Longitudinal Impact of Caregiver Depression on Child Verbal Ability

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Introduction

- Bronfenbrenner (1999) proposed the concept of ecological systems, defined as a "conceptualization of the ecological environment as a set of nested systems ranging from 'micro' to the 'macro'," like from family to the community.

- In addition to factors at the level of the child and family, neighborhood collective efficacy— defined as perceived social support and cohesion— can positively impacts child development (Choi et al., 2018; Froiland, 2011), especially in Choi et al.'s study, they found that neighborhood collective efficacy has a mediating effect on the negative influence of maternal depression on cognitive development.

- Previous studies indicate the association between caregiver depression and child verbal development may be mediated by parental responsiveness, which is defined as providing responses that are "prompt, contingent, and appropriate" (Bornstein et al., 2008). However, relatively little is known about how neighborhood collective effectiveness might interact with caregiver depression to impact parental responsiveness and children's verbal development.

Hypothesis

- We plan to investigate whether neighborhood collective efficacy would buffer the effect of caregiver depression on child language development via promoting parental responsiveness.

- Based on previous studies, we hypothesize that caregiver responsiveness will mediate the longitudinal association between caregiver depression at age 1 and children's language outcomes at age 5.

- Furthermore, when children are exposed to high levels of maternal depression, language outcomes may depend on the level of social support and cohesion perceived. We predict higher levels of neighborhood collective efficacy will reduce the negative impact of caregiver depression on responsiveness.

Methods

- Our participants are newborns from 1998-2000, and their parents and primary caregivers from Fragile Families and Child Well-being Studies (FFCWS), in which there are over 4,700 participants from 75 hospitals in 20 cities. The study sample was largely drawn from lower-income and racially diverse communities.

- The caregiver depression is the independent variable in the study, measured when children were 1-year old. Questions were drawn from Composite International Diagnostic Interview-Short Form (CIDI-SF).

- Our mediator is parental responsiveness, measured in Year 3, from Home Observation for the Measurement of Environment (HOME) survey.

- Neighborhood collective efficacy is the moderator of the association between depression and responsiveness, also measured in Year 3 in the HOME survey.

- Our dependent variable, child language development, is measured by Peabody Vocabulary Test in Year 5.

- We plan to use regression analyses to test the direct and indirect correlations between our variables.

