Relationships Between Parental Depression and Infant Cognition

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Introduction

Do individual differences in parental depression impact infant cognitive development at 9-months?

Parental depression is extremely common, making studies that explore its effects on children highly important.

- *1 in 10 US* report clinically significant symptoms of depression, with a higher rate of symptoms in women than men (CDC, 2012)
- One of the most common *adverse childhood experiences* reported by adults was a family member with depression (CDC, 2011)
- Studies have linked parental depression with a *child's future risk for depression* (Morris, McGrath, Goldman, & Rottenberg, 2014)
- Numerous studies report associations between maternal depression and decreased well-being in children, including *poor physical health, poor social functioning, and decreased emotional understanding*

The focus of the current study is to expand the literature on what forms of early infant cognition, including emerging executive function skills, are affected by parental depression.
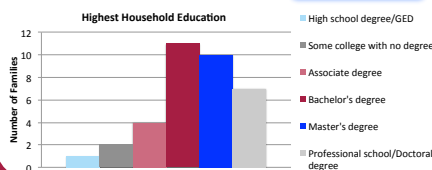
Participants

N = 34 9-month-old infants completed cognitive testing (15 girls; 19 boys)

Infant Ethnicity

- Caucasian
- Asian
- Latino/Hispanic/Chicano
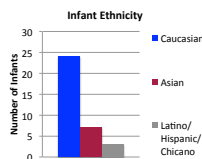
N = 32 parents completed questionnaire measures of depression (6 fathers)

	Mothers	Fathers
Mean age at birth (years)	31.79	32.24
Age range at birth (years)	21-39	24-41

Median income: $76,000 to $100,000

Highest Household Education

- High school degree/GED
- Some college with no degree
- Associate degree
- Bachelor's degree
- Master's degree
- Professional school/Doctoral degree

Methods

Measures of Infant Cognition

1. A-not-B Task

Assesses inhibitory control and working memory skills that likely rely on prefrontal cortex (Diamond, 1985; Baird et al., 2002).

Requires infant to retrieve a toy from one of two hiding spots following a delay; delay length increases over successful trials

A-not-B Task

Infants were assigned an object permanence score, with higher scores reflecting better task performance (Bell & Fox, 1997).

2. Free Play

Assesses sustained attention skills reliant on prefrontal cortex (Reynolds & Richards, 2006) during free play in presence of one or more objects (Ruff 1984, 1986).

Single Toy   Multiple Toys
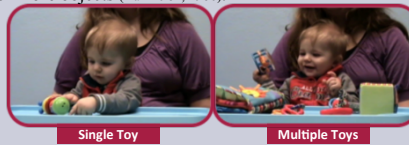
Infant behavior is coded from video for duration of looking and number of attentional shifts.

3. Bayley-III Screening Test

Infant intelligence test comprised of multiple domains (Bayley, 2006), including:

Cognitive	Receptive language	Fine motor
	Expressive language	Gross motor

Measures of Parental Depression

1. Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977)

Self-report depression scale; 20 items; individuals are asked to rank depression symptoms experienced in the past week on a scale of 0 (rarely) to 3 (most of the time).

2. Perceived Stress Scale (PSS) (Cohen, Kamarck, & Mermelstein, 1983).

Self-report measure of perceived stress associated with daily living; 10 items; individual is asked to rank on a scale of 0 (never) to 4 (very often).

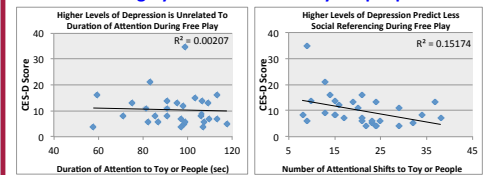*CES-D and PSS scores were highly correlated (r = .734, p < .000)*

Results

A-not-B and Parental Depression

Higher Levels of Depression Predict Poorer A-not-B Task Performance
$R^2 = 0.15736$
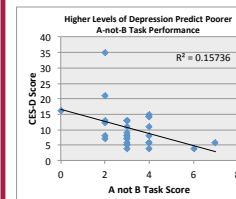
Higher levels of parental depression predicted poorer performance by infants on the A-not-B task.

Free Play and Parental Depression

Higher levels of parental depression predicted less attention shifting by infants between toys or people.

Higher Levels of Depression is Unrelated To Duration of Attention During Free Play
$R^2 = 0.00207$

Higher Levels of Depression Predict Less Social Referencing During Free Play
$R^2 = 0.15174$

Bayley Score and Parental Depression

There was no significant correlation between parental depression and infant IQ scores from the Bayley-III Screening Test.

Pearson's Correlation Coefficients (all non-significant)					
	Cognitive	R.Lang	E.Lang	F.Motor	G.Motor
CES-D Score	0.089	0.06	-0.036	0.189	0.023
PSS Score	0.079	0.18	0.037	-0.024	0.09

Conclusion

Parental depression is associated with altered infant cognitive development and social referencing at 9-months of age.

Parental depression impacts infant sociocognitive development, perhaps especially the development of specific behaviors relying on the prefrontal cortex.

- *Long-term goal:* This study will investigate executive function development in full-term and late preterm (34-36 weeks gestation) infants, to determine whether parental depression is a risk factor for altered cognitive development over and above preterm birth.
- *Implications:* Due to high rates of both depression and preterm birth in the United States, our results argue for increased parental mental health screening and support from early intervention services.