

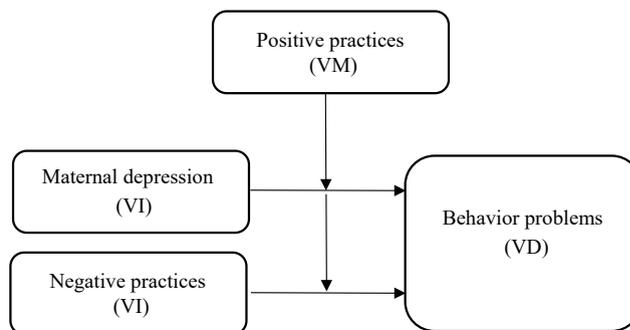
Data analysis. Data were first organized into spreadsheets in IBM SPSS version 22, including sociodemographic data, the raw scores concerning the positive and negative parenting

practices (RE-HSE-P), the presence or absence of the current maternal depression and clinical profiles of externalizing, internalizing, or combined problems.

Next, to verify associations between the variables of interest, the Spearman’s correlation analysis was performed. First, a normality analysis using the Kolmogorov-Smirnov Test (with Lilliefors correction) was conducted, demonstrating that the data do not have normal distribution, implying that a non-parametric test was used. Next, to verify associations of the total scores of positive and negative educational practices, maternal depression and behavior problems Spearman’s correlation Test were used. To analyze the impact of the variables of interest (maternal depression, according to the PHQ’s total score, used against the amplitude offered by the score, and positive and negative parenting according to the total scores obtained in the RE-HSE-P) on behavior problems, simple and multiple logistic regression analyses were conducted when the clinical profiles of internalizing, externalizing, or combined problems were considered (Marôco, 2021).

Positive models were then tested from data obtained by literature, in which positive parenting practices act as moderators of the negative effects of both maternal depression and negative parenting practices on behavior problems (Figure 1). It intends to test how positive practices could influence such outcomes, since seeming correlated to maternal depression but not directly impact behavior problems because the occurrence of both negative and positive practices was verified in the actions of parents. Then, for testing a model that identified different adversity and protection variables that could impact the behavior, the hypothesis of a possible moderating effect of positive parenting practices in explanatory models was tested, which justified the analyses done.

Figure 1
Prediction model – maternal depression, positive practices, negative practices and child behavior



For this purpose, the analyses recommended in the literature (Hayes & Rockwood, 2016) were performed using Process extension for SPSS to verify the moderating role of positive parenting between maternal depression and behavior problems (model 1) and between negative practices and behavior problems (model 2), using moderation models with bootstrapping were adopted, with a 95% confidence interval (Vieira, 2009). The variance of the explanatory moderation model was calculated using R² and the level of significance was set at $p \leq 0.05$.

Ethical Considerations

This study is part of the project *Práticas educativas de pais, mães e professores de crianças com e sem problemas de comportamento diferenciadas por sexo e escolaridade, considerando relato e observação* [Rearing practices of parents, mothers, and teachers of children with and without problem behavior, according to sex and education, considering reports and observations] and was approved by the Ethics Committee of the Universidade Estadual Paulista “Júlio de Mesquita Filho”, CAAE nº 83049618.0.0000.5398 and followed the guidelines of Resolution 466/2012 set forth by the National Health Council.

Results

The results section is organized to describe the outcomes according to the objectives proposed. Correlation data indicated the positive correlation between the outcome variable, child behavior problems, and two adversity variables (negative parenting practices: $\rho = 0.443$; $p < 0,001$; and maternal depression: $\rho = 0.253$; $p = 0,011$), as well as the negative correlation between maternal depression and positive parenting practices ($\rho = 0.287$; $p = 0.004$).

The impact of the variables maternal depression and parenting practices was analyzed by univariate and multivariate models (Table 1).

