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Predictors of Parental Locus of Control in Mothers of Pre- and Early-Adolescents

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Abstract

Parental locus of control refers to parents' perceived power and efficacy in child-rearing situations. This study explored parental locus of control and its correlates in 160 mothers of children ages 8–14 cross-sectionally and 1 year later. Maternal depression, maternal expressed emotion, and child internalizing and externalizing behavior were examined, along with a number of sociodemographic factors. Cross-sectional analyses indicated that external parental locus of control was associated with child externalizing behavior, maternal depression, less maternal education, lower income, and older maternal age. Longitudinal analyses showed that child age and externalizing behavior also predicted increases in external parental locus of control 1 year later. Finally, lower income and less parental perceived control predicted increases in child externalizing behavior over time.

Parental locus of control refers to parents' perceived power and efficacy in child-rearing situations (Campis, Lyman, & Prentice-Dunn, 1986). Parental locus of control is an adaptation of Rotter's (1966) original concept of locus of control that is specific to parent-child situations. Parents with external locus of control tend to ascribe their children's development to forces outside of their control, while parents with internal locus of control credit their children's development to their own parenting efforts. A number of cross-sectional studies show that parents of children with behavior difficulties are more likely to hold external parental locus of control beliefs compared with parents of children without identified problems. For example, Campis and colleagues (1986) found that parents of elementary school-age children who requested services for parenting problems had more

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external parental locus of control beliefs than parents who did not report experiencing difficulties in the parenting role. Similarly, Roberts, Joe, and Rowe-Hallbert (1992) found that mothers of children in treatment for oppositional child behavior tended to have more external locus of control beliefs than non-clinic parents, and there was a significant relationship between child coercive behavior and external parental locus of control beliefs. Mothers who report more total child behavior problems on the Child Behavior Checklist tend to be more external in their parental locus of control orientation (Morton, 1997), and mothers of children with conduct problems report significantly lower levels of self-efficacy in handling child behaviors than mothers of children without conduct problems (Sanders & Woolley, 2005). Similarly, Teti and Gelfand (1991) found that perceptions of infant difficulty were associated with low maternal self-efficacy beliefs. At the same time, others have shown that high maternal self-efficacy beliefs are related to maternal behavior, including competence, sensitivity and warmth, responsiveness, promotive parenting strategies, and parental monitoring and involvement (Ardelt, & Eccles, 2001; Bogenschneider, Small, & Tsay, 1997; Shumow & Lomax, 2002; Teti & Gelfand, 1991). These cross-sectional studies clearly suggest a correlation between external parental locus of control, challenging child behavior, and parenting behavior.

Longitudinal data suggest that child behavior may influence parental cognitions in that having a temperamentally difficult infant or a child with behavior problems may cause parents to develop low feelings of parental efficacy and control. For instance, parents who had infants with difficult temperaments were less likely to feel in control of their children's behavior when in preschool, and these preschoolers had more internalizing and externalizing problems as reported by mothers, fathers, and teachers (Hagekull, Bohlin, & Hammarberg, 2001). However, these authors also found that parental control perceptions were associated with child behavior even when controlling for early problems, suggesting that "the perceptions of control can only partly be accounted for by the experiences with a particular child; they might also be rooted in parents' personality, or more likely, they could stem from an interaction between parent and child characteristics" (p. 436). Thus, while this study clearly suggests that child behavior and parental perceived control are associated, the relationship may be bi-directional. That is, it may also be the case that low feelings of control that exist prior to a child's birth lead to early problems in the parent-child relationship that then affect child temperament or behavior. Indeed, another study found that pregnant mothers who had less confidence about their future parenting skills had worse postpartum adjustment to motherhood, less confidence as parents, and more negative mother-toddler relationships (Williams, Joy, Travis, & Gotowiec, 1987). Moreover, parenting confidence was a more salient predictor of these outcomes than mothers' global self-esteem.

Depression and Parental Locus of Control

The depression literature has examined the role of general locus of control in the etiology and maintenance of depressive symptoms. Depression has been linked with locus of control in that greater externality is associated with higher levels of depressive symptomatology (Presson & Benassi, 1996). This relationship may extend to the parenting domain in that low self-perceived parental efficacy, competence, and control is associated with parental

depressive symptoms (Coleman & Karraker, 1997; Cutrona & Troutman, 1986; Jackson & Huang, 2000; Lovejoy, Verda, & Hays, 1997; Teti & Gelfand, 1991). New parents' perceived parental control has also been shown to predict their mental health outcomes during the first year of parenthood (Keeton, Perry-Jenkins, & Sayer, 2008). Specifically, parents who exhibited feelings of control prior to their child's birth had lower levels of depression and anxiety symptoms; and increases in sense of control during the transition to parenthood predicted decreases in symptoms. Child behavior may also play a role in that experience with a difficult child may interact with depression to bring about poor perception of parenting skills. According to a study investigating new mothers, although in general mothers who were depressed tended to have low parental efficacy, those who perceived their babies as having "easy" temperaments were more likely to have adequate parental efficacy (Teti & Gelfand, 1991).

