

LITERATURE REVIEW COVER SHEET

The Role of Paternal Responsiveness in Infant Development

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THE ROLE OF PATERNAL RESPONSIVENESS IN INFANT DEVELOPMENT

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Literature Review: The Role of Paternal Responsiveness in Infant Development¹**Abstract**

Understanding the impact of father-infant interactions on early infant development is of particular interest, given that early development predicts later cognitive development and fathers are becoming more involved in infant care. Paternal responsiveness is a core component of positive father-infant interaction and can be defined as verbal and non-verbal paternal behaviours towards the infant; including stimulation, sensitivity and warmth. Attachment theory hypothesises that paternal responsiveness influences infant development, while evidence from research studies is promising but limited at present. While there is strong evidence for a concurrent association between paternal responsiveness and infant development, this could be explained by reverse causality. Longitudinal studies of observed paternal responsiveness are rare and have provided inconsistent results. Methodological differences and limitations make it difficult to draw any firm conclusions. Future research is certainly warranted, and would benefit from exploring paternal responsiveness using validated measures within longitudinal or experimental designs in UK community and clinical samples. Implications for clinical practice include the possibility of offering early interventions to improve paternal responsiveness.

Keywords: paternal responsiveness, paternal sensitivity, infant development

¹ This literature review has been formatted according to the nominated journal; Psychological Review. Instructions to authors are included in Appendix A.

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Introduction

Early infant development is predictive of later cognitive ability (Sutcliffe, Soo & Barnes, 2010), which has implications for academic achievement, behavioural conduct and social competence in childhood, adolescence and beyond (Masten, Hubbard, Gest, Tellegen, Garnezy, & Ramirez, 1999). Parents care for, comfort and teach their dependent infants every day, and thus have the potential to influence their infants' development. Although mothers are usually the primary caregivers to their dependent infants, fathers in two-parent families in the United Kingdom (UK) are becoming more involved in infant care than ever before (Smith, 2004). Paternal care of infants and young children increased by 800% between 1975 and 1997; from an average of 15 minutes to two hours in a typical working day (Fisher, McCulloch & Gershuny, 1999). Fathers now carry out a quarter to a third of child-care in two-parent families (Equal Opportunities Commission, 2003). This is likely to increase as maternal employment increases and the gender pay-gap continues to reduce; meaning that for many families automatic allocation of the 'breadwinner' role to fathers may not necessarily be financially viable. In reflection of this and the raising awareness of the importance of paternal involvement for child outcomes (Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2008); government policy has begun to change, allowing fathers to take up to six months additional paternity leave. The increasing involvement of fathers in their infants' care highlights the need to study the nature and influence of father-infant interaction on infant development.

Despite researchers' efforts in recent years to study the father-child relationship, literature in the field of parent-infant interaction and relationships has predominately focussed on mothers, with little comparative focus on father-infant interaction, or the

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possibility that fathers contribute to infant development (Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000).

In order to somewhat readdress the imbalance, this review will focus solely on the influence of the father in infancy². Specifically, it will synthesise what is currently known about the role of a core component of father-infant interactions in infant development; paternal responsiveness. The review will begin with an explanation of the search strategy, followed by consideration of the definition and measurement of paternal responsiveness. The review will then summarise the existing theory and research evidence relating to the relationship between father responsiveness and infant development. Finally, clinical applications and directions for future research will be suggested.

A fully systematic review was not considered feasible given time and resource limitations, and therefore a narrative review is presented. A structured search strategy was employed to determine if articles were relevant for the purposes of the review. Three electronic data-bases were searched in August 2011 and April 2013. Articles included in the review measured observed father-infant interactions; children's socio-cognitive outcomes either concurrently or longitudinally to the measurement of observed father-infant interaction; and included children under 3 years old. Articles that were not written in English, those that included animal participants, mothers and infants only, children over 3 years old, duplicates, and clearly irrelevant articles were excluded. In order to maximise the inclusion of applicable material, further articles were found by examining the reference lists of pertinent articles. This resulted in 45 publications being incorporated in the review.

² For the purposes of this review 'father' will include biological fathers as well as father figures (such as step-fathers or men cohabiting with the child's mother), as a biological bond has not been found to be necessary for mediating outcomes (Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2008). The focus will be on the role of fathers who are involved in their infants' lives in two-parent families, rather than father-absence which has been extensively explored elsewhere in the literature (see Single-Rushton, & McLanahan, 2004 for a review). For the purposes of consistency in terms, 'infant' refers to a child under 2 years old.

