Effects of paternal depression on fathers’ parenting behaviors: A meta-analytic review

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A B S T R A C T

One possible mechanism for the familial transmission of depression is through its negative effects on parenting and the parent–child relationship. Although previous research indicates that depression is associated with parenting impairment for mothers, no quantitative synthesis of the empirical literature on the effects of paternal depression on fathers’ parenting has been conducted. The present meta-analysis examined the effects of paternal depression on fathers’ positive and negative parenting behaviors. The mean effect sizes, computed using 40 independent effect sizes derived from 28 published and unpublished studies, indicated that paternal depression has significant, though small, effects on parenting, with depressed fathers demonstrating decreased positive and increased negative parenting behaviors. Several moderating effects were found, including child and father age, and sample race/ethnicity, and effects were comparable for studies that used self-report measures and observational methods to assess fathers’ parenting behaviors. Moreover, effect sizes for the relationship between paternal depression and fathers’ parenting behaviors were comparable to those found for mothers. The present findings indicate that paternal depression has a significant and deleterious effect on parenting behaviors by fathers, and speak to the importance of continuing to include fathers in research on child development and the family environment.

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1. Introduction

Depression is a prevalent psychological disorder associated with substantial and wide-ranging negative effects on individuals’ functioning. Among other important life domains, depression has been found to interfere with both forming and maintaining adaptive interpersonal relationships (see Hirschfeld et al., 2000, for a review). In turn, a considerable body of research indicates that depression, which is commonly experienced during the child-rearing years (Hasin, Goodwin, Stinson, & Grant, 2005), has significant negative implications for the offspring of depressed parents. Parental depression is associated with multiple indicators of poor child outcome, including social and academic impairment, overall poor psychosocial adjustment, and increased risk for the development of psychopathology (e.g., Fergusson & Lynskey, 1993; Klein, Lewinsohn, Rohde, Seeley, & Olin, 2005; Lieb, Ijzendoorn, Hoffer, Pfister, & Wittchen, 2002; Weissman et al., 2006; see Beardslee, Versage, & Gladstone, 1998; Downey & Coyle, 1990; Gunlicks & Weissman, 2008, for reviews). Thus, it is important to understand the mechanisms that may link parental depression and offspring outcomes.

1.1. Epidemiology of depression in adults of parenting age

The National Epidemiologic Survey of Alcohol and Related Conditions (NESARC), a recent epidemiological study that assessed psychological disorders within a large, nationally representative sample (N = 43,093), reported prevalence estimates for current (past 12 months) and lifetime Major Depressive Disorder (MDD) of 5.3% and 13.2%, respectively (Hasin et al., 2005). Twelve-month rates of MDD for adults between the ages of 18 and 45, the age group most likely to be rearing children, ranged from 5.5% to 6.4%. Moreover, although the NESARC and other epidemiological studies of major depression, dysthymia, and subclinical depressive symptoms find that women experience current and lifetime depression diagnoses and symptoms at a rate twice that of men (Blazer, Kessler, McGonagle, & Swartz, 1994; Eaton et al., 1997; Hasin et al., 2005; Kessler et al., 1993; Nolen-Hoeksema, 1987; Weissman, Leaf, Holzer, Myers, & Tischler, 1984), prevalence rates also indicate that sizeable numbers of men experience depression over the course of their lifetimes. The NESARC, for example, reported 12-month and lifetime rates of MDD of 3.6% and 9.0%, respectively, for male participants. Thus, depressive disorders are common during the child-rearing years for men, as well as for women.

1.2. Effects of maternal and paternal depression on child outcomes

Research on the relationship between parental depression and child outcomes has focused predominantly on mothers and their offspring (see Belsky & Barends, 2002; Phares, 1992; Phares, Fields, Kamboulkos, & Lopez, 2005). However, ecological models of child development emphasize that the relationship between parent characteristics and child outcome is not necessarily limited to mothers (Bronfenbrenner, 1986; Cicchetti & Toth, 1997). Consonant with this approach, there is growing recognition that child development is best understood within the context of the larger family environment and the multiple relationships found therein (Lamb, 2004; Parke, 2002; Parke & Buriel, 2006). In general, investigations of parental depression that have included mothers and fathers suggest that both maternal and paternal depression have implications for child outcomes, though the effects of maternal depression may be stronger than those of paternal depression (Connell & Goodman, 2002; Kane & Garber, 2004; Klein et al., 2005; Lewinsohn, Olin, & Klein, 2005; Ramchandani, Stein, Evans, & O’Connor, 2005; Ramchandani et al., 2008; Rohde, Lewinsohn, Klein, & Seeley, 2005).

1.3. Mechanisms of transmission of parental depression

Children of depressed parents are approximately three times more likely to experience a lifetime episode of depression than are children of nondepressed parents (Lieb et al., 2002; Weissman, Warner, Wickramaratne, Moreau, & Olson, 1997). The role of genes in the transmission of depression in families is well documented (see Merikangas et al., 2002; Sullivan, Neale, & Kendler, 2000, for reviews and a meta-analysis). However, depression is not invariably transmitted, and depressive disorders in offspring can also occur in the absence of a parental history of depression (Puig-Antich et al., 1989). This suggests that other modes of transmission may also play a role, including direct effects of environmental mechanisms, and moderation of genetic effects by environmental factors (i.e., gene–environment interactions).

One possible environmental mechanism for the transmission of depression from parent to child is the quality of the parenting that the child receives (e.g., Barry, Kochanska, Philibert, 2008; Caspi et al., 2003; Kaufman et al., 2004, 2006). A large literature exploring the effects of maternal depression on the parent–child relationship has described significant deleterious effects; depression is generally associated with less adaptive parenting behaviors by mothers, including increased hostility, more negative interactions with, and less responsiveness to the child (see Beardslee et al., 1998; Goodman & Gotlib, 1999; Lovejoy, Graczyk, O’Hare, & Neuman, 2000, for reviews and a meta-analysis). In turn, quality of parenting has been found to be related to depression in children and adolescents (see McLeod, Weisz, & Wood, 2007, for a meta-analysis). Thus, aspects of parenting and the parent–child relationship that are negatively affected by mothers’ depression may mediate the familial transmission of mood disorders.

1.4. Paternal depression and parenting behaviors

As noted above, existing research on the association between parental depression and the parent–child relationship has been conducted primarily with mothers. However, in the past several decades, a
smaller, but still informative, body of empirical research on the effects of paternal depression on fathers' parenting behaviors has emerged. These investigations have utilized a variety of methods and measures to assess depression and parenting behaviors within diverse samples, and an association between paternal depression and indices of dysfunctional parenting by fathers has been demonstrated in multiple studies. Importantly, several studies that have included both mothers and fathers suggest comparable effects of maternal and paternal depression on mothers’ and fathers’ parenting behaviors (Cummings, Keller, & Davies, 2005; Eiden & Leonard, 2000; Franck & Buehler, 2007; Leinonen, Solantaus, & Punämaki, 2002; Papp, Cummings, & Goeke-Morey, 2005).

1.5. The present meta-analysis

As described, a qualitative assessment of previous empirical research suggests that paternal depression is associated with parenting impairment. However, it is only through the combination of all relevant data using quantitative methods that the overall magnitude of this effect can be estimated. Although the number of empirical studies conducted to date that have included fathers is small in comparison with those that have included mothers, that number of studies is now sufficient for the quantitative synthesis of findings relating to the relationship between paternal depression and parenting behaviors. Such a meta-analytic approach allows for the examination of whether paternal depression is associated with comparable parenting deficits to those associated with maternal depression, as well as the investigation of potential moderators of this relationship, including characteristics of the sample and the method by which parenting behaviors are assessed. Moreover, given that the existing data regarding effects of depression on mothers’ parenting have been quantitatively summarized in several meta-analytic studies (C. T. Beck, 1995; Lovejoy et al., 2000), it will now be possible to compare the magnitude of effects in studies examining fathers with those previously demonstrated in studies of mothers, as well to make direct comparisons of effect sizes for mothers and fathers from studies that included both parents.

