Doing It All For My Baby: Determinants of Multidimensional Paternal Involvement with Infants

Brian P. Cole¹, Daniel B. Singley², Sonia Molloy³, Paul Ingram⁴, Alyssa Dye¹ and Anthony Isacco⁵

Abstract
The measurement of paternal involvement as a multidimensional construct has evolved with current societal trends of fathering and corresponding advanced theories. As a result, research must keep pace by continuing to examine predictors of the dynamic ways that fathers are involved with their children, particularly with infants. The current study built upon Belsky’s
theoretical model of determinants of parenting to posit that paternal involvement with their infants (dependent variable) will be influenced by a combination of father, child, and contextual factors (independent variables). A total of 456 participants were recruited within the United States. Paternal involvement was categorized into five subfactors from the Paternal Involvement with their Infants Scale (PIWIS). Five separate linear regressions were conducted using each of the PIWIS subscale domains as the dependent variable. Results provide support for examining paternal involvement with a multidimensional approach. Characteristics of the child, and psychosocial and relational and contextual variables of the father were uniquely related to the five domains of involvement measured by the PIWIS. Clinical and programmatic implications as well as future directions for research are discussed.

Keywords
determinants of parenting, father, infants, father involvement, fatherhood

Doing It All For My Baby: Determinants of Multidimensional Paternal Involvement with Infants

The contemporary study of fatherhood is a rapidly-maturing body of scholarly inquiry. Societal trends such as women’s increased participation in the workforce and men adopting diverse gender norms about fatherhood have contributed to fathers spending more time with their children (Yogman & Garfield, 2016). Scholarship has shifted from the negative impact of fathers’ absence on child outcomes to focus on the aspects of fathers’ involvement that influence positive child outcomes (Lamb; 2010; Pleck, 2007). Researchers, practitioners, and policymakers seek to understand factors that enhance positive paternal involvement in order to impact family health and well-being (Ramchandani et al., 2013).

The seminal work of Lamb et al. (1985) proposed the tripartite approach to paternal involvement consisting of paternal engagement (direct caretaking interactions), accessibility (i.e., availability), and responsibility (arranging for the child’s care). Pleck (2010) conducted a synthesis of extant paternal involvement research and theory in order to devise an updated reconceptualization including three primary components: Positive engagement activities, warmth and responsiveness, and control, which are supplemented by two auxiliary domains of
involvement: Indirect care and process responsibility. Since Lamb et al.’s (1985) initial work and in parallel with the work informing Pleck’s (2010) revised approach, conceptual models of fathering have been proposed to emphasize the unique predictors of fathering in consideration of multiple influential contextual factors (Cabrera et al., 2007; Doherty et al., 1998). Holmes and Huston (2010) examined fathering using a conceptual model of fathering (Doherty et al., 1998) that considered father, child, and mother characteristics as influential to dimensions of father involvement. Scholars continued to build upon existing research and theory to develop models that considered the multiple dimensions of fathering and father and child relationships. A heuristic model of fathering that is grounded in bioecological theory and Belsky’s process model of parenting was expanded upon to acknowledge nuances in parenting, including the developmental age of the child (Cabrera et al., 2014). Therefore, the known theories in the literature indicate that fathering is a multidimensional construct and is influenced by several factors. However, understanding contemporary fathers is complicated by inadequately measuring the construct as unidimensional such as hours of contact (Schoppe-Sullivan et al., 2004; Singley et al., 2018).

The perinatal period (i.e., during pregnancy and postpartum) is a time of acute and dramatic transition as a man navigates the entry into fatherhood (Singley & Edwards, 2015). Enhancing positive paternal involvement in infancy requires a strong operationalization of paternal involvement. Relatedly, researchers and practitioners would benefit from understanding factors that are hindering or facilitating paternal involvement. Therefore, this study examines paternal involvement by integrating contextual factors related to fathers’ parenting behaviors (Belsky, 1984) with a multidimensional measurement of fathers’ paternal involvement with infants (Singley et al., 2018).

**Determinants of Parenting**

Belsky (1984) proposed a process model of determinants of parenting behavior to address the interrelationships among three contextual domains: child characteristics (e.g., temperament), parent characteristics (e.g., childrearing attitudes), and contextual supports and stressors (e.g., employment). Subsequently, studies have demonstrated that these contextual domains impact paternal involvement (Macon et al., 2017; Norman & Elliot, 2015). For instance, Coley and Hernandez (2006) examined fathering with preschool-aged children and found that the
parental relationship had the strongest, most proximal relationship with fathers’ involvement. This finding is consistent with not only past research (Coley & Hernandez, 2006; Feldman et al., 1983), but also with Belsky’s (1984) process model that proposes that characteristics of individuals (e.g., mother, father, and child) influence fathers’ parenting behavior largely indirectly via the mother-father relationship. Coley and Hernandez’s 2006 study demonstrated that the father’s social connections, psychosocial functioning, and relationships in his family-of-origin predicted involvement with his child. The most important contribution of their study, however, was that theoretically driven groups of variables, which map roughly onto the contextual domains delineated by Belsky (1984), were separately used to predict pathways to paternal involvement. For example, fathers’ distress related directly and indirectly (via parental conflict) with paternal involvement, whereas parental conflict mediated the relationship between fathers’ income and paternal involvement. These differently functioning pathways reflect a need to distinguish how a father’s basic demographic and more psychosocially-oriented factors relate to involvement with his child.