Table 1

Simple and multiple regression models for behavior problems according to clinical profiles (absence of problems, internalizing or externalizing problems, or combined problems)

Simple logistic regression						
	B	Exp(B)	<i>p</i>	95% CI		
				Inter or exter problem		
Depression	0.104	1.110	0.030	1.010; 1.220		
Positive parenting	-0.141	0.868	0.387	0.631; 1.196		
Negative parenting	0.091	1.095	0.178	0.959; 1.251		
				Inter and exter problems		
Depression	0.156	1.168	0.005	1.048; 1.303		
Positive parenting	-0.232	0.793	0.245	0.537; 1.172		
Negative parenting	0.219	1.245	0.010	1.054; 1.471		
Multiple logistic regression						
	B	Exp(B)	<i>p</i>	95% CI	Probability	
				Inter or exter problems		
Depression	0.096	1.101	0.046	1.002;1.211		10.1%
Positive parenting	-0.038	0.963	0.819	0.694;1.335		-
Negative parenting	0.094	1.099	0.166	0.962;1.256		-
				Inter and exter problems		
Depression	0.152	1.164	0.011	1.036;1.309		16.4%
Positive parenting	0.084	1.088	0.747	0.651;1.819		-
Negative parenting	0.251	1.286	0.007	1.073;1.541		12.9%

The simple regressions models presented in Table 1 show that maternal depression predicts both problems in one of the assessed areas (internalizing or externalizing) and combined problems (internalizing or externalizing, in the same case), compared to the non-clinical group; Pseudo R^2 were 0.094 and 0.110 (Cox and Snell, and Nagelkerke, respectively). The model of positive parenting practices was not significant to behavior problems, whereas the model whose predictive variable was the negative practices, it is highlighted the predictive effect to combined problems compared to the non-clinical group, with Pseudo R^2 equal to 0.071 and 0.083 (Cox and Snell, and Nagelkerke, respectively). Therefore,

maternal depression influences all the children’s negative behavior outcomes. It is noteworthy that maternal depression is a risk factor for all behavioral problems, while the highest scores of negative practices are an adverse condition that influences the presence of combined problems.

The multiple regression model shows that interest variables maintained an impact standard similar to the univariate analyses, in order to maternal depression impact the group of combined clinical profiles (i.e., the likelihood of a child to present combined problems increases by 16.4% with every point scored in the PHQ, compared to the non-clinical group, and 5% compared to the clinical group