1.5.1. Paternal parenting behaviors

Previous research on parenting by depressed mothers and fathers has examined multiple aspects of adaptive and maladaptive parenting, including, for example, expressions of positive and negative emotions, warmth, hostility, sensitivity, intrusiveness, responsiveness, and disengagement. Although the specific aspects of parenting that have been assessed are diverse, they can typically be classified within the two broad categories of positive and negative parenting behaviors. This is consistent with theoretical models of parenting impairment associated with depression, which note the absence of positive (e.g., warmth) and presence of negative (e.g., criticism) parenting behaviors (Chioriello & Orvaschel, 1995; Kaslow, Deering, & Racusin, 1994). As noted by Lovejoy et al. (2000), conceptualizing parenting impairment related to depression using these two parenting dimensions is consistent with current understanding of depressive disorders as defined by two orthogonal dimensions of mood, low positive affect and high negative affect (Brown, Chorpita, & Barlow, 1998; Clark & Watson, 1991).

1.5.2. Sample characteristics

The samples included in investigations of the association between paternal depression and parenting behaviors have varied considerably. Therefore, we examined whether several sample characteristics moderated the effects of paternal depression on fathers’ parenting, including child and father age, child gender, and sample race/ethnicity. Child age might moderate the relationship between paternal depression and parenting behaviors as a result of changing child needs at different stages of child development. For example, the high demands of infants, toddlers, and preschool-aged children might be particularly taxing for depressed fathers, resulting in greater effect sizes for depressed fathers parenting very young children. In contrast, bidirectional influences of parent and child on one another might exacerbate dysfunctional interactions over time, so that effect sizes for depressed fathers are greatest by the time children are in adolescence. Father age may be positively related to increasing parenting experience and skill, which may buffer the effects of depression for older fathers. Child gender has been shown to moderate the effects of parental depression on child outcome (e.g., Cummings & Davies, 1994; Goodman & Gotlib, 1999), so child gender was also explored as a potential moderator of the relationship between paternal depression and fathers’ parenting behaviors. Finally, although the majority of studies investigating the effects of parental depression on parenting behaviors has been conducted with primarily Caucasian samples, given that some studies have found different effects for particular parenting constructs depending on sample race or ethnicity (e.g., authoritarian parenting; Peterson, Steinmetz, & Wilson, 2004), sample race/ethnicity was included as a potential moderator.

1.5.3. Methodological characteristics

The methods by which the parenting of depressed fathers has been measured have varied, with many studies assessing parenting using self-report measures and fewer utilizing observational measures of father–child interactions. The present meta-analysis examined whether effect sizes vary as a function of the assessment approach used. Although rich observational data can be coded from even brief parent–child interactions, such coding is often both time- and labor-intensive. From a practical perspective, if effect sizes for parenting behaviors assessed using self-report measures are comparable to those assessed using observational methods, researchers might opt to use self-report, which is generally more feasible and time-effective. In addition, examination of whether the relationship between paternal depression and parenting behaviors is moderated by specific aspects of the observational assessment, such as the location of the observation (i.e., in the family home or at a research laboratory), the type of observational task used (i.e., structured or unstructured), or the length of the observation, will provide important information for optimizing observational assessment batteries. From a theoretical perspective, comparison of effect sizes derived for self-reported and observationally assessed parenting behaviors provides one means to examine whether there is a bias in fathers’ self-reports of their parenting behaviors arising from social desirability factors (Paulhus, 1991) or overly negative reporting due to a depression–distortion bias (see Richters, 1992).

2. Method

2.1. Literature search

Studies were obtained using multiple methods, including (1) computer searches on PsycINFO and ProQuest Dissertations and Theses for relevant empirical studies, review articles, and meta-analyses; (2) examination of reference lists in the empirical studies reviewed for possible inclusion in the meta-analysis, as well as relevant review articles and meta-analyses; (3) personal communication with authors of relevant studies, inquiring as to any additional studies or unpublished data or dissertations.

Keywords used in the computer searches for empirical studies included combinations of the following search terms: depress*, dysthym*, affective disorder, negative affect, or mood disorder and parenting, father, paternal, parent–or father–child (or -infant, or -adolescent) interaction, parent– or father–child (or -infant, or -adolescent) relat*, parent– or father–child (or -infant, or -adolescent) interaction, respons*, or sensitiv*. Keywords used in the computer searches for review articles and meta-analyses included combinations of the following search terms: depress*, dysthym*, affective disorder, negative affect, or mood disorder and parent*, father, or paternal and review or meta*.
These search methods resulted in the identification of over 100 published and unpublished empirical studies that appeared, upon preliminary examination, to assess both paternal depression and parenting behaviors by fathers. These studies were then examined for additional inclusion and exclusion criteria.

2.2. Study selection criteria

Abstracts for studies identified using the literature search delineated above were examined for potential inclusion in the meta-analysis. Inclusion criteria included: (1) assessment of self-reported or interviewer-assessed paternal depressive symptoms or diagnoses; (2) assessment of father-reported or observationally assessed parenting behaviors; and (3) provision of sufficient information to allow for the computation of effect sizes (e.g., correlation coefficients for the association between paternal depression and parenting behaviors by fathers).

Exclusion criteria included: (1) studies that reported effect sizes calculated using (a) measures of general psychopathology, combined measures of depression and anxiety, or general negative mood (as opposed to measures that specifically assessed depressive symptoms or diagnoses, or dysphoric mood); (b) combined parental depressive symptoms or diagnoses for mothers and fathers (as opposed to separately for paternal and maternal depression); (c) combined assessment of parenting behaviors by both mothers and fathers (as opposed to separate assessment of parenting for fathers and mothers); (d) mother- or child-reported paternal depressive symptoms or diagnoses (as opposed to father-reported or interviewer-assessed symptoms or diagnoses); (e) mother- or child-reported parenting behaviors by fathers (as opposed to father-reported or observationally assessed parenting behaviors); (2) provision of insufficient information to compute effect sizes (e.g., beta weights from multiple regression analyses, as opposed to correlation coefficients).

2.3. Study coding

2.3.1. Procedures and variables coded

Twenty-eight studies met the aforementioned criteria and were selected for inclusion in the meta-analysis (see Table 1 for a list of included studies). These studies were coded for multiple variables, including descriptive study and sample characteristics, methodological information, and information about the parenting behavior assessed. Both authors separately coded all studies following established coding guidelines (e.g., Cooper & Hedges, 1994; Lipsey & Wilson, 2001), and discrepant codes were reviewed and agreed upon by consensus (intrarater reliability coefficients for the first coding pass are provided below).

2.3.2. Study information

Descriptive study information included the study citation (author names, year); study publication status (published or unpublished); and, if a published study, in which journal.

2.3.3. Sample information

Descriptive sample information included the sample size; the mean age of the children and fathers in the sample; child gender (i.e., percent female); the race/ethnicity of the sample (i.e., percent Caucasian); the depression measure(s) used to assess paternal depression; how depression was assessed (symptoms or diagnosis); the timing of depressive symptoms or diagnosis (current or lifetime); and reliability coefficients (i.e., alpha, intraclass correlation coefficient, kappa) for the depression measure used.