Outside of direct co-parental or spousal support, previous research also shows that the network of friends, family members, and community contacts often serve as sources of support for the father during early fatherhood (Harknett & Knab, 2007). This area of research has repeatedly shown that social support of fathers may indirectly influence children through the quality of paternal involvement and via the co-parental relationship (Parke, 2002; Pleck, 1997). Importantly, both direct involvement by the father as well as the quality of the father’s participation in the relationship with his spouse have been shown to clearly impact child development.

The current study extends Belsky’s (1984) model of determinants of paternal involvement utilizing a multidimensional measurement of paternal involvement with infants (Singley et al., 2018). To examine the relationships between four areas of paternal involvement with infants and the domains of child characteristics, fathers’ psychosocial functioning, fathers’ relationship with his partner, and fathers’ contextual supports, variables were grouped together to examine the relationships between the constructs. Although Belsky’s (1984) model consists of three domains, in the current study, we opted to create a separate block of variables that reflect aspects of fathers’ psychosocial functioning because these factors lend themselves more to clinical intervention with fathers (Day & Lamb, 2004; Dermott, 2008; Moss & Deven, 2006). The subsequent sections provide an overview of current literature on
the theoretically driven categories of determinants of fathering: child characteristics, father relational and contextual characteristics, and father psychosocial characteristics.

**Child Characteristics**

Child characteristics including gender, age, and temperament have historically been examined as determinants of maternal parenting behaviors, often highlighting complex relationships and interactions (Belsky et al., 1998; van Aken et al., 2007). Research on children’s gender as a predictor of paternal involvement is inconsistent (Cooksey & Craig, 1998; Keizer et al., 2014) and it appears moderated by whether or not the father resides with his children (Coley & Hernandez, 2006). Less attention has been paid to how other child characteristics, including common infant health conditions like colic or reflux, impact paternal infant involvement. Considering infant conditions and partner relationships have been significant protective factors for mothers of infants experiencing colic (Alexander et al., 2017), the lack of research on fathers’ experiences is surprising. Infant crying was associated with increases in anger and doubt in a sample of fathers of infants four-months-old in Australia (Cook et al., 2017). When crying problems were reported for six-month-olds, fathers indicated higher depressive symptoms as well as lower support from family and friends, indicating the need to consider infant age and crying behaviors as it relates to father-related factors. Similarly, a qualitative study of fathers of an infant who was previously in the NICU, revealed themes of emotional strain and helplessness along with themes of wanting to be there for their child (Hearn et al., 2019). The fathers’ expectations of involvement aligned with provider and protector, yet the experience of spending time with their infant in the NICU facilitated a change in involvement, with fathers identifying more with caregiving roles. The limited research on fathers of infants with health issues suggests that caring for infants with colic or reflux may be associated with different dimensions of father involvement.

**Father Contextual and Relational Characteristics**

Fathers’ age, education, and employment status are demographic characteristics that have been examined in the paternal involvement literature, although the findings have been inconsistent. Fathers’ involvement in domestic care including child care varies as a function of family-earner status (Norman & Elliot, 2015). The impact of employment on
paternal involvement is mixed. Some studies show that working more predicts less involvement because of time away from the family (Yeung et al., 2001). Conversely, although play and responsibility were not impacted, McGill (2014) found that hours worked negatively predicted paternal involvement for physical care in children ages birth to 19 years. Fathers who report living with fewer financial limitations emphasized the role of the father as protector, attending to the use of safety equipment, indicating that dimensions of father involvement may be impacted by the financial situation of the father (Olsen et al., 2015). As more mothers are employed full-time, thus participating in the financial contributions to the family, fathers are participating in more child care duties (Raley et al., 2012). With regard to age and education, older, more educated fathers generally have higher levels of involvement (King et al., 2004). Of all the domains studied, the contextual predictor of parenting alliance between the coparents has received the most attention with the closer the couple’s relationship, the more highly involved the father (Macon et al., 2017). Mothers’ perceptions of fathers’ work at home predicted higher reports of marital quality and, in turn, mothers’ positive perceptions of the father and child relationship (Galovan et al., 2014). While fathers in dual employed partnerships participate in more housework, mothers continue reporting frustration with being responsible for more daily housework and childcare duties than fathers, often referred to as the second shift for women (Walters & Whitehouse, 2012).

**Father Psychosocial Characteristics**

As gender role norms and expectations for fathers evolve, it is important to explore men’s experiences of gender role socialization as they relate to fatherhood. Traditional masculine norms encourage men to provide for their families, emphasize work and career success as measures of masculinity and self-worth, and diminish the value of displays of affection and emotion (O’Neil, 2008). Men’s decisions to adhere to or violate masculine norms may lead to the experience of gender role conflict, which can have numerous negative implications for men’s mental health and relationship functioning (see O’Neil, 2015 for review). While research on the impact of gender role conflict on fatherhood is scant, fathers’ experiences of gender role conflict are associated with decreased parenting self-efficacy, parenting satisfaction, and involvement (Molenda-Kostanski, 2016).