Expressed Emotion and Parental Locus of Control

Parental expressed emotion (EE) is another construct associated with general locus of control and likely to be associated with parenting cognitions and behavior. EE is an index of the emotional attitudes that family members hold toward one another and is thought to reflect the emotional atmosphere of the family (Vaughn & Leff, 1976). More specifically, individuals who are designated as high in EE generally exhibit a high degree of criticism, hostility, and/or emotional over-involvement toward family members. High EE is associated with mothers' perception of child symptoms or problem behavior as being under the child's volitional control (Barrowclough & Hooley, 2003; Bolton, Calam, Barrowclough, Peters, Roberts, et al., 2003). A mother who views the causes of her child's behavior as being related to factors within the child might also be more likely to feel as though she, herself, has less control over her child (i.e., external parental locus of control). Consistent with this idea, high-EE individuals tend to have more pessimistic beliefs about their ability to control general problem situations (Barrowclough & Hooley, 2003; Hooley, 1998). Barrowclough and Hooley (2003) suggest that high-EE attitudes might be conceptualized as attempts to control situations through restoring or changing the family member's behavior. However, such attempts tend to be ineffective, thus perpetuating low feelings of efficacy and control. Therefore, high-EE mothers may be likely to develop external parental locus of control beliefs, particularly when faced with challenging child behavior.

The Current Study

In sum, these ideas converge on a general model in which maternal depression, EE, and parental locus of control influence one another in intricate ways and may become amplified over time. Further, the presence of challenging child behavior may have a moderating effect on these relationships. The aims of the current study were to explore the relationship between maternal depression, EE, child behavior, and parental locus of control in mothers of pre- to early-adolescents over a one-year time period. Associations with possible sociodemographic correlates of parental locus of control were also explored, including mothers' education, family income, age, and marital status and children's age and gender. These sociodemographic variables were selected based on prior research showing associations with parenting cognitions (Coleman & Karraker, 2000; Cutrona & Troutman,

1986; Maniadaki, Sonuga-Barke, Kakouros, & Karaba, 2005; Teti & Gelfand, 1991; Zayas, Jankowski, & McKee).

We first hypothesized that maternal depression, high maternal EE, and child behavior would be associated with external parental locus of control cross-sectionally. In particular, we hypothesized that external parental locus of control in mothers would be associated with the presence of high maternal EE, higher rates of maternal depressive symptoms, and higher rates of child internalizing and externalizing symptoms. Second, we tested whether these factors would uniquely predict parental locus of control even when controlling for sociodemographic variables. Third, we tested whether child behavior moderates the relationships between maternal factors, in that higher child internalizing and externalizing symptoms would be associated with a stronger relationship between maternal depression, maternal EE, and parental locus of control. Fourth, we examined whether our predictors contributed to changes in parental locus of control over time. Finally, to further address the question of directionality, we looked at whether parental locus of control beliefs also had an influence on change in child behavior over time.

Method

Procedure

Data for the present study were drawn from a larger study focused on psychosocial factors associated with the development of psychopathology in children of mothers with and without depression (Tompson, Pierre, Boger, McKowen, Chan, & Freed, 2010). The current analyses include data from the second wave (T1) and third wave (T2) of this larger study which included three waves of yearly evaluations. We included data from these two waves as the PLOC measure was not administered at the first wave. The full sample included 171 mothers and their children ages 8 to 12 living in the city of Boston and its surrounding suburbs. Mothers were recruited through three sources, with the intent of enlisting a high-risk sample with approximately half of the women having a history of depression. First, mothers were identified through a Veterans Administration research study focusing on normative aging in men (VA-NAS; Bell, Rose, & Damon, 1972). Veterans were identified by age as potentially having grandchildren within the study's targeted age range, and permission was requested to contact their offspring. There were 25 mothers recruited through the VA-NAS study. Second, 35 mothers who had participated in the Harvard Moods and Cycles study (which examined depression in the peri-menopausal years; Harlow, Cohen, Otto, Cramer, & Spiegelman, 2004) and who had children ages 8 to 12 were identified and contacted. Third, publicly-available census data were obtained for several ethnically-diverse suburbs of Boston, and letters were sent to all women in these suburbs within the age range for potentially having children ages 8 to 12. The remaining mothers (n = 111) were identified through this mass-mailing procedure. In all cases, women received a letter by mail describing the study, along with a self-addressed, stamped postcard to be returned if they were interested in being contacted for further information. Recruitment materials were particularly geared to enhance participation of women who had experienced depression. Those who returned the postcards indicating interest were contacted by phone and screened for inclusion (see: Tompson et al., 2010).