2.3.4. Methodological information

Methodological information included the method by which parenting behaviors were assessed (self-report or observational); if self-report, the specific parenting measure(s) used and reliability coefficients (i.e., alpha) for the scale; if observational, the type of task used (structured or unstructured), a description of the specific task used (e.g., free play, verbal interaction), the location of the observational assessment (laboratory or home), the length of the task in minutes, a description of the coding system used to rate parenting behaviors (e.g., Iowa Family Rating Scales; Melby et al., 1991), and reliability coefficients (i.e., Pearson's r, intraclass correlation coefficient, kappa) for the observational ratings.

2.3.5. Parenting behaviors

Information about the parenting behavior assessed included a description of the parenting behavior measured (e.g., warmth, hostility), as well as the category of parenting behavior (positive or negative).

2.4. Outcome variables

2.4.1. Parenting behaviors

Paternal parenting variables assessed in each study were classified into positive or negative behaviors (see Table 2 for a description of parenting behaviors assessed by each study included in the meta-analysis). Parenting behaviors were classified as “positive” if they involved, for example, warm, affectionate, sensitive, engaged, positive, accepting, and supportive behaviors and/or interactions; parenting behaviors were classified as “negative” if they involved, for example, hostile, coercive, intrusive, restrictive, controlling, negative, critical, and dysfunctional behaviors and/or interactions. Twelve (43%) of the included studies assessed both positive and negative parenting behaviors, 9 (32%) assessed only positive parenting behaviors, and 7 (25%) assessed only negative parenting behaviors ($\kappa = 1.00$).

2.5. Moderator variables

2.5.1. Descriptive study information

Twenty-two (79%) of the included studies were published and 6 (21%) were unpublished ($\kappa = 1.00$).

2.5.2. Descriptive sample information

All 28 (100%) of the included studies provided the sample size ($\kappa = 1.00$); 28 (100%) provided the mean child age (or information from which child age could be estimated, such as grade in school) ($\kappa = .86$); 18 (64%) provided the mean age for fathers ($\kappa = 1.00$); 22 (79%) provided child gender ($\kappa = .91$); and 21 (75%) provided the race/ethnicity of the sample ($\kappa = 1.00$).

The self-report measures used to assess depressive symptoms varied ($\kappa = 1.00$). Twenty-three (82%) of the included studies assessed paternal depression using a single depression measure (e.g., Beck Depression Inventory [BDI]; A. T. Beck, Steer & Brown, 1996; A. T. Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), Center for Epidemiological Studies Depression Scale [CES-D; Radloff, 1977], Edinburgh Postnatal Depression Scale [EPDS; Cox, Holden, & Sagovsky, 1987], General Health Questionnaire [GHQ; Goldberg, 1972], Lubin Checklist [Lubin, 1963], Minnesota Multiphasic Personality Inventory Scale 2 [MMPI; Hathaway & McKinley, 1983], Symptom Checklist-90-Revised, Depression subscale [SCL-90-R; Derogatis, 1983, 1994]). Five (18%) studies used multiple depression measures (e.g., the BDI and the CES-D); the effect sizes estimated for these studies were averaged across the multiple depression measures. All 28 (100%) studies assessed depressive symptoms (as opposed to diagnoses) ($\kappa = 1.00$) and all symptoms assessed were current (as opposed to lifetime) ($\kappa = 1.00$). Fifteen (54%) studies reported reliability coefficients for the depression measure used ($\kappa = .82$).

2.5.3. Methodological information

Fourteen (50%) of the included studies assessed parenting behaviors using self-report methods, 9 (32%) used observational
methods, and 5 (18%) used both self-report and observational methods ($k=0.93$). The effect size estimated for studies that used both self-report and observational methods were averaged across both types of assessment for overall effect sizes, but calculated separately when examining the potential moderating effect of type of assessment. The self-report measures used within studies that assessed parenting behaviors using father report varied widely ($r=1.00$), corrected for attenuation; BDI = Beck Depression Inventory; CES-D = Center for Epidemiologic Studies Depression Scale; EPDS = Edinburgh Postnatal Depression Scale; GHQ = General Health Questionnaire; Lubin = Lubin Checklist; MMPI Dep = Minnesota Multiphasic Personality Inventory Scale 2; SCL-90-D = Symptom Checklist-90 Revised, Depression subscale; APQ = Alabama Parenting Questionnaire; CRPR = Child Rearing Practices Report; CRPS = Child Rearing Practices Scale; FIAI = Father–Infant Attachment Inventory; IPPA = Inventory of Parent and Peer Attachment; IS = Involvement Scale; PACR = Parental Attitudes toward Child Rearing; PARQ = Parental Acceptance–Rejection Questionnaire; PBI = Parental Behavior Inventory; PSI = Parenting Dimensions Inventory; PS = Parenting Scale; PSI = Parental Stress Index; SPMS = Small Parental Monitoring Scale; SPS = Supportive Parenting Scale.

### Note
- Pub = published; Y = yes; N = no; $N =$ total sample size; Parent behav = parenting behavior assessed; Pos = positive parenting; Neg = negative parenting; Assess = type of assessment; Self = self-report; Obs = observation; Loc = location of assessment; $S =$ structured; $U =$ unstructured; ES = reported or estimated effect size ($r$), corrected for attenuation; BDI = Beck Depression Inventory; CES-D = Center for Epidemiologic Studies Depression Scale; EPDS = Edinburgh Postnatal Depression Scale; GHQ = General Health Questionnaire; Lubin = Lubin Checklist; MMPI Dep = Minnesota Multiphasic Personality Inventory Scale 2; SCL-90-D = Symptom Checklist-90 Revised, Depression subscale; APQ = Alabama Parenting Questionnaire; CRPR = Child Rearing Practices Report; CRPS = Child Rearing Practices Scale; FIAI = Father–Infant Attachment Inventory; IPPA = Inventory of Parent and Peer Attachment; IS = Involvement Scale; PACR = Parental Attitudes toward Child Rearing; PARQ = Parental Acceptance–Rejection Questionnaire; PBI = Parental Behavior Inventory; PSI = Parenting Dimensions Inventory; PS = Parenting Scale; PSI = Parental Stress Index; SPMS = Small Parental Monitoring Scale; SPS = Supportive Parenting Scale.