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Table 1

Search strategy and results

Search Terms	Number of Results		
	Psych Info	Psych Articles	ISI Web of Science
'father sensitivity' OR 'father respons*' OR 'father-infant interaction' OR 'father-infant attachment' OR 'father-toddler interaction'	834	48	8787
'father sensitivity' OR 'father respons*' OR 'father-infant interaction' OR 'father-infant attachment'	831	48	8780
'father sensitivity' OR 'father respons*' OR 'father-infant interaction'	808	46	8750
'Paternal sensitivity' OR 'paternal respons*' OR 'father-infant interaction'	318	18	6601
'paternal respons*' AND 'infant development'	3	0	135
'paternal sensitivity' AND 'infant development'	3	1	37
'father-infant interaction' AND 'infant development'	14	2	51
'father-infant interaction' AND 'infant outcome'	14	0	8
'father' AND 'infant' AND 'observed interaction'	44	4	178
'father sensitivity' AND 'infant development'	3	1	69
'father respons*' AND 'infant development'	7	2	284
Father AND infant AND 'observed interaction' AND 'develop*' OR outcome OR cognitive OR language OR emotional OR, social OR behav* OR motor'	28	3	157
'father-infant interaction' AND 'develop*' OR outcome OR cognitive OR language OR emotional OR, social OR behav* OR motor'	40	10	105
'paternal respon*' AND 'infant' AND 'develop*' OR outcome OR cognitive OR language OR emotional OR, social OR behav* OR motor'	82	7	338

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'paternal sensitivity' AND 'infant' AND 'develop* OR outcome OR cognitive OR language OR emotional OR, social OR behav* OR motor'	24	4	75
'father sensitivity' AND 'infant AND 'develop* OR outcome OR cognitive OR language OR emotional OR, social OR behav* OR motor'	56	7	156
'father respon*' AND infant AND 'develop* OR outcome OR cognitive OR language OR emotional OR, social OR behav* OR motor'	559	28	723
'Paternal sensitivity' AND 'predict' AND infant	5	1	20
'Paternal sensitivity' AND 'associat*' AND infant	12	3	67
'Paternal sensitivity' AND 'related' AND infant	8	1	24
'Paternal sensitivity' AND 'correl*' AND infant	7	2	20
'paternal respons*' AND 'predict' AND infant	0	0	32
'paternal respons*' AND 'associat*' AND 'infant'	0	3	175
'paternal respons*' AND 'related' AND infant	4	0	86
'paternal respons*' AND 'correl*' AND infant	1	0	72
'father-infant interaction' AND 'predict' AND infant	2	12	24
'father-infant interaction' AND 'associat*' AND infant	19	2	33
'father-infant interaction' AND 'related' AND infant	14	2	24
father-infant interaction' AND 'correl*' AND infant	7	0	11
Total	3747	255	35822
39824			

Defining and Measuring Paternal Responsiveness

Although there is a vast literature on the benefits of paternal *involvement* for children's social, behavioural, psychological and cognitive development from infancy to young adulthood (see Sarkadi et al., 2008 for a systematic review), it is less clear what exactly constitutes effective paternal involvement as the fathers' role has many aspects. Lamb, Pleck, Charnov and Levine (1985) coined the term 'paternal involvement' and identified

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three important elements: Accessibility, engagement (amount of time spent in care-taking and playing activities); and responsibility. In attempt to further conceptualise important aspects of paternal engagement, some have made the helpful distinction between the *quantity and quality* of father-child interaction (e.g. Easterbrooks & Golding, 1984; Lamb, 2010). More recent theories have emphasised particular qualities of father-infant interactions, such as the level of paternal warmth and ‘responsiveness’ (Pleck, 2010).

In the mother literature, terms such as ‘maternal sensitivity’ and ‘maternal responsiveness’ have been used somewhat interchangeably as umbrella terms to encapsulate the quality of mother-infant interactions without much consistency (Shin, Park, Ryu, & Seomun, 2008). Maternal sensitivity was originally defined by Ainsworth, Blehar, Waters, and Wall (1978) as the mother’s ability to accurately perceive the child’s needs and signals and respond promptly and contingently (Ainsworth et al 1978). Maternal sensitivity has been broken down and studied in smaller components including warmth, verbal and non-verbal positive responses, reciprocity, and attunement or contingency of the mothers’ response to the infants’ hypothesised internal state (Shin et al., 2008).