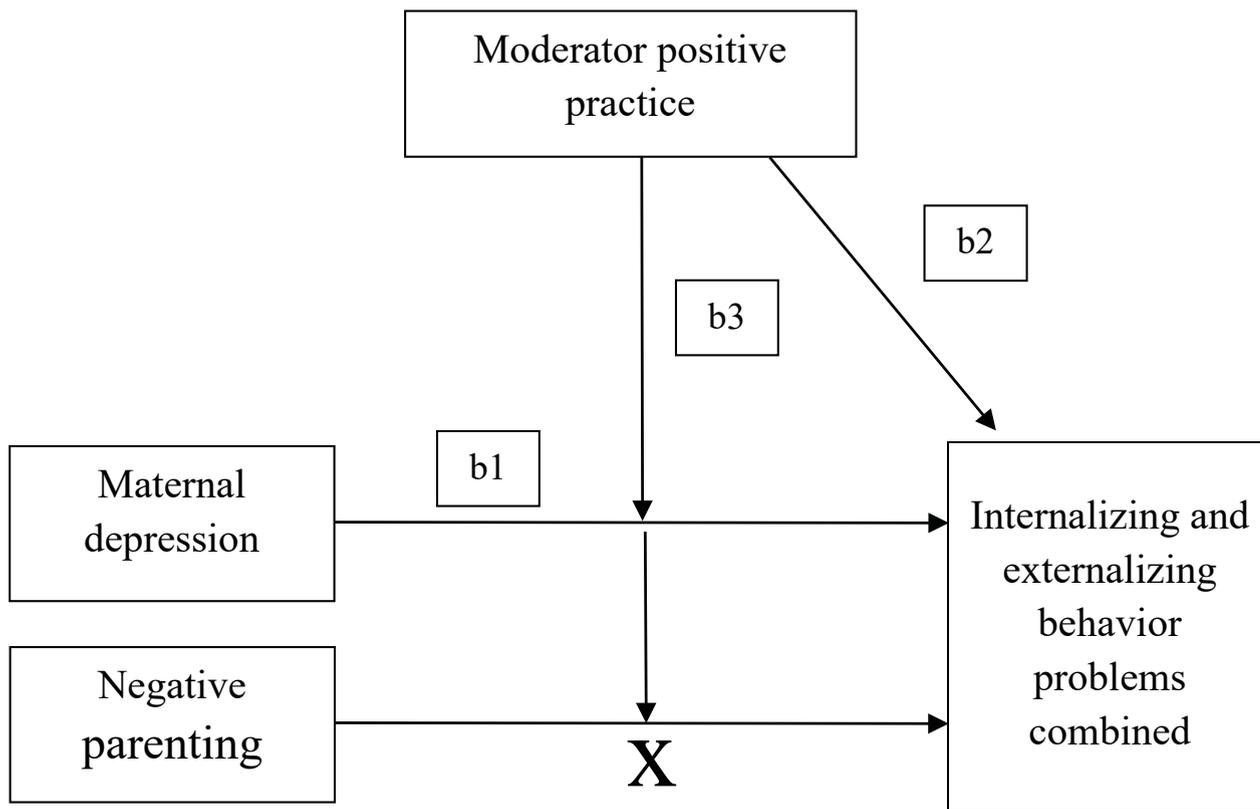
with only one behavior problem; whereas the likelihood of a child in the clinical group with one problem only increases by 10.1% at every point scored in the PHQ compared to the non-clinical group). Negative parenting practices only helped to explain more problem behaviors in the clinical group with combined problems (the likelihood of a child to present combined problems increases by 12.9% with every point scored for negative practices compared to the non-clinical group and by 18% compared to the clinical group with one problem behavior only).

The influence of maternal depression and negative parenting practices, independently, on child behavior problems, moderated by positive parenting practices, was tested to analyze the ways through which maternal depression, negative and positive parenting work in the explanatory model for child behavior outcomes, according to the models presented

in Figure 2. There was a significant interaction between maternal depression and positive parenting (model 1), but not in the model that included negative parenting practices (model 2), identifying only one model in which the interaction was significant. A protective effect of positive parenting was found in 3% and 6% of the odds of clinical profiles of combined problems ($B = 0.1185$; $t(97) = 3.6991$; $p = 0.0004$; $95\%CI = 0.0549; 0.1821$). The impact of maternal depression remains, i.e., the higher the score obtained in the PHQ, the higher the score obtained for behavior problems or the more frequent combined problems. However, positive parenting lessens the impact of depression on behavior problems. The results reveal that the variable positive parenting appears as a pure moderator in both moderation models, as no significant relationship was found between the moderating variable (positive parenting) and the dependent variables (problem behaviors combined).

Figure 2

Moderation models tested for internalizing and externalizing problem behaviors combined



Note. $b_1 = 3.6991$; $p < 0.001$; coefficient = 0.1185 (V.I. depression); $b_2 = 1.4222$; $p = 0.158$; coefficient = 0.1035 (MOD positive practice); $b_3 = -2.6236$; $p = 0.010$; coefficient = - 0.277 (interaction between positive practice and depression).

Discussion

This study intended to verify the impact of positive and negative parenting and maternal depression on problem behavior profiles considering prediction and moderation analyses, focusing on the effect of positive parenting. The results are discussed according to the three hypotheses proposed.