Families were invited to participate in the study if they met the following criteria: (1) mother and child were English-speaking; (2) child was between the ages of 8 and 12; (3) mother and child were biologically related; (4) mother and child had been living together for at least one year prior to entrance into the study; (5) mother had no history of psychosis, bipolar disorder, or brain injury; (6) child had no history of psychosis, brain injury, or major medical condition (i.e., chronic/life-threatening illness); (7) child had no history of autism or other developmental disability. Eligible families were invited to be interviewed in our research laboratory at Boston University or in their home. Mothers signed IRB-approved consent forms, and children signed IRB-approved assent forms prior to data collection. Participants were interviewed in separate rooms to protect confidentiality. Data were collected by pairs of trained interviewers (licensed clinicians, doctoral students in clinical psychology, and a B.A.-level research assistant). Dyads were administered a series of semi-structured interviews, completed self-report measures, and participated in a video-taped interaction task. The assessment battery was divided between diagnosticians, with the person conducting child assessments blind to maternal diagnostic status.

Participants

The participants included in the current analyses consisted of 160 mother-child dyads. Eleven of the 171 dyads originally enrolled in the first wave of the study did not participate in the second wave of data collection. Another 12 families did not participate in the third wave of data collection, but their data from the second wave was retained for the current analyses. Of the 160 children included in the current analyses, 92 were boys (57.5%) and 68 were girls (42.5%). At T1, children ranged in age from 8 to 14 (M = 11.16, SD = 1.45). In the child sample, 109 (68%) were White, 22 (14%) were African American, 3 (2%) were Asian, 10 (6%) were Hispanic, and 16 (10%) were Multi-Racial.

Mothers ranged in age from 29 to 55 (M = 43.42, SD = 5.90) at T1. Among mothers, 124 self-identified as White, 19 as African American, 3 as Asian, 7 as Hispanic, and 7 as Multi-Racial. Mothers had an average of 2.41 children (SD = 1.15). Twenty-eight percent of mothers (n = 45) were single (i.e., divorced, separated, or never married) and 72% (n = 115) were currently married or living with their partners as though married (cohabiting). Mothers had between 9 and 23 years of education (M = 15.61, SD = 2.59). This level of education is consistent with education estimates for the region indicating that, during the time these data were collected, 45% of women over 25 had an associates degree or higher (U.S. Bureau of the Census, 2007). Median family income was reported as $80,000, also consistent with census data for the region (U.S. Bureau of the Census, 2007). Thirty-one percent of mothers in our sample had at some time received public assistance (e.g., Food stamps, WIC, Medicaid, etc.).

Measures

Maternal depression—Current maternal depressive symptoms were evaluated using the 21-item Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI has acceptable internal consistency and test-retest reliability (Bumberry, Oliver, & McClure, 1978). Internal consistency in this sample was high (α = 0.72). Mothers' scores ranged from 0 to 33 (M = 5.17, SD = 6.35). Given that these data were not normally

distributed, a square root transformation was applied and used in all analyses. Although the BDI is based on self-report, scores were strongly correlated (r = .86, p > .001) with evaluator ratings of depressive symptoms using the Structured Clinical Interview for the DSM-IV (First & Gibbon, 2004).

Parental locus of control—Mothers completed the 47-item Parental Locus of Control scale (PLOC; Campis et al., 1986) at T1 and T2. Exploratory factor analysis on these items has yielded five distinct factors labeled: Parental Efficacy, Parental Responsibility, Child Control of Parents' Life, Parental Belief in Fate/chance, and Parental Control of Child's Behavior (Parental Control). These subscales contain an unequal number of items, ranging from 7 to 10. Parents were asked to rate the degree to which they agree with each statement on a five-point Likert scale ranging from 1 ('strongly disagree') to 5 ('strongly agree'). Total PLOC score was calculated as the sum of responses to each of the 47 items. Subscale scores represent the sum of responses to each item in the subscale. Typically, higher scores represent more external locus of control. However, for ease of interpretability in the present study, this was reversed so that higher scores represented more internal locus of control. For our analyses, when items were skipped, the values of these items were replaced by the mean score for the subscale. In cases where more than two items in a subscale were skipped, the data were excluded from analyses. Previous studies using the PLOC have reported adequate internal consistency for the total scores and five subtests, as well as high test-retest reliability (Campis et al., 1986; Roberts et al., 1992). Reliability for the PLOC in our sample was good at both T1 (α = .84) and at T2 (α = .85).

Although mothers completed the full PLOC measure, we included only the Parental Efficacy and Parental Control subscales in our analyses. Items included on these scales are listed in Tables 1 and 2. These subscales were selected based on previous research demonstrating that they discriminate most significantly between parents of children with behavior difficulties and parents of children without identified problems (Campis et al., 1986). Further, in our sample, the PLOC total score was highly correlated with Parental Efficacy (T1: r = .69; T2: r = .78) and Parental Control (T1: r = .75; T2 r = .84); the other subscales correlated less strongly with the PLOC total score: Parental Responsibility (T1: r = .40; T2: r = .45), Child Control of Parents' Life (T1: r = .55; T2: r =.58), and Fate/Chance (T1: r = .53; T2: r = .50).

