



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

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## ABSTRACT

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' positive and negative parenting behaviors. 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 The mean effect sizes, computed using 40 independent effect sizes derived from 28 published and unpublished studies, indicated that paternal depression has significant, though small, effects on parenting, with depressed fathers demonstrating decreased positive and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, & Olino, 2005](#); [Lieb, Isensee, Hofer, Pfister, & Wittchen, 2002](#); [Weissman et al., 2006](#); see [Beardslee, Versage, & Gladstone, 1998](#); [Downey & Coyne, 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 Alcoholism 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, Kamboukos, & 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, Olino, & 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, & Olfson, 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, & Punamäki, 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 (Chiariello & 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 (interrater 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



**Table 1**  
Summary of study characteristics and moderator variables.

	Pub	N	Child age <sup>a</sup>	Father age <sup>b</sup>	Child gender <sup>c</sup>	Sample race <sup>d</sup>	Depression measure	Parent behav	Assess	Self-report measure	Observation			
											Loc	Task	Length <sup>e</sup>	ES
Conger, Ge, Elder, Lorenz, and Simons (1994)	Y	378	151.20	40.01	52	100	SCL-90-D	Neg	Obs	–	Home	S	50	–.05
Conger, Patterson, and Ge (1995)	Y	75	141.60	39.90	0	91	CES-D/ Lubin	Neg	Obs	–	Home	U	–	.19
								Neg	Self	Items	–	–	–	.07
Cummings, Keller, and Davies (2005)	Y	235	60.00	36.80	55	77	CES-D	Pos	Self	APQ/PARQ	–	–	–	–.13
								Neg	Self	PBI	–	–	–	.21
Devall (1990)	N	72	30.00	34.00	54	100	CES-D	Pos	Self	CRPR	–	–	–	–.21
								Neg	Self	CRPR	–	–	–	.04
Du Rocher Schudlich and Cummings (2007)	Y	262	126.84		48	86	CES-D/ SCL-90-D	Pos	Self	PBI	–	–	–	–.27
Eiden, Edwards, and Leonard (2007)	Y	227	24.00	32.90	49	87	CES-D	Pos	Obs	–	Lab	U	10	–.14
								Neg	Obs	–	Lab	U	10	.10
Eiden and Leonard (2000)	Y	206	12.00	32.94		89	CES-D	Neg	Self	PACR	–	–	–	.52
Feinberg and Kan (2008)	Y	165	6.50	29.76		90	CES-D	Neg	Self	PSI	–	–	–	.21
Fielding (2004)	N	103	53.88	36.57	61	97	CES-D/ SCL-90-D	Pos	Obs	–	Lab	S	–	–.27
								Neg	Obs	–	Lab	S	–	.32
Formoso (2002)	N	113	154.68	40.00	49	100	CES-D	Pos	Self	PBI/IPPA/ IS/SPMS	–	–	–	–.28
Franck and Buehler (2007)	Y	416	144.00		51	91	BDI/ CES-D	Pos	Obs	–	Home	S	15	–.27
Gartstein and Fagot (2003)	Y	159	60.00	34.86	52	93	CES-D	Pos	Obs	–	Home	S	6	.11
								Neg	Obs	–	Home	U	240	–.07
Hjelmstedt and Collins (2008)	Y	89	2.00		53		EPDS	Pos	Self	FIAI	–	–	–	–.29
Jacob and Johnson (1997)	Y	53	164.52	41.86			BDI/ MMPI Dep	Pos	Obs	–	Home	S	15	–.14
Kashdan et al. (2004)	Y	100	113.16	41.00	0		BDI	Neg	Obs	–	Home	S	15	.15
								Pos	Self	PCRQ	–	–	–	–.15
Kovacs (2003)	N	72	120.84		55	82	CES-D	Neg	Self	PCRQ	–	–	–	.30
								Pos	Obs	–	Lab	S	10	–.10
Leinonen, Solantaus and Punamäki (2002)	Y	527	151.20	41.00	47	96	GHQ	Pos	Self	APQ/PBI	–	–	–	–.12
								Neg	Self	PBI	–	–	–	.46
Lundy (2002)	Y	15	6.30	31.13	100		CES-D	Pos	Obs	–	Lab	U	6	–.28
MacMartin (1997)	N	100	36.00				BDI	Pos	Self	PDI	–	–	–	–.35
McElwain and Volling (1999)	Y	62	12.00	35.50	50	93	BDI	Neg	Obs	–	Lab	S	15	–.22
								Neg	Obs	–	Lab	U	11	–.25
McKee (2002)	N	27	86.64	38.44	8		BDI	Pos	Obs	–	Home	U	60	–.26
								Neg	Obs	–	Home	U	60	.24
Mezulis, Hyde, and Clark (2004)	Y	350	60.00		52	93	CES-D	Neg	Self	PS	–	–	–	.46
								Pos	Self	CRPR	–	–	–	–.15
Onatsu-Arvilommi, Nurmi, and Aunola (1998)	Y	54	78.00		42		BDI	Neg	Self	CRPR	–	–	–	.14
								Pos	Self	CRPR	–	–	–	–.30
Papp, Cummings, and Goeke-Morey (2005)	Y	277	132.00		49	84	SCL-90-D	Neg	Self	CRPR	–	–	–	–.03
								Pos	Self	PBI	–	–	–	–.25
Roggman, Boyce, Cook, and Cook (2002)	Y	59	10.00	25.30		78	CES-D	Pos	Obs	–	Home	U	–	–.37
Siantz and Smith (1994)	Y	56	63.89	34.51	40	0	CES-D	Neg	Self	PARQ	–	–	–	.32
Simons, Lorenz, Conger and Wu (1992)	Y	451	144.00			100	SCL-90-D	Pos	Obs	–	Home	S	–	–.01
								Pos	Self	SPS	–	–	–	–.11
Webster-Stratton (1988)	Y	85	52.00		32	98	BDI	Neg	Obs	–	Home	U	30	.01

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; PCRQ = Parent–Child Relationship Questionnaire; PDI = Parenting Dimensions Inventory; PS = Parenting Scale; PSI = Parental Stress Index; SPMS = Small Parental Monitoring Scale; SPS = Supportive Parenting Scale.

<sup>a</sup> Child age in months.

<sup>b</sup> Father age in years.

<sup>c</sup> Percent female.

<sup>d</sup> Percent Caucasian.