Akin to the mother literature, defining the quality of father-infant interaction is not an easy task as researchers have used many different over-lapping terms such as paternal ‘nurturance’ (Black, Dubowitz, & Starr 1999), ‘support’ (Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004), ‘sensitivity’ (Kelley, Smith, Green, Berndt, & Rodgers (1998), ‘responsiveness’ (Shannon, Tamis-LeMonda, & Cabrera, 2006; Shannon, Tamis-LeMonda, London, & Cabrera, 2002), to name but a few. Although a full conceptual analysis is beyond the scope of this review, it appears that researchers are often referring to the same core components of paternal responses; stimulatory/didactic behaviours, sensitive behaviours, or verbal/non-verbal expressions of positive affect (e.g. Shannon et al., 2006).

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Stimulation can be described as any activating interaction directed toward the infant to promote his or her exploration or understanding. This may include focusing the infants' attention, introducing, describing and demonstrating, and thus may be didactic (Bornstein, 2002; De Wolff & Van Ijzendoorn, 1997). This can be contrasted with sensitivity; which relates to the *contingent* reactions to infants' verbal and nonverbal cues (Ainsworth et al., 1987). Expressions of positive affect or warmth are affective displays that are positive or comforting (Shannon et al., 2006). Although it could be argued that these behaviours capture distinct aspects of paternal behaviour, they are somewhat over-lapping and are often highly correlated and frequently combined in research (Black, Dubowitz & Starr, 1999; Tamis-LeMonda et al., 2004; Shannon et al., 2006; Shannon et al., 2002). Therefore, these aspects of positive paternal behaviour can be referred to under the umbrella term of 'paternal responsiveness'; defined as a father's positive verbal and non-verbal responses towards his infant including sensitive or didactic behaviours, as well as expressions of positive affect or warmth (Shannon et al., 2006).

Observational methods have been identified as the 'gold standard' for assessing the quality of parent-infant interactions (Ramchandani, Domoney, Sethna, Psychogiou, Vlachos, & Murray, 2013). Researchers have measured paternal responses using slightly different scales, which complicates comparison between studies. Due to the lack of measures developed specifically for assessing the father-infant interaction, many researchers have utilised scales devised for mothers, or have developed their own measures for the purposes of their research.

Measures with demonstrated validity and reliability for assessing *mother*-infant interactions have been used to assess father-infant interactions in the literature including the Emotional Availability Scales (Biringen, Robinson, & Emde, 1994); Global Rating Scales

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(Murray, Fiori-Cowley, Hooper, & Cooper, 1996); Interaction Rating Scale (Field, 1980); Nursing Child Assessment Teaching Scale (Sumner & Spietz, 1994); Child Adult Relationship Index (Crittenden, 2001); and the Caregiver–Child Affect, Responsiveness, and Engagement Scale (Tamis-LeMonda, Ahuja, Hannibal, Shannon, & Spellmann, 2001).

Paternal responsiveness measured using maternal measures has been found to be associated with child outcomes (e.g. Kelley et al., 1998), indicating that similar aspects of father and mothers' behaviour may be important. Nonetheless, the use of measures that have not been designed for fathers has the potential to result in low ecological validity, given that fathers' and mothers' may interact with their infants in somewhat different ways. For example, it has been noted that fathers may preferentially focus on stimulating physical and exploratory play (Grossmann, Grossmann, & Zimmermann, 2002). Novel, theoretically informed measures of fathers' responsiveness are needed to avoid missing potentially important aspects of father-infant interaction and thus paternal influence (Ramchandani et al., 2013). This is illustrated by the finding of Ramchandani et al. (2013) who measured observed paternal responsiveness in a car seat and a free play floor mat task and found that the detection of significant associations varied according to the observation setting.

A number of researchers have developed their own measures for the purposes of their research and have generally achieved good inter-rater reliability (e.g. Black et al., 1999; Connor, Knight & Cross, 1997; Easterbrooks & Goldberg, 1987). However, the internal or convergent validity of their scales has not been demonstrated; making it unclear what exactly is being measured and complicating comparisons between studies.

Furthermore, virtually all of the measures use likert or binary scales to indicate the intensity or presence of aspects of responsiveness. There is a need for more continuous measures with greater power to detect individual differences in paternal responsiveness if

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small but meaningful associations between paternal responsiveness and infant development are not to be missed.

