Early Parenting Predicts Children's Cognitive Risk for Depression

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Abstract

Negative cognitions are important in the etiology and maintenance of depression and can be observed in children as young as preschool age. However, little work has prospectively examined precursors of children's negative cognitive styles. The current study examined the effects of early childhood negative and positive parenting on children's later negative and positive self- referent verbalizations, as indicators of their cognitive styles. Participants included 173 children who were assessed in early childhood (Wave 1 age; M= 4.19 years, SD=.81) and again three years later (Wave 2 age; M= 6.80 years, SD=.97). Parenting was assessed using a parent-child observational task at Waves 1 and 2; children's verbalizations were assessed during frustration-inducing laboratory tasks at Waves 1 and 2. Results indicated that greater early childhood intrusive parenting predicted children's later use of fewer positive self-referent verbalizations. In addition, greater early childhood parental support predicted children's later use of greater positive self-referent verbalizations. Results highlight the importance of parental behavior on how a child thinks about themselves and how their cognitive styles may lead to increased risk for depression. These findings suggest that early interventions targeting parenting may lead to reductions in children's cognitive styles that incur risk for later depression.

Early Parenting Predicts Children's Cognitive Risk for Depression

Cognitive styles play an important role in the etiology and maintenance of depression (Beck, 1987; Haeffel et al., 2008; Haeffel & Hames, 2014; Hayden et al., 2013, 2014; Lee et al., 2010; Liu et al., 2019; Mezulis et al., 2006; Sasso et al., 2019; Y. Abramson et al., 1989). Negative views about the world, the self, and the future are key components of depression, and treatments for depression focus on challenging negative cognitions (Beck, 1987; J. Garber et al., 1993; Judy Garber & Flynn, 2001; Romens et al., 2008, 2008; Singer & Dobson, 2007; Y. Abramson et al., 1989). Negative biases likely arise from negatively biased perceptions, interpretations, and memories for past events (Kircanski et al., 2012; Mathews & MacLeod, 2004). Importantly, depressogenic cognitions increase risk for suicidality (Abramson et al., 2002; Haeffel et al., 2008; Hiramura et al., 2008). Depressogenic cognitive styles have been observed in children as young as preschool age when using developmentally appropriate assessments (Hayden et al., 2013; Leppert et al., 2019; Luby, 2010; Murray et al., 2001). Given the risks of depressogenic cognitions in early childhood, more work is needed examining predictors of these cognitive biases to support early identification and prevention efforts in young children, prior to the onset of depression. (Hayden et al., 2013; Jacobs et al., 2008; Leppert et al., 2019). Nevertheless, we know little about the developmental origins of early emerging cognitive styles. Understanding predictors of early childhood cognitions may help identify youth at-risk for developing depression.

Researchers have examined biological and environmental predictors of children's cognitive styles. Children at the age of three with insecure attachments, whose mothers were more predictively unsupportive and inconsistent, were more likely to remember negative events over positive events (Belsky et al., 1996)) . With negative events being more prominent in one's

mind, these emotional and negative concepts may predict a more depressogenic style in the future for children with insecure attachments (Belsky et al., 1996). Others have found that early life stress is associated with interpersonal risks and internalizing depressogenic cognitive styles in children (Gibb et al., 2001, 2003; Mezulis et al., 2006; Rose & Abramson, 1992). It has also been well-established that the interaction between children's biology, such as temperament, and their environments is predictive of depressogenic styles and onset of depression (Alloy et al., 2006; Daryanani et al., 2017; National Research Council (US) and Institute of Medicine (US) Committee on Depression et al., 2009). For example, adolescents who had more negative cognitive styles and experienced more negative events were more likely to experience concurrent depressive symptoms (Hankin & Abramson, 2002). There are many different environmental factors that could influence one's vulnerability to depression. Through this study, we are focusing specifically on the parenting behaviors and how they may share children's cognitive styles.

Parenting and children's cognitions: Parenting practices, both positive and negative, are predictors of children's cognitive development (Bruce et al., 2006; Frazer & Fite, 2016; Hayden et al., 2013; Mezulis et al., 2006; Randolph & Dykman, 1998; Rodriguez et al., 2019). For example, children whose mothers encourage and support them through tasks are more likely to be better problem solvers, and children whose mothers talk to them are more likely to have a quicker development in language acquisition (Barrett et al., 1991; Meadows, 1996; Wood & Middleton, 1975) These few examples show the importance of an attentive parent on how the child develops, which shows that specific factors of parenting may be important to explain why some children have negative or positive cognitions. However, research on associations between parenting and children's cognition are limited to studies involving older children (Bruce et al.,

2006; Frazer & Fite, 2016; Mezulis et al., 2006) and have examined parental feedback (Mezulis et al., 2006). There have been no longitudinal studies that have specifically examined whether parenting prospectively predicts pre-school aged children's depressogenic cognitions.

Negative parenting and children's cognitive styles: Most research has examined associations between negative parenting and children's negative cognitive styles. There have been significant findings between parenting characteristics such as high levels of criticism, intrusiveness, and rejection, that can lead to a child's high self-criticism, low self-esteem, and dysfunctional attitudes (Judy Garber & Flynn, 2001)**.** One concurrent study found that negative parenting measured through parent and child reports was associated with depressogenic cognitive styles in children in 2nd, 4th, and 6th grades and that these correlations were stronger in 6th graders (Bruce et al., 2006). Depressogenic thoughts have been found in adults and adolescents who grew up with parents who had a variety of different negative parenting behaviors, including being restrictive and rejecting, showing low levels of warmth, and having perfectionistic expectations for their children (Mezulis et al., 2006; Randolph & Dykman, 1998). Mezulis, et al., (2006) found that maternal anger, negative feedback, and criticism towards the child at age nine predicted later negative cognitive style and child cognitive vulnerability to depression at age eleven.

Positive parenting and children's cognitive styles: Less work has examined associations between positive parenting and children's cognitive styles. For example, father involvement with at-risk infants has shown to help increase children's emotional cognitions, which allows them to be more social and have stronger coping skills, which strongly affects how well the child's family functions (Schor & American Academy of Pediatrics Task Force on the Family, 2003). Parental support is associated with higher school grades, better mental health, and

better social skills (Amato & Fowler, 2002; Woodward et al., 2018). Positive parenting was also concurrently associated with more positive child cognitions compared to negative parenting (Woodward et al., 2018). It was also found that undergraduate students who were at low-risk for depressogenic cognitive styles were less likely to have mothers with negative dysfunctional attitudes, more likely to have fathers who showed more warmth and emotional acceptance, and more likely for both parents to have shown less negative feedback for stressful events for the undergraduate throughout their lives (Alloy et al., 2001). Higher positive parenting is also seen to associate with higher levels of self-perceived competence (Bruce et al., 2006; Judy Garber & Flynn, 2001).

Parenting and children's self-referent verbalizations: Moreover, limited work has examined associations between parenting and children's self-referent verbalizations. Self-referent verbalizations describe references about oneself, such as acknowledging one's behaviors or describing oneself to others (Kaplan, 1986). Self-referent cognitions have been related to depressive symptoms in children (Hayden et al., 2013), yet few studies have examined effects of parenting on self-referent verbalizations. Maternal depression, which has been linked to negative parenting behaviors, has been associated with children's greater negative (Cicchetti & Beeghly, 1990; Judy Garber & Flynn, 2001) and fewer positive self-reference verbalizations compared to children who were not exposed to maternal depression (Leppert et al., 2019).

However, no prospective, longitudinal study has examined effects of early childhood negative and positive parenting on children's later negative and positive self-referent verbalizations (Bruce et al., 2006; Mezulis et al., 2006). This is an important question to examine given that children's increased use of negative and reduced use of positive self-referent verbalizations may be precursors of the development of depression. Thus, examining both

negative and positive self-referent verbalizations in relation to early childhood parenting may have important implications for uncovering pathways to children's risk for depression.

The Current Study

We aim to identify how early negative and positive parental behaviors (hostility, intrusiveness, and support) towards preschoolers predicts changes in children's negative and positive cognitive styles related to the self from preschool to school age. Negative and positive cognitive styles are assessed by self-referent verbalizations which is where the kid says either negative or positive phrases in reference to themselves while performing a frustration-inducing laboratory paradigm (i.e. "I can't do this", "I believe in myself"). We assessed negative and positive parenting and preschool-age children's (age M=4.1 years, SD=0.81, range=3-5.9 years) positive and negative self-referent cognitions and assessed these same variables three years later (Wave 2: age M=7.27 years, SD=0.95, range=5.5-10 years). This current study is one of few studies (Mezulis et al., 2006) to use observational lab tasks to measure parenting behaviors, rather than parent-report measures. This study is also one of few to include an ethnically diverse sample that is more representative (Bruce et al., 2006). Longitudinal work will allow us to examine whether parenting predicts changes in cognitive style over time and whether there are sensitive periods in the development of cognitive style. For instance, earlier parenting may be more influential on cognitive style development than later parenting behavior.

We hypothesized that early childhood negative parenting would be concurrently and longitudinally associated with greater negative self-referent verbalizations and fewer positive self-referent verbalizations. We also hypothesized that early childhood positive parenting would be concurrently and longitudinally associated with children's fewer negative and greater positive self-referent verbalizations. We also hypothesized that Wave 2 negative parenting would be

concurrently associated with children's greater Wave 2 negative and fewer Wave 2 positive self-referent verbalizations and Wave 2 positive parenting would be concurrently associated with children's fewer Wave 2 negative and greater Wave 2 positive self-referent verbalizations.

Methods

Participants

The sample consisted of 175 preschool aged children. The study oversampled offspring of mothers with a history of depression (Dougherty et al., 2013) Participants ages three to five years old were recruited from the metropolitan Washington, D.C. area through responding to flyers that were posted in schools, daycares, and healthcare centers, as well as received through a commercial mailing list (Leppert et al., 2019). Children had to have no significant medical or developmental disabilities, had to live with at least one English speaking biological parent that had at least 50% legal custody over the child. Out of the 175 children recruited for the study, 173 participants completed the Wave 1 (W1) visit where they participated in stress-inducing laboratory tasks to assess the children's cognitive style and reaction to these events. About three years later, 95 of these participants returned to complete similar stress-inducing tasks to measure children's cognitive styles for Wave 2 (W2). Participants were ethnically diverse; 46.4 % white, 36.3% Black/African American, 1.8% Asian, 6.0% Multi-Racial, and 9.5% other race/ethnicity. Thirty-one participants are of Hispanic descent. Most children were from middle-class two-parent households.

Procedure

At W1, children and a biological parent (94.6% mothers) attended a laboratory visit during which observations of parenting behavior were collected and participated in stress-

inducing laboratory tasks to assess the children's cognitive style and reaction to these events. About three years later, children and parents attended a behavioral assessment, during which observations of parenting behavior and a second stress-inducing laboratory task were again conducted. This study was approved by the University of Maryland's Institutional Review Board. Parents provided informed consent for both W1 and W2 and children provided assent once they turned 7 years old.

Measures

Children's cognitive styles: Children's cognitive styles were measured at W1 and W2 by assessing self-referent verbalizations during age-appropriate stress-inducing laboratory tasks. Self-referent verbalizations are statements about the self in reference to the task (e.g., "I am good at this") (Leppert et al., 2019). W1 and W2 tests included tasks which were coded for positive and negative statements about themselves. The first W1 task included having to open a clear box in order to retrieve a toy, but the keys given to the child were inoperable and would not open the clear box. The second W1 task included a timed matching game which was created to be impossible to complete (Kryski et al., 2011; Leppert et al., 2019). This task had previously been shown to make children stressed, increasing and decreasing negative affect (Leppert et al., 2019; Tolep & Dougherty, 2014). W2 tasks were similar to W1 tasks but were adapted to be developmentally appropriate for the children's ages. The first W2 lab task included having children participate in a modified version of the Trier Social Stress task for Children (TSST-C; Buske-Kirschbaum et al., 1997). This task included giving the children a book with just pictures and no words and asked the child to describe the story in 4 ½ minutes in front of a "judge" and the experimenter. The second W2 task included an unsolvable puzzle task. Both tasks were designed to be frustration inducing (Leppert et al., 2019).

Child cognitive styles were assessed by quantifying both negative ("I am really bad at this") and positive ("I think I can make this work") self-verbalizations. To calculate the proportion of positive and negative self-referent verbalizations used, we took the number of statements in each category and divided them by the total number of statements that the child used. W1 and W2 inter-rater reliability estimates for self-referent verbalizations were good (W1: positive self-referent verbalizations intraclass correlation coefficient [ICC]= .91; negative self-referent verbalizations ICC=.88; W2: positive self-referent verbalizations ICC=.91; negative self-referent verbalizations ICC= .97).

Parental hostility, intrusiveness, and support: Parenting was assessed during W1 and W2 through age-appropriate parent-child interaction tasks, modified from the Teaching Tasks Battery (Egeland et al., 1995). These observational tasks were used to assess parental hostility, intrusiveness, and support. Parental hostility refers to a parent's expression of frustration, anger, and criticism toward the child. Parental intrusiveness refers to when a parent interferes with the child's needs, desires, interests or behaviors. Parental support refers to a parent's encouragement and praise that shows the child that they are accepted and appreciated. The tasks were chosen to have similar qualities and require collaboration between the child and parent and were moderated to be developmentally appropriate tasks for each age range. At W1, 173 (161, 92% mothers) children participated with the primary caregiver (94.5% mothers) in an observational parent-child interaction task (Dougherty et al., 2013). These six tasks included 1) book-reading, parents reading their child a book, 2) wheels, parents helping their children name as many objects with wheels, 3) maze, parents helping their children complete an Etch A Sketch® maze where children could not touch the sides, 4) story, parents helping their children arrange a set of picture cards in sequential order, 5) tangoes, parents helping their children create a specific shape with

geometric puzzle pieces, and 6) gift, where the parent and child looked at a gift together that the parent gave to the child. At W2, 103 children participated with the primary caregiver (97, 94.2% mothers) in the task. These five tasks included 1) guessing game, parents helping their children guess an image on a hidden card, 2) traffic, parents helping their children reposition cars on a board to clear a path, 3) maze, parents helping and competing with their child to get a marble into holes on a wooden labyrinth board, 4) block buddies, parents working with their child to assemble plastic shapes to copy pictures shown on a card, and 5) gift, where the parent and child looked at a gift together that the parent gave to the child . Coders coded each interaction between the parent and child by scoring each task on a scale from 1 (none) to 5 (high) for maternal hostility, intrusiveness and support, each variable coded separately. Scores were averaged across tasks. Based on 38 coded videos at W1 and 28 videos at W2, inter-rater reliability of the scales was excellent (W1 hostility: ICC= .89; W1 intrusiveness: ICC= .91; W1 support: ICC= .96; W2 hostility: ICC= .96, W2 intrusiveness: ICC= .91; W2 support: ICC= .92).

Parental depression: Parental depression was assessed at W1 and W2 using the Structured Clinical Interview (SCID) from the DSM-IV (*Structured Clinical Interview for the DSM-IV Axis I Disorders (SCID PTSD Module) - PTSD*, n.d.; Tolep & Dougherty, 2014). Parental depression was present (present=1) if either parent met criteria for major depressive disorder (MDD) or dysthymia disorder (DD) in their lifetimes. Interviews were over the phone. We obtained SCIDs from all 165 mothers and 81 fathers at W1 and we obtained SCIDS from 108 mothers and 57 fathers at W2. After reviewing 16 audiotapes from the phone SCID interviews, inter-rater agreement between raters was excellent (kappa=1.00) (Dougherty et al., 2013). Eighty-nine parents had a lifetime history of depression (33.0%).

Early cognitive ability. General cognitive ability was assessed using the block design subtest of the Wechsler Preschool and Primary Scale of Intelligence-Third Edition (Wechsler, 2002).

Data analysis plan

Using SPSS Version 24, we ran correlations among our study variables: parental hostility, parental intrusiveness, parental support, children's negative self-referent verbalizations children's positive self-referent verbalizations at W1 and W2. Next, we examined associations between W1 and W2 negative and positive parenting and W1 and W2 children's cognitive styles. In all models, we controlled for child sex and W2 age. We additionally controlled for parental lifetime depression and children's cognitive ability in follow-up models. To examine whether W1 parenting predicts changes in cognitive style from W1 to W2, we additionally adjusted for the corresponding W1 child self-referent verbalizations variable (e.g., W1 negative self-referent verbalizations when predicting W2 negative self-referent verbalizations) in all prospective models. By controlling for prior cognitive styles, the dependent variable reflects residuals and captures change in cognitive styles from early to middle childhood.

Results

Covariates

Correlations among study variables are presented in Table 2. Child sex (1=male, 2=female) was associated with W1 child negative self-referent verbalizations, such that males used more negative self-referent verbalizations than females (r=-.17, p=.024). W1 child age was positively associated with W1 child positive self-referent verbalizations, such that the older the child was, the more positive self-referent verbalizations the child made (r=.18, p=.02). Parental

depression and children's early childhood cognitive ability were not associated with negative or positive child self-referent verbalizations at W1 or W2.

Concurrent associations between early parenting and preschool-age children's self-referent verbalizations

We did not observe any concurrent associations between early childhood parenting and self-referent verbalizations (Table 2).

Prospective associations between early parenting and children's later self-referent verbalizations

We observed a significant negative association between W1 parental intrusiveness and W2 child positive self-referent verbalizations (r= -.27, p= .008). After controlling for children's sex and W2 age, greater levels of early childhood parental intrusiveness predicted children's fewer positive self-referent verbalizations three years later (b= -.03, SE= .01, pr= -.27, p= .008). After further controlling for children's prior positive self-referent verbalizations, W1 intrusive parenting predicted decreases in children's positive self-referent verbalizations from W1 to W2 (b= -.04, SE= .01, pr= -.28, p= .007). Furthermore, after additionally controlling for children's W1 cognitive ability and parental lifetime depression, results were similar (b= -.03, SE= .01, pr= -.26, p= .036).

We also observed a significant positive association between W1 parental support and children's W2 positive self-referent verbalizations (r= .21, p= .045). After controlling for children's sex and W2 age, early childhood parental support continued to predict children's later increased positive self-referent verbalizations (b=.02, SE=.01, pr=.22, p=.038). After additionally controlling for children's prior positive self-referent verbalization, W1 parental support predicted

increases in positive self-referent verbalizations from W1 to W2 (b=.02, SE=.01, pr=.22, p=.033). After further adding children's W1 cognitive ability and parental depression to the model, associations no longer persisted.

Concurrent associations between W2 parenting and children's self-referent verbalizations

There were no significant associations between W2 parenting and W2 children's self-referent verbalizations.

Discussion

Findings from our study showed that children who experienced high levels of parental intrusiveness in early childhood were more likely to demonstrate fewer positive self-referent verbalizations. It was also found that children who experienced high parental support were more likely to demonstrate greater self-referent verbalizations. Findings persisted even after accounting for child sex, age, and prior positive self-referent behaviors. W1 parental intrusiveness persisted to associate with W2 positive self-referent verbalizations after accounting for W1 parental depression and cognitive ability which may show the importance of intrusiveness as a specific parental behavior that may lead to specific children's cognitive styles in the future. However, parental support's association with positive self-referent behaviors did not persist after accounting for W1 cognitive ability and parental depression.

Our findings linking parental behaviors and positive self-referent verbalizations but not negative self-referent verbalizations are consistent with the one study that has also looked at parental behaviors and children's self-referent verbalizations (Leppert et al., 2019). We may have found associations with positive self-referent verbalizations and not negative self-referent verbalizations because we used a sample of young children and negative self-referent

verbalizations seem to increase and become stronger when one ages (Hankin et al., 2009; Leppert et al., 2019) and stabilize more during adolescence (Hankin & Abela, 2005; Leppert et al., 2019). It is possible that self-referent verbalizations may vary in young children and may not be stable enough due to changes in the child's cognitive development during this developmental stage (Cole & Turner, 1993; Leppert et al., 2019; Turner & Cole, 1994; Weisz et al., 2001). This also shows that a lack of stability in children's cognitive styles suggests that children undergo changes during this developmental period which may influence the number of negative verbalizations they say.

This also may have influenced why we found prospective associations in our data, but not concurrent associations. Leppert et al., (2019) discovered that concurrently, if a child had a negative temperamental style and/or were more likely to have psychiatric symptoms, they were less likely to use positive self-referent verbalizations. However, since those are internal sources, and parenting is an external influence, parenting behaviors could influence a child's cognitive style prospectively. These outside influences such as parenting behaviors could persist, slowly changing the child's cognitive style, and be especially influential during the preschool developmental period, which is why parental behavior is more likely to have a long-term influence on the emergence of vulnerability to depression instead of a short-term influence (Bruce et al., 2006; Kertz et al., 2016; Lecompte et al., 2014; Leppert et al., 2019).

Looking at parenting behaviors helps predict children's cognitive styles. This is important especially when trying to figure out what environmental factors can lead to negative cognitive styles that can lead to a vulnerability to depression. Our results show that intrusive parenting may be a specific early indicator that decreases positive cognitive styles. This is consistent with prior research that shows that intrusive parenting has been linked with the development of certain

mental health disorders, hinting to children to be scared of the world and not letting children

make their own decisions (Enns et al., 2002; Meites et al., 2012). However, we did not find

associations between negative parenting styles and children's negative self-verbalizations. Some

prior studies, although focusing on older children than our own sample, have found links

between negative parenting styles and children and adolescent's negative cognitive styles (Bruce

et al., 2006; Mezulis et al., 2006; Randolph & Dykman, 1998). Previous studies showed that

hostile parenting towards the child led to greater depression from the child (Bruce et al., 2006;

Leppert et al., 2019; Lovejoy et al., n.d.).

There are many possible explanations in the developmental process that may explain

links between parental behavior and a child's future cognitive vulnerability for depression. One

possibility is that parental depression can lead to more hostile and less emotional involvement in

the parent which leads to an increase in risk of a variety of psychiatric problems such as

depression. (Downey & Coyne, 1990; Hammen, 1988; Hayden et al., 2014; Lovejoy et al., n.d.).

Another possible explanation is that the combination of negative life events and negative

parenting behaviors could lead to worsening cognitive styles of the child at a young age (Bruce

et al., 2006; Mezulis et al., 2006). Another possibility is that the child's behavior could cause

negative parenting behaviors which would then lead to these negative behaviors affecting the

child's cognitive style in the future (Ingram, 2003; Lovejoy et al., n.d.). It is likely that multiple

forms of risk exposure contribute to children's negative cognitive styles and possibly explain

why some children are more at risk to depression compared to others.

This study included a few strengths in its research design. First, most research that has

looked at children's depressogenic cognitive styles has been cross-sectional research and we

were able to conduct a longitudinal study, looking at the same participants through a 3-year time

span. Second, we were also able to manipulate specific variables so that we could see the child

react to specific frustrating and stress-inducing tasks that were developmentally and ecologically

relevant to the participants. Third, this study showed that cognitive styles can be observed in the

early preschool period with the use of developmentally appropriate stress-inducing tasks. Fourth,

we also were able to look at verbalizations which allowed us to assess specific risk factors for

depression during a developmental period before the typical onset of the disorder. Fifth, this

study was more ethnically diverse than previous studies (Bruce et al., 2006) so this sample could

be generalized more.

       This current study also had a few limitations. First, self-verbalizations and parental

behavior were only measured in a laboratory setting instead of a natural setting. Although the

study tried to match a natural setting, this is an issue because the parents and children may adjust

their behaviors because they know that they are being observed. Second, the stress inducing

settings may not have been stressful for all the children involved. Third, we only included two

types of negative parenting and one type of positive parenting, so there are likely additional

parenting behaviors that may influence a child's cognitive styles that may lead to vulnerability of

depression. Fourth, it is possible that our specific measures did not capture very negative or very

positive parenting styles. Future studies should investigate other parental behaviors, such as

parental rejection, criticism, involvement, and affection on preschool-aged children and the

prediction of certain cognitive styles that may lead to vulnerability to depression.

       Targeting and identifying early parenting styles may decrease the emergence of negative

cognitive styles and may help lower the risk for future depression. Our study expands the

literature by looking at specific parenting behaviors, such as hostility, intrusiveness, and parental

support to see the longitudinal influence of preschool aged children's cognitive styles and risk of

depression. Interventions that target parenting should look specifically at intrusiveness and find ways to help decrease negative parental behaviors so that that could decrease their child's risk of susceptibility to depression. Interventions should also start looking at helping children at a younger age because this is a developmentally vulnerable time for children which could lead to depressive tendencies and thoughts. Future research should examine the clinical effectiveness of specific parenting interventions that would help prevent the development of depressogenic cognitive styles and increase positive cognitive styles in young children.

Table 1.

Demographic Characteristics

	Wave 1		Wave 2	
Demographic Characteristics				
Child mean age: years SD; range	4.19 (0.81)	3-5.97	6.80 (0.97)	5-10
Mother's mean age: years SD; range	34.68 (6.40)	18-50	38.75 (6.11)	24-53
Father's mean age: years SD; range	36.95 (6.98)	20-57	40.98 (5.61)	28-54
Child sex: female *n* (%)	88	(50.9)		
Child sex: male *n* (%)	85	(49.1)		
Child race: *n* (%)				
White	78	(46.2.)		
Black/African-American	61	(36.1)		
Asian	4	(2.4)		
Multi-racial/Other	26	(15.4)		
Child Hispanic ethnicity: *n* (%)	31	(18.3)		
Biological parents' marital status: *n* (%)				
Married	115	(66.5)		
Living together	7	(4.0)		
Divorced, separated, or widowed	16	(9.3)		
Never married	35	(20.2)		
Family Income: *n* (%)				
<$40,000	30	(18.0)		
$40,001-$70,000	34	(20.4)		
$70,001-$100,000	45	(26.9)		
>$100,000	58	(34.7)		
Either parent attended college: *n* (%)	118	(68.6)		
Parental Lifetime Depression: *n* (%)			89	(33.0)
Parental Hostility	1.16 (0.32)	1.00-2.80	1.17 (0.41)	1.00-3.25
Parental Intrusiveness	1.60 (0.51)	1.00-3.20	1.45 (0.43)	1.00-2.75

Parental Support	4.06 (.82)	1.40-5.00	4.41 (.68)	1.50-5.00
Negative Self-Verbalizations	-.01 (.78)	-.80-3.86	.05 (.06)	.00-.26
Positive Self-Verbalizations	.00 (.78)	-.55-3.29	.04 (.06)	.00-.25
Block Design	9.84 (3.09)	4.00-19.00		

Table 2.

Bivariate Correlations Among Parental Hostility, Parental Intrusiveness, and Child Cognition

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	Wave 1 Parental Hostility	-															
2.	Wave 1 Parental Intrusiveness	.49**	-														
3.	Wave 1 Parental Support	-.59**	-.55**	-													
4.	Wave 2 Parental Hostility	.11	.01	-.02	-												
5.	Wave 2 Parental Intrusiveness	.14	.07	-.085	.49**	-											
6.	Wave 2 Parental Support	-.54**	-.42**	.26**	.01	-.10	-										
7.	Wave 1 Child Negative Self-Referent Verbalizations	-.06	.05	.12	.36**	.27**	.07	-									
8.	Wave 1 Child Positive Self-Reference Verbalizations	-.10	-.14	.04	-.08	.12	.03	-.14	-								
9.	Wave 2 Child Negative Self-Referent Verbalizations	.08	.00	-.00	.11	.02	.03	.10	-.06	-							-
10.	Wave 2 Child Positive Self-Referent Verbalizations	-.19	-.27**	.21*	-.22	-.07	.10	-.10	.04	-.07	-						

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
11.	W1 Child Age	-.08	-.22**	-.01	.03	.06	.08	-.05	.18*	.06	-.05	-					
12.	W2 Child Age	-.09	-.34**	-.06	.05	.09	.03	-.02	.20*	.09	.03	.81**	-				
13.	Child Sex	-.06	-.04	.00	-.25**	-.04	.00	-.17*	-.03	-.04	.12	.02	-.08	-			
14.	Child Ethnicity	.13	.15*	-.10	.00	-.01	-.05	-.07	-.15	-.01	-.16	-.16*	-.13	-.07	-		
15.	Parental depression	.09	.07	-.20	-.29*	-.08	-.14	-.21	-.05	.00	.06	-.11	-.19	.06	.08	-	
16.	W1 Child cognitive ability	-.09	-.28**	.19*	.005	-.03	-.20*	-.10	.06	-.00	.18	-.08	.01	.04	-.01	-.18	

References

Abramson, L. Y., Alloy, L. B., Hogan, M. E., Whitehouse, W. G., Donovan, P., Rose, D. T., Panzarella, C., & Raniere, D. (2002). Cognitive vulerability to depression: Theory and evidence. In R. L. Leahy & E. T. Dowd (Eds.), Clinical advances in cognitive psychotherapy: Theory and Application. (2002-01001-004; pp. 75–92). Springer Publishing Co.

Alloy, L. B., Abramson, L. Y., Smith, J. M., Gibb, B. E., & Neeren, A. M. (2006). Role of parenting and maltreatment histories in unipolar and bipolar mood disorders: Mediation by cognitive vulnerability to depression. Clinical Child and Family Psychology Review, 9(1), 23–64. https://doi.org/10.1007/s10567-006-0002-4

Alloy, L. B., Abramson, L. Y., Tashman, N. A., Berrebbi, D. S., Hogan, M. E., Whitehouse, W. G., Crossfield, A. G., & Morocco, A. (2001). Developmental Origins of Cognitive Vulnerability to Depression: Parenting, Cognitive, and Inferential Feedback Styles of the Parents of Individuals at High and Low Cognitive Risk for Depression. Cognitive Therapy and Research, 25(4), 397–423. https://doi.org/10.1023/A:1005534503148

Amato, P. R., & Fowler, F. (2002). Parenting Practices, Child Adjustment, and Family Diversity. Journal of Marriage and Family, 64(3), 703–716. JSTOR. https://www.jstor.org/stable/3599936

Barrett, M., Harris, M., & Chasin, J. (1991). Early lexical development and maternal speech: A comparison of children's initial and subsequent uses of words*. Journal of Child Language, 18(1), 21–40. https://doi.org/10.1017/S0305000900013271

Beck, A. T. (1987). Cognitive models of depression. Journal of Cognitive Psychotherapy, 1(1),

5–37.

Belsky, J., Spritz, B., & Crnic, K. (1996). Infant Attachment Security and Affective-Cognitive

Information Processing at Age 3. Psychological Science, 7(2), 111–114. JSTOR.

Bruce, A. E., Cole, D. A., Dallaire, D. H., Jacquez, F. M., Pineda, A. Q., & LaGrange, B. (2006).

Relations of Parenting and Negative Life Events to Cognitive Diatheses for Depression in

Children. Journal of Abnormal Child Psychology, 34(3), 310–322.

https://doi.org/10.1007/s10802-006-9019-x

Buske-Kirschbaum, A., Jobst, S., Wustmans, A., Kirschbaum, C., Rauh, W., & Hellhammer, D.

(1997). Attenuated free cortisol response to psychosocial stress in children with atopic

dermatitis. Psychosomatic Medicine, 59(4), 419–426. https://doi.org/10.1097/00006842-

199707000-00012

Cicchetti, D., & Beeghly, M. (1990). The Self in Transition: Infancy to Childhood. University of

Chicago Press.

Cole, D. A., & Turner, J. E. (1993). Models of cognitive mediation and moderation in child

depression. Journal of Abnormal Psychology, 102(2), 271–281.

https://doi.org/10.1037//0021-843x.102.2.271

Daryanani, I., Hamilton, J. L., McArthur, B. A., Steinberg, L., Abramson, L. Y., & Alloy, L. B.

(2017). Cognitive Vulnerabilities to Depression for Adolescents in Single-Mother and

Two-Parent Families. Journal of Youth and Adolescence, 46(1), 213–227.

https://doi.org/10.1007/s10964-016-0607-y

Dougherty, L. R., Tolep, M. R., Smith, V. C., & Rose, S. (2013). Early Exposure to Parental

    Depression and Parenting: Associations with Young Offspring's Stress Physiology and

    Oppositional Behavior. Journal of Abnormal Child Psychology, 41(8), 1299–1310.

    https://doi.org/10.1007/s10802-013-9763-7

Downey, G., & Coyne, J. C. (1990). Children of depressed parents: An integrative review.

    Psychological Bulletin, 108(1), 50–76. https://doi.org/10.1037/0033-2909.108.1.50

Egeland, B., Weinfield, N., Hiester, M., Lawrence, C., Pierce, S., & Chippendale, K. (1995).

    Teaching tasks administration and scoring manual.

Enns, M. W., Cox, B. J., & Clara, I. (2002). Parental bonding and adult psychopathology:

    Results from the US National Comorbidity Survey. Psychological Medicine, 32(6), 997–

    1008. https://doi.org/10.1017/s0033291702005937

Frazer, A. L., & Fite, P. J. (2016). Maternal Psychological Control, Use of Supportive Parenting,

    and Childhood Depressive Symptoms. Child Psychiatry & Human Development, 47(3),

    384–396. https://doi.org/10.1007/s10578-015-0573-8

Garber, J., Weiss, B., & Shanley, N. (1993). Cognitions, depressive symptoms, and development

    in adolescents. Journal of Abnormal Psychology, 102(1), 47–57.

    https://doi.org/10.1037//0021-843x.102.1.47

Garber, Judy, & Flynn, C. (2001). Predictors of Depressive Cognitions in Young Adolescents.

    Cognitive Therapy and Research, 25(4), 353–376.

    https://doi.org/10.1023/A:1005530402239

Gibb, B. E., Alloy, L. B., Abramson, L. Y., & Marx, B. P. (2003). Childhood maltreatment and maltreatment-specific inferences: A test of Rose and Abramson's (1992) extension of the hopelessness theory. Cognition & Emotion, 17(6), 917. https://doi.org/10.1080/02699930302306

Gibb, B. E., Alloy, L. B., Abramson, L. Y., Rose, D. T., Whitehouse, W. G., Donovan, P., Hogan, M. E., Cronholm, J., & Tierney, S. (2001). History of Childhood Maltreatment, Negative Cognitive Styles, and Episodes of Depression in Adulthood. Cognitive Therapy and Research, 25(4), 425–446. https://doi.org/10.1023/A:1005586519986

Haeffel, G. J., Gibb, B. E., Metalsky, G. I., Alloy, L. B., Abramson, L. Y., Hankin, B. L., Joiner, T. E., & Swendsen, J. D. (2008). Measuring cognitive vulnerability to depression: Development and validation of the cognitive style questionnaire. Clinical Psychology Review, 28(5), 824–836. https://doi.org/10.1016/j.cpr.2007.12.001

Haeffel, G. J., & Hames, J. L. (2014). Cognitive Vulnerability to Depression Can Be Contagious. Clinical Psychological Science, 2(1), 75–85. https://doi.org/10.1177/2167702613485075

Hammen, C. (1988). Self-cognitions, stressful events, and the prediction of depression in children of depressed mothers. Journal of Abnormal Child Psychology, 16(3), 347–360. https://doi.org/10.1007/bf00913805

Hankin, B. L., & Abela, J. R. Z. (2005). Development of Psychopathology: A Vulnerability-Stress Perspective. SAGE.

Hankin, B. L., & Abramson, L. Y. (2002). Measuring Cognitive Vulnerability to Depression in Adolescence: Reliability, Validity, and Gender Differences. Journal of Clinical Child & Adolescent Psychology, 31(4), 491–504. https://doi.org/10.1207/S15374424JCCP3104_8

Hankin, B. L., Oppenheimer, C., Jenness, J., Barrocas, A., Shapero, B. G., & Goldband, J.

(2009). Developmental origins of cognitive vulnerabilities to depression: Review of

processes contributing to stability and change across time. Journal of Clinical

Psychology, 65(12), 1327–1338. https://doi.org/10.1002/jclp.20625

Hayden, E. P., Hankin, B. L., Mackrell, S. V. M., Sheikh, H. I., Jordan, P. L., Dozois, D. J. A.,

Singh, S. M., Olino, T. M., & Badanes, L. S. (2014). Parental Depression and Child

Cognitive Vulnerability Predict Children's Cortisol Reactivity. Development and

Psychopathology, 26(4 0 2), 1445–1460. https://doi.org/10.1017/S0954579414001138

Hayden, E. P., Olino, T. M., Mackrell, S. V. M., Jordan, P. L., Desjardins, J., & Katsiroumbas, P.

(2013). Cognitive vulnerability to depression during middle childhood: Stability and

associations with maternal affective styles and parental depression. Personality and

Individual Differences, 55(8), 892–897. https://doi.org/10.1016/j.paid.2013.07.016

Hiramura, H., Shono, M., Tanaka, N., Nagata, T., & Kitamura, T. (2008). Prospective study on

suicidal ideation among Japanese undergraduate students: Correlation with stressful life

events, depression, and depressogenic cognitive patterns. Archives of Suicide Research,

12(3), 238–250. https://doi.org/10.1080/13811110802100924

Ingram, R. E. (2003). Origins of Cognitive Vulnerability to Depression. Cognitive Therapy and

Research, 12.

Jacobs, R. H., Reinecke, M. A., Gollan, J. K., & Kane, P. (2008). Empirical evidence of

cognitive vulnerability for depression among children and adolescents: A cognitive

science and developmental perspective. Clinical Psychology Review, 28(5), 759–782.

https://doi.org/10.1016/j.cpr.2007.10.006

Kaplan, H. B. (1986). Social Psychology of Self-Referent Behavior. Springer Science & Business Media.

Kertz, S. J., Belden, A. C., Tillman, R., & Luby, J. (2016). Cognitive Control Deficits in Shifting and Inhibition in Preschool Age Children are Associated with Increased Depression and Anxiety Over 7.5 Years of Development. Journal of Abnormal Child Psychology, 44(6), 1185–1196. https://doi.org/10.1007/s10802-015-0101-0

Kircanski, K., Joormann, J., & Gotlib, I. H. (2012). Cognitive aspects of depression. Wiley Interdisciplinary Reviews: Cognitive Science, 3(3), 301–313. https://doi.org/10.1002/wcs.1177

Kryski, K. R., Smith, H. J., Sheikh, H. I., Singh, S. M., & Hayden, E. P. (2011). Assessing stress reactivity indexed via salivary cortisol in preschool-aged children. Psychoneuroendocrinology, 36(8), 1127–1136. https://doi.org/10.1016/j.psyneuen.2011.02.003

Lecompte, V., Moss, E., Cyr, C., & Pascuzzo, K. (2014). Preschool attachment, self-esteem and the development of preadolescent anxiety and depressive symptoms. Attachment & Human Development, 16(3), 242–260. https://doi.org/10.1080/14616734.2013.873816

Lee, A., Hankin, B. L., & Mermelstein, R. J. (2010). Perceived social competence, negative social interactions, and negative cognitive style predict depressive symptoms during adolescence. Journal of Clinical Child and Adolescent Psychology: The Official Journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53, 39(5), 603–615. https://doi.org/10.1080/15374416.2010.501284

Leppert, K. A., Wasserbach, M.-C., & Dougherty, L. R. (2019). Cognitive Styles in Preschool-

  Age Children: Associations with Depression Risk and Evidence of Stability. Journal of

  Psychopathology and Behavioral Assessment. https://doi.org/10.1007/s10862-019-

  09726-1

Liu, R. T., McArthur, B. A., Burke, T. A., Hamilton, J. L., Mac Giollabhui, N., Stange, J. P.,

  Hamlat, E. J., Abramson, L. Y., & Alloy, L. B. (2019). A Latent Structure Analysis of

  Cognitive Vulnerability to Depression in Adolescence. Behavior Therapy, 50(4), 755–

  764. https://doi.org/10.1016/j.beth.2018.11.004

Lovejoy, M. C., Graczyk, P. A., O'Hare, E., & Neuman, G. (n.d.). MATERNAL DEPRESSION

  AND PARENTING BEHAVIOR: A META-ANALYTIC REVIEW. 32.

Luby, J. L. (2010). Preschool Depression: The Importance of Identification of Depression Early

  in Development. Current Directions in Psychological Science, 19(2), 91–95.

  https://doi.org/10.1177/0963721410364493

Mathews, A., & MacLeod, C. (2004). Cognitive Vulnerability to Emotional Disorders. Annual

  Review of Clinical Psychology, 1(1), 167–195.

  https://doi.org/10.1146/annurev.clinpsy.1.102803.143916

Meadows, S. (1996). Parenting Behaviour and Children's Cognitive Development. Psychology

  Press.

Meites, T. M., Ingram, R. E., & Siegle, G. J. (2012). Unique and Shared Aspects of Affective

  Symptomatology: The Role of Parental Bonding in Depression and Anxiety Symptom

  Profiles. Cognitive Therapy and Research, 36(3), 173–181.

  https://doi.org/10.1007/s10608-011-9426-3

Mezulis, A., Shibley Hyde, J., & Y Abramson, L. (2006). The developmental origins of

    cognitive vulnerability to depression: Temperament, parenting, and negative life events in

    childhood as contributors to negative cognitive style. Developmental Psychology, 42,

    1012–1025. https://doi.org/10.1037/0012-1649.42.6.1012

Murray, L., Woolgar, M., Cooper, P., & Hipwell, A. (2001). Cognitive vulnerability to

    depression in 5-year-old children of depressed mothers. Journal of Child Psychology and

    Psychiatry, and Allied Disciplines, 42(7), 891–899.

National Research Council (US) and Institute of Medicine (US) Committee on Depression, P. P.,

    England, M. J., & Sim, L. J. (2009). The Etiology of Depression. National Academies

    Press (US). https://www.ncbi.nlm.nih.gov/books/NBK215119/

Randolph, J. J., & Dykman, B. M. (1998). Perceptions of Parenting and Depression-Proneness in

    the Offspring: Dysfunctional Attitudes as a Mediating Mechanism. Cognitive Therapy

    and Research, 22(4), 377–400. https://doi.org/10.1023/A:1018761229824

Rodriguez, C. M., Pu, D. F., & Foiles, A. R. (2019). Cognitive-Affective Pathways to Child

    Depressive and Anxious Symptoms: Role of Children's Discipline Attributions. Child

    Psychiatry & Human Development, 50(1), 163–171. https://doi.org/10.1007/s10578-018-

    0831-7

Romens, S. E., Abramson, L. Y., & Alloy, L. B. (2008). High and Low Cognitive Risk for

    Depression: Stability from Late Adolescence to Early Adulthood. Cognitive Therapy and

    Research, 33(5), 480. https://doi.org/10.1007/s10608-008-9219-5

Rose, D. T., & Abramson, L. Y. (1992). Developmental predictors of depressive cognitive style:

Research and theory. In Developmental perspectives on depression (pp. 323–349).

University of Rochester Press.

Sasso, M. P., Giovanetti, A. K., Schied, A. L., Burke, H. H., & Haeffel, G. J. (2019). #Sad:

Twitter Content Predicts Changes in Cognitive Vulnerability and Depressive Symptoms.

Cognitive Therapy and Research, 43(4), 657–665. https://doi.org/10.1007/s10608-019-

10001-6

Schor, E. L., & American Academy of Pediatrics Task Force on the Family. (2003). Family

pediatrics: Report of the Task Force on the Family. Pediatrics, 111(6 Pt 2), 1541–1571.

Singer, A. R., & Dobson, K. S. (2007). An experimental investigation of the cognitive

vulnerability to depression. Behaviour Research and Therapy, 45(3), 563–575.

https://doi.org/10.1016/j.brat.2006.05.007

Structured Clinical Interview for the DSM-IV Axis I Disorders (SCID PTSD Module) - PTSD:

National Center for PTSD. (n.d.). [General Information]. Retrieved October 29, 2019,

from https://www.ptsd.va.gov/professional/assessment/adult-int/scid-ptsd-module.asp

Tolep, M. R., & Dougherty, L. R. (2014). The Conundrum of the Laboratory: Challenges of

Assessing Preschool-Age Children's Salivary Cortisol Reactivity. Journal of

Psychopathology and Behavioral Assessment, 36(3), 350–357.

https://doi.org/10.1007/s10862-014-9410-9

Turner, J. E., & Cole, D. A. (1994). Developmental differences in cognitive diatheses for child

depression. Journal of Abnormal Child Psychology, 22(1), 15–32.

https://doi.org/10.1007/BF02169254

Wechsler, D. (2002). The Wechsler Preschool and Primary Scale of Intelligence, Third Edition

(WPPSI-III) (3rd ed.). The Psychological Corporation.

Weisz, J. R., Southam-Gerow, M. A., & McCarty, C. A. (2001). Control-related beliefs and

depressive symptoms in clinic-referred children and adolscents: Developmental

differences and model specificity. Journal of Abnormal Psychology, 110(1), 97–109.

https://doi.org/10.1037/0021-843X.110.1.97

Wood, D., & Middleton, D. (1975). A Study of Assisted Problem-Solving. British Journal of

Psychology, 66(2), 181–191. https://doi.org/10.1111/j.2044-8295.1975.tb01454.x

Woodward, K. E., Boeldt, D. L., Corley, R. P., DiLalla, L., Friedman, N. P., Hewitt, J. K.,

Mullineaux, P. Y., Robinson, J., & Rhee, S. H. (2018). Correlates of Positive Parenting

Behaviors. Behavior Genetics, 48(4), 283–297. https://doi.org/10.1007/s10519-018-9906-

2

Y. Abramson, L., Metalsky, G., & Alloy, L. (1989). Hopelessness Depression: A Theory-Based

Subtype of Depression. Psychological Review, 96, 358–372.

https://doi.org/10.1037/0033-295X.96.2.358