Maternal expressed emotion—Maternal EE was assessed using the Five Minute Speech Sample (FMSS; Magaña, Goldstein, & Karno, 1986). Each mother was asked to talk for five minutes about her child with the following instructions: "I'd like to hear your thoughts and feelings about (child's name) in your own words and without my interrupting you with any questions or comments. When I ask you to begin, I'd like you to speak for five minutes, telling me what kind of a person (child's name) is and how the two of you get along together." Monologues were then transcribed and were scored by a trained rater. Mothers were categorized as "high EE" or "low EE" by assessing the presence or absence of highly critical attitudes (CRIT EE) and/or high emotional over-involvement (EOI EE). A rating of high CRIT EE was made if the mother made a negative initial statement about, described a negative relationship with, or made one or more criticisms of the child. A rating

of high EOI EE was scored if the mother cried during a speech sample, described self-sacrificing/overprotective behavior, or evidenced two of the following: excessive description of early life, five or more positive remarks, or one or more statements of love/devotion. Our work using this coder has demonstrated high inter-rater reliability (Asarnow et al., 1994, 2001; Tompson, Asarnow, Hamilton, & Newell, 1997). In our sample, T1 EE data were missing from six mothers. Of the remaining mothers, 38 (25%) were identified as being high in EE. Twenty-nine of these mothers were categorized as high CRIT EE, and 12 were categorized as high EOI EE (three mothers were placed in both categories).

Child behavior—The Achenbach Child Behavior Checklist (CBCL; Achenbach, 1991) was used to assess current levels of internalizing and externalizing child symptoms as reported by mothers. The CBCL has excellent test-retest reliability and good inter-parental agreement (McConaughy, 1993) and shows good convergent and discriminant validity (Clarke, Lewinsohn, Hops, & Seeley, 1992). The present analyses included the Internalizing and Externalizing problem scales from the CBCL. Internalizing scale scores successfully differentiate children with and without diagnosable depressive disorder, and externalizing scale scores successfully differentiate children with and without attention deficit disorder (Biederman, Faraone, Mick, & Moore, 1996).

Family income—Mothers completed a self-report questionnaire on which they provided information about income and receipt of government services. The questionnaire included an ordinal scale of 9 income ranges (e.g., $10,000 – $19,999) and mothers were asked to indicate the range within which their gross annual family income falls. The highest income range that mothers could select was “$80,000 or more.” Given that approximately half of families in our study indicated a gross annual family income of $80,000 or more, income data for our sample were skewed. For this reason, families were split into two income groups: “below median” (less than $80,000) and “above median” ($80,000 or more) gross annual family income.

Results

Preliminary Analyses

Preliminary analyses compared participants from our different recruitment sources on our key variables of interest. Using one-way ANOVAs, the scores of the participants from our three referral sources (i.e., VA-NAS, HMC, and mass mailing) were compared on BDI, CBCL Internalizing and Externalizing problem scales, and T1 and T2 PLOC. Using Contingency analyses, the three referral sources were also compared on overall EE, CRIT EE, and EOI EE. There were no differences between the referral sources on any of the variables of interest. We also examined the families who completed the T1 assessments but did not participate in the T2 assessments to see if they differed from those who participated in both assessments. No group differences were detected on any of the variables of interest. The total number of participants in our sample was 160. However, because there were some missing data, *n* differs for some analyses.

Relationships among PLOC and Other Variables of Interest

Data were first analyzed bivariately using simple correlations and *t*-tests to examine whether sociodemographic characteristics of interest (family income, children's age and gender, and mothers' age, education, and marital status) and family risk factors (child internalizing and externalizing symptoms, maternal depressive symptoms, and EE status) were significantly related to Parental Efficacy and Parental Control at T1 and T2. Significant correlates were included in subsequent analyses. Correlations among variables are shown in Table 3, with cross-sectional correlations above the diagonal and longitudinal associations below the diagonal. Results of *t*-tests indicated that scores on Parental Efficacy were higher among mothers in the above median income group than mothers in the below median income group at T1 ($t = -4.75$, $p < .01$) and at T2 ($t = -3.07$, $p < .01$). Married/cohabiting mothers scored significantly higher on Parental Efficacy at T1 than single mothers ($t = -2.25$, $p < .05$), but there were no differences between groups at T2. There were no significant differences between income groups or marital groups on Parental Control at either time point. Results of *t*-tests also revealed no significant differences between mothers of boys versus girls on either factor at either time point.

We also used *t*-tests to examine potential differences in Parental Efficacy and Parental Control scores between mothers categorized as low versus high overall EE. There were no significant differences between EE groups on Parental Control or Parental Efficacy at either time point. We then looked at low versus high CRIT EE. Results of *t*-tests indicated that mothers who were categorized as high CRIT EE at T1 scored significantly lower on Parental Efficacy at T1 ($t = 2.77$, $p < .01$) and T2 ($t = 3.76$, $p < .01$) and on Parental Control at both time points ($t = 3.46$, $p < .01$; $t = 3.87$, $p < .01$, respectively). Results of *t*-tests also revealed that mothers who were categorized as high CRIT EE at T1 had children with higher average T2 Internalizing ($t = 2.00$, $p < .05$) and Externalizing ($t = 4.15$, $p < .01$) T-scores than mothers who were categorized as low CRIT EE. Given that too few mothers were categorized as high EOI EE, we did not compare low versus high EOI EE groups.