### Table 1
<table>
<thead>
<tr>
<th>Pub</th>
<th>N</th>
<th>Child age$^a$</th>
<th>Father age$^b$</th>
<th>Child gender$^c$</th>
<th>Sample race$^d$</th>
<th>Depression measure</th>
<th>Parent behav</th>
<th>Assess</th>
<th>Self-report measure</th>
<th>Observation</th>
<th>Task</th>
<th>Length$^e$</th>
<th>ES</th>
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<tr>
<td>Conger, Ge, Elder, and Simons (1994)</td>
<td>Y</td>
<td>378</td>
<td>151.20</td>
<td>40.01</td>
<td>52</td>
<td>100</td>
<td>SCL-90-D</td>
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<td>Obs</td>
<td>–</td>
<td>Home</td>
<td>S</td>
<td>50</td>
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<td>91</td>
<td>CES-D/</td>
<td>Neg</td>
<td>Self</td>
<td>Items</td>
<td>–</td>
<td>–</td>
<td>–</td>
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<td>235</td>
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<td>36.80</td>
<td>55</td>
<td>77</td>
<td>CES-D</td>
<td>Neg</td>
<td>Self</td>
<td>Items</td>
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<tr>
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<td>72</td>
<td>30.00</td>
<td>34.00</td>
<td>54</td>
<td>100</td>
<td>CES-D</td>
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<td>Self</td>
<td>CRPR</td>
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<td>262</td>
<td>126.84</td>
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<td>86</td>
<td>CES-D/</td>
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<td>PBI</td>
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<td>–</td>
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<td>227</td>
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<td>87</td>
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<td>–</td>
<td>Lab</td>
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<td>97</td>
<td>CES-D/</td>
<td>Neg</td>
<td>Obs</td>
<td>–</td>
<td>Lab</td>
<td>S</td>
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<td>100</td>
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<td>–</td>
<td>Lab</td>
<td>S</td>
<td>.32</td>
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<td>144.00</td>
<td>51</td>
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<td>Pos</td>
<td>Obs</td>
<td>–</td>
<td>Home</td>
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<td>93</td>
<td>CES-D</td>
<td>Pos</td>
<td>Obs</td>
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<td>Home</td>
<td>S</td>
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<td>53</td>
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<td>Self</td>
<td>FIAI</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
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<tr>
<td>Jacob and Johnson (1997)</td>
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<td>164.52</td>
<td>41.86</td>
<td>BDI/</td>
<td>Pos</td>
<td>Obs</td>
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<td>S</td>
<td>15</td>
<td>.15</td>
</tr>
<tr>
<td>Kovacs (2003)</td>
<td>N</td>
<td>72</td>
<td>120.84</td>
<td>55</td>
<td>82</td>
<td>CES-D</td>
<td>Neg</td>
<td>Obs</td>
<td>–</td>
<td>Lab</td>
<td>S</td>
<td>10</td>
<td>–0.10</td>
</tr>
<tr>
<td>Lundy (2002)</td>
<td>Y</td>
<td>15</td>
<td>6.30</td>
<td>31.13</td>
<td>100</td>
<td>CES-D</td>
<td>Pos</td>
<td>Obs</td>
<td>–</td>
<td>Lab</td>
<td>U</td>
<td>6</td>
<td>–0.28</td>
</tr>
<tr>
<td>MacMartin (1997)</td>
<td>N</td>
<td>100</td>
<td>36.00</td>
<td>BDI</td>
<td>Neg</td>
<td>Obs</td>
<td>–</td>
<td>Home</td>
<td>S</td>
<td>60</td>
<td>–0.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>McElwain and VOLLing (1999)</td>
<td>Y</td>
<td>62</td>
<td>12.00</td>
<td>35.50</td>
<td>50</td>
<td>93</td>
<td>BDI</td>
<td>Neg</td>
<td>Obs</td>
<td>–</td>
<td>Lab</td>
<td>S</td>
<td>15</td>
</tr>
<tr>
<td>McKee (2002)</td>
<td>N</td>
<td>27</td>
<td>86.64</td>
<td>38.44</td>
<td>8</td>
<td>BDI</td>
<td>Pos</td>
<td>Obs</td>
<td>–</td>
<td>Home</td>
<td>U</td>
<td>60</td>
<td>.24</td>
</tr>
<tr>
<td>Mezulis, Hyde, and Clark (2004)</td>
<td>Y</td>
<td>350</td>
<td>60.00</td>
<td>52</td>
<td>93</td>
<td>CES-D</td>
<td>Pos</td>
<td>Self</td>
<td>CRPR</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.46</td>
</tr>
<tr>
<td>Onatsu-Arvaloim, Nurmi, and Aunola (1998)</td>
<td>Y</td>
<td>54</td>
<td>78.00</td>
<td>42</td>
<td>BDI</td>
<td>Neg</td>
<td>Obs</td>
<td>–</td>
<td>Lab</td>
<td>U</td>
<td>11</td>
<td>–0.14</td>
<td></td>
</tr>
<tr>
<td>Papp, Cummings, and Goeke-Morey (2005)</td>
<td>Y</td>
<td>277</td>
<td>132.00</td>
<td>49</td>
<td>84</td>
<td>SCL-90-D</td>
<td>Pos</td>
<td>Self</td>
<td>PBI</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Roggman, Boyce, Cook, and Cook (2002)</td>
<td>Y</td>
<td>59</td>
<td>10.00</td>
<td>25.30</td>
<td>78</td>
<td>CES-D</td>
<td>Pos</td>
<td>Obs</td>
<td>–</td>
<td>Home</td>
<td>U</td>
<td>–0.37</td>
<td></td>
</tr>
<tr>
<td>Siantz and Smith (1994)</td>
<td>Y</td>
<td>56</td>
<td>63.89</td>
<td>34.51</td>
<td>40</td>
<td>0</td>
<td>CES-D</td>
<td>Neg</td>
<td>Self</td>
<td>PARQ</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Simons, Lorenz, Conger and Wu (1992)</td>
<td>Y</td>
<td>451</td>
<td>144.00</td>
<td>100</td>
<td>SCL-90-D</td>
<td>Neg</td>
<td>Obs</td>
<td>–</td>
<td>Home</td>
<td>S</td>
<td>–0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Webster-Stratton (1988)</td>
<td>Y</td>
<td>85</td>
<td>52.00</td>
<td>32</td>
<td>98</td>
<td>BDI</td>
<td>Neg</td>
<td>Obs</td>
<td>–</td>
<td>Home</td>
<td>S</td>
<td>30</td>
<td>.01</td>
</tr>
</tbody>
</table>

---

$^a$ Child age in months.

$^b$ Father age in years.

$^c$ Percent female.

$^d$ Percent Caucasian.

$^e$ Length in minutes.
The laboratory and 9 (64%) were conducted in participants’ homes. Unstructured tasks (Observational methods, 8 (57%) used structured tasks and 6 (43%) used unstructured tasks). Fourteen (74%) of the studies that used self-report methods reported reliability coefficients for the parenting measure used. Ten (71%) of the studies that used observational methods provided information on the length of tasks (κ = .20), and 11 (79%) reported reliability coefficients for the coding system used to assess parenting behaviors (κ = .85).

### Table 2

Description of paternal parenting behaviors.