<sup>e</sup> Length in minutes.

methods, and 5 (18%) used both self-report and observational methods ( $\kappa = .93$ ). 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 ( $\kappa = 1.00$ ). Of the 19 studies that used self-report methods, 16 (84%) used a single parenting measure (e.g., Child Rearing Practices Report [CRPR; Block, 1965; Roberts, Block, & Block, 1984], Child Rearing Practices Scale

**Table 2**  
Description of paternal parenting behaviors.

Study	Positive parenting behaviors	Negative parenting behaviors
Conger, Ge, Elder, Lorenz, and Simons (1994)		Self-reported hostility
Conger, Patterson, and Ge (1995)		Observationally assessed hostility
		Self-reported poor discipline practices
		Observationally assessed aversiveness, poor discipline practices
Cummings, Keller, and Davies (2005)	Self-reported emotional availability (warmth, affection, positive parenting)	Self-reported psychological control (intrusiveness, control through guilt, instilling persistent anxiety)
Devall (1990)	Self-reported nurturance	Self-reported restrictiveness
Du Rocher Schudlich and Cummings (2007)	Self-reported acceptance, psychological autonomy, firm control	
Eiden, Edwards and Leonard (2007)	Observationally assessed sensitivity, warmth	Observationally assessed negative affect
Eiden and Leonard (2000)		Self-reported aggravation
Feinberg and Kan (2008)		Self-reported dysfunctional interaction
Fielding (2004)	Observationally assessed emotional support, technical support	Observationally assessed rejection and invalidation, coerciveness and control, withdrawal
Formoso (2002)	Self-reported engagement (acceptance, attachment, involvement, monitoring)	
Franck and Buehler (2007)	Observationally assessed warmth	
Gartstein and Fagot (2003)	Observationally assessed cognitive guidance/instructional behaviors	Observationally assessed coercive behaviors
Hjelmstedt and Collins (2008)	Self-reported attachment	
Jacob and Johnson (1997)	Observationally assessed positivity	Observationally assessed negativity
Kashdan et al. (2004)	Self-reported warmth, involvement	Self-reported intrusiveness, negative discipline
Kovacs (2003)	Self-reported acceptance, involvement	Self-reported rejection, inconsistent discipline
	Observationally assessed warmth, positive involvement	Observationally assessed harshness, negative involvement, hostility
Leinonen, Solantaus and Punamäki (2002)	Self-reported authoritative parenting	Self-reported punitive parenting, noninvolved parenting
Lundy (2002)	Observationally assessed synchrony with the child	
MacMartin (1997)	Self-reported supportive parenting	
McElwain and Volling (1999)		Observationally assessed intrusiveness
McKee (2002)		Self-reported lax parenting, overreactive parenting
	Observationally assessed praise, positive affection	Observationally assessed arguing, negative tone
Mezulis, Hyde, and Clark (2004)	Self-reported warmth	Self-reported control, control by anxiety
Onatsu-Arviolommi, Nurmi, and Aunola (1998)	Self-reported encouragement of independence, expression of affection, rational guidance, supervision of the child	Self-reported authoritarian control, control by anxiety
Papp, Cummings, and Goeke-Morey (2005)	Self-reported acceptance, psychological autonomy, firm control	
Roggman, Boyce, Cook, and Cook (2002)	Observationally assessed engagement	
Siantz and Smith (1994)		Self-reported rejection
Simons, Lorenz, Conger and Wu (1992)	Self-reported supportive parenting	
	Observationally assessed supportive parenting	
Webster-Stratton (1988)		Observationally assessed criticism, physical negative behaviors

[CRPS; Conger, 1989; Leinonen et al., 2002], Father–Infant Attachment Inventory [FAI; Hjelmstedt & Collins, 2008; Muller, 1994], Inventory of Parent and Peer Attachment [IPPA; Armsden & Greenberg, 1987], Involvement Scale [IS; Formoso, 2002], Parental Attitudes toward Child Rearing [PACR; Easterbrooks & Goldberg, 1990], Parental Acceptance–Rejection Questionnaire [PARQ; Rohner, Saavedra & Granum, 1991], [Children's Report of] Parental Behavior Inventory [(CR)PBI; Margolies & Weintraub, 1977; Schaefer, 1965], Parent–Child Relationship Questionnaire [PCRQ; Furman & Giberson, 1995], Parenting Dimensions Inventory [PDI; Slater & Power, 1987], Parenting Scale [PS; Arnold, O'Leary, Wolff, & Acker, 1993], Parental Stress Index [PSI; Abiden, 1997; Reitman, Currier, & Stickle, 2002], Small Parental Monitoring Scale [SPMS; Small & Kerns, 1993], and Supportive Parenting Scale [SPS; Simons, Lorenz, Conger, & Wu, 1992]), or used parenting items developed specifically for the particular study. Three (16%) of the studies that used self-report methods used multiple parenting measures (e.g., the PBI and the Alabama Parenting Questionnaire [APQ; Shelton, Frick & Wooton, 1996]), or a composite measure formed using scales taken from multiple measures; the effect sizes estimated for these studies were averaged across the multiple self-report parenting measures. Fourteen (74%) of the studies that used self-report methods reported reliability coefficients for the parenting measure used ( $\kappa = .94$ ).

Of the 14 studies that assessed parenting behaviors using observational methods, 8 (57%) used structured tasks and 6 (43%) used unstructured tasks ( $\kappa = .86$ ); 5 (36%) of the studies were conducted in the laboratory and 9 (64%) were conducted in participants' homes ( $\kappa = .70$ ). Ten (71%) of the studies that used observational methods

provided information on the length of tasks ( $\kappa = .20$ ), and 11 (79%) reported reliability coefficients for the coding system used to assess parenting behaviors ( $\kappa = .85$ ).

## 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 ( $\kappa = 1.00$ ). In addition, when provided, effect sizes for the effects of maternal depression on mothers' parenting were also coded ( $\kappa = 1.00$ ), 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 & Pillemer, 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,  $r = -.19$ ,  $p < .001$  (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  $-.37$  to  $.11$ , 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,  $Q_T(20) = 42.02$ ,  $p < .01$ , 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,  $Q_B(1) = 1.85$ ,  $p = .17$ , type of assessment,  $Q_B(1) = 1.52$ ,  $p = .22$ , child age,  $Q_R(1) = .15$ ,  $p = .70$ , father age,  $Q_R(1) = 1.11$ ,  $p = .29$ , child gender,  $Q_R(1) = .91$ ,  $p = .34$ , or sample race/ethnicity,  $Q_R(1) = 2.40$ ,  $p = .12$ .