Results

Model

The model applied to the current study is the model with one moderator, shown as below.
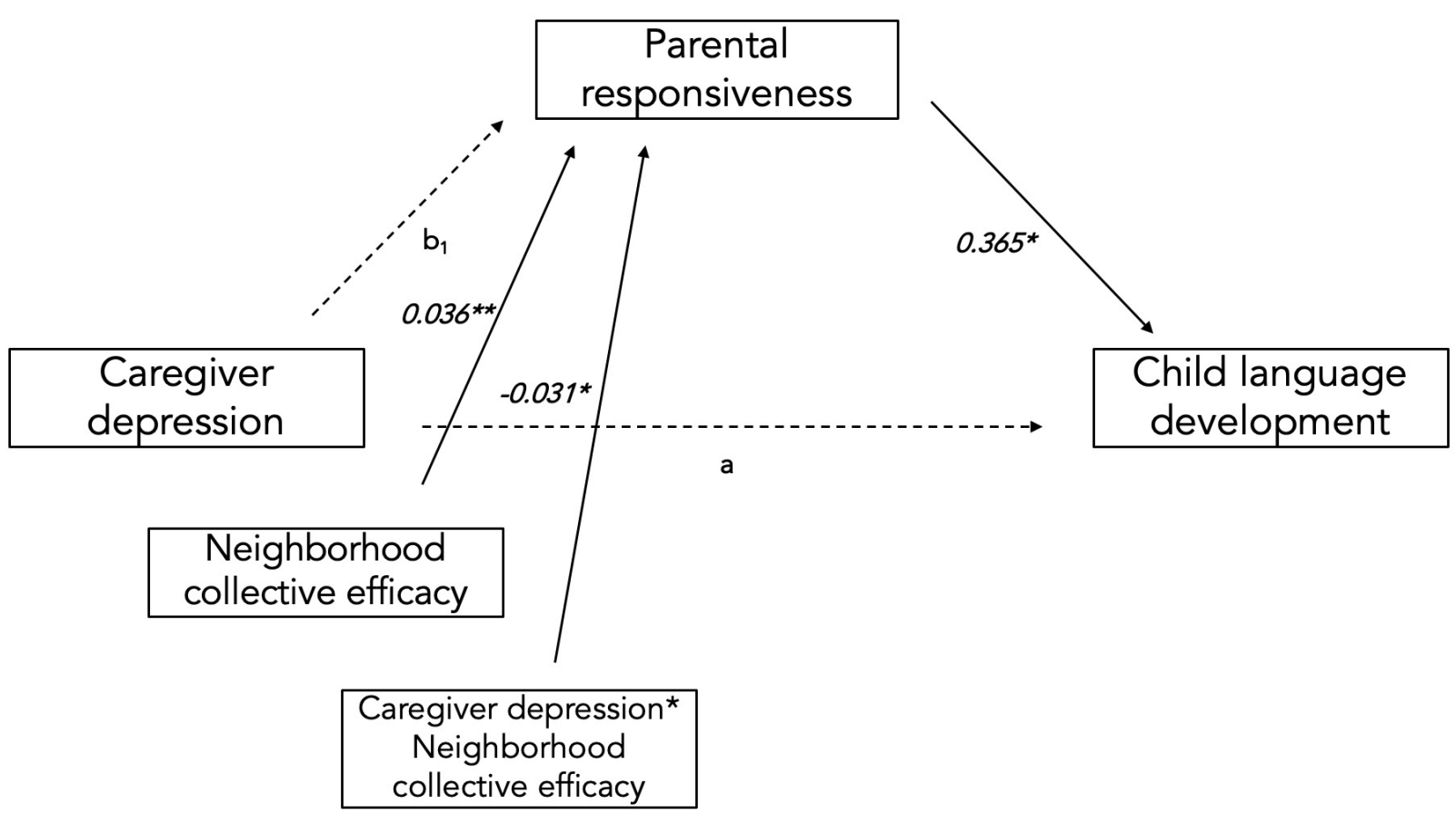
- The caregiver depression is the independent variable. As indicated by the previous studies, there might exist a direct association with language development.

- The present study focuses on testing the indirect pathway between caregiver depression at age 1 and child verbal development at age 5 via parental responsiveness at age 3.

- We will also test whether neighborhood collective efficacy (assessed for the first time at age 3) will moderate the association between caregiver depression and parental responsiveness, such that higher levels of collective efficacy "buffer" the effects of exposure to higher levels of caregiver depression.

Descriptive

- As self-reported, for mother's races, there are 47.6% Black, non-Hispanic, 27.3% Hispanic, 21.1% White, and 4.0% others (Fig.1).

- At the baseline of the study, when the baby was born, for 4,890 mothers, the mean age is 25.3 (Fig.2, where "cm1age" represents the age of the mother at baseline).

- There are 52.2% boys and 47.8% girls of all our newborn participants (Fig.3).