<table>
<thead>
<tr>
<th>Study</th>
<th>Positive parenting behaviors</th>
<th>Negative parenting behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conger, Ge, Elder, Lorenz, and Simons (1994)</td>
<td>Self-reported emotional availability (warmth, affection, positive parenting)</td>
<td>Self-reported hostility</td>
</tr>
<tr>
<td>Conger, Patterson, and Ge (1995)</td>
<td>Self-reported nurturance</td>
<td>Observationally assessed hostility</td>
</tr>
<tr>
<td>Cummings, Keller, and Davies (2005)</td>
<td>Self-reported acceptance, psychological autonomy, firm control</td>
<td>Self-reported poor discipline practices</td>
</tr>
<tr>
<td>Devall (1990)</td>
<td>Observationally assessed sensitivity, warmth</td>
<td>Observationally assessed aversiveness, poor discipline practices</td>
</tr>
<tr>
<td>Du Rocher Schudlich and Cummings (2007)</td>
<td>Observationally assessed emotional support, technical support</td>
<td>Self-reported psychological control (intrusiveness, control through guilt, instilling persistent anxiety)</td>
</tr>
<tr>
<td>Eiden and Leonard (2000)</td>
<td>Self-reported acceptance, involvement, monitoring</td>
<td>Observationally assessed negative affect</td>
</tr>
<tr>
<td>Feinberg and Kan (2008)</td>
<td>Observationally assessed engagement (acceptance, attachment, involvement, monitoring)</td>
<td>Self-reported aggression</td>
</tr>
<tr>
<td>Formoso (2002)</td>
<td>Observationally assessed supportive parenting</td>
<td>Observationally assessed rejection and invalidation, coerciveness and control, withdrawal</td>
</tr>
<tr>
<td>Franck and Buehler (2007)</td>
<td>Observationally assessed warmth</td>
<td>Observationally assessed coercive behaviors</td>
</tr>
<tr>
<td>Gartstein and Fagot (2003)</td>
<td>Observationally assessed cognitive guidance/instructional behaviors</td>
<td>Observationally assessed negative discipline</td>
</tr>
<tr>
<td>Hjelmstedt and Collins (2008)</td>
<td>Self-reported acceptance, involvement</td>
<td>Self-reported intrusiveness, inconsistent discipline</td>
</tr>
<tr>
<td>Jacob and Johnson (1997)</td>
<td>Observationally assessed warmth, involvement</td>
<td>Observationally assessed harshness, negative involvement, hostility</td>
</tr>
<tr>
<td>Kashdan et al. (2004)</td>
<td>Observationally assessed engagement</td>
<td>Self-reported punitive parenting, noninvolved parenting</td>
</tr>
<tr>
<td>Kovacs (2003)</td>
<td>Observationally assessed warmth, positive involvement</td>
<td></td>
</tr>
<tr>
<td>Leinonen, Solantaus and Punamaki (2002)</td>
<td>Observationally assessed socialization with the child</td>
<td></td>
</tr>
<tr>
<td>Lundy (2002)</td>
<td>Observationally assessed warmth, positive affection</td>
<td></td>
</tr>
<tr>
<td>MacMartin (1997)</td>
<td>Observationally assessed engagement (acceptance, attachment, involvement, monitoring)</td>
<td></td>
</tr>
<tr>
<td>McElwain and Volling (1999)</td>
<td>Observationally assessed warmth, positive affection</td>
<td></td>
</tr>
<tr>
<td>Meeul, Hyde, and Clark (2004)</td>
<td>Observationally assessed positive affection</td>
<td></td>
</tr>
<tr>
<td>Onatsu-Ariolommi, Nurmi, and Aunola (1998)</td>
<td>Observationally assessed warmth, involvement</td>
<td></td>
</tr>
<tr>
<td>Papp, Cummings, and Goike-Morey (2005)</td>
<td>Observationally assessed engagement</td>
<td></td>
</tr>
<tr>
<td>Rogman, Boyce, Cook, and Cook (2002)</td>
<td>Observationally assessed psychological autonomy, firm control</td>
<td></td>
</tr>
<tr>
<td>Siantz and Smith (1994)</td>
<td>Observationally assessed engagement</td>
<td></td>
</tr>
<tr>
<td>Simons, Lorenz, Conger and Wu (1992)</td>
<td>Self-reported acceptance, involvement</td>
<td></td>
</tr>
<tr>
<td>Webster-Stratton (1988)</td>
<td>Observationally assessed supportive parenting</td>
<td></td>
</tr>
</tbody>
</table>

2.6. **Effect size calculation**

Effect sizes were derived from each study using the correlation coefficients provided or were calculated from the statistics provided (e.g., independent samples t tests). Each study included in the present meta-analysis yielded at least one effect size for the effects of paternal depression on fathers’ parenting (κ = 1.00). In addition, when provided, effect sizes for the effects of maternal depression on mothers’ parenting were also coded (κ = 1.00), for use in separate analyses in order to provide a direct comparison with the magnitude of effects for fathers. Each effect size was corrected for attenuation due to measurement unreliability (i.e., unreliability in the depression or parenting measure) when the appropriate reliability coefficients were provided (Hunter & Schmidt, 1990, 1994). Many of the included studies reported multiple effect sizes for one type of parenting behavior (e.g., correlation coefficients for associations between paternal depressive symptoms and fathers’ warmth and acceptance). In such instances, the multiple effect sizes for each type of parenting behavior were averaged, resulting in one effect size for each type of parenting behavior (positive or negative) per study. Each effect size was transformed using Fisher’s Z-transform (Hedges & Olkin, 1985) to a standard effect size statistic, r.
2.7. Data analysis

Mean effect sizes were calculated for both positive and negative parenting behaviors by weighting each individual effect size by the inverse of its variance (Lipsey & Wilson, 2001). A mixed effects model was used to fit the effect size data. The mixed effect model assumes that effect size variance can be explained by both systematic and random components. That is, even after accounting for the systematic effects of between-study variables, an unmeasured random effect in the effect size distribution, in addition to sampling error, is assumed present when using a mixed effects model (Lipsey & Wilson, 2001).

Homogeneity analyses were conducted to assess whether the amount of variability among effect sizes exceeded that expected by chance. Follow-up moderator analyses were conducted when homogeneity analyses indicated significant heterogeneity among effect sizes. Moderator analyses for categorical variables, which followed the analog to the Analysis of Variance (Lipsey & Wilson, 2001), examined whether a significant amount of variability in the relationship between paternal depression and parenting behaviors could be explained by the categorical moderating variables (publication status, type of parenting behavior assessment, type of observational task, location of observational assessment). Meta-regression analyses (Lipsey & Wilson, 2001) were conducted to examine whether a significant amount of variability could be explained by the continuous moderating variables (child age, father age, child gender [i.e., percent female], sample race/ethnicity [i.e., percent Caucasian], and length of observational assessment).

Finally, potential bias due to the underrepresentation of studies with small samples (and subsequently lower power to detect significant results) was investigated by examining a funnel-plot for the expected shape of the scatter (Light & Pillmer, 1984). This approach assumes that if all relevant studies were included in a meta-analysis, a scatterplot of the effect sizes would be dispersed symmetrically on either side of the overall effect. The funnel-plot is used to examine whether effect sizes are dispersed asymmetrically, with the missing studies assumed to be those that report small effects. When there was evidence of asymmetry, Duval and Tweedie’s (2000) trim and fill was used to impute any missing studies to the analyses, and to then recompute the combined effect.

3. Results

Forty independent effect sizes for the relationship between paternal depression and fathers’ parenting behaviors, derived from 28 studies and including 21 effect sizes for positive parenting behaviors and 19 for negative parenting behaviors, were included in the following analyses.

3.1. Fathers’ positive parenting behaviors

3.1.1. Mean effect size

The weighted mean effect size, averaged over 21 independent effect sizes, for the relationship between paternal depression and positive parenting was significantly different from zero, $r = -0.19$, $p < 0.001$ (see Table 3). This represents a small effect (Cohen, 1988), and indicates that paternal depression is associated with a significant decrease in positive parenting.

A stem-and-leaf display of the reported and estimated effect sizes for the relationship between paternal depression and fathers’ positive parenting behaviors (corrected for attenuation) is presented in Table 4. The effect sizes ranged from $-0.37$ to $0.11$, with $20$ (95%) in the expected direction (i.e., paternal depression was associated with less positive parenting), and $1$ (5%) in the direction opposite theoretical expectations (i.e., paternal depression was associated with more positive parenting).

3.1.2. Moderator analyses

Homogeneity analyses indicated that the set of effect sizes for positive parenting was significantly heterogeneous, $Q_{H} = 42.02$, $p < 0.01$, which indicated that additional analyses examining the effects of potential moderators on the relationship between paternal depression and positive parenting behaviors were warranted. Moderator analyses for the relationship between paternal depression and positive parenting behaviors are presented in Table 5. Interpretation of these analyses should be made with caution, given that a modest number of effect sizes were examined in each analysis.

No significant moderating effects were found for publication status, $Q_{H} (1) = 1.85$, $p = .17$, type of assessment, $Q_{H} (1) = 1.52$, $p = .22$, child age, $Q_{H} (1) = 1.5$, $p = .70$, father age, $Q_{H} (1) = 1.11$, $p = .29$, child gender, $Q_{H} (1) = .91$, $p = .34$, or sample race/ethnicity, $Q_{H} (1) = 2.40$, $p = .12$.