Previous examinations of paternal mental health indicate that fathers of infants may experience increases in stress, anxiety, and depression (Bronte-Tinkew et al., 2007) and consequently lower levels of paternal
involvement (Roggman et al., 2002). Paternal depression impacts the family system and the interactions with its members (Lamb, 2010). Conversely, paternal involvement is associated with positive psychosocial outcomes such as increases in fathers’ self-esteem, self-efficacy, and lower levels of psychological distress (Murdock, 2013; Schindler, 2010). For instance, the more paternal involvement and financial contributions a father provides, the greater impact his involvement has on his psychological well-being (Schindler, 2010). Co-parenting and parenting interactions within a family system are also impacted by fathers’ self-efficacy (Sevigny & Loutzenhiser, 2009), suggesting that a nuanced understanding of paternal involvement requires consideration of fathers’ psychosocial characteristics.

**Current Study**

To refine understanding of the factors associated with paternal involvement, this study builds upon Belsky’s (1984) model of parental determinants. We utilize the PIWIS, a multidimensional measurement of paternal involvement with infants, (Singley et al., 2018) to conduct an examination of paternal involvement based on the maternal and paternal literature, along with anecdotal evidence from clinical work with families. Informed by the literature, we expected four domains to differentially predict paternal involvement: children’s characteristics, fathers’ demographic characteristics, fathers’ relationship characteristics, and fathers’ psychosocial characteristics. Our separation of father demographics and fathers’ psychosocial characteristics was based on the latter being a common, targetable area in clinical and programmatic work. For this reason, we examine how these factors, which lend themselves to clinical intervention, differentially predict specific dimensions of paternal involvement. Thus, this study explores relations between child characteristics (i.e. colic, reflux, age, and first child), father characteristics (i.e. education, employment, race, and financial contributions), fathers’ psychosocial characteristics (i.e. depression, gender role conflict, parenting satisfaction, infant care self-efficacy, and social support), and relationship characteristics (i.e. partner financial contributions and parenting alliance) along the five domains of paternal involvement of the PIWIS (Singley et al., 2018). Specifically, the following hypotheses were tested while controlling for child age, sex, and birth order:

Hypothesis 1: Child characteristics including colic and reflux will be associated with lower levels of paternal involvement.
Hypothesis 2: Father demographic characteristics will be associated with paternal involvement. More specifically, as education level of the father increases, their involvement will increase. As the father’s financial contributions and employment outside the home increase, their involvement will decrease.

Hypothesis 3: Relationship characteristics will be associated with paternal involvement. More specifically, partner financial contributions, parenting alliance, and partner social support will be positively associated with paternal involvement.

Hypothesis 4: Fathers’ psychosocial characteristics will be associated with paternal involvement. More specifically, depression and gender-role conflict will be associated with less paternal involvement, and infant care self-efficacy and social support from friends and family will be associated with more involvement.

Method

Participants and Procedures

Prior to recruitment, this study obtained Institutional Review Board (blinded for review) approval. Fathers (N = 456) were recruited by Qualtrics Panels service utilizing multiple sampling techniques (e.g., recruitment in mobile applications, in-person recruitment, and telephone sampling) to develop a database of potential participants. Inclusion criteria included being a father of an infant between the ages of 0 and 12 months (M = 6.86, SD = 3.32) and living with the infant and the infant’s other parent. Only participants who met this inclusion criteria and completed the entire survey were provided to the researchers, leading to no missing data. Participants were recruited from panels throughout the United States using quotas to match the racial diversity of the 2013 U.S. Census. Participants self-identified as White/European American (61.6%), Hispanic/Latino (17.1%), Black/African American (12.9%), Asian/Asian American (5.3%), Native American or American Indian (1.1%), and biracial or multiracial (2.0%). The mean age of fathers was 32.4 years old (SD = 5.3). For 58.5% of the participants, this was their first child. 87.3% of the fathers worked full-time, 4.8% worked part-time, 1.5% were unemployed, 2.9% were stay-at-home fathers, 2.0% were students, 0.9% were disabled, and 0.7% indicated having an “other” employment status. Marital status was reported as married (88.4%), partnered (9.0%),
single or dating (2.2%), divorced (0.2%), and having an “other” relationship status (0.2%). In general, those who were married were descriptively similar to those who were not, with only small differences, with those who were married feeling slightly more satisfied with their life, more supported, and somewhat less depressed. Participants reported a mean household income of $86,432.46 (Median = $75,000.00), and reported spending a mean of 54.8 months (SD = 54.2) in a relationship with the child’s other parent. After providing consent, participants completed a brief set of demographic questions about themselves and their infant (e.g., age, birth order, and colic).

Measures

Descriptive characteristics for all scales are located in Table 1.

Demographics. Participants completed a brief demographic measure to assess participant characteristics, partner status, and child characteristics. Participant characteristics included highest level of education (1 = Junior High School, 6 = Graduate Degree), income, amount of time spent employed outside the home, and self-identified race and sexual orientation. Financial contributions of the father and the partner were measured using two questions that asked participants to estimate the percentage of financial contribution that they and their partner made to the household and to care for the baby. With regard to child characteristics, age, birth order, diagnosis of colic and diagnosis of reflux were collected. Colic and reflux were assessed through self report of baby’s past diagnosis of colic and/or reflux by a healthcare professional.