Examination of the within-group heterogeneity statistics indicated that a significant amount of variability among effect sizes remained in published studies,  $Q_W(15) = 40.64$ ,  $p < .001$ , and studies that assessed parenting behaviors observationally,  $Q_W(9) = 31.10$ ,  $p < .001$ . 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,  $Q_R(1) = 4.18$ ,  $p < .05$  (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,  $Q_E(5) = 13.68$ ,  $p < .05$ . 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,  $Q_R(1) = 14.27$ ,  $p < .001$  (see Fig. 2); the amount of variability remaining in the model was not significant,  $Q_E(4) = 3.32$ ,  $p = .51$ . No significant moderating effects were found for location of assessment,  $Q_B(1) = .14$ ,  $p = .71$ , or observational task,  $Q_B(1) = 1.18$ ,  $p = .28$ . 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,  $r = -.11$ ,  $p = .10$ , and for unstructured tasks,  $r = -.24$ ,  $p < .01$ ). Given that only a small number of effect sizes were examined in each moderator analysis, and that

**Table 3**  
Summary of mean effect sizes for mixed effects analyses.

Parenting behavior	Fathers				$Q_T$	Mothers				
	$k$	ES	95% CI			$k$	ES	95% CI		$Q_T$
			Lower	Upper				Lower	Upper	
Positive parenting	21	-.19***	-.24	-.14	42.02**	16	-.20***	-.29	-.10	94.54***
Negative parenting	19	.16***	.08	.24	71.57***	17	.22***	.14	.30	59.15***

Note.  $k$  = number of studies; ES = effect size calculated using Fisher's  $Z_r$  transformation, corrected for measurement unreliability; CI = confidence interval;  $Q_T$  = total heterogeneity.

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

**Table 4**  
Stem-and-leaf plot for reported and estimated effect sizes (*r*) for fathers' positive and negative parenting behaviors.

Positive		Negative	
Stem	Leaf	Stem	Leaf
-.1	<b>1</b>	-.2	<b>4</b>
-.0	<b>6</b>	-.1	
-.1	<b>1, 1, 3, 4, 4, 5, 5</b>	-.0	<b>3, 7</b>
-.2	<b>1, 5, 6, 7, 7, 7, 8, 8, 9</b>	.0	<b>1, 7, 4</b>
-.3	<b>0, 5, 7</b>	.1	<b>0, 4, 5, 6, 6</b>
		.2	<b>1, 1, 5</b>
		.3	<b>0, 2, 2, 5</b>
		.4	
		.5	<b>2</b>

Note: Correlations in **bold** indicate published studies.

moderator analyses in meta-analyses are less powerful than those examining main effects (Hedges & Piggot, 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 5**  
Variables potentially moderating the association between paternal depression and fathers' positive and negative parenting behaviors.

Variable and group	Positive parenting					$Q_W$	Negative parenting					
	$Q_B$	<i>k</i>	ES	95% CI			$Q_B$	<i>k</i>	ES	95% CI		$Q_W$
				Lower	Upper					Lower	Upper	
Publication status	1.85											
Published		16	-.17***	-.23	-.11	40.64***						
Unpublished		5	-.25***	-.37	-.12	2.88	15	.14**	.06	.23	65.98***	
Type of assessment	1.52											
Observational		10	-.14**	-.23	-.06	31.10***	8.90**					
Self-report		12	-.21***	-.28	-.14	13.94	10	.05***	-.05	.15	21.06*	
							13	.25***	.17	.33	46.10***	
	<i>b</i>						<i>b</i>					
Child age	.00						-.00 <sup>+</sup>					
Father age	.01						-.01*					
Percent female children	-.00						-.00					
Percent Caucasian	.00						-.00 <sup>*,a</sup>					

Note.  $Q_B$  = between-groups heterogeneity; *k* = number of studies; ES = effect size calculated using Fisher's  $Z_r$  transformation, corrected for measurement unreliability; CI = confidence interval;  $Q_W$  = within-group heterogeneity; *b* = unstandardized regression coefficient.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . <sup>+</sup> $p < .10$ .

<sup>a</sup> *b* =  $-.01^{**}$  with one outlier study excluded.

**Table 6**  
Variables potentially moderating the association between paternal depression and fathers' positive and negative parenting behaviors assessed observationally.

Variable and group	Positive parenting					$Q_W$	Negative parenting					
	$Q_B$	<i>k</i>	ES	95% CI			$Q_B$	<i>k</i>	ES	95% CI		$Q_W$
				Lower	Upper					Lower	Upper	
Location	.14											
Laboratory		4	-.18 <sup>+</sup>	-.36	.01	1.83	.65	.10	-.05	.23	12.36**	
Home		6	-.14 <sup>+</sup>	-.27	.01	28.44***	6	.02	-.10	.14	4.51	
Task	1.18											
Structured		4	-.11 <sup>+</sup>	-.24	.02	26.36***	.29	.06	-.09	.21	6.46**	
Unstructured		6	-.24**	-.42	.04	2.97	6	.01	-.14	.15	8.56	
	<i>b</i>						<i>b</i>					
Length of task	-.01 <sup>*,a</sup>						-.00					

Note.  $Q_B$  = between-groups heterogeneity; *k* = number of studies; ES = effect size calculated using Fisher's  $Z_r$  transformation, corrected for measurement unreliability; CI = confidence interval;  $Q_W$  = within-group heterogeneity; *b* = unstandardized regression coefficient.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . <sup>+</sup> $p < .10$ .

<sup>a</sup> *b* =  $-.04^{***}$  with one outlier study excluded.



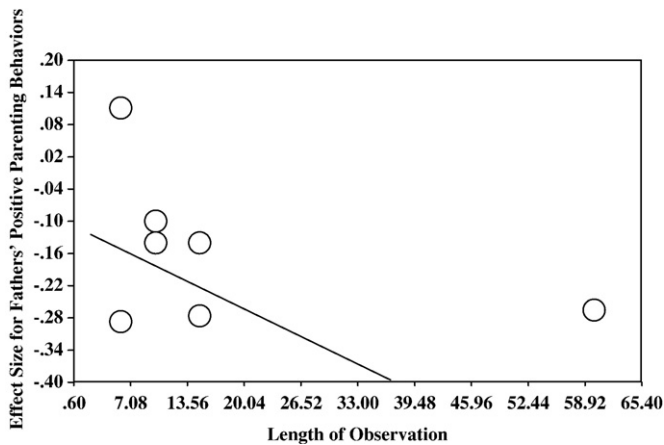


Fig. 1. Scatterplot illustrating the strength of the relationship between paternal depression and fathers' positive parenting behaviors as a function of length of observational assessment.