Examination of the within-group heterogeneity statistics indicated that a significant amount of variability among effect sizes remained in published studies, $Q_{W} (1) = 60.4$, $p < 0.001$, and studies that assessed parenting behaviors observationally, $Q_{W} (9) = 31.10$, $p < 0.001$. However, given the small number of effect sizes, only a priori moderator analyses that had been planned for theoretical reasons were conducted. The a priori moderator analyses for the relationship between paternal depression and positive parenting behaviors among the 10 studies that assessed parenting behaviors observationally are presented in Table 6. A significant moderating effect of the length of the observational assessment was found, $Q_{H} (1) = 4.18$, $p < 0.05$ (see Fig. 1), such that the effect of paternal depression on fathers’ positive parenting was greater (i.e., less positive parenting) the longer the assessment; examination of the sum-of-squares residual indicated that a significant amount of variability remained in the model, $Q_{W} (5) = 13.68$, $p < 0.05$. Although examination of Fig. 1 suggested that this effect was driven by a single study with an extended assessment time (Mckee, 2002), the effect remained, even after excluding this study, $Q_{H} (1) = 14.27$, $p < 0.001$ (see Fig. 2); the amount of variability remaining in the model was not significant, $Q_{W} (4) = 3.32$, $p = .51$. No significant moderating effects were found for location of assessment, $Q_{H} (1) = 0.14$, $p = .71$, or observational task, $Q_{H} (1) = 1.18$, $p = .28$. Although the difference in the effect sizes for positive parenting behaviors assessed using structured and unstructured tasks did not reach significance, the magnitude of the difference between effects was substantial (for structured tasks, $r = -0.11$, $p = .10$, and for unstructured tasks, $r = -0.24$, $p < .01$). Given that only a small number of effect sizes were examined in each moderator analysis, and that

<table>
<thead>
<tr>
<th>Parenting behavior</th>
<th>Fathers</th>
<th>Mothers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$k$</td>
<td>ES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lower</td>
</tr>
<tr>
<td>Positive parenting</td>
<td>21</td>
<td>$-0.19^{***}$</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>$-0.20^{***}$</td>
</tr>
<tr>
<td>Negative parenting</td>
<td>19</td>
<td>$0.16^{***}$</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>$0.22^{***}$</td>
</tr>
</tbody>
</table>

Note. $k =$ number of studies; ES = effect size calculated using Fisher’s $Z$ transformation, corrected for measurement unreliability; CI = confidence interval; $Q_{H} =$ total heterogeneity.

$**$ $p < 0.01$.

$***$ $p < 0.001$. 

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moderator analyses in meta-analyses are less powerful than those examining main effects (Hedges & Pigott, 2004), it is possible that there was not enough power to detect a significant difference in effect sizes from observational assessments using structured versus unstructured tasks.

Finally, examination of the within-group heterogeneity statistics for studies that assessed positive parenting behaviors observationally indicated that a significant amount of variability among effect sizes remained in observational assessments conducted in participants’ homes, $Q_w(5) = 28.44, p < .001$, and using structured tasks, $Q_w(5) = 26.36, p < .001$. However, given the small number of effect sizes for these sets of studies, no further moderating analyses were conducted.

### 3.2. Fathers’ negative parenting behaviors

#### 3.2.1. Mean effect size

The weighted mean effect size, averaged over 19 independent effect sizes, for the association between paternal depression and negative parenting was significantly different from zero, $r = .16$, $p < .001$ (see Table 3). This represents a small effect (Cohen, 1988), and indicates that paternal depression is associated with a significant increase in negative parenting.

A stem-and-leaf display of the reported and estimated effect sizes for the relationship between paternal depression and fathers’ negative parenting behaviors (corrected for attenuation) is presented in Table 4. The effect sizes ranged from $-.24$ to $.52$, with 16 ($84\%$) in the expected direction (i.e., paternal depression was associated with more negative parenting), and 3 ($16\%$) in the direction opposite theoretical expectations (i.e., paternal depression was associated with less negative parenting). Notably, the one study that reported a moderate effect in the direction opposite expectations (McElwain & Volling, 1999) assessed the effects of paternal depression on observed intrusiveness of fathers with their infants; it is possible that low intrusiveness reflects a somewhat different parenting dimension of disengagement, rather than less negative parenting, per se.

### Table 4

Stem-and-leaf plot for reported and estimated effect sizes ($r$) for fathers’ positive and negative parenting behaviors.

<table>
<thead>
<tr>
<th>Variable and group</th>
<th>Positive parenting</th>
<th>Negative parenting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$Q_k$ $k$ ES 95% CI</td>
<td>$Q_w$ $k$ ES 95% CI</td>
</tr>
<tr>
<td>Publication status</td>
<td>1.85</td>
<td>.75</td>
</tr>
<tr>
<td>Published</td>
<td>16 $-1.7^{<em><strong>}$ 23 $-.11$ 40.64$^{</strong></em>}$</td>
<td>15 $1.4^{<strong>}$ .06 23 65.98$^{</strong>*}$</td>
</tr>
<tr>
<td>Unpublished</td>
<td>5 $-2.5^{***}$ 37 $-.12$ 2.88</td>
<td>4 $2.3^{**}$ .05 41 3.99</td>
</tr>
<tr>
<td>Type of assessment</td>
<td>1.52</td>
<td>8.90$^{**}$</td>
</tr>
<tr>
<td>Observational</td>
<td>10 $-1.4^{<strong>}$ 23 $-.06$ 31.10$^{</strong>*}$</td>
<td>10 $1.0^{<strong>}$ .05 .15 21.06$^{</strong>}$</td>
</tr>
<tr>
<td>Self-report</td>
<td>12 $-2.4^{***}$ 28 $-.14$ 13.94</td>
<td>13 $2.5^{<em><strong>}$ .17 .33 46.10$^{</strong></em>}$</td>
</tr>
</tbody>
</table>

Note: $Q_k =$ between-groups heterogeneity; $k =$ number of studies; ES = effect size calculated using Fisher’s $Z$, transformation, corrected for measurement unreliability; CI = confidence interval; $Q_w =$ within-group heterogeneity; $b =$ unstandardized regression coefficient.

### Table 5

Variables potentially moderating the association between paternal depression and fathers’ positive and negative parenting behaviors.

<table>
<thead>
<tr>
<th>Variable and group</th>
<th>Positive parenting</th>
<th>Negative parenting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$Q_k$ $k$ ES 95% CI</td>
<td>$Q_w$ $k$ ES 95% CI</td>
</tr>
<tr>
<td>Child age</td>
<td>$.00$</td>
<td>-.00$^a$</td>
</tr>
<tr>
<td>Father age</td>
<td>$.01$</td>
<td>-.00$^a$</td>
</tr>
<tr>
<td>Percent female children</td>
<td>$.00$</td>
<td>-.00$^a$</td>
</tr>
<tr>
<td>Percent Caucasian</td>
<td>$.00$</td>
<td>-.00$^a$</td>
</tr>
</tbody>
</table>

Note: $Q_k =$ between-groups heterogeneity; $k =$ number of studies; ES = effect size calculated using Fisher’s $Z$, transformation, corrected for measurement unreliability; CI = confidence interval; $Q_w =$ within-group heterogeneity; $b =$ unstandardized regression coefficient.

### Table 6

Variables potentially moderating the association between paternal depression and fathers’ positive and negative parenting behaviors assessed observationally.