The Paternal Involvement with Infants Scale. The Paternal Involvement with Infants Scale (PIWIS; Singley et al., 2018) measures frequency of paternal involvement across five subscales using 35 items answered on a seven-point Likert-type scale (1 = not at all, 7 = more than once a day). The Warmth and Attunement subscale measures feelings of emotional connection and playful interactions with the baby (e.g., soothing your baby, kissing your baby, and interactive play). The Control and Process Responsibility subscale reflects higher-order managerial elements of involvement (e.g., choosing appropriate toys and foods). The Indirect Care subscale examines involvement in transportation of the baby to medical appointments and child care. The Positive Engagement subscale measures hands-on care of the baby (e.g.,
Table 1. Descriptive Characteristics and Bivariate Correlations

<table>
<thead>
<tr>
<th></th>
<th>α</th>
<th>M(SD)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIWIS</td>
<td></td>
<td></td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Indirect care</td>
<td>0.73</td>
<td>4.0 (1.7)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Frustration</td>
<td>0.84</td>
<td>5.4 (1.0)</td>
<td>.41***</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Warmth &amp; attunement</td>
<td>0.83</td>
<td>4.0 (1.8)</td>
<td>–.30***</td>
<td>–.33***</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Control process and</td>
<td>0.86</td>
<td>6.3 (0.7)</td>
<td>.22***</td>
<td>.07</td>
<td>.32***</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>responsibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive engagement</td>
<td>0.81</td>
<td>5.7 (0.9)</td>
<td>.29***</td>
<td>.17***</td>
<td>.36***</td>
<td>.57***</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>PAI</td>
<td>0.95</td>
<td>86.1 (11.4)</td>
<td>–.10*</td>
<td>–.20***</td>
<td>.46***</td>
<td>.21***</td>
<td>.20***</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>MSPSS</td>
<td>0.94</td>
<td>66.6 (12.3)</td>
<td>–.02</td>
<td>–.15***</td>
<td>.40***</td>
<td>.28***</td>
<td>.20***</td>
<td>.40***</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>EDPS</td>
<td>0.85</td>
<td>8.3 (5.1)</td>
<td>.25***</td>
<td>–.44***</td>
<td>–.32***</td>
<td>.02</td>
<td>–.04</td>
<td>–.27***</td>
<td>–.28***</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>GRCS</td>
<td>0.95</td>
<td>46.8 (18.1)</td>
<td>.20***</td>
<td>.40***</td>
<td>–.23***</td>
<td>–.06</td>
<td>–.11*</td>
<td>–.22***</td>
<td>–.22***</td>
<td>.59***</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>PSOC</td>
<td>0.93</td>
<td>34.7 (11.5)</td>
<td>.25***</td>
<td>–.56***</td>
<td>.31***</td>
<td>–.01</td>
<td>.05</td>
<td>.23***</td>
<td>.14***</td>
<td>–.66***</td>
<td>–.67***</td>
<td>–</td>
</tr>
<tr>
<td>SEICS</td>
<td>0.94</td>
<td>49.4 (11.2)</td>
<td>.03</td>
<td>–.11</td>
<td>.23***</td>
<td>.25***</td>
<td>.20***</td>
<td>.21***</td>
<td>–.21***</td>
<td>–.16***</td>
<td>–.26***</td>
<td>.23***</td>
</tr>
</tbody>
</table>

Note. *p < .05, **p < .01, ***p < .001. PIWIS = Paternal Involvement with Infants Scale, PAI = Parenting Alliance Inventory, MSPSS = Multidimensional Scale of Perceived Social Support, EDPS = Edinburgh Postnatal Depression Scale, GRCS = Gender Role Conflict Scale, PSOC = Parenting Sense of Self Competence Scale, SEICS = Self-Efficacy in Infant Care Scale
diapering, swaddling, burping, and feeding). The Frustration Subscale examines negative emotional reactions to the baby (e.g., jealousy, resentfulness, and low tolerance of crying). The PIWIS subscales have adequate internal consistency ($\alpha = .77$ to .92) and moderate to strong test-retest reliability ($r = .51$ to .74).

**Parenting Alliance Inventory.** The Parenting Alliance Inventory (PAI; Abidin and Brunner, 1995) is a 20-item measure assessing the parents perception of their working relationship with their child’s other parent ($M = 4.3$, $SD = 0.6$, $\alpha = .95$). Items are answered on a five-point Likert-type scale (5 = strongly agree, 1 = strongly disagree), with higher scores reflecting a relatively higher perception of a good working relationship. The PAI has adequate internal consistency ($\alpha = .97$). The PAI has also demonstrated convergent validity with measures of marital satisfaction, parenting stress, and parenting style (Abidin & Brunner, 1995).

**Multidimensional Scale of Perceived Social Support.** The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) is a 16-item measure assessing the perceived availability of social supports from friends, family, military peers, and intimate partners with responses rated on a seven-point Likert-type scale (1 = very strongly disagree, 7 = very strong agree). The MSPSS has shown adequate internal consistency reliability ($\Omega = .87$; Osman et al., 2014). The MSPSS demonstrates divergent validity from measures of depression and anxiety, and convergent validity with measures of social support (Clara et al., 2003; Zimet et al., 1988).