### 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,  $Q_R(1) = 8.90, p < .01$ , 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,  $Q_R(1) = 3.29, p = .07$  (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,  $Q_E(12) = 61.98, p < .001$ . There was also a significant moderating effect of father age on negative parenting behaviors,  $Q_R(1) = 4.04, p < .05$  (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

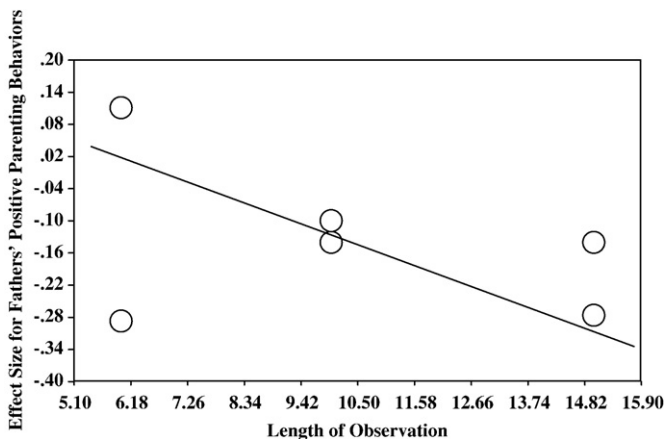


Fig. 2. Scatterplot illustrating the strength of the relationship between paternal depression and fathers' positive parenting behaviors as a function of length of observational assessment, with one outlier study excluded.

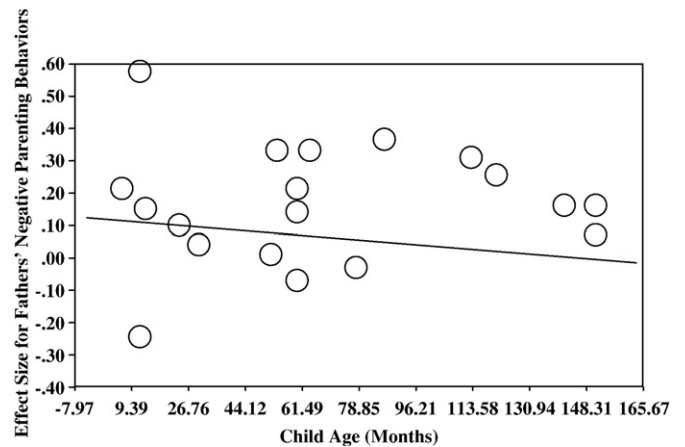


Fig. 3. Scatterplot illustrating the strength of the relationship between paternal depression and fathers' negative parenting behaviors as a function of child age.

model,  $Q_E(12) = 61.98, p < .001$ . Finally, there was a significant moderating effect of sample race/ethnicity on negative parenting behaviors,  $Q_R(1) = 5.24, p < .05$  (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,  $Q_R(1) = 7.15, p < .01$  (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,  $Q_B(1) = .75, p = .39$ , or child gender,  $Q_R(1) = .39, p = .53$ .

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,  $Q_B(1) = .65$ ,

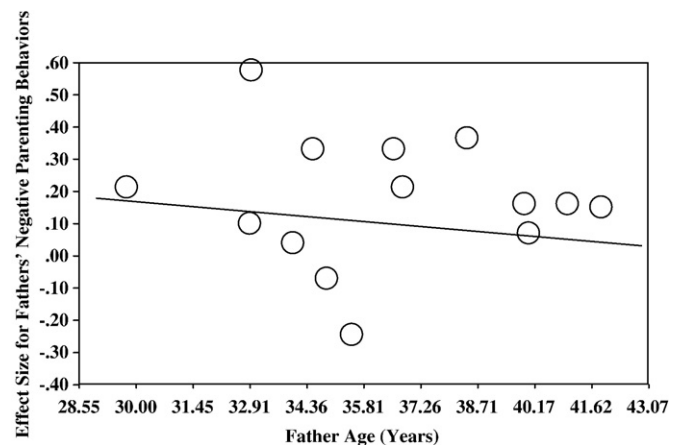


Fig. 4. Scatterplot illustrating the strength of the relationship between paternal depression and fathers' negative parenting behaviors as a function of father age.

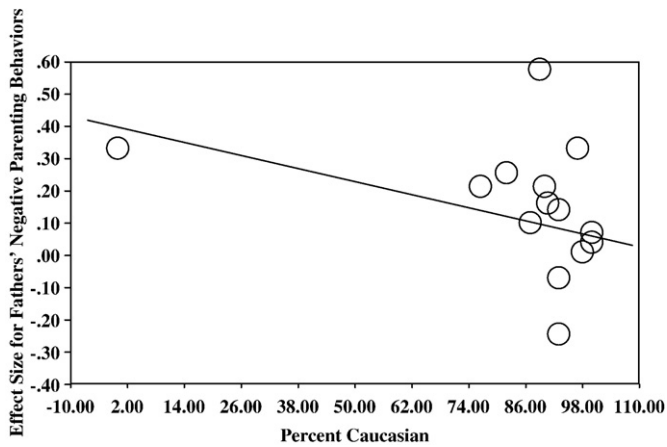


Fig. 5. Scatterplot illustrating the strength of the relationship between paternal depression and fathers' negative parenting behaviors as a function of sample race/ethnicity.

$p = .42$ , observational task,  $Q_B(1) = .29$ ,  $p = .59$ , or length of observational assessment,  $Q_R(1) = 1.65$ ,  $p = .20$ .

Finally, examination of the within-group heterogeneity statistics for studies that assessed negative parenting behaviors observationally indicated that a significant amount of variability among effect sizes remained in observational assessments conducted in the laboratory,  $Q_W(3) = 12.36$ ,  $p < .01$ , and using structured tasks,  $Q_W(4) = 16.46$ ,  $p < .01$ . However, given the small number of effect sizes, no further moderating analyses were conducted.

### 3.3. Comparison of effect sizes for fathers' and mothers' positive and negative parenting behaviors

Twenty-three of the 28 studies included in the present meta-analysis included both fathers and mothers. Thus, in addition to the 40 independent effect sizes for the relationship between paternal depression and fathers' parenting behaviors, it was possible to also derive 33 effect sizes for the relationship between maternal depression and mothers' parenting behaviors. This allowed for a direct comparison of the magnitude of effects for fathers and mothers in studies using similar samples and comparable methods. The weighted mean effect sizes for the relationship between maternal depression and positive and negative parenting is presented in Table 3. The mean effect sizes for mothers' and fathers' parenting were comparable in magnitude (mothers' positive parenting,  $r = -.20$ ,  $p < .001$ , versus fathers',  $r = -.19$ ,  $p < .001$ , and mothers' negative parenting,  $r = .22$ ,

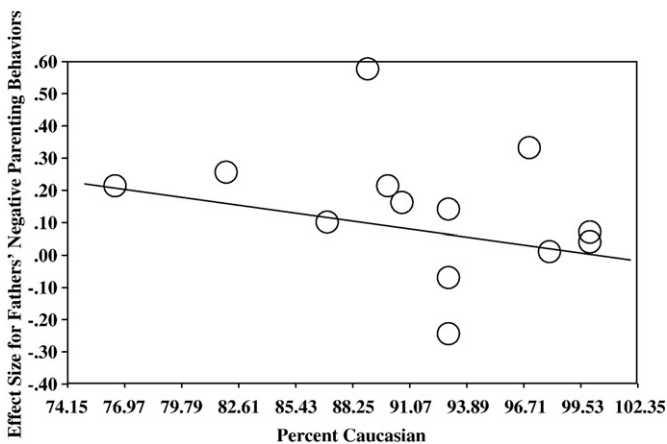


Fig. 6. Scatterplot illustrating the strength of the relationship between paternal depression and fathers' negative parenting behaviors as a function of sample race/ethnicity, with one outlier study excluded.