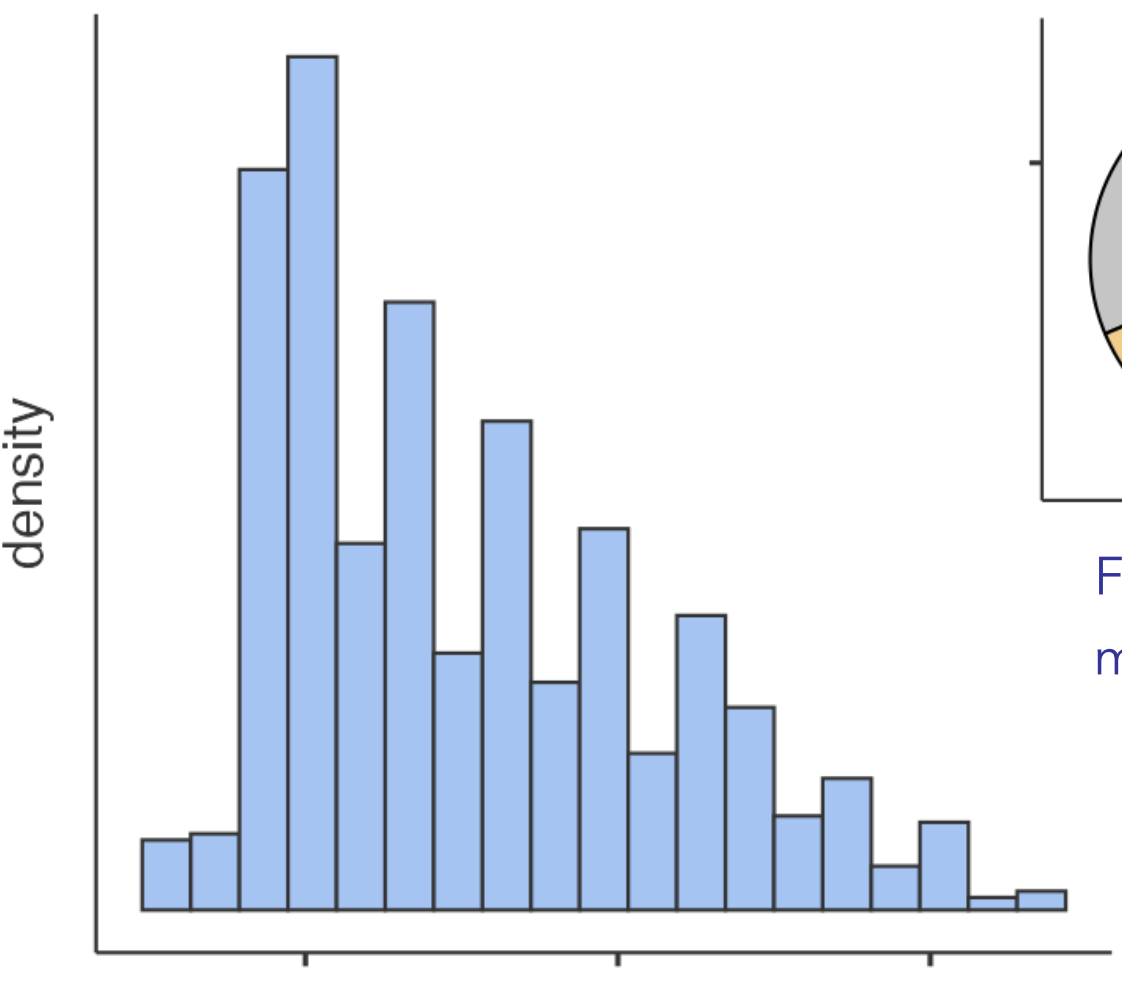- For 3,564 families, the average income is $35,624 with a median of $24,000.
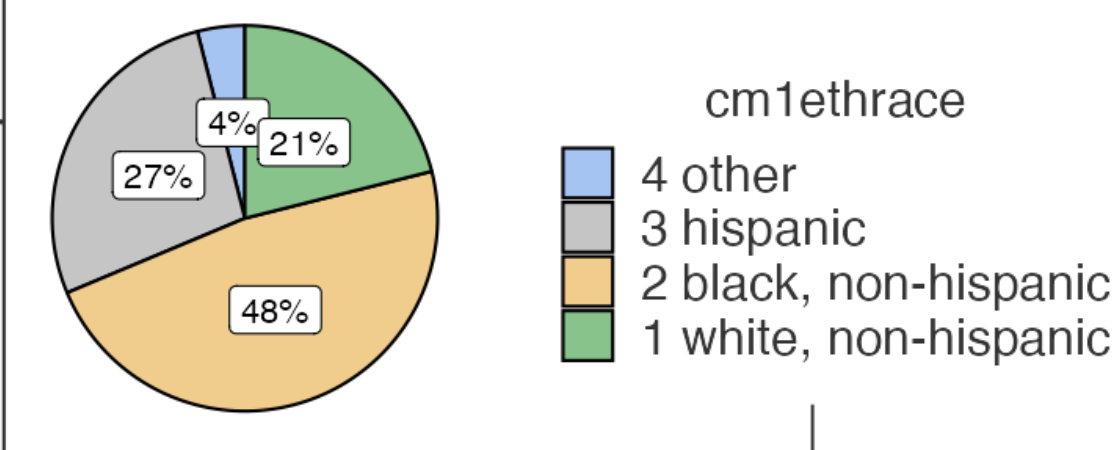