**Edinburgh Postnatal Depression Scale.** The Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987) is a 10-item measure of postpartum depression measured with a four-point Likert-type scale and higher scores indicating more depressive symptoms. In previous studies of fathers with infants the EPDS has demonstrated adequate internal consistency ($\alpha = .84$; Fisher et al., 2012). One item (“The thought of harming myself has occurred to me”) was omitted at the request of the IRB. As a result, the maximum possible total score was reduced by three. The EPDS has demonstrated convergent validity with other measures of postnatal depression. Predictive validity has also been established through the ability to distinguish between depressed and non-depressed mothers (McBride et al., 2013).
Gender Role Conflict Scale. The Gender Role Conflict Scale (GRCS; O’Neil et al., 1986) is a 37-item measure of the extent to which men experience stress related to conflict with traditional masculine gender roles scored using a six-point Likert-type scale (6 = strongly agree, 1 = strongly disagree), with higher scores reflecting more conflict experienced when violating traditional masculine gender roles. For this study, we used the Restrictive Emotionality (eight items; e.g., “I have difficulty telling others I care about them”) and Conflicts Between Work and Leisure – Family Relations subscales (six items; e.g., “My needs to work or study keep me from my family or leisure more than I would like”). Research has shown the Restrictive Emotionality subscale ($\alpha = .82$) and Conflicts Between Work and Leisure – Family Relations ($\alpha = .75$) to have adequate internal consistency (O’Neil et al., 1986). Convergent validity has been established by comparing the GRCS to other measures of masculinity including Masculine Gender Role Stress Scale, Masculine Role Norms Scale, Male Role Norm Inventory, and the Conformity to Masculine Norm Inventory with correlations ranging from .32 to .49 across studies. Discriminant validity has been established by comparing the GRCS to sex role egalitarianism and homophobia (O’Neil, 2008).

Parenting Sense of Competence Scale. The Parenting Sense of Competence Scale (PSOC; Gibaud-Wallston & Wandersman, 1978) is a 17-item measure of a parent’s overall sense of competence in child rearing tasks assessed on a seven-point Likert-type scale (1 = strongly disagree, 7 = strongly agree) with higher scores indicate greater sense of parenting competence. For this study, we examined the nine-item Parental Satisfaction Subscale (PSCS), which assesses one’s satisfaction with parenting a young child. Research has demonstrated an adequate internal consistency ($\alpha = .75$), as well as significant positive correlations with measures of fathers’ child-rearing practices ($r = .37$, $p < .01$; Ohan et al., 2000) for the PSCS (Johnston & Mash, 1989).

Self-Efficacy in Infant Care Scale. The Self-Efficacy in Infant Care Scale (SEICS; Froman & Owen, 1989) is a 40-item measure of a parent’s perceived ability to successfully and competently care for an infant’s needs during the infant’s first 12 months, with items scored on a five-point Likert-type scale (1 = strongly disagree, 5 = strongly agree). For this study, we used the 13-item Health Skills subscale to measure paternal self-efficacy in caring for an infant’s health needs (e.g., “I am confident that I am able to decide when I should give my baby a tepid
sponge when she/he has a fever”). Previous studies of the Health Skills subscale have shown adequate internal consistency (α = .89) and strong evidence of construct validity (Froman & Owen, 1989; Prasopkittikun et al., 2006).

**Results**

Five separate linear regressions were conducted with one of the five PIWIS subscales serving as the dependent variable for each linear regression. Each regression included variables exploring relationships between the five types of parental infant involvement and child characteristics, father characteristics, partner relationship as perceived by the father, and father psychosocial functioning. Results from these regressions are presented in Table 2. All of the five parenting domains were positively predicted by the included variables within the overall model: Positive Engagement \( [F(17, 438) = 6.35, \ p < .001, \ R^2 = .20, \ \text{adj. } R^2 = .17] \), Indirect Care \( [F(17, 438) = 12.49, \ p < .001, \ R^2 = .33, \ \text{adj. } R^2 = .30] \), Frustration \( [F(17, 438) = 19.59, \ p < .001, \ R^2 = .43, \ \text{adj. } R^2 = .41] \), Warmth and Attunement \( [F(17, 438) = 22.21, \ p < .001, \ R^2 = .46, \ \text{adj. } R^2 = .44] \), and Control and Process Responsibility \( [F(17, 438) = 7.53, \ p < .001, \ R^2 = .23, \ \text{adj. } R^2 = .20] \).

As such, results broadly reveal that child and father characteristics as well as partner relationship and father psychosocial functioning impact different aspects of parental involvement with infants. For the Frustration, Warmth and Attunement, and Indirect Care forms of parental involvement, variables included within analyses accounted for a large amount of variance, as defined by Cohen’s (1988) estimation of effects \( (R < .5; \ < 25\% \ \text{of variance in the dependent variable explained, as observed in } R^2 \ \text{values}) \). The remaining two domains of parental engagement (i.e., Control and Process Responsibility and Positive Engagement) have an amount of their variance explained which is best described as medium in effect \( (R < .3; \ < 9\% \ \text{of variance explained}) \). In addition to significant overall models, notable and distinct patterns of independent contribution were evident across the included variables for each of the five parental involvement domains and these patterns of independent contribution at least partially supported each of our hypotheses. Hypothesis 1 was supported as colic and reflux were associated with the Indirect Care and Warmth and Attunement. As expected in Hypothesis 2, employment and financial contributions of the father were negatively associated with parental involvement as measured by Indirect Care; however, education was
Table 2. Simultaneous Regression Analyses for each of the PIWIS domains