Hierarchical Regression Analyses of Variables Predicting T1 PLOC

Hierarchical linear regression analyses tested the hypothesis that family risk factors would remain significantly associated with PLOC scores at T1 after controlling for sociodemographic factors. Specifically, two regressions were run, one for each PLOC subscale, with sociodemographic factors entered on Step 1 of each model and family risk factors entered on Step 2. Only those sociodemographic variables that were significant correlated with PLOC subscales were included. To examine whether CBCL Internalizing and Externalizing T-scores moderated the relationships between maternal BDI score, CRIT EE, and PLOC subscales, a third step was added to each model that included the following two-way interaction terms: Externalizing × BDI; Internalizing × BDI; Externalizing × CRIT EE; and Internalizing × CRIT EE.

As Table 4 shows, for the first hierarchical linear regression analysis predicting T1 Parental Efficacy, maternal education, marital status, and income were entered in Step 1, explaining 17% of the variance. CRIT EE, CBCL Internalizing T-score, CBCL Externalizing T-score, and maternal BDI score, entered at Step 2, explained an additional 21% of the variance in

T1 Parental Efficacy. Addition of interaction terms on Step 3 did not reliably improve R^2. Results of the full model indicate that only income, education, and CBCL Externalizing T-score emerged as significant predictors of Parental Efficacy at T1, $F(7, 140) = 12.45$, $p < .01$. For the second hierarchical linear regression analysis, predicting T1 Parental Control, maternal age and child age were entered in Step 1, explaining 10% of the variance. CRIT EE, CBCL Internalizing T-score, CBCL Externalizing T-score, and maternal BDI score, entered at Step 2, explained an additional 37% of the variance in T1 Parental Control. Again, interaction terms did not reliably improve R^2. Only maternal age and CBCL Externalizing T-score significantly predicted Parental Control at T1, $F(6, 140) = 21.22$, $p < .01$.

Hierarchical Regression Analyses of Variables Predicting T2 PLOC

We conducted another set of hierarchical linear regression analyses, with T2 Parental Efficacy and T2 Parental Control as outcome variables, to examine change in PLOC scores over time. T1 family risk and sociodemographic predictor variables remained the same, except for the removal of marital status and the addition of child age in predicting T2 Parental Efficacy (see Table 5). In order to statistically control for the influence of T1 Parental Efficacy and T1 Parental Control, these variables were entered on the first step of their respective models. Again, interaction terms were added on the final steps of each model to test whether child behavior emerged as a moderating variable.

As Table 5 shows, T1 Parental Efficacy entered at Step 1 explained a large percentage of the variance in T2 Parental Efficacy, $R^2 = .45$, $F(1, 136) = 111.44$, $p < .01$. Inclusion of sociodemographic variables on Step 2 contributed an additional 4% of variance, and T1 family risk variables entered on Step 3 added another 6%. Addition of interaction terms on Step 4 did not reliably improve R^2. After controlling for T1 Parental Efficacy, only child age and CBCL Externalizing T-score significantly predicted Parental Efficacy at T2, $F(8, 129) = 19.57$, $p < .01$. T1 Parental Control also explained a large percentage of variance in T2 Parental Control $R^2 = .64$, $F(1, 134) = 242.12$, $p < .01$. However, the addition of sociodemographic variables, T1 family risk variables, and interaction terms on Steps 2, 3, and 4, respectively, did not reliably improve R^2 for the model predicting Parental Control.

Hierarchical Regression Analyses of Variables Predicting T2 Child Symptoms

We next examined predictors of T2 CBCL Internalizing and Externalizing problem scales to determine whether the relationship between parental locus of control and child behavior was bi-directional in nature. Specifically, we examined whether T1 correlates (income, maternal BDI score, CRIT EE, Parental Efficacy, and Parental Control) of T2 CBCL T-scores were significant predictors of change in CBCL T-scores. Two regressions were run, with T2 CBCL Internalizing and Externalizing T-scores as outcome variables. For both models, T1 CBCL T-score was entered on Step 1. For the model predicting T2 CBCL Internalizing T-score, the other T1 correlates were entered on Step 2. Only T1 CBCL Internalizing T-score ($\beta = .76$, $p < .01$) emerged as a significant predictor of T2 CBCL Internalizing T-score, $R^2 = .58$, $F(1, 136) = 185.59$, $p < .01$. For the second model, predicting T2 CBCL Externalizing T-score, income was entered on Step 2, and the other T1 correlates were entered on Step 3. For this model, in addition to T1 CBCL Externalizing T-score ($\beta = .64$, p

< .01), income (β = −.14, $p < .05$) and Parental Control (β = −.20, $p < .01$) emerged as significant predictors of T2 CBCL Externalizing T-score, explaining an additional 6% of the variance (final model: $R^2 = .71$, $F(6, 131) = 52.58$, $p < .01$).