Fig. 1. Pie chart of mothers' ethnicity/race
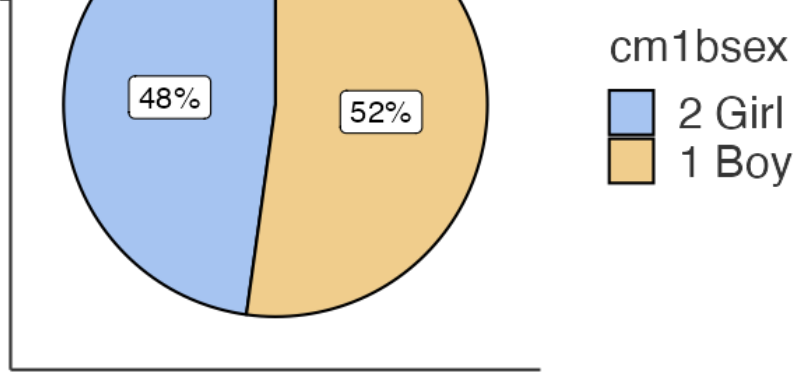
Fig. 2. Histogram of mothers' age when giving birth

Fig. 3. Sex of newborns

Results

- The linear regression model is run to test the linear associations among variables. For the first path (the association between maternal depression and parental responsiveness), a moderation regression is run. We found there exist a significant moderation effect of neighborhood collective efficacy (b = 0.04, p<.001) and a weak interaction effect between maternal depression and collective efficacy (b = -0.03, p = 0.046), shown in the Table.1 and Fig.4 above.

- Further, another linear regression model is run to test the direct and indirect association. However, we failed to find a direct association between maternal depression and early verbal ability. For the indirect path, though we failed to predict responsivity by maternal depression, we find a significant effect of responsiveness on early language development (b = 0.365, p = .002).

Moderation Estimates

	Estimate	SE	Z	p
cm2md_libT3	−0.1173	0.22086	−0.531	0.595
cp3_nce	0.0359	0.00584	6.151	<.001
cm2md_libT3 ✻ cp3_nce	−0.0306	0.01528	−2.000	0.046

Table 1 The moderation regression

Model Coefficients – ch4ppvtstdT3

Predictor	Estimate	SE	t	p
Intercept [a]	101.812	1.4576	69.850	<.001
ch3_pr	0.365	0.1173	3.109	0.002
cp3_nce	−0.238	0.0326	−7.308	<.001
cf2md_libT3:				
1 − 0	−1.353	1.4126	−0.958	0.338