Theoretical understanding

Attachment theory suggests that sensitive and responsive parenting contributes to a 'secure attachment' (emotional bond) between care-giver and infant which becomes an internal working model for future relationships (Ainsworth, et al., 1978; Bowlby, 1969). Although Bowlby (1969) viewed the mother as the primary attachment figure, he also stated that infants form attachments to their fathers. This has been substantiated by research showing that infants do indeed form attachment relationships with their fathers (Lamb, 2010). Furthermore, meta-analysis indicates that paternal responsiveness in infancy is weakly but significantly related to secure infant-father attachment; albeit to a lesser degree than the association between maternal responsiveness and infant-mother attachment (Lucassen, Tharner, Van Ijzendoorn, Bakermans-Kranenburg, Volling, Verhulst, Lambregtse-Van den Berg, & Tiemeier, 2011).

A key assertion of attachment theory is that securely attached infants can use their parent as a 'safe haven' to return to for comfort in times of distress, and a 'secure base' from which to confidently investigate the world when their attachment system is not activated; fostering social, emotional, and cognitive development (Ainsworth, et al 1978; Bowlby, 1988). Attachment theory therefore provides a useful framework for understanding how father responsiveness may impact on infant development. Indeed, toddlers who are securely attached to their fathers demonstrate more optimal behaviour in problem solving tasks in the presence of their father if they are securely attached to their fathers (Easterbrooks & Goldberg, 1984). This has led some to propose the question, do fathers serve a similar (but perhaps lesser) function in child development? Or do they serve a unique and complementary

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function, which is qualitatively different to the mothers'? (Hazen, McFarland, Jacobvitz, & Boyd-Soisson, 2010).

The work of Grossmann et al. (2002) has addressed this to some extent by expanding on traditional attachment theory to suggest that a major aspect of the role of the father as an attachment figure is to facilitate 'secure exploration' through sensitive and challenging exploratory play. This is thought to complement the 'safe haven' role more commonly employed by the mother. In support of their theory, Grossman et al. (2002) found that fathers' sensitive and challenging responsiveness during play with their infants predicted later behavioural and psychological outcomes for children, over and above father-infant attachment security as measured in the Strange Situation method (Ainsworth et al., 1978). Of course, this does not imply that both parents could not serve both roles, but the authors emphasise the two ends of the comfort–exploration continuum when infants are mastering their developmental tasks.

Neurological theory also provides insight in to how paternal responsiveness may enhance infant development through direct stimulation of the infant brain. Specifically, studies of mothers and infants have found that positive responses are the most vital stimulus for the growth of the infant's social and emotional brain (Schore, 2005). For example, when an infant sees their mother smiling, this stimulates the release of beta-endorphin and dopamine which travel to the Orbito-frontal part of the brain and causes it to develop (Schore, 2005). There is no reason to assume this would not also apply to father-infant interactions, given that infants also develop attachment relationships with their fathers.

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Research

Cross-sectional studies. Cross-sectional studies undertaken in the United States of America have found that paternal responsiveness is contemporaneously associated with a range of specific infant outcomes including social skills at 8, 16 and 20 months (Kelley et al., 1998; Shannon et al., 2006), motor skills 12-36 months (Kelley et al., 1998), problem-solving skills at 20 and 24 months (Easterbrooks & Golding, 1984; Connor et al., 1997), and early language/communication skills at 8, 16, 20, and 36 months (Black et al., 1999; Connor et al., 1997; Shannon et al., 2006). Positive concurrent associations have also been found between paternal responsiveness and measures of global infant development at 12-36, 24 and 36 months (Kelley et al 1998, Shannon et al., 2002; Tamis-LeMonda et al., 2004) and cognitive development at 36 months (Black et al., 1999). For example, Shannon et al. (2002) found that paternal responsiveness in low-income fathers was highly related to concurrent infant development at 24 months measured using the Bayley Scales of Infant Development (Bayley, 1993). Highly responsive fathers were nearly five times more likely to have children with development scores in the normal range than fathers who demonstrated low responsiveness. Black et al. (1999) also found a positive concurrent association between paternal responsiveness and infant vocabulary and early cognitive development at 36 months in a high risk sample of low-income, African-American fathers where a significant proportion of the infants had a history of failure to thrive or were at risk of HIV due to maternal drug use. The associations were found after controlling for mother-infant interactions, maternal education and age. However, a limitation of cross-sectional studies is that it cannot be determined if paternal sensitivity preceded child development. Longitudinal studies controlling for infant development prior to the measurement of paternal responsiveness may account for reverse causality.