<table>
<thead>
<tr>
<th>Variable and group</th>
<th>Positive parenting</th>
<th>Negative parenting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$Q_k$ $k$ ES 95% CI</td>
<td>$Q_w$ $k$ ES 95% CI</td>
</tr>
<tr>
<td>Location</td>
<td>.14</td>
<td>.65</td>
</tr>
<tr>
<td>Laboratory</td>
<td>4 $-.18^{+}$ .36 .01 1.83</td>
<td>4 .10 $-.05$ .23 12.36$^{**}$</td>
</tr>
<tr>
<td>Home</td>
<td>6 $-.14^{+}$ .27 .01 28.44$^{***}$</td>
<td>6 $.02$ $-.10$ .14 4.51</td>
</tr>
<tr>
<td>Task</td>
<td>1.18</td>
<td>.29</td>
</tr>
<tr>
<td>Structured</td>
<td>4 $-.11^{+}$ .24 .02 26.38$^{***}$</td>
<td>5 .06 $-.09$ .21 6.46$^{**}$</td>
</tr>
<tr>
<td>Unstructured</td>
<td>6 $-.24^{**}$ .42 .04 2.97</td>
<td>6 $.01$ $-.14$ .15 8.56</td>
</tr>
</tbody>
</table>

Note: $Q_k =$ between-groups heterogeneity; $k =$ number of studies; ES = effect size calculated using Fisher’s $Z$, transformation, corrected for measurement unreliability; CI = confidence interval; $Q_w =$ within-group heterogeneity; $b =$ unstandardized regression coefficient.

$a^+$ $b = -.04^{**}$ with one outlier study excluded.
3.2.2. Moderator analyses

Homogeneity analyses indicated that the set of effect sizes assessing negative parenting was significantly heterogeneous, $Q_T (18) = 71.57, p < .001$, which indicated that additional analyses examining the effects of potential moderators on the relationship between paternal depression and negative parenting behaviors were warranted.

Moderator analyses for the relationship between paternal depression and negative parenting behaviors are presented in Table 5. As with those presented for positive parenting behaviors, interpretation of these analyses should be made with caution, given that a modest number of effect sizes were examined in each analysis.

A significant moderating effect of type of assessment on negative parenting behaviors was found, $Q_E (1) = 8.90, p < .01$, such that the effect sizes for paternal depression and fathers' negative parenting behaviors were greater (i.e., more negative parenting) when using self-report methods, $r = .25, p < .001$, than when assessed observationally, $r = .05, p = .31$. There was a trend toward a significant moderating effect of child age on negative parenting behaviors, $Q_E (1) = 3.29, p = .07$ (see Fig. 3), such that the effect of paternal depression on fathers' negative parenting was greater (i.e., more negative parenting) with younger children; a significant amount of variability remained in the model, $Q_E (17) = 68.28, p < .001$. There was also a significant moderating effect of father age on negative parenting behaviors, $Q_E (1) = 4.04, p < .05$ (see Fig. 4), such that the effect of paternal depression on fathers' negative parenting was greater (i.e., more negative parenting) for younger fathers; a significant amount of variability remained in the model, $Q_E (12) = 61.98, p < .001$. Finally, there was a significant moderating effect of sample race/ethnicity on negative parenting behaviors, $Q_E (1) = 5.24, p < .05$ (see Fig. 5), such that the effect of paternal depression on fathers' negative parenting was greater (i.e., more negative parenting) for samples with a greater percentage of non-Caucasian fathers; a significant amount of variability remained in the model, $Q_E (12) = 62.62, p < .001$. Although examination of Fig. 5 suggested that this effect was driven by a single study comprised of all non-Caucasian participants (Siantz & Smith, 1994), the effect remained, even with this study excluded, $Q_E (1) = 7.15, p < .01$ (see Fig. 6); a significant amount of variability remained in the model, $Q_E (11) = 59.18, p < .001$. No significant moderating effects were found for publication status, $Q_E (1) = .75, p = .39$, or child gender, $Q_E (1) = .39, p = .53$.

Examination of the within-group heterogeneity statistic for each moderating variable indicated that a significant amount of variability among effect sizes remained in published studies, $Q_W (14) = 65.98, p < .001$, and studies that assessed parenting behaviors observationally, $Q_W (9) = 21.06, p < .05$, and those using self-report measures, $Q_W (12) = 46.10, p < .001$. Again, given the small number of effect sizes, only a priori moderator analyses that had been planned for theoretical reasons were conducted. The a priori moderator analyses for the relationship between paternal depression and negative parenting behaviors among the 10 studies that assessed parenting behaviors observationally are presented in Table 6. No significant moderating effects were found for location of assessment, $Q_E (1) = .65,
The present meta-analysis provides a quantitative analysis of the empirical research that has been conducted to date on paternal depression and fathers’ parenting behaviors, yielding an estimate of the magnitude of the effect of paternal depression on fathers’ positive and negative parenting behaviors. We were also able to explore a number of potential moderators of the association between paternal depression and fathers’ parenting behaviors, and to compare the effects for fathers with those for mothers by (1) contrasting effects within studies that included both fathers and mothers, and (2) comparing effect sizes from the present meta-analysis with prior research on maternal depression and mothers’ parenting behaviors. The mean effect sizes for the association between paternal depression and both positive and negative parenting behaviors, computed using 40 independent effect sizes from 28 published and unpublished studies, were significantly different from zero, and small in magnitude. Thus, paternal depression (as assessed by self-reports of current depression symptoms) was significantly associated with lower levels of positive and higher levels of negative parenting behaviors. The specific parenting behaviors assessed across studies varied greatly, including decreased positive emotions, warmth, sensitivity, and responsiveness, and increased negative emotions, hostility, intrusiveness, and disengagement.
Of particular importance is the fact that the mean effect sizes for the association between parental depression and positive and negative parenting behaviors by fathers and mothers did not differ significantly, as assessed by the studies included in the present meta-analysis. That is, studies that included both mothers and fathers in investigations of the effects of parental depression on parenting behaviors found comparable effects for both fathers and mothers. Moreover, the effect sizes reported in the present meta-analysis on the effects of paternal depression on fathers' parenting behaviors are comparable to, or exceed, those reported in the most recent meta-analysis examining the effects of maternal depression on parenting behaviors by mothers (see Lovejoy et al., 2000). Although Lovejoy et al.'s meta-analysis differed from the present one in several respects (i.e., only effect sizes from published studies that assessed mothers' parenting behaviors using observational methods were included, and the categories of parenting behaviors were defined somewhat differently than in the present study), the studies included are similar enough to allow for comparison with results from the present analysis. Lovejoy et al. reported effect sizes for the effects of maternal depression on three types of parenting behaviors by mothers: positive, $r = -0.08$, $p < .05$, disengaged, $r = .15$, $p < .05$, and negative, $r = .20$, $p < .05$. Comparison of these estimates with those from the present meta-analysis indicate that, although the effects for mothers and fathers are comparable for negative parenting behaviors, the effect of depression on positive parenting behaviors is actually larger in magnitude for fathers than for mothers.