$p < .001$ , versus fathers',  $r = .16$ ,  $p < .001$ ). No significant moderating effects were found for parent gender for either positive parenting,  $Q_B(1) = .00$ ,  $p = .97$ , or negative parenting,  $Q_B(1) = 1.25$ ,  $p = .26$ .

### 3.4. Publication bias

Examination of separate funnel-plots for effect sizes for the relationship between paternal depression and fathers' positive and negative parenting behaviors indicated that effect sizes were asymmetrically dispersed around the overall effects for positive parenting behaviors. Duval and Tweedie's (2000) trim and fill was used to impute 5 missing studies to the set of positive parenting effect sizes, which resulted in an imputed mean effect of  $r = -.16$ ,  $p < .001$  (reduced from  $r = -.19$ ). The dispersion for fathers' negative parenting behaviors was symmetrical, and no missing studies were imputed.

## 4. Discussion

Depression is associated with dysfunction in a wide range of social and interpersonal domains, including the parent-child relationship (Beardslee et al., 1998; Goodman & Gotlib, 1999; Hirschfeld et al., 2000; Lovejoy et al., 2000). Impairments in parenting behaviors and in the quality of the parent-child bond have a number of implications for children's psychosocial and physical adjustment (Belsky, 1999; Luecken & Lemery, 2004; Martin, 1981; Maunder & Hunter, 2001; Moss & St-Laurent, 2001; Shaw & Winslow, 1997; Thompson, 1998; Wakschlag & Hans, 1999), and may represent mechanisms for the familial transmission of depression from parents to children (e.g., Barry et al., 2008; Caspi et al., 2003; Kaufman et al., 2004, 2006).

Previous research on the relationship between parental depression and parenting behaviors has been conducted overwhelmingly with depressed mothers, to the relative neglect of depressed fathers. However, there is growing recognition that research on the effects of depression on the family environment should be guided by an ecological approach to child development, which takes into consideration the multiple relationships found within the family environment (Lamb, 2004; Parke, 2002; Parke & Buriel, 2006). The available evidence from studies comparing the relative effects of maternal and paternal depression on relevant child outcomes and aspects of the parent-child relationship has generally found meaningful effects for both mothers and fathers (Connell & Goodman, 2002; Kane & Garber, 2004; Klein et al., 2005; Lewinsohn et al., 2005; Ramchandani et al., 2005; Ramchandani et al., 2008; Rohde et al., 2005).

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,  $r = -.08$ ,  $p < .05$ , 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 de-

creased 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 & Piggot, 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 maternal 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 literatures on parenting by depressed mothers and fathers are similar, in that studies of the effects on parenting 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 comparably 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<sup>1</sup>

- Abiden, R. R. (1997). Parenting Stress Index: A measure of the parent-child system. In C. P. Zalaquett, & R. J. Wood (Eds.), *Evaluating stress: A book of resources* (pp. 277–291). Lanham, MD: Scarecrow Press.
- Armsden, G. C., & Greenberg, M. T. (1987). The inventory of parent and peer attachment: Relationships to well-being in adolescence. *Journal of Youth and Adolescence*, 16, 427–454.
- Arnold, D. S., O'Leary, S. G., Wolff, L. S., & Acker, M. M. (1993). The Parenting Scale: A measure of dysfunctional parenting in discipline situations. *Psychological Assessment*, 5, 137–144.
- Barry, R. A., Kochanska, G., & Philibert, R. A. (2008). G × E interaction in the organization of attachment: Mothers' responsiveness as a moderator of children's genotypes. *Journal of Child Psychology & Psychiatry*, 49, 1313–1320.
- Beardslee, W. R., Versage, E. M., & Gladstone, T. R. G. (1998). Children of affectively ill parents: A review of the past 10 years. *Journal of the American Academy of Child & Adolescent Psychiatry*, 37, 1134–1141.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the BDI-II*. San Antonio, TX: The Psychological Corporation.
- Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, 4, 561–571.
- Beck, C. T. (1995). The effects of postpartum depression on maternal-infant interaction: A meta-analysis. *Nursing Research*, 44, 298–304.
- Belsky, J. (1999). Interactional and contextual determinants of attachment security. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 249–264). New York: Guilford.
- Belsky, J., & Barends, N. (2002). Parenting and personality. In M. H. Bornstein (Ed.), 2nd ed. *Handbook of parenting: Being and becoming a parent*, Vol. 3. (pp. 415–438) Mahwah, NJ: Erlbaum.
- Blazer, D. G., Kessler, R. C., McGonagle, K. A., & Swartz, M. S. (1994). The prevalence and distribution of depression of major depression in a national community sample. *American Journal of Psychiatry*, 151, 979–986.
- Block, J. (1965). *The Child-Rearing Practices Report (CRPR): A set of Q items for the description of parental socialization attitudes and values*. Berkeley: University of California Press.
- Bronfenbrenner, U. (1986). The ecology of the family as a context for human development: Research perspectives. *Developmental Psychology*, 22, 723–742.
- Brown, T. A., Chorpita, B. F., & Barlow, D. H. (1998). Structural relationships among dimensions of the DSM-IV anxiety and mood disorders and dimensions of negative affect, positive affect, and autonomic arousal. *Journal of Abnormal Psychology*, 107, 179–192.
- Caspi, A., Sugden, K., Moffitt, T. E., Taylor, A., Craig, I. W., Harrington, H., et al. (2003). Influence of life stress on depression: Moderation by a polymorphism in the 5-HTT gene. *Science*, 301, 386–389.
- Chiariello, M. A., & Orvaschel, H. (1995). Patterns of parent-child communication: Relationship to depression. *Clinical Psychology Review*, 15, 395–407.
- Cicchetti, D., & Toth, S. L. (1997). Transactional ecological systems in developmental psychopathology. In S. S. Luthar, J. A. Burack, D. Cicchetti, & J. R. Weisz (Eds.), *Developmental psychopathology: Perspectives on adjustment, risk, and disorder* (pp. 317–349). New York: Cambridge University Press.
- Clark, L. A., & Watson, D. (1991). Tripartite model of anxiety and depression: Psychometric evidence and taxonomic implications. *Journal of Abnormal Psychology*, 100, 316–336.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*, 2nd ed. Hillsdale, NJ: Erlbaum.
- Conger, R. D. (1989). Child Rearing Practices Scale: A measure developed for the Iowa Youth and Families Project. Unpublished manuscript. Iowa State University.
- \*Conger, R. D., Ge, X., Elder, G. H., Lorenz, F. O., & Simons, R. L. (1994). Economic stress, coercive family process, and developmental problems of adolescents. *Child Development*, 65, 541–561.
- \*Conger, R. D., Patterson, G. R., & Ge, X. (1995). It takes two to replicate: A mediational model for the impact of parents' stress on adolescent adjustment. *Child Development*, 66, 80–97.
- Connell, A. M., & Goodman, S. H. (2002). The association between psychopathology in fathers versus mothers and children's internalizing and externalizing behavior problems: A meta-analysis. *Psychological Bulletin*, 128, 746–773.
- Cooper, H., & Hedges, L. V. (Eds.). (1994). *The handbook of research synthesis*. New York: Russell Sage Foundation.
- Cox, J. L., Holden, J. M., & Sagovsky, R. (1987). Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry*, 150, 782–786.
- Cummings, E. M., & Davies, P. (1994). *Children and marital conflict: The impact of family dispute and resolution*. New York: Guilford Press.
- \*Cummings, E. M., Keller, P. S., & Davies, P. T. (2005). Towards a family process model of maternal and paternal depressive symptoms: Exploring multiple relations with child and family functioning. *Journal of Child Psychology and Psychiatry*, 46, 479–489.
- Derogatis, L. R. (1983). *SCL-90-R administration, scoring, and procedures manual-II*. Towson, MD: Clinical Psychometric Research.

<sup>1</sup> References marked with an asterisk indicate studies included in the meta-analysis.



- Derogatis, L. R. (1994). *SCL-90-R: Administration, scoring, and procedures manual*. Minneapolis, MN: Author.
- \*Deval, E. L. (1990). The relation of marital satisfaction to parental functioning. Unpublished doctoral dissertation. University of Georgia, Athens, GA.
- Downey, G., & Coyne, J. C. (1990). Children of depressed parents: An integrative review. *Psychological Bulletin*, 108, 50–76.
- \*Du Rocher Schudlich, T. D., & Cummings, E. M. (2007). Parental dysphoria and children's adjustment: Marital conflict styles, children's emotional security, and parenting as mediators of risk. *Journal of Abnormal Child Psychology*, 35, 627–639.
- Duval, S., & Tweedie, R. (2000). Trim and fill: A simple funnel-plot-based method of testing and adjusting for publication bias in meta-analysis. *Biometrics*, 56, 455–463.
- Easterbrooks, M. A., & Goldberg, W. A. (1990). Parental attitudes toward child rearing (PACR). In J. Touliatos, B. Perlmutter, & M. Straus (Eds.), *Handbook of family measurement techniques* (pp. 341–342). Newbury Park, CA: Sage.
- Eaton, W. W., Anthony, J. C., Gallo, J., Cai, G., Tien, A., & Romanoski, A. (1997). Natural history of Diagnostic Interview Schedule/DSM-IV major depression. *Archives of General Psychiatry*, 54, 939–999.
- \*Eiden, R. D., Edwards, E. P., & Leonard, K. E. (2007). A conceptual model for the development of externalizing behavior problems among kindergarten children on alcoholic families: Role of parenting and children's self-regulation. *Developmental Psychology*, 43, 1187–1201.
- \*Eiden, R. D., & Leonard, K. E. (2000). Paternal alcoholism, parental psychopathology, and aggravation with infants. *Journal of Substance Abuse*, 11, 17–29.
- \*Feinberg, M. E., & Kan, M. L. (2008). Establishing family foundations: Intervention effects on coparenting, parent/infant well-being, and parent-child relations. *Journal of Family Psychology*, 22, 253–263.
- Fergusson, D. M., & Lynskey, M. T. (1993). The effects of maternal depression on child conduct disorder and attention deficit behaviours. *Social Psychiatry and Psychiatric Epidemiology*, 28, 116–123.
- \*Fielding, E. D. (2004). Depression and family interactions: Depressed parents and their 4-year-olds in dyads and triads. Unpublished doctoral dissertation. Fuller Theological Seminary, Pasadena, CA.
- \*Formoso, D. (2002). Gateways to fathering: Predictors of paternal parenting in a low-income, Mexican American sample. Unpublished doctoral dissertation. Arizona State University, Tempe, AZ.
- \*Franck, K. L., & Buehler, C. (2007). A family process model of marital hostility, parental depressive affect, and early adolescent problem behavior: The roles of triangulation and parental warmth. *Journal of Family Psychology*, 21, 614–625.
- Furman, W., & Giberson, R. S. (1995). Identifying the links between parents and their children's sibling relationships. In S. Shulman (Ed.), *Close relationships in social-emotional development* (pp. 95–108). Norwood, NJ: Ablex.
- \*Gartstein, M. A., & Fagot, B. I. (2003). Parental depression, parenting and family adjustment, and child effortful control: Explaining externalizing behaviors for preschool children. *Applied Developmental Psychology*, 24, 143–177.
- Goldberg, D. P. (1972). *The detection of psychiatric illness by questionnaire: A technique for the identification and assessment of non-psychotic psychiatric illness*. London: Oxford University Press.
- Goodman, S. H., & Gotlib, I. H. (1999). Risk for psychopathology in the children of depressed mothers: A developmental model for understanding mechanisms of transmission. *Psychological Review*, 106, 458–490.
- Gunlicks, M. L., & Weissman, M. M. (2008). Change in child psychopathology with improvement in parental depression: A systematic review. *Journal of the American Academy of Child & Adolescent Psychiatry*, 47, 379–389.
- Hasin, D. S., Goodwin, R. D., Stinson, F. S., & Grant, B. F. (2005). Epidemiology of major depressive disorder. *Archives of General Psychiatry*, 62, 1097–1106.
- Hathaway, S. R., & McKinley, J. C. (1983). *Minnesota Multiphasic Personality Inventory: Manual for administration and scoring*. Minneapolis, MN: University of Minnesota Press.
- Hedges, L. V., & Olkin, I. (1985). *Statistical methods for meta-analysis*. Orlando, FL: Academic Press.
- Hedges, L. V., & Piggit, T. D. (2004). The power of statistical tests for moderators in meta-analysis. *Psychological Methods*, 9, 426–445.
- Hirschfeld, R. M. A., Montgomery, S. A., Keller, M. B., Kasper, A. F., Moller, H. -J., et al. (2000). Social functioning in depression: A review. *Journal of Clinical Psychiatry*, 61, 268–275.
- \*Hjelmstedt, A., & Collins, A. (2008). Psychological functioning and predictors of father-infant relationship in IVF fathers and controls. *Scandinavian Journal of Caring Sciences*, 22, 72–78.
- Hunter, J. E., & Schmidt, F. L. (1990). *Methods of meta-analysis: Correcting error and bias in research findings*. Newbury Park, CA: Sage.
- Hunter, J. E., & Schmidt, F. L. (1994). Correcting for sources of artificial variation across studies. In H. Cooper & L. V. Hedges (Eds.), *The handbook of research synthesis* (pp. 323–336). New York: Russell Sage Foundation.
- \*Jacob, T., & Johnson, S. L. (1997). Parent-child interaction among depressed fathers and mothers: Impact on child functioning. *Journal of Family Psychology*, 11, 391–409.
- Kane, P., & Garber, J. (2004). The relations among depression in fathers, children's psychopathology, and father-child conflict: A meta-analysis. *Clinical Psychology Review*, 24, 339–360.
- \*Kashdan, T. B., Jacob, R. G., Pelham, W. E., Lang, A. R., Hoza, B., Blumenthal, J. D., et al. (2004). Depression and anxiety in parents of children with ADHD and varying levels of oppositional defiant behaviors: Modeling relationships with family functioning. *Journal of Clinical Child & Adolescent Psychology*, 33, 169–181.
- Kaslow, N. J., Deering, C. G., & Racusin, G. R. (1994). Depressed children and their families. *Clinical Psychology Review*, 14, 39–59.