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Longitudinal studies. To date, only a handful of longitudinal studies have been published, and provide inconsistent support for the notion that father responsiveness influences later infant development. A study of low-income fathers found paternal responsiveness at 8 months was only marginally associated with greater infant social and communication skills at 16-months, and confounding factors were not considered (Shannon et al., 2006). Furthermore, Magill-Evans & Harrison (1999) did not find paternal responsiveness during a teaching task with their pre- and full-term infants at 3 or 12 months to be associated with infant development at 18 months. This may be due to the greater influence of mothers during infancy. Mothers are responsible for a greater proportion of infant care than fathers, and the influence of maternal responsiveness on later infant developmental outcomes has been clearly evidenced (e.g. Pearson et al., 2011).

However, Tamis-LeMonda et al. (2004) *did* find support for the role of paternal responsiveness in infant development in a sample of low-income fathers. Infants with more responsive fathers during play at 24 months had more advanced vocabulary and general development at 36 months. The associations were independent of maternal responsiveness, maternal education, paternal education and prior infant development. The inconsistency in findings from the longitudinal research could be explained by variations in the methodology of the studies.

Firstly, the infants were of different ages. One explanation for the different findings is that paternal responsiveness may become more influential in the second to third year of an infants' life rather than at younger ages, when infants are more dependent on their mothers (Clarke-Stewart, 1978). Secondly, variation in the measurement of paternal responsiveness or the observation context could be important. Magill-Evans & Harrison (1999) measured responsiveness during a structured teaching interaction, while Tamis-LeMonda et al. (2004)

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and Shannon et al. (2006) used free play and semi-structured play respectively. Thirdly, the studies focused on different aspects of infant outcomes (specific social, vocabulary or communication skills versus global infant development). Finally, the sample sizes were relatively modest, which may have led to low power to detect associations in some studies.

Randomised controlled trials (RCTs). The best evidence for a causal association between paternal responsiveness and infant development would be a randomised control trial examining whether improving paternal responsiveness leads to an improvement in infant development. However, the only published RCT evaluating the effect of a videotaped self-modeling and feedback intervention to improve responsiveness for Canadian fathers of 5-6 month old infants, did not measure infant development as an outcome. At 8 month follow up, fathers who had received the intervention maintained sensitivity and were more skilled in fostering cognitive growth than control group fathers (Magill-Evans, Harrison, Benzies, Gierl, & Kimak, 2007). RCTs should be a consideration for future research.

Limitations of the current evidence-base. While many of the more recent studies used validated measures of paternal responsiveness (Kelley et al., 1998; Magill-Evans & Harrison, 1999; Shannon et al., 2002; Shannon et al., 2006; Tamis-LeMonda et al., 2004), a limitation of the older studies is that they used unvalidated measures (Black et al., 1999; Connor et al., 1997; Easterbrooks & Goldberg, 1987). Furthermore, a major limitation of the majority of the studies is that they did not control for potentially confounding variables that are known to be associated with the quality of father-infant interactions and infant development in the literature; such as prior infant development, mother-infant interactions, paternal education, and paternal involvement (Boechler, Harrison & Magill-Evans, 2003; Lewis, West, Stein, Malmberg, Bethell, Barnes, Sylva, & Leach, 2011; Pearson et al., 2011; Barnett, Deng, Mills-Koonce, Eilloughby, & Cox, 2008; Shannon et al 2006; Sarkadi et al.,

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2008). The few studies that controlled for mother-infant interactions did find significant associations between paternal responsiveness and infant development (Black et al., 1999; Tamis-LeMonda et al., 2004), providing some evidence for fathers' independent role in infant development. Tamis-LeMonda et al. (2004) were able to find a longitudinal relationship between paternal responsiveness and later infant development after controlling for paternal and maternal education and prior infant development. Although by virtue of their participation in a research study, the fathers in the studies are likely to be involved fathers, it is not known whether the degree of involvement accounts for the association between paternal responsiveness and infant development. Only Easterbrooks & Golding (1984) investigated this and found both responsiveness and degree of involvement were independently associated with paternal responsiveness in their cross-sectional study. Confounding factors need further investigation.