[a] Represents reference level
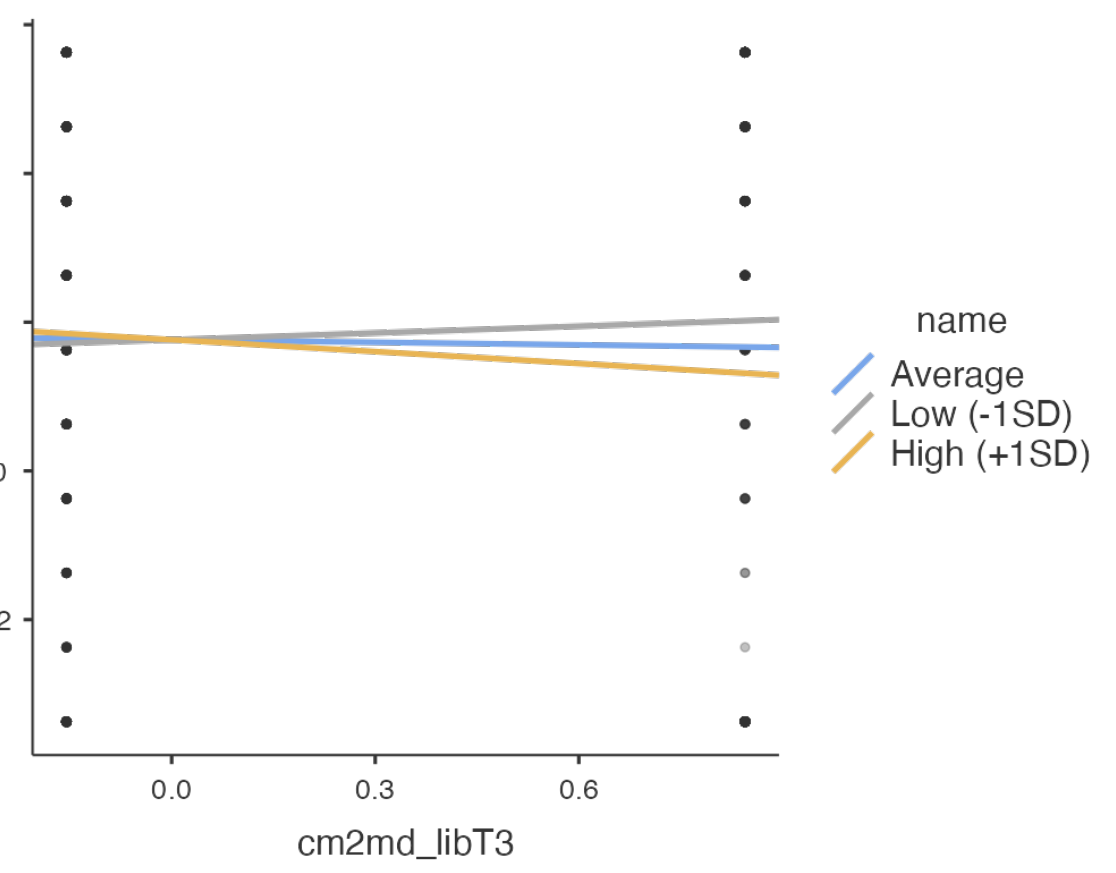
Table 2 The linear regression

Fig. 4. With average or low levels of collective efficacy, there is no correlation between maternal depression and parental responsiveness. However, with a higher level of collective efficacy, there is a negative impact between maternal depression and parental responsiveness.

Discussion

- The results we obtained are different from our prediction. We fail to find a direct association between maternal depression and language development.

- Moreover, with a high level of collective efficacy, parental responsivity is negatively correlated with maternal depression weakly. This shows that with more social support perceived, we can better observe the individual difference on the familial level.

- Consistent with previous studies, parental responsiveness predicts early language development significantly. Based on this study, it gives us new insights into future studies. For example, neighborhood collective efficacy might interact with other factors to influence child development over the long term.

- In this case, we only discussed maternal depression since mothers are the primary caregiver, who are mainly researched in previous studies.

Conclusions

- To conclude, the neighborhood plays a pivotal effect on parental responsiveness, and thus, child language development. Different from our prediction, maternal depression fails to predict parental responsiveness unless under a high level of collective efficacy and to predict early language development.

- But we do find the moderation effect of collective efficacy on parental responsivity, and the predictability of responsivity on early language development.

References

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