- Kaufman, J., Yang, B., Douglas-Palumberi, H., Grasso, D., Lipschitz, D., Houshyar, S., et al. (2006). Brain-derived neurotrophic factor-5-HTTLPR gene interactions and environmental modifiers of depression in children. *Biological Psychiatry*, 59, 673–680.
- Kaufman, J., Yang, B., Douglas-Palumberi, H., Houshyar, S., Lipschitz, D., Krystal, J. H., et al. (2004). Social supports and serotonin transporter gene moderate depression in maltreated children. *Proceedings of the National Academy of Sciences of the United States of America*, 101, 17316–17321.
- Kessler, R. C., McGonagle, K. A., Swartz, M. S., Blazer, D. G., & Nelson, C. B. (1993). Sex and depression in the National Comorbidity Survey: I. Lifetime prevalence, chronicity, and recurrence. *Journal of Affective Disorders*, 29, 85–96.
- Klein, D. N., Lewinsohn, P. M., Rohde, P., Seeley, J. R., & Olino, T. M. (2005). Psychopathology in the adolescent and young adult offspring of a community sample of mothers and fathers with major depression. *Psychological Medicine*, 35, 353–365.
- \*Kovacs, E. A. (2003). Individual and familial predictors of multiple dimensions of fathers' parenting. Unpublished doctoral dissertation. University of Washington, Seattle, WA.
- Lamb, M. E. (2004). *The role of fathers in child development*, 4th ed. Hoboken, NJ: Wiley.
- \*Leinonen, J. A., Solantaus, T. S., & Punamäki, R. -L. (2002). The specific mediating paths between economic hardship and the quality of parenting. *International Journal of Behavioral Development*, 26, 423–435.
- Lewinsohn, P. M., Olino, T. M., & Klein, D. N. (2005). Psychosocial impairment in offspring of depressed parents. *Psychological Medicine*, 35, 1493–1503.
- Lieb, R., Isensee, B., Hofler, M., Pfister, H., & Wittchen, H. -U. (2002). Parental major depression and the risk of depression and other mental disorders in offspring. *Archives of General Psychiatry*, 59, 365–374.
- Light, R. J., & Pillemer, D. B. (1984). *Summing up: The science of reviewing research*. Cambridge, MA: Harvard University Press.
- Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis*. Thousand Oaks, CA: Sage.
- Lovejoy, M. C., Graczyk, P. A., O'Hare, E., & Neuman, G. (2000). Maternal depression and parenting behavior: A meta-analytic review. *Clinical Psychology Review*, 20, 561–592.
- Lubin, B. (1963). Adjective checklists for measurement of depression. *Archives of General Psychiatry*, 12, 57–62.
- Luecken, L. J., & Lemery, K. S. (2004). Early caregiving and physiological stress responses. *Clinical Psychology Review*, 24, 171–191.
- \*Lundy, B. L. (2002). Paternal socio-psychological factors and infant attachment: The mediating role of synchrony in father-infant interactions. *Infant Behavior & Development*, 25, 221–236.
- \*MacMartin, L. M. (1997). Child adjustment difficulties and maternal depressive symptoms: The father's role. Unpublished master's thesis, University of Manitoba, Winnipeg, Manitoba.
- Margolies, P. J., & Weintraub, S. (1977). The revised 56-item CRPBI as a research instrument: Reliability and factor structure? *Journal of Clinical Psychology*, 33, 472–476.
- Martin, J. A. (1981). A longitudinal study of the consequences of early mother-infant interaction: A microanalytic approach. *Monographs of the Society for Research in Child Development*, 46, 1–58.
- Mauder, R. G., & Hunter, J. J. (2001). Attachment and psychosomatic medicine: Developmental contributions to stress and disease. *Psychosomatic Medicine*, 63, 556–567.
- \*McElwain, N. L., & Volling, B. L. (1999). Depressed mood and marital conflict: Relations to maternal and paternal intrusiveness with one-year-old infants. *Journal of Applied Developmental Psychology*, 20, 63–83.
- \*McKee, T. E. (2002). Parental psychopathology, coping, and discipline: The exploration of a mediational model. Unpublished doctoral dissertation. University of Connecticut, Storrs, CT.
- McLeod, B. D., Weisz, J. R., & Wood, J. J. (2007). Examining the association between parenting and childhood depression: A meta-analysis. *Clinical Psychology Review*, 27, 986–1003.
- Melby, J., Conger, R. D., Brook, R., Rueter, M., Lucy, L., Repinski, D., et al. (1991). *The Iowa Family Interaction Rating Scales*. Ames, IA: Iowa State University Press.
- Merikangas, K. R., Chakravarti, A., Moldin, S. O., Araj, H., Blangero, J., Burmeister, M., et al. (2002). Future of genetics of mood disorders research. *Biological Psychiatry*, 52, 457–477.
- \*Mezulis, A. H., Hyde, J. S., & Clark, R. (2004). Father involvement moderates the effect of maternal depression during a child's infancy on child behavior problems in kindergarten. *Journal of Family Psychology*, 18, 575–588.
- Moss, E., & St-Laurent, D. (2001). Attachment at school age and academic performance. *Developmental Psychology*, 37, 863–874.
- Muller, M. (1994). A questionnaire to measure mother-to-infant attachment. *Journal of Nursing Measurement*, 2, 129–141.
- Nolen-Hoeksema, S. (1987). Sex differences in unipolar depression: Evidence and theory. *Psychological Bulletin*, 101, 259–282.
- \*Onatsu-Arivilommi, T., Nurmi, J. -E., & Aunola, K. (1998). Mothers' and fathers' well-being, parenting styles, and their children's cognitive and behavioural strategies at primary school. *European Journal of Psychology of Education*, 13, 543–553.
- \*Papp, L. M., Cummings, E. M., & Goekse-Morey, M. C. (2005). Parental psychological distress, parent-child relationship qualities, and child adjustment: Direct, mediating, and reciprocal pathways. *Parenting: Science and Practice*, 5, 259–283.
- Parke, R. D. (2002). Fathers and families. In M. H. Bornstein (Ed.), *Handbook of parenting: Being and becoming a parent*, Vol. 3. (pp. 27–73) Mahwah, NJ: Erlbaum.
- Parke, R. D., & Buriel, R. (2006). Socialization in the family: Ecological and ethnic perspectives. In W. Damon & R. M. Lerner (Eds.), 6th ed. *Handbook of child psychology: Social, emotional, and personality development*, Vol. 3. (pp. 429–504) New York: Wiley.
- Paulhus, D. L. (1991). Measurement and control of response bias. In J. P. Robinson, P. R. Shaver & L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes* (pp. 17–59). San Diego: Academic Press.