In terms of generalisability of the findings, most of the studies have utilised high risk samples such as families with low social-economic status, premature infants or infants with a history of failure to thrive (Kelley et al., 1998; Black et al., 1999; Magill-Evans & Harrison, 1999; Shannon et al., 2002; Shannon et al., 2006). Studies need to be replicated in more advantaged samples, community populations, and clinical samples to aid understanding of the fathers' role in child development in different circumstances. Paternal responsiveness may be important across different ethnic groups. For example, Kelley et al (1998) studied low income working class African-American fathers, while Connor et al. (1997) studied Caucasian-American fathers, and both found concurrent associations with aspects of infant development. However, all of the studies have been completed in the United States of America or Canada, where there may be cultural differences in parenting compared to the UK. As such, the influence of paternal responsiveness on infant development in the UK is currently unknown.

Clinical Applications

Therapists working with parents and infants have tended to assume that fathers only influence their infants by providing support to the mother, rather than acknowledging a direct role (Barrows, 1999).

However, as outlined above, research is beginning to show that fathers may independently influence infant development, via their level of responsiveness towards their infants.

Clinical research is also providing evidence that fathers can benefit from interventions to improve the quality of father-infant interactions (Bakermans-Kranenburg, van Ijzendoorn, & Juffer, 2003; Magill-Evans et al., 2007; Magill-Evans, Harrison, Rempel, & Slater, 2006; Lawrence, Davies, & Ramchandani, 2013). For example, Lawrence et al. (2013) found a brief video-feedback intervention to promote positive father-infant interaction was feasible with a small sample of fathers who reported the intervention improved their understanding of their infant's thoughts and feelings and their communication and relationship with their infants. Furthermore, the first randomised controlled trial evaluating the efficacy of a video interaction guidance intervention for fathers found that fathers in the intervention group became more skilled in utilising stimulating responses with their infants and maintained sensitivity while fathers in the control group became less sensitive (Magill-Evans et al., 2007).

Clinical psychologists who work closely with parents of infants and young children (e.g. within perinatal, infant, child and adolescent or adult mental health services), have an opportunity to disseminate research findings to colleagues and supervisees, and provide psychological interventions to promote positive father-child interactions and optimal child

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development. In order to direct resources accordingly it will be important to draw on research in to the determinants of low and high paternal responsiveness.

Conclusion

Attachment and neurological theory suggest that paternal responsiveness should influence infant development, but locating the research evidence can be a difficult task. Research evidence for the influence of paternal responsiveness on infant development is promising but limited. There is strong evidence for a concurrent association indicating paternal responsiveness is worthy of further study. A disadvantage of cross-sectional studies is that associations could be a result of reverse causality. Longitudinal studies are rare, but one well designed study produced evidence of a positive association between paternal responsiveness and later infant development, which was independent of mother-infant interaction, parental education and prior infant development. Other longitudinal studies have not found an association, which may reflect the predominance of the mothers' influence in infancy, or limitations of the studies. Limitations of the studies include the use of measures that have not been validated, and the failure to control for important possible confounding variables. Differential measurement of infant outcomes and varying sample characteristics makes the results difficult to compare across studies. Possible inferences that can be made from the literature include that measurement of paternal responsiveness during play may be particularly important, and father responsiveness may be more important for older infants' development as they become more independent from their mothers. As the studies were all completed in USA or Canada, the results should be generalised to fathers in the UK with caution. Further investigation within longitudinal and experimental studies using validated measures of paternal responsiveness is warranted to explore if father responsiveness is

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associated with later infant development. Studies would benefit from controlling for the prior development of the infant, maternal responsiveness, parental social-demographic factors and father involvement. Studies need to be replicated with more advantaged samples, community populations, and clinical samples in the UK.

Implications for clinical psychology practice include the possibility of offering early interventions to improve paternal responsiveness.

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References

- Ainsworth, M. D. S., Blehar, M.C., Waters, E., & Wall, S. (1978). *Patterns of attachment: Assessed in the strange situation and at home*. Hillsdale, New Jersey: Lawrence Erlbaum.
- Bakermans-Kranenburg, M. J., Van Ijzendoorn, M. H., & Juffer, F. (2003). Less is more: Meta-analyses of sensitivity and attachment interventions in early childhood. *Psychological Bulletin*, *129*, 195–215.
- Barnett, M. A., Deng, M., Mills-Koonce, W. R., Willoughby, M., & Cox, M. (2008). Interdependence of parenting of mothers and fathers of infants. *Journal of Family Psychology*, *22*(3), 561-573.
- Bayley, N. (1993). *Manual for Bayley Scales of Infant Development, second edition*. San Antonio: Psychological Corporation.
- Biringen, Z., Robinson, L. J., