Cognitive vulnerability to depression during middle childhood: Stability and associations with maternal affective styles and parental depression

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A B S T R A C T

Theories of cognitive vulnerability to depression (CVD) imply that CVD is early-emerging and trait-like; however, little longitudinal work has tested this premise in middle childhood, or examined theoretically relevant predictors of child CVD. We examined test–retest correlations of self-referent encoding task performance and self-reported attributional styles and their associations with parental characteristics in 205 seven-year-olds. At baseline, child CVD was assessed, structured clinical interviews were conducted with parents, and ratings of observed maternal affective styles were made. Children's CVD was re-assessed approximately one and two years later. Both measures of children's CVD were prospectively and concurrently associated with children's depressive symptoms and showed modest stability. Multilevel modeling indicated that maternal criticism and paternal depression were related to children's CVD. Findings indicate that even early-emerging CVD is a valid marker of children's depression risk.

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1. Introduction

Cognitive theories of depression (cognitive vulnerability to depression; CVD; e.g., Beck, 1967) are firmly established as central models of depression risk and treatment. Although these models hold that cognitive diatheses are early-emerging and stable (Ingram, Miranda, & Segal, 1998), few investigations have examined the stability of indices of CVD in early childhood. Measurement of cognitive risk in youth is important given that recent decades have seen a shift toward research on the validity of cognitive models of depression in adolescents and children. This work represents an important step in the further refinement of theories of CVD. More specifically, cognitive theories purport that CVD should be evident prior to depressive disorder and become increasingly consolidated during development. This increased stability could play an important role in potentiating the well-established increase in depression that occurs in adolescence. Thus, research that characterizes the stability of CVD early in life could inform prevention efforts by identifying early periods in which CVD shows some evidence of stability.

A surprisingly small body of work documents the stability of adult CVD (e.g., Hankin, Fraley, & Abela, 2005). Many of these

studies comprise two waves only, and most examine the stability of self-reported CVD rather than laboratory measures, despite their widespread use (e.g., self-referent encoding tasks; SRET). The latter issue is underappreciated, as the stability of laboratory measures may be a more stringent test of the trait-like properties of CVD, as performance-based measures do not capitalize on the stability of response style biases as self-reports might. Furthermore, laboratory measures might better capture negative cognition in younger participants, who may lack the introspection and self-reflection required to provide valid self-reports of their cognition. Important work that speaks to the stability of childhood CVD is accruing (e.g., Cole et al., 2009), with evidence suggesting both stability and change (Hankin, 2008; Hankin et al., 2009). However, this work has focused on self-reported CVD in later childhood and early adolescence across relatively brief follow-ups, factors which may increase estimates of stability relative to work on younger samples using information processing measures, and longer follow-up intervals.

Based on this literature, there is ongoing debate regarding when meaningful, stable aspects of CVD emerge (e.g., Abela & Hankin, 2011; Cole et al., 2008), and evidence may vary depending on how it is measured. The developmental literature indicates that children develop a more stable yet differentiated sense of self in middle childhood (Abela & Hankin, 2008), suggesting that measures of CVD that tap self-schemas may yield meaningful information about depressive cognition in children this age. However, no data are available with respect to the long-term stability of widely

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used measures of children's schemas (e.g., self-referent encoding tasks; SRETs) in middle childhood; indeed, we know of no study examining the stability of self-referent encoding biases in *any* age group, an important omission if such biases are truly thought to be trait-like.

Therefore, as our first hypothesis, we examined the stability of information processing biases over multiple follow-up assessments spanning a lengthy two-year period, predicting at least modest stability across this time frame. We know of no other study of child CVD that has used such a lengthy follow-up period, thus providing a relatively stringent test of the stability of early cognitive risk. Furthermore, most studies that have tested the stability of CVD in youth have examined older children; we therefore looked at the middle childhood period. In addition to an information-processing measure, we also included a self-report of CVD, the Children's Attributional Styles Questionnaire-Revised (CASQ-R; Thompson, Kaslow, Weiss, & Nolen-Hoeksema, 1998) for comparison.

We also examined links between children's CVD and two well-established markers of children's depression risk that may be mediated via their impact on children's emerging negative cognition: maternal affective style and parental depression (Garber & Flynn, 2001). Theoretical accounts of the development of CVD have long posited a role of caregiver behavior, especially criticism, in fostering negative child cognition (e.g., Beck, 1967), perhaps by leading children to internalize negative self-views. Through such mechanisms, children's CVD may mediate associations found between early caregiver behavior and offspring depression (Alloy, Abramson, Smith, Gibb, & Neeren, 2006). However, much of the research on parenting-CVD links has been conducted with adolescents, despite evidence that stress earlier in life, such as adverse parenting, may have particularly detrimental effects on young children's development (Brown, 2012). Thus, as our second hypothesis, we predicted that negative caregiving styles would be associated with elevated initial and increased negative child cognition over follow-up.

Familial depression is the most robust marker of an individual's depression risk (Goodman & Gotlib, 1999). Previous work has found that children with a maternal history of depression are at heightened risk for the development of CVD (Garber & Flynn, 2001), potentially through genetic, social learning, and other processes; however, associations between fathers' depression history and child risk are poorly understood and understudied in the field, despite their implications for child outcomes (e.g., Connell & Goodman, 2002). We therefore expanded previous work by including measures of both parents' depression; as our last hypothesis, we predicted that parental depression would predict heightened initial and increasing child cognitive risk.

2. Method

A community sample of 205 seven-year-olds (96 boys; 46.83%) and their parents were recruited from a psychology department database and advertisements. The mean age of children at baseline was 7.37 years (SD = 0.30). The Peabody Picture Vocabulary Test, Fourth Edition (Dunn & Dunn, 2007) was administered as a measure of cognitive functioning. Children performed within the normal range (M = 111.92; SD = 12.15). Parents identified their child's race as Caucasian (n = 180; 87.80%), Asian (n = 4; 1.95%) or other (n = 16; 7.80%). Most children (n = 187; 91.22%) came from two-parent homes.

Of the 205 children, 181 (88.3%) participated in a follow-up visit in the family's home approximately a year after the baseline assessment, when children were 8.48 years old (SD = 0.32). Comparing participants who did and did not participate in the first

follow-up showed no significant differences in major study variables (all $ps > 0.05$). Approximately 2 years after baseline, a third assessment, conducted during a laboratory visit, occurred when children were 9.63 years old (SD = 0.38); 171 children (83% of the original sample) participated. We again compared participants who completed the third assessment to those who completed the baseline assessment only, and found no significant differences in study variables.

2.1. Assessment of parents

2.1.1. Parent mood disorder

The Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-NP; First, Spitzer, Gibbon, & Williams, 1996) was used to assess for lifetime history of depressive disorder (DD) at baseline. The majority of mothers (n = 202; 98.54%) and most fathers (n = 183; 89.27%) completed the SCID. Inter-rater reliability was high, with Cohen's Kappa = 1.00, $p < 0.001$ for a diagnosis of DD (N = 14). In our sample, 68 (33%) mothers and 34 (17%) fathers had a lifetime history of DD; for mothers, 11 cases were current and 10 fathers had a current mood disorder.

2.1.2. Maternal affective style

As part of a laboratory visit at which the baseline SRET was collected, the experimenter supervising the visit completed a scale (Goldsmith, 1995) in which maternal affective styles while interacting with their child were rated. Ratings were made on a 0–5 scale by a trained post-baccalaureate experimenter with a background in child development, based on positive (i.e., maternal enjoyment/pleasure; sensitivity; connectedness) and negative (criticism; intrusiveness) maternal affect directed toward the child, across the entire two-hour-long visit. Maternal behavior with the child before and after the visit formally began was also considered in ratings. These ratings were significantly correlated with ratings made of the same behaviors during a five-minute standardized parent–child interaction task during the visit (mean $r = 0.48$; range = 0.34–0.61).

2.2. Child assessment

2.2.1. Child cognitive vulnerability

To activate latent cognitive vulnerability (Taylor & Ingram, 1999), a mood induction procedure (MIP) shown to be effective in multiple studies (e.g., Hayden, Klein, Durbin, & Olino, 2006) was administered, in which children were shown a sad movie clip. A novel clip was shown at each assessment. Next, a SRET (Kuiper & Derry, 1982), a widely used information-processing task used to assess memory biases for positive and negative self-referent information, was administered. Children were presented with 26 words (13 positive and 13 negative) taken from previous research using this task with young children (Hayden et al., 2006). Words were presented on flash cards and spoken aloud by the experimenter. Following each word, children were asked "Is this like you?" Words were presented in a different random order for each participant; the same word stimuli were used at each assessment. This portion of the task was followed by an incidental recall period in which children were asked to recall as many of the presented words as possible. Two indices of memory processing relevant to depression were calculated: a positive schematic processing score (the proportion of positive words both rated as self-descriptive *and* subsequently recalled relative to all words rated as self-descriptive) and a negative schematic processing score (derived in the same manner using negative words) (Johnson, Joorman, & Gotlib, 2007).

The Child Attributional Style Questionnaire (CASQ-R; Thompson et al., 1998) is a self-report of attributions for 12 positive and 12