- Peterson, G. W., Steinmetz, S. K., & Wilson, S. M. (2004). Persisting issues in cultural and cross-cultural parent–youth relations. *Marriage & Family Review*, 36, 229–240.
- Phares, V. (1992). Where's poppa? The relative lack of attention to the role of fathers in child and adolescent psychopathology. *American Psychologist*, 47, 656–664.
- Phares, V., Fields, S., Kamboukos, D., & Lopez, E. (2005). Still looking for poppa. *American Psychologist*, 60, 735–736.
- Puig-Antich, J., Goetz, D., Davies, M., Kaplan, T., Davies, S., Ostrow, L., et al. (1989). A controlled family history study of prepubertal major depressive disorder. *Archives of General Psychiatry*, 46, 406–418.
- Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385–401.
- Ramchandani, P., Stein, A., Evans, J., & O'Connor, T. G. (2005). Paternal depression in the postnatal period and child development: A prospective population study. *Lancet*, 365, 2201–2205.
- Ramchandani, P., Stein, A., O'Connor, T. G., Heron, J., Murray, L., & Evans, J. (2008). Depression in men in the postnatal period and later child psychopathology: A population cohort study. *Psychiatry*, 47, 390–398.
- Reitman, D., Currier, R. O., & Stickle, T. R. (2002). A critical evaluation of the Parenting Stress Index–Short Form (PSI-SF) in a Head Start population. *Journal of Clinical Child & Adolescent Psychology*, 31, 384–392.
- Richters, J. E. (1992). Depressed mothers as informants about their children: A critical review of the evidence for distortion. *Psychological Bulletin*, 112, 485–499.
- Roberts, G. C., Block, J. H., & Block, J. (1984). Continuity and change in parents' child rearing practices. *Child Development*, 55, 586–597.
- \*Roggman, L. A., Boyce, L. K., Cook, G. A., & Cook, J. (2002). Getting dads involved: Predictors of father involvement in Early Head Start and with their children. *Infant Mental Health Journal*, 23, 62–78.
- Rohde, P., Lewinsohn, P. M., Klein, D. N., & Seeley, J. R. (2005). Association of parental depression with psychiatric course from adolescence to young adulthood among formerly depressed individuals. *Journal of Abnormal Child Psychology*, 114, 409–420.
- Rohner, R. P., Saavedra, J. M., & Granum, E. O. (1991). *Parental acceptance–rejection questionnaire: Test manual handbook for the study of parental acceptance and rejection* (pp. 17–48). Storrs, CT: University of Connecticut, Center for the Study of Parental Acceptance and Rejection.
- Schaefer, E. S. (1965). Children's reports of parental behavior: An inventory. *Child Development*, 36, 417–424.
- Shaw, D. S., & Winslow, E. B. (1997). Precursors and correlates of antisocial behavior from infancy to preschool. In D. M. Stoff, J. Breilin, & J. D. Maser (Eds.), *Handbook of antisocial behavior* (pp. 148–158). New York: Wiley.
- Shelton, K. K., Frick, P. J., & Wootton, J. (1996). Assessment of parenting practices in families of elementary school-age children. *Journal of Clinical Child Psychology*, 25, 317–329.
- \*Siantz, M., & Smith, M. S. (1994). Parental factors correlated with developmental outcome in the migrant Head Start child. *Early Childhood Research Quarterly*, 9, 481–503.
- \*Simons, R. L., Lorenz, F. O., Conger, R. D., & Wu, C. (1992). Support from spouse as mediator and moderator of the disruptive influence of economic strain on parenting. *Child Development*, 63, 1282–1301.
- Slater, M. A., & Power, T. G. (1987). Multidimensional assessment of parenting in single-parent families. *Advances in Family Intervention: Assessment and Theory*, 4, 197–228.
- Small, S. A., & Kerns, D. (1993). Unwanted sexual activity among peers during early and middle adolescence: Incidence and risk factors. *Journal of Marriage & the Family*, 55, 941–952.
- Sullivan, P. F., Neale, M. C., & Kendler, K. S. (2000). Genetic epidemiology of major depression: Review and meta-analysis. *American Journal of Psychiatry*, 157, 1552–1562.
- Thompson, R. A. (1998). Early sociopersonality development. In N. Eisenberg (Ed.), 5th ed. *Handbook of child psychology: Social, emotional, and personality development*, Vol. 3. (pp. 25–104). New York: Wiley.
- Turkheimer, E. (2000). Three laws of behavior genetics and what they mean. *Current Directions in Psychological Science*, 9, 160–164.
- Wakschlag, L. S., & Hans, S. L. (1999). Relation of maternal responsiveness during infancy to the development of behavior problems in high-risk youths. *Developmental Psychology*, 35, 569–579.
- \*Webster-Stratton, C. (1988). Mothers' and fathers' perceptions of child deviance: Roles of parent and child behaviors and parent adjustment. *Journal of Consulting and Clinical Psychology*, 56, 909–915.
- Weissman, M. M., Leaf, P. J., Holzer, C. E., Myers, J. K., & Tischler, G. L. (1984). The epidemiology of depression: An update on sex differences in rates. *Journal of Affective Disorders*, 7, 179–188.
- Weissman, M. M., Warner, V., Wickramaratne, P., Moreau, D., & Olfson, M. (1997). Offspring of depressed parents: 10 years later. *Archives of General Psychiatry*, 54, 932–940.
- Weissman, M. M., Wickramaratne, P., Nomura, Y., Warner, V., Pilowsky, D., & Verdelli, H. (2006). Offspring of depressed parents: 20 years later. *American Journal of Psychiatry*, 163, 1001–1008.