Discussion

The present study examined parental locus of control and factors that may be associated with such parenting cognitions. The study yielded a number of findings with important implications. First, mothers who had children with more externalizing symptoms and who were suffering from symptoms of depression were significantly more likely to have external parental locus of control beliefs (i.e., lower feelings of parental self-efficacy and control over child behavior). Second, a number of sociodemographic factors, including maternal education, family income, and maternal age, were uniquely associated with parental locus of control. Third, child symptoms did not appear to moderate the relationships between parental locus of control and maternal depression or parental locus of control and critical expressed emotion. Fourth, over time, child externalizing behaviors negatively influenced a mother's parental self-efficacy. Further, as children grew older, mothers tended to feel less efficacious about their parenting ability. Fifth and finally, the relationship between parental control beliefs and child behavior was bi-directional, as mothers' reduced feelings of control over child behavior predicted future child externalizing behavior.

Our first hypothesis was confirmed in that maternal depressive symptoms, the presence of high critical expressed emotion, and child internalizing and externalizing symptoms were all significantly inversely correlated with internal parental locus of control, as measured by two of the PLOC subscales. However, when entered together into regression models, CRIT EE and child internalizing symptoms were no longer significant predictors of the PLOC subscales. We predicted that mothers with high CRIT EE would feel less effective in the parenting role. However, this was not supported by our analyses suggesting that the relationship between high CRIT EE and external parental locus of control may be better explained by other factors such as child behavior or maternal depression. Although child internalizing behavior was not uniquely predictive of parental locus of control, child externalizing behavior exerted a strong influence on a mother's feelings about her parenting abilities. Cross-sectionally, maternal depressive symptoms also emerged as a significant predictor of Parental Control and approached significance as a predictor of Parental Efficacy. It is important to note that the majority of mothers in our sample were not experiencing significant depressive symptoms at the time of the evaluations, limiting the range of this variable. Therefore, it is possible that the association with PLOC subscales would have been more robust had the mothers in our study been more symptomatic.

Not only were externalizing symptoms strongly correlated with both PLOC subscales at the first time point, but they also predicted change in these parenting cognitions over time. Interestingly, contrary to predictions, child behavior did not emerge as a moderating variable in the association between PLOC and either maternal depressive symptoms or CRIT EE either cross-sectionally or longitudinally. We expected that maternal depressive symptoms would interact with child behavior, in that the level of depression experienced by a mother would be more strongly related to her parental locus of control when parenting a child with

challenging behavior; however, our findings did not support this. Rather, depressive symptoms were associated with parental locus of control regardless of child behavior. In addition, we anticipated that maternal CRIT EE would interact with child behavior in predicting PLOC. However, this was also not supported by our findings. It is possible that high expressed emotion emerges in mothers as a consequence of external PLOC, rather than as a predictor.

Although not a main objective of the study, we also discovered that a number of sociodemographic factors were associated with parental locus of control. Interestingly, different factors were associated with each of the subscales. Maternal education and family income were uniquely associated with Parental Efficacy subscale scores cross-sectionally, while Parental Control showed significant unique associations with maternal age. Over time, child age uniquely predicted change in Parental Efficacy. Given these discrepancies, when understanding the role of sociodemographic factors, it may be more useful to think about Parental Efficacy and Parental Control as distinct dimensions of the overall construct of parental locus of control with different correlates.

When entered into the full model, the two demographic variables that were cross-sectionally associated with scores on the Parental Efficacy subscale were maternal education and family income. This is consistent with Coleman and Karraker's (2000) finding that mothers of school-aged children with higher family incomes and more years of education report higher parenting self-efficacy. Interesting, although income and education were highly correlated with one another, they made unique contributions to the variance in Parental Efficacy. We suspect that education contributes to a mother's parenting efficacy by enhancing her overall, general self-efficacy. Though, it may also be the case that more highly educated mothers have had greater exposure to information about parenting and child development and/or have more resources to access this information. Mothers who have higher family incomes would also be more likely to have access to resources to assist with parenting such as child care, pediatric mental health care, and other social and community supports and services. Availability of these important resources and supports might allow mothers more time and energy to cope with the stress associated with parenting, particularly in the context of challenging child behavior. Families with higher incomes may also have fewer general life stressors, allowing them to devote more effort and attention to their children and the parenting role.

As our longitudinal analyses suggest, lower family income predicted increases in child externalizing behavior a year later. This could be due to increases in family stress as a consequence of financial challenges. It is important to note that our lower income group was not representative of a low-income population; rather, this group was comprised of families that were below median family income estimates for the state of Massachusetts (though a number of families within this group were living below the poverty line). Therefore, no conclusions can be made regarding families of low-income status. Even so, it is reasonable to assume that families earning below-average incomes are more likely to experience some financial stress, as compared to those earning above-average incomes.

Scores on the Parental Control subscale had moderate inverse cross-sectional correlations with maternal age. Although correlation analyses also showed an inverse relationship between Parental Control and child age, when entered in a regression analysis with maternal age, this relationship was no longer significant. Therefore, it seems that older mothers may have lower feelings of control over challenging child behavior. This is somewhat surprising given that older mothers might be expected to possess increased levels of maturity as well as more education and financial resources. However, older mothers may also possess less physical stamina and emotional energy for handling difficult child behavior. They may also have a greater number of competing demands with which to cope. Interestingly, as the results of our longitudinal analyses suggest, as children grow older, parental efficacy beliefs (though not feelings of control over child behavior) may decrease. Perhaps when children enter adolescence and become more independent, parents begin to feel less efficacious about their ability to influence child behavior and development.