The first hypothesis states that maternal depression and parenting influence child behavior, and the second considered that children living with maternal depression and negative parenting concomitantly would be more likely to develop behavior problems. The univariate (hypothesis a) and multivariate regression analyses (hypothesis b) show that maternal depression and negative parenting favor total behavior

problems. When these problems were assessed according to clinical profiles, both variables (maternal depression and negative parenting) presented greater explanatory power in the presence of combined problems. Maternal depression alone appears as an adverse condition for children with internalizing or externalizing problems, and the higher the scores obtained for depression and negative parenting, the more significant the impact on child behavior problems.

Therefore, children living with maternal depression and negative parenting presented more indicators of behavior problems (a profile with externalizing and internalizing problems combined), with greater explanatory power than in the univariate analysis, highlighting the cumulative effect of adverse events on child outcomes. The conclusion is that these two hypotheses were confirmed, except for positive parenting influencing behavior problems (part of hypothesis a), which was not verified in any of the regression analyses. Thereby, positive parenting practices do not seem to be directly associated with the children's behavior problems. However, concerning the presence of maternal depression, positive practices can decrease the negative impact of depression on children's behavior. Such data suggest relevance, especially in mothers with depressive symptomatology, of promoting positive parenting practices through specific training, because these practices can be a protective factor against children's behavior problems.

The literature supports these results, as the family may either promote healthy development or appear as an adversity factor, increasing the risk for child behavior problems (Autuori & Granato, 2017). The results confirm the effect of negative parenting and its association with a greater risk of behavior problems (Charrois et al., 2019; Cicchetti & Handley, 2019), which, together with maternal depression, influence internalizing and externalizing problems combined.

Analysis of data concerning the impact of depression and negative parenting practices on child behavior corroborates with previous studies (Ahun et al., 2017; Connors-Burrow et al., 2016; Kuckertz et al., 2018; Shaw et al., 2016; Vafaenejad et al., 2018). Similar to Zubizarreta et al. (2019) this study's results suggest that punitive practices have been associated with an increase in behavior problems. Furthermore, the presence of depression simultaneously with negative parenting on child behavior characterized increased risk, which suggests the influence of one variable on another (Ahun et al., 2017; Kuckertz et al., 2018; Vafaenejad et al., 2018) and the effects of cumulative risks, which imply worse behavioral outcomes such as a combined profile of internalizing and externalizing problems. Thus, identifying cumulative risks is especially relevant in complex contexts such as child development in the family environment (Autuori & Granato, 2017) to favor more effective preventive measures and treatments for child behavior problems.

The literature has not reached a consensus regarding the role of positive parenting. Previous studies report that it decreases the risk of behavior problems (Charrois et al., 2019); does not alleviate behavior problems nor favor the psychosocial functioning of children (Zalewski et al., 2017);

and promotes child social skills, which are inversely proportional to behavior problems. The results obtained in the regression analyses show that positive parenting did not directly influence behavior problems, which appears to corroborate Zalewski et al. (2017). However, the moderation analysis reveals that positive parenting decreased the negative impact of maternal depression on behavior problems when the total scores and externalizing and internalizing problems combined were considered, which is in line with other studies (Bödeker et al., 2019; Charrois et al., 2019). Therefore, these results confirm the third hypothesis, in which positive parenting is a protective resource to decrease the negative impact of maternal depression on child behavior; i.e., positive parenting appeared as a pure moderator (Vieira, 2009).

By including maternal depression, positive and negative parenting, and different behavior problems classified in different profiles, multiple variables were included in this study and favored mapping the roles of positive and negative parenting and maternal depression influencing behavior problems. Although not all relevant variables were included in this study, such as child social skills, marital relationship, and various sociodemographic conditions, the results contributed to advance in the knowledge regarding this topic.

Additionally, although positive parenting did not directly influence problem behaviors, it certainly indirectly influences child behavior because positive parenting minimizes the relationship between depression and negative parenting. Thus, we can hypothesize that the contribution of positive parenting is twofold, i.e., through affection and attention, positive parenting minimizes the adverse effects of negative parenting and provides the child an alternative problem-solving behavior model, which favors child development. The implication of these results includes the importance of encouraging positive parenting to deal with child behavior problems and lessen the effects of negative parenting, especially in the context of maternal depression, a risk widely recognized for child development.