<table>
<thead>
<tr>
<th>Variable</th>
<th>Positive Engagement</th>
<th>Indirect Care</th>
<th>Frustration</th>
<th>Warmth and Attunement</th>
<th>Control and Process Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>$t$</td>
<td>$\beta$</td>
<td>$T$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>Child Characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colic</td>
<td>$-.09$</td>
<td>$-1.28$</td>
<td>$-.07$</td>
<td>$-1.00$</td>
<td>$-.13$</td>
</tr>
<tr>
<td>Reflux</td>
<td>$-.10$</td>
<td>$-1.50$</td>
<td>$-.22$</td>
<td>$-3.56^{***}$</td>
<td>$-.11$</td>
</tr>
<tr>
<td>Sex</td>
<td>$.11$</td>
<td>$2.39^*$</td>
<td>$.10$</td>
<td>$2.48^*$</td>
<td>$-.08$</td>
</tr>
<tr>
<td>Age</td>
<td>$-.05$</td>
<td>$-1.16$</td>
<td>$.12$</td>
<td>$2.94^{***}$</td>
<td>$.04$</td>
</tr>
<tr>
<td>First child?</td>
<td>$-.09$</td>
<td>$2.03^*$</td>
<td>$.08$</td>
<td>$1.87^*$</td>
<td>$.06$</td>
</tr>
<tr>
<td>Father Characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>$.02$</td>
<td>$.40$</td>
<td>$.06$</td>
<td>$1.56$</td>
<td>$.06$</td>
</tr>
<tr>
<td>Employment</td>
<td>$-.06$</td>
<td>$-1.38$</td>
<td>$.09$</td>
<td>$2.24^*$</td>
<td>$.01$</td>
</tr>
<tr>
<td>Financial contrib.</td>
<td>$-.15$</td>
<td>$-2.24^*$</td>
<td>$.26$</td>
<td>$-4.38^{***}$</td>
<td>$-.05$</td>
</tr>
<tr>
<td>Relationship Characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner financial contrib.</td>
<td>$-.15$</td>
<td>$-2.24^*$</td>
<td>$-.26$</td>
<td>$-4.38^{***}$</td>
<td>$-.05$</td>
</tr>
<tr>
<td>Parenting alliance</td>
<td>$-.13$</td>
<td>$2.43^*$.</td>
<td>$.22$</td>
<td>$4.5^{***}$</td>
<td>$.01$</td>
</tr>
<tr>
<td>Social support: Partner</td>
<td>$-.18$</td>
<td>$2.70^{***}$</td>
<td>$.03$</td>
<td>$.45$</td>
<td>$.06$</td>
</tr>
<tr>
<td>Father Psychosocial Characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>$.04$</td>
<td>$.71$</td>
<td>$.05$</td>
<td>$.95$</td>
<td>$.06$</td>
</tr>
<tr>
<td>Gender role conflict</td>
<td>$-.08$</td>
<td>$-1.30$</td>
<td>$.04$</td>
<td>$.75$</td>
<td>$.01$</td>
</tr>
<tr>
<td>Parenting satisfaction</td>
<td>$-.02$</td>
<td>$-2.3$</td>
<td>$.09$</td>
<td>$1.46$</td>
<td>$.42$</td>
</tr>
<tr>
<td>Infant care self-efficacy</td>
<td>$-.13$</td>
<td>$2.84^{***}$</td>
<td>$.07$</td>
<td>$.64$</td>
<td>$.02$</td>
</tr>
<tr>
<td>Social support: Family</td>
<td>$-.22$</td>
<td>$-3.15^{***}$</td>
<td>$.03$</td>
<td>$.52$</td>
<td>$.04$</td>
</tr>
<tr>
<td>Social support: Friends</td>
<td>$.26$</td>
<td>$4.55^{***}$</td>
<td>$.20$</td>
<td>$3.76^{***}$</td>
<td>$.13$</td>
</tr>
</tbody>
</table>

Note. *$p < .05$, **$p < .01$, ***$p < .001$. Sex is coded with higher values reflecting the infant child being a girl. Higher values on First child indicate that this infant is the father’s first baby. Higher values for Colic and Reflux indicate that the infant has those conditions. The remaining demographic, relationship, and psychosocial characteristics are coded such that a higher value indicates more of the given characteristics.
not meaningfully associated with parental involvement. Hypothesis 3 predicted that parental relationship characteristics would predict greater involvement: this was most notable in (a) the relationships between parenting alliance, perceived social support, and the PIWIS Warmth and Attunement domain; and (b) the Indirect Care and Control and Process Responsibility PIWIS domains for partner financial contributions. Lastly, greater social support was associated with an array of more involved parenting behaviors, supporting Hypothesis 4. Variables are presented in the above mentioned theoretical framework (e.g., father characteristics, partner relationship, etc.) along with the standardized betas and significance of their independent contribution, within the regression table.

**Discussion**

Building upon previous theoretical and methodological contributions (Belsky, 1984; Singley et al., 2018), this study expands the literature by examining the intricacies of the relationships between multiple determinants of parenting and multiple dimensions of paternal involvement. Results from this study support focusing on interrelationships among child characteristics, father psychosocial characteristics, and father contextual and interpersonal relationships in determining father involvement. Additionally, our results revealed nuances amongst determinants of father involvement and multiple dimensions of paternal involvement. Results and implications from the results of the hierarchical linear regression models are explained further.