In this study we also sought to better understand the direction of the relationship between parental locus of control and child behavior. In examining these relationships longitudinally, we discovered that not only does child externalizing behavior predict a mother's self-reported parental locus of control when evaluated a year later, child externalizing behavior predicts *change* in her parental locus of control. This is particularly noteworthy given that our data also suggest that parental locus of control tends to be quite stable over time in this sample. However, we also discovered that a mother's perceived control over her child's behavior predicts his or her externalizing behavior a year later. As mentioned above, and as reflected in numerous studies, child externalizing symptoms also remain quite stable over time; yet mothers' parental locus of control predicted *change* in externalizing symptoms over the one year follow-up period. This suggests that the relationship between parental locus of control and child externalizing behavior may be bi-directional in nature, with each affecting the other over time.

Several study limitations warrant mentioning. First, one potential limitation involves the fact that child symptoms were based on mother report. Some of the relationships among measures may be a consequence of having mothers report on multiple measures, particularly the outcome measures. For example, it is possible that mothers who have external parental locus of control beliefs tend to rate their children as being more symptomatic. However, this suggestion may be disputed by past findings that parents of children with oppositional and conduct problems, referred by outside providers for treatment, have higher rates of external parental locus of control beliefs (e.g., Roberts et al., 1992; Sanders & Woolley, 2005).

There also remains the question of whether mothers who endorsed high levels of depressive symptoms were more likely to interpret their children's behaviors as negative or maladjusted. Depression is often associated with negative cognitive biases and may lead mothers to have incorrect or distorted views about their children's behavior (the "depression-distortion hypothesis"). However, a review by Richters (1992) determined that children of parents with depression versus those without are more likely to be rated as maladjusted by (non-depressed) spouses, children's peers, and even the children themselves. Findings by Kroes, Veerman, and De Bruyn (2003) suggest that the depression-distortion hypothesis may only hold true for the reporting of child internalizing symptoms, which may

be more ambiguous, and not for externalizing symptoms, which are more readily observable. Regardless, future research should include observational measures of the constructs of interest.

Implications for Research, Policy, and Practice

It is important to recognize that parenting cognitions can significantly affect the way a mother interacts with and disciplines her children, particularly in the face of challenging child behavior. Bugental and colleagues (1975, 1980) found that when interacting with a child exhibiting difficult behavior, women with more external locus of control orientations have more assertive voice quality when making neutral statements than when expressing both positive and negative verbal affect. This is the opposite pattern used by women with internal locus of control orientations, suggesting that challenging child behavior can affect mother-child interaction patterns and that external locus of control orientation may moderate this relationship. Parenting cognitions can also affect the way a mother disciplines her children. Mothers who have low perceived control over and confidence in dealing with difficult child behavior are more likely to be abusive, show high levels of nonabusive coerciveness, and engage in permissive and inconsistent discipline (Bor & Sanders, 2004; Bugental, Blue, and Cruzcosa , 1989; Sanders & Woolley, 2005). Given these findings, understanding and addressing parental locus of control is imperative for strengthening positive and promotive parenting practices and thus helping to protect against negative outcomes in children. Future research might explore other maternal, child, and contextual factors that may impact a mother's feelings about her parenting.

Our findings also have implications in the development of parenting and family interventions. Such programs could be specifically designed to address parental locus of control, and could be tailored to those parents who are experiencing economic hardship, have fewer educational opportunities, are older, and are experiencing depressive symptoms. The development of therapeutic techniques aimed at increasing feelings of control over parenting could help to inspire hope in parents, enhance confidence for managing difficult child behavior, and help motivate parents to persevere in the face of parenting challenges and apply their parenting skills in creative ways. This would not only lead to more successes in parenting but would also provide modeling to children about positive, productive ways to problem solve and overcome challenges. Interventions might also center on structuring opportunities for success in parent-child interactions in an effort to indirectly increase parenting confidence and self-efficacy.

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Table 1

The PLOC Parental Efficacy Subscale

Item	
1	When I set expectations for my child, I am almost certain that I can help him/her meet them. *R*
2	I am often able to predict my child's behavior in situations.*R*
3	When my child gets angry, I can usually deal with him/her if I stay calm.*R*
4	What I do has little effect on my child's behavior.
5	No matter how hard a parent tries, some children will never learn to mind.
6	My child usually ends up getting his/her way, so why try.
7	When something goes wrong between my child and me, there is little I can do to correct it.
8	Parents should address problems with their children because ignoring them won't make them go away.*R*
9	It is not always wise to expect too much from my child because many things turn out to be a matter of good or bad luck anyway.
10	If your child throws tantrums no matter what you try, you might as well give up.

R indicates items reversed for scoring.