As final considerations, we note that this study presents associations between negative parenting, current maternal depression, and child behavior (total, internalizing, externalizing, and combined problems) and confirmed the moderating role of positive practices in decreasing the negative impact of maternal depression on child behavior. The strengths of this investigation include the methodological rigor in recruiting a homogeneous sample (biological mothers living in stable relationships, evenly distributed between boys and girls, with and without behavior problems distributed between early childhood education centers and primary schools), and sophisticated regression and moderation analyses, treating multiple variables simultaneously.

The limitations include: (a) a relatively small sample from a single location; (b) other variables possibly relevant to understand behavior problems, such as marital relationships, child social skills, living conditions, sociodemographic variables, and whether the families lived in a risk neighborhood were controlled for but not included in the analysis; (c) having the mothers as the single source of information,

which limits the generalization for parents; (d) mothers with current depression were addressed, however with no information regarding history of depression or diagnostic assessment; (e) study design was cross-sectional and it does not allow affirmations about cause and effect concerning relations between variables; (f) a possible selection bias related to the sample, due to children were indicated by teachers, although the behavior had been assessed by a gauged instrument, which provides cutoff scores for the types of problems, from a statistical point of view, it is not possible to assume that it behaves like a ratio scale, with equivalent distances between the three considered outcomes; (g) the inclusion in the study exclusively of nuclear, biparental families that, although predominant, does not cover different existing family arrangements.

Future studies should consider these limitations, adopting larger samples with greater representative power, covering different family arrangements, and from different regions. Including other variables of interest and other sources of information such as fathers, teachers, and the children themselves would be interesting along with observation measures. Longitudinal studies, including maternal depression given its recurrence and in diagnostic score, could also verify the impact of the variables over time. Moderation and combined studies (mediation and moderation) could also improve the understanding regarding the impact of various variables that simultaneously influence children's behavioral outcomes. Study data have implications to interventions related to positive practices, especially to mothers and children who live with depression.