A number of sample and methodological variables were explored as potential moderators of the relationship between paternal depression and parenting behaviors. Several significant moderating effects for sample characteristics were found. There was a moderating effect of both child age and father age on the association between paternal depression and fathers' negative parenting behaviors. Fathers' depressive symptoms were more strongly related to increased negative parenting behaviors in samples of younger children, and samples of younger fathers produced higher estimates of the effect of depression on negative parenting behaviors. These findings may reflect (1) the strain of dealing with the high demands of infants, toddlers, and preschool-aged children; (2) the inexperience of younger fathers in the new-parent role; or (3) an interaction between these contextual features and fathers' age. There was also a moderating effect of sample race/ethnicity on fathers' negative parenting, so that fathers' depressive symptoms were more strongly related to increased negative parenting behaviors in samples with a greater percentage of non-Caucasian families. This effect may be related to findings that some parenting constructs have different implications for child outcomes for minority racial, ethnic, and cultural groups, compared to majority groups (e.g., Peterson et al., 2004), or it may have emerged from the effects of other variables correlated with race/ethnicity (i.e., socioeconomic status [SES]) that may exacerbate the effects of depression on parenting by fathers. Unfortunately, the number of studies included in the present meta-analysis that provided information regarding sample SES was insufficient to explore this possibility.

Moderating effects were also found for several methodological variables. There was a significant moderating effect of type of assessment on fathers' negative parenting behaviors. Fathers' depressive symptoms were more strongly related to increased negative parenting behaviors when fathers' self-reports of parenting behaviors were used, as opposed to observational assessment. This finding may reflect (1) a depression–distortion bias (see Richters, 1992), such that fathers' depressive symptoms negatively bias their reports of parenting behaviors; (2) a failure of fathers to engage in negative parenting behaviors when being assessed observationally; or, (3) given that both depressive symptoms and parenting behaviors were assessed using self-report methods, may be the result of shared-method bias. There was also a moderating effect of the length of the observational assessment on fathers' positive parenting behaviors. Fathers' depressive symptoms were more strongly related to decreased positive parenting behaviors the longer the assessment. This finding may indicate that displays of positive parenting behaviors are difficult to maintain for long periods of time, a possibility that may be particularly relevant for depressed fathers experiencing anhedonia and fatigue, and/or longer observational assessments may provide more reliable estimates of individual differences in positive parenting behaviors.

Although several moderating effects of sample and methodological variables were found, much of the variability in the effect sizes obtained for each type of parenting behavior remained unexplained. It is possible that moderating variables not included in the present analyses, such as differences in the self-report depression or parenting measures used, or variations in the structured tasks used for observational assessments (e.g., teaching tasks, verbal interaction tasks), would better account for the remaining heterogeneity. As only a modest number of effect sizes were examined in each analysis, results of the moderator analyses must be interpreted with caution. Moderator analyses in meta-analyses are less powerful than those examining main effects (Hedges & Piggott, 2004); although every attempt was made to locate all empirical studies on the relationship between parental depression and parenting behaviors by fathers, given the relative paucity of research in this area, and thus the small number of effect sizes that could be included in the present meta-analysis, it is possible that the power to detect significant moderating effects was insufficient.

The findings of the present meta-analysis have a number of implications for future research on the effects of both maternal and paternal depression on parenting behaviors. Perhaps most importantly, the present findings provide evidence that the relationship between parental depression and parenting impairment is not limited to depressed mothers, but also exists for depressed fathers. Thus, these findings emphasize the importance of including fathers in future research on family environmental factors involved in the transmission of depression, and beg the question as to whether the processes linking depression to parenting dysfunction are similar for men and women. Furthermore, the present findings indicate that theories of environmental mechanisms implicated in the familial transmission of depression that focus on the unique role of mothers and the paternal role should be updated to account for the role of fathers in these processes.

Notably, although the present findings indicate that paternal, as well as maternal, depression is associated with parenting impairment, the extent to which parenting serves as a mechanism in the transmission of depression from parent to child remains unclear. Previous research on the effects of parental psychopathology on child outcomes has relied on findings linking parental psychopathology and parenting dysfunction as evidence that parenting is the mechanism of transmission. However, given known genetic influences on environmental variables (Turkheimer, 2000), and the generally small effects of parental depression on parenting found in the present meta-analysis, it is important to consider a broader range of environmental mechanisms, as well as gene–environment interactions, that might account for the familial transmission of depression. Although the present findings demonstrate an association between paternal depression and fathers' parenting behaviors, the parenting domain in and of itself appears to be insufficient for understanding the familial transmission of depression and other negative child outcomes.

The present findings also have practical implications for conducting research on the relationship between paternal depression and parenting behaviors by fathers. First, the method by which positive and negative parenting behaviors were assessed moderated the effect sizes reported. That is, the effect sizes reported for negative parenting behaviors assessed using self-report measures were significantly larger (i.e., more negative parenting) than those assessed using observational methods. Future research is needed to clarify this finding; in particular, the use of diagnostic assessments of depressive
disorders would resolve the possibility that this finding is the result of shared-method inflation arising from fathers reporting on their own depressive symptoms and parenting behaviors. In addition, future research using observational techniques should note that, although effect sizes for parenting behaviors were generally comparable regardless of whether they were assessed in the laboratory or participants’ homes, or using structured or unstructured tasks, effect sizes for positive parenting behaviors were largest (i.e., less positive parenting) when assessed using longer observational assessments. Moreover, a qualitative review of the studies included in the present meta-analysis suggests that considerable work remains to be done regarding the observational assessment of parenting. Specifically, few studies use standardized coding schemes with known psychometric properties, and there are no universally agreed upon constructs, tasks/techniques, or coding schemes for assessing important aspects of positive and negative parenting for children at different developmental stages. As the field continues to develop, the effect of these methodological choices on the validity of the assessments and their ability to reveal effects of depression on parenting will be clarified.

Similarly, it should be noted that none of the available studies in the literature on depression and parenting by fathers examined the effects of depressive diagnoses on fathers’ parenting behaviors, despite the fact that most questions motivating this work concern the effects of depressive psychopathology on parenting. Elevated depressed mood was noted in several of the community samples included in the present meta-analysis (e.g., Du Rocher Schudlich & Cummings, 2007 reported that 16% of fathers had CES-D scores indicative of potentially serious levels of depressive symptoms), but only one of the included studies (Jacob & Johnson, 1997) specifically recruited a sample of fathers with diagnosed depression. Although it is reasonable to propose that dimensional measures of depressive symptoms are linearly related to parenting deficits, this question cannot be answered without including samples of individuals at the extremes of the distribution. Given that the empirical literature currently available consists primarily of community samples of fathers experiencing only mild symptoms of depression, it is possible that the present findings underestimate the strength of the relationship between depression and fathers’ parenting. Future research with samples of fathers diagnosed with depressive disorders and/or with moderate-to-severe depressive symptoms will help to clarify the extent to which actual depressive psychopathology affects fathers’ parenting behaviors. In this respect, the literature on parenting by depressed mothers and fathers is similar, in that studies of the effects of parenting on parents of Frank mood disorders in mothers are also rare. Finally, the present findings are consistent with the hypothesis that the low levels of positive and high levels of negative affect that characterize depression (Brown et al., 1998; Clark & Watson, 1991) are comparatively manifested within the parent–child relationship through decreased positive and increased negative parenting behaviors. Future research on the effects of other psychological disorders commonly comorbid with depression (such as anxiety and substance use disorders), as well as with parents who have extreme scores on measures of trait positive and negative affect, will help to clarify whether this pattern of parenting impairment is specific to depressive disorders, or whether it reflects a general distress factor that crosses diagnostic categories.

5. Conclusion

Compared to depression in mothers, paternal depression has been less frequently the focus of empirical research. However, the findings of the present meta-analysis indicate that paternal depression has a significant and deleterious effect on parenting behaviors by fathers to a degree comparable to that seen for mothers, and speak to the importance of continuing to include fathers in research on child development and the family environment. Moreover, the findings suggest that intervention programs designed to reduce the negative effects of depression on families should target depressed fathers, as well as depressed mothers.

References


1 References marked with an asterisk indicate studies included in the meta-analysis.