Table 2

The PLOC Parental Control of Child's Life Subscale

Item	
1	It is not too difficult to change my child's mind about something.^{R}
2	My child's behavior is sometimes more than I can handle.
3	Sometimes I feel that I do not have enough control over the direction my child's life is taking.
4	I always feel in control when it comes to my child.^{R}
5	Sometimes I feel that my child's behavior is hopeless.
6	It is often easier to let my child have his/her way than to put up with a tantrum.
7	I allow my child to get away with things.
8	I find that sometimes my child can get me to do things I really did not want to do.
9	My child often behaves in a manner very different from the way I would want him/her to behave.
10	Sometimes when I'm tired I let my children do things I normally wouldn't.

^{R}indicates items reversed for scoring.

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Table 3

Descriptive Statistics and Correlations among Variables

		Time 1 Variables (above diagonal)										
Time 1 Variables	***M* (*SD*) or %**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
1. Mother Age (in years)	43.42 (5.90)		.22**	.29**	.21*	.09	.08	.05	.07	−.30**	.10	.03
2. Child Age (in years)	11.16 (1.45)			−.01	−.00	−.07	.09	.15	−.15	−.19*	.05	.14
3. Maternal Education (in years)	15.61 (2.59)				.57**	.31**	−.18*	−.11	.35**	−.09	−.04	−.12
4. Income (0: < Median; 1: ≥ Median)	0 = 48%, 1 = 52%					.49**	−.19*	−.07	.37**	−.08	−.19*	−.12
5. Married/Cohabiting (0: No; 1: Yes)	0 = 28%, 1 = 72%						−.24**	−.06	.22**	.03	−.22**	−.10
6. Maternal BDI Score[a]	1.82 (1.37)							.30**	−.40**	−.43**	.47**	.44**
7. CRIT EE (0: Low, 1: High)	0 = 81%, 1 = 19%								−.22**	−.28**	.19*	.31**
8. PLOC Parental Efficacy Score	44.67 (4.49)	−.04	−.28**	.25**	.26**	.07	−.33**	−.31**	.67**	.45**	−.39**	−.49**
9. PLOC Parental Control Score	37.15 (7.434)	−.17*	−.21*	−.06	−.03	−.01	−.41**	−.32**	.47**	.80**	−.44**	−.61**
10. CBCL Internalizing T-Score	47.59 (10.34)	.01	.07	.01	−.09	−.13	.39**	.17*	−.35**	−.43**	.76**	.64**
11. CBCL Externalizing T-Score	46.75 (10.18)	.01	.13	−.14	−.22**	−.12	.40**	.33**	−.51**	−.61**	.58**	.81**
		Time 2 Variables (below diagonal)										

*p < .05,

**p < .01

[a]transformed variable (square root).

Note. Variables with non-significant correlations with PLOC were omitted.

Table 4

Hierarchical Regression Analyses Predicting T1 PLOC Subscales

Variable	*B*	*SEB*	β	R^2	ΔR^2
Regression 1: Predicting T1 PLOC Parental Efficacy					
Step 1: Sociodemographic Variables				.17	
Family Income	1.76	.80	.20*		
Education	.30	.14	.17*		
Marital Status	−.12	.78	−.01		
Step 2: Family Risk Variables				.38	.21**
T1 Maternal BDI Score[a]	−.49	.26	−.15†		
T1 CRIT EE	−.33	.82	−.03		
T1 CBCL Internalizing T-Score	−.03	.04	−.06		
T1 CBCL Externalizing T- Score	−.15	.04	−.34**		
Regression 2: Predicting T1 PLOC Parental Control					
Step 1: Sociodemographic Variables				.10	
Mother Age	−.32	.08	−.25**		
Child Age	−.21	.33	−.04		
Step 2: Family Risk Variables				.48	.38**
T1 Maternal BDI Score[a]	−.92	.39	−.17*		
T1 CRIT EE	−.92	1.25	−.05		
T1 CBCL Internalizing T-Score	−.01	.06	−.01		
T1 CBCL Externalizing T- Score	−.36	.06	−.50**		

* $p < .05$.

** $p < .01$.

† $p = .06$.

[a] transformed variable (square root).

Note. Step 3 (interaction terms) was omitted due to non-significant results.

Table 5

Hierarchical Regression Analyses Predicting Change in T2 PLOC Parental Efficacy

Variable	*B*	*SEB*	β	R^2	ΔR^2
Step 1: T1 PLOC Parental Efficacy	.56	.09	.50**	.45	
Step 2: Sociodemographic Variables				.49	.04*
Family Income	.42	.77	.04		
Education	.00	.15	.00		
Child Age	−.57	.21	−.16**		
Step 3: T1 Family Risk Variables				.55	.06**
T1 Maternal BDI Score[a]	.12	.27	.03		
T1 CRIT EE	−1.29	.83	−.10		
T1 CBCL Internalizing T-score	−.01	.04	−.02		
T1 CBCL Externalizing T-score	−.12	.04	−.25**		

* p < .05.

** p < .01.

[a] transformed variable (square root).

Note. Step 3 (interaction terms) was omitted due to non-significant results.