References

- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA School-Age Forms & Profiles*. ASEBA.
- Ahun, M. N., Geoffroy, M. C., Herba, C. M., Brendgen, M., Séguin, J. R., Sutter-Dallay, A. L., Boivin, M., Tremblay, R. E., & Côté, S. M. (2017). Timing and chronicity of maternal depression symptoms and children's verbal abilities. *The Journal of Pediatrics*, *190*, 251-257. <https://doi.org/10.1016/j.jpeds.2017.07.007>
- Autuori, M., & Granato, T. M. M. (2017). Encaminhamento de crianças para atendimento psicológico: Uma revisão integrativa de literatura [Children referral for psychological care: An integrative literature review]. *Psicologia Clínica*, *29*(3), 449-467. http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S0103-56652017000300006
- Bordin, I. A., Rocha, M. M., Paula, C. S., Teixeira, M. C. T. V., Achenbach, T. M., Rescorla, L. A., & Silveira, E. F. M. (2013). Child Behavior Checklist (CBCL), Youth Self Report (YSR) and Teacher's Report Form (TRF): An overview of the development of the original and Brazilian versions. *Cadernos de Saúde Pública*, *29*(1), 13-28. <https://doi.org/10.1590/S0102-311X2013000100004>
- Bödeker, K., Fuchs, A., Führer, D., Kluczniok, D., Dittrich, K., Reichl, C., Reck, C., Kaess, M., Hindi Attar, C., Möhler, E., Neukel, C., Bierbaum, A. L., Zietlow, A. L., Jaite, C., Lehmkuhl, U., Winter, S. M., Herpertz, S., Brunner, R., Birmphohl, F., & Resch, F. (2019). Impact of maternal early life maltreatment and maternal history of depression on child psychopathology: Mediating role of maternal sensitivity? *Child Psychiatry and Human Development*, *50*(2), 278-290. <https://doi.org/10.1007/s10578-018-0839-z>
- Bolsoni-Silva, A. T., Loureiro, S. R., & Marturano, E. M. (2016). *Roteiro de Entrevista de Habilidades Sociais Educativas Parentais (RE-HSE-P)*. Manual técnico [Interview Script of Parental Social Educative Skills (RE-HSE-P). Technical manual]. Hogrefe Cetepp.
- Charrois, J., Côté, S. M., Paquin, S., Séguin, J. R., Japel, C., Vitaro, F., Kim-Cohen, J., Tremblay, R. E., & Herba, C. M. (2019). Maternal depression in early childhood and child emotional and behavioral outcomes at school age: Examining the roles of preschool childcare quality and current maternal depression symptomatology. *European Child & Adolescent Psychiatry*, *29*(5), 637-648. <https://doi.org/10.1007/s00787-019-01385-7>
- Cicchetti, D., & Handley, E. D. (2019). Child maltreatment and the development of substance use and disorder. *Neurobiology of Stress*, *10*, 100144. <https://doi.org/10.1016/j.ynstr.2018.100144>
- Connors-Burrow, N. A., McKelvey, L., Perry, D., Whiteside-Mansell, L., Kraleti, S., Mesman, G., Holmes, K., & Kyzer, A. (2016). Low-level symptoms of depression in mothers of young children are associated with behavior problems in middle childhood. *Maternal and Child Health Journal*, *20*(3), 516-524. <https://doi.org/10.1007/s10995-015-1849-0>
- Fuentes-Balderrama, J., Del Castillo, C. C., García, A. O., Loving, R. D., Plaza, B. T., & Cardona, J. R. P. (2020). The effects of parenting styles on internalizing and externalizing behaviors: A Mexican preadolescents study. *International Journal of Psychological Research*, *13*(1), 9-18. <https://doi.org/10.21500/20112084.4478>
- González-Cámara, M., Osorio, A., & Reparaz, C. (2019). Measurement and function of the control dimension in 13 parenting styles: A systematic review. *International Journal of Environmental Research and Public Health*, *16*(17), 31-57. <https://doi.org/10.3390/ijerph16173157>
- Hayes, A. F., & Rockwood, N. J. (2016). Regression-based statistical mediation and moderation analysis in clinical research: Observations, recommendations, and implementation. *Behaviour Research and Therapy*, *98*, 39-57. <https://doi.org/10.1016/j.brat.2016.11.001>
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, *16*(9), 606-613. <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
- Kuckertz, J. M., Mitchell, C., & Wiggins, J. L. (2018). Parenting mediates the impact of maternal depression on child internalizing symptoms. *Depression and Anxiety*, *35*(1), 89-97. <https://doi.org/10.1002/da.22688>