**Child Characteristics**

Several child characteristics were significant predictors of paternal involvement. Fathers reported more positive engagement and indirect care with their first child than with subsequent children. Age was also a significant factor, with fathers’ reporting increased involvement in indirect care as their infants got older. Gender was significant for three of the dimensions of father involvement with increases in engagement and indirect care for female infants and decrease in frustration for fathers of female infants. Previous research has shown mixed results regarding father involvement and gender with earlier studies showing fathers were more engaged with male infants (Leavell et al., 2012; Manlove & Vernon-Feagans, 2002). Although these findings were significant, status as first child, age, and gender were imputed into the hierarchical
linear regression as control variables. As a result, these findings do not connect to specific hypotheses.

Perhaps the most interesting finding with regard to child characteristics comes from fathers of infants with colic and reflux. Fathers of infants with reflux reported higher levels of warmth and attunement, indicating that they engage in more play and are more emotionally connected to their infants. These findings suggest that fathers of infants with reflux may be more emotionally connected to their infants through their efforts to comfort them. However, additional research is warranted given the finding that fathers of infants with reflux are less involved in indirect care activities. Research examining colic in infants primarily examines a father’s role as a support to the mother and is often reported from a mother’s perspective (Alexander et al., 2017). This result highlights an important finding in that child health in infancy can decrease fathers’ frustration, which may be a resilience factor.

**Father Contextual Characteristics**

**Father Demographics.** Relations between father demographics and paternal involvement were mixed in that employment status and financial contributions were the strongest predictors of paternal involvement. The more time that fathers spent working outside the home, the more involved they were in indirect care tasks with their infants. Employment status was not a predictor of positive engagement, frustration, or control and process responsibility, but fathers reported less warmth and attunement with their infants as their amount of time working outside the home increased. These mixed findings mirror past research in that hours working outside the home have been found to be positive (McGill, 2014) and negative (Yeung et al., 2001) predictors of involvement with children. When financial contributions are explored outside of the context of employment status (i.e., total amount of finances provided to the family regardless of hours worked), levels of positive engagement, indirect care, and control and process responsibility decreased as fathers’ financial contributions increased. Taken together, these findings suggest that it is not the amount of time the father spends at his job, but the amount of money that he contributes to his infant that more broadly predicts lower levels of involvement positive engagement, indirect care, and control and process responsibility. The intricacies of this finding could be accounted for in how men consider their definition of contributing to fathering. For example, when fathers provide more financially, they may see this as being a good provider, which
could account for the lower levels of positive engagement, indirect care, and control and process responsibility.

**Partner Relationships.** Consistent with past research (Coley & Hernandez, 2006), characteristics of fathers’ relationships with their partners appear to be the strongest predictors of paternal involvement. As partner financial contributions to infant care increased, fathers reported more positive engagement, indirect care, and control and process responsibility with their infants. As with past research, new fathers are engaging in more caregiving of their infants when their partners contribute more financially to the family (Schindler, 2010). When considered alongside findings about fathers’ work outside the home and financial contributions to infant care, these results highlight the dynamic tension that many new fathers report when parenting in a two-income household (Harrington et al., 2011). The findings that fathers’ financial contributions and his partner’s financial contributions are (respectively) negatively and positively predictive of the same three core dimensions of paternal involvement (PE, IC, and CPR) suggest that using paternal financial contribution alone does not provide adequate indication of paternal involvement. Fathers’ perceptions of parenting alliance and partner social support are associated with higher levels of positive engagement, warmth and attunement, and control and process responsibility. This finding is consistent with Isacco and colleagues (2010) findings that perceptions of parenting alliance and partner social support predicted positive engagement among fathers.

**Father Psychosocial Characteristics**

**Gender role conflict and depression.** Although past research suggests that gender role socialization influences paternal involvement (e.g., Molenda-Kostanski, 2016; Petts et al., 2018), fathers’ experiences of gender role conflict were not predictive of paternal involvement. This may reflect evolving gender norms for fatherhood that include increased prioritization of caregiving and emotional connection (Harrington et al., 2011; McGill, 2014). While past research suggests that fathers who experience paternal depression engage in less positive and more negative parenting behaviors (McMahon & Spector, 2007), fathers in the current study reported increased involvement in control and process responsibility when depressed. No other domains of involvement were associated with depression. Given that a variety of studies have shown that approximately one in ten new fathers report depression (Cameron et al., 2016; Paulson & Bazemore, 2010), this finding is
especially important in that the majority of domains of involvement with infants are unaffected.

**Satisfaction and Self-Efficacy.** Parenting satisfaction was a strong predictor of warmth and attunement, indicating that when fathers enjoy their role as a parent, they are more engaged in play and emotional connection with their infants. Results of the current study demonstrate that parenting satisfaction was not a significant predictor of positive engagement, indirect care, frustration, or control and process responsibility. Thus, fathers may continue to be engaged across many domains of involvement even when they are not satisfied with their role as a parent. Infant care self-efficacy was shown to be predictive only of positive engagement as well as control and process responsibility. This finding is meaningful in that a father’s level of confidence in caring for his infant does not predict him being more involved in play activities, which is the type of involvement most commonly ascribed to fathers of infants (Lewis & Lamb, 2003). In this way, it appears that he is likely to engage in play no matter what, but needs to experience a higher level of confidence to change diapers and help set the baby’s schedule.

**Social Support.** Receiving support from friends proved to be a significant positive predictor of four of the five domains of paternal involvement under this study. Men have difficulty with seeking support and new fathers need support in unique ways (Isacco et al., 2016; Rominov et al., 2018) during the perinatal period. Our results also underscore the need to instruct fathers to be proactive in getting support from friends, which may in turn maximize their involvement with their infants.