- Marôco, J. (2021). *Análise estatística com o SPSS statistics* [Statistics analysis with SPSS statistics] (8th ed.). Report Number.
- Osório, F. L., Mendes, A. V., Crippa, J. A., & Loureiro, S. R. (2009). Study of the discriminative validity of the PHQ-9 and PHQ-2 in a sample of Brazilian women in the context of primary health care. *Perspectives in Psychiatric Care, 45*(3), 216-227. <https://doi.org/10.1111/j.1744-6163.2009.00224.x>
- Rocha, M. M., Rescorla, L. A., Emerich, D. R., Silveiras, E. F., Borsa, J. C., Araújo, L. G., Bertolla, M. H., Oliveira, M. S., Perez, N. C., Freitas, P. M., & Assis, S. G. (2013). Behavioural/emotional problems in Brazilian children: Findings from parents' reports on the Child Behavior Checklist. *Epidemiologic Psychiatric Science, 22*(4), 329-338. <https://doi.org/10.1017/S2045796012000637>
- Saputra, F., Yunibhandb, J., & Sukratul, S. (2017). Relationship between personal, maternal, and familial factors with mental health problems in school-aged children in Aceh province, Indonesia. *Asian Journal of Psychiatry, 25*, 207-212. <https://doi.org/10.1016/j.ajp.2016.10.025>
- Shaw, D. S., Sitnick, S. L., Reuben, J., Dishion, T. J., & Wilson, M. N. (2016). Transactional effects among maternal depression, neighborhood deprivation, and child conduct problems from early childhood through adolescence: A tale of two low-income samples. *Development and Psychopathology, 28*(3), 819-836. <https://doi.org/10.1017/S095457941600033X>
- Spitzer, R. L., Kroenke, K., & Williams, J. B. (1999). Validation and utility of a self-report Version of PRIME-MD: The PHQ Primary Care Study. *Journal of the American Medical Association, 282*(18), 1737-1744. <https://doi.org/10.1001/jama.282.18.1737>
- Vafaenejad, Z., Elyasi, F., Moosazadeh, M., & Shahhosseini, Z. (2018). Psychological factors contributing to parenting styles: A systematic review [version 1; peer review: 1 approved with reservations, 1 not approved]. *F1000Research, 7*, 906. <https://doi.org/10.12688/f1000research.14978.1>
- Vieira, V. A. (2009). Moderação, mediação, moderadora-mediadora e efeitos indiretos em modelagem de equações estruturais: Uma aplicação no modelo de desconformação de expectativas [Moderator, mediator, moderator-mediator and indirect effects in structural equation modeling: An application in the expectation model]. *RAUSP Management Journal, 44*(1), 17-33. <http://rausp.usp.br/wp-content/uploads/files/v4401017.pdf>
- World Health Organization. (2022). *Depression and other common mental disorders: Global health estimates*. WHO. <https://iris.who.int/bitstream/handle/10665/254610/WHO-MSD-MER-2017.2-eng.pdf>
- Zalewski, M., Thompson, S. F., & Lengua, L. J. (2017). Parenting as a moderator of the effects of maternal depressive symptoms on preadolescent adjustment. *Journal of Clinical Child and Adolescent Psychology, 46*(4), 563-572. <https://doi.org/10.1080/15374416.2015.1030752>
- Zubizarreta, A., Calvete, E., & Hankin, B. L. (2019). Punitive parenting style and psychological problems in childhood: The moderating role of warmth and temperament. *Journal of Child and Family Studies, 28*(1), 233-244. <https://doi.org/10.1007/s10826-018-1258-2>
- Alessandra Turini Bolsoni-Silva* is a Associated Full Professor of the Faculdade de Ciências at Universidade Estadual Paulista “Júlio de Mesquita Filho”, Bauru-SP, Brazil.
- Fernanda Aguiar Pizeta* is a Post-Doctorate in Psychology of the Psychology Department of the Faculdade de Filosofia, Ciências e Letras at Ribeirão Preto of the Universidade de São Paulo, Ribeirão Preto-SP, Brazil and Psychologist of the Court of Justice of the State of São Paulo, Ribeirão Preto-SP, Brazil.
- Sonia Regina Loureiro* is a Senior PhD Professor of the Universidade de São Paulo, Ribeirão Preto-SP, Brazil.
- Authors' Contribution:*
All authors made substantial contributions to the conception and design of this study, to data analysis and interpretation, and to the manuscript revision and approval of the final version. All the authors assume public responsibility for content of the manuscript.
- Associate editor:*
Adriana Martins Saur
- Received:* Sep. 27, 2022
1st Revision: Jul. 24, 2023
2nd Revision: Sep. 21, 2023
Approved: Sep. 29, 2023
- How to cite this article:*
Bolsoni-Silva, A. T., Pizeta, F. A., & Loureiro, S. R. (2023). Parenting practices, maternal depression and behavior problems: Associations, prediction and moderation. *Paidéia (Ribeirão Preto), 33*, e3334. <https://doi.org/10.1590/1982-4327e3334>