Contrary to expectations and previous research in family support, our findings show a negative relationship between fathers’ experience of family support and positive engagement and control and process responsibility. This finding may reflect a type of “extended family gatekeeping” in which supportive family members engage in much of the hands-on work of caring for the infant, thus decreasing the father’s involvement in providing hands-on care for his child as well as determining higher-level aspects of the child’s routine (e.g., feeding schedule). Although this has yet to receive scholarly attention, researchers should address the complex bidirectional relationship between family support and the father’s involvement with his infant.

**Implications for Practice**

Although there are a number of clinically relevant findings presented earlier, we would like to highlight three areas that we believe to be
important considerations for clinicians working with fathers of infants. First, clinicians are encouraged to take a more nuanced approach to exploration of financial contributions of both parents. Results of the current study indicate that increased financial contributions (the primary means by which paternal involvement is typically assessed) are associated with less indirect care, positive engagement, and decision-making. Working fathers may benefit from supportive interventions that enhance their levels of involvement in these areas (e.g., encouraging fathers to take their infants to medical appointments), being more engaged in decision making (e.g., finding a pediatrician), and making more time for positive engagement with their infants. Furthermore, clinicians are encouraged to explore the challenges and stress that may come from balancing increased paternal involvement with work obligations, systemic issues at work (e.g., lack of paternity leave), and fathers’ beliefs about their duty to provide financially for their families. Relatedly, partner financial contributions appear to be strong predictors of increased involvement among fathers. As the fathers’ partners contribute more in terms of providing for the family financially, fathers may take up more of the caregiving role. Clinicians are therefore encouraged to attend not only to how much a father contributes financially but also rather to the overall balance that both partners contribute financially and in the day-to-day care of their infant.

Results of the current study also provide important information regarding fathers’ experiences of paternal depression. Although clinicians might logically expect fathers with depression to be less involved, this was not the case in the current sample. In fact, fathers in the study became more involved in making decisions for their infants when experiencing depression. Perhaps more importantly, levels of depression were not associated with fathers’ decreased hands-on care for their babies, play with babies, or indirect care. Relatedly, as fathers reported increased levels of depression, they did not report more frustration with their infants or with being a father. This finding is especially important given that increased anger and withdrawal from significant relationships are common among men with depression (Oliffe & Phillips, 2008). As a result, monitoring for decreased paternal involvement may not be an effective strategy for assessing fathers’ depression.

Finally, results of the current study provide information on the unique influence of social support on the involvement of fathers of infants. Although social support from partner and friends were positively associated with forms of involvement, support from family was associated with less positive engagement. It may be beneficial for
clinicians to work with fathers of infants to seek out and enhance the social support they receive from their partner and friends, and to remind them that self-care and time with their partner may enhance their effectiveness as a father. It may also be beneficial to explore men’s perceptions of extended family support. If support from parents, in-laws, or other extended family are preventing a father from taking a more direct role in caring for his infant, he may need supportive interventions to process these feelings and to develop a plan to advocate for himself in this area without harming these important relationships.

Limitations and Future Directions

The primary limitations of the current study are related to mono-method bias and generalizability. Participants completed the study online, which limited recruitment to those with internet access. Relatedly, the use of self-report measures of child characteristics, father characteristics, relationship characteristics, and psychosocial characteristics provides the fathers’ perceptions of these areas and are subject to social desirability bias. Furthermore, the current sample consisted of residential fathers living with their partners and infants. As such, these findings may not generalize to non-residential fathers or single fathers. Finally, although the sample in the current study matches the most recent US Census with regard to race, future studies would benefit from stratification of factors including household income.

Results of the current study suggest that fathers’ perceptions of partner relationships are significant predictors of paternal involvement. Future studies may benefit from taking a dyadic approach to assessing both partners’ perceptions of the child, father, relationship, and psychosocial characteristics examined in the current study. Examination of child characteristics could be strengthened in future studies through inclusion of measures of child emotionality and temperament. Given significant findings related to social support, interventions to develop social media platforms to support new fathers could be an interesting way to enhance support and engagement by connecting fathers via informal interactions with other fathers who share in their fatherhood journey (Rominov et al., 2018). Furthermore, utilizing this multidimensional approach with special populations of fathers (e.g., military fathers) may enhance our understanding of factors that promote paternal involvement with specific groups of fathers.
Conclusions
Given the numerous benefits of the increased role of fathers in the lives of even very young children, developing a more nuanced picture of what today’s fathers are doing with their infant children along with a clear understanding of the factors that facilitate that involvement is paramount for research, clinical practice, and policy. The answer to the question, “How involved is this father?” often has important legal, relationship, and/or clinical implications. In order to better support new fathers and their families for higher levels of involvement, it is essential that those charged with assessing fathers use a valid, reliable, and multidimensional approach. Results from this study deepen and extend previous research by showing how commonly studied psychosocial factors including child characteristics, father characteristics, the father’s relationship with his partner, and the father’s psychosocial functioning differentially predict specific domains of paternal involvement. Findings provide support for examining paternal involvement as a multidimensional construct using the PIWIS (Singley et al., 2018). Researchers are encouraged to continue to utilize a systemic, multidimensional, and psychosocially oriented approach to predicting paternal involvement.

Declaration of Conflicting Interests
The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding
The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD
Brian P. Cole https://orcid.org/0000-0002-7033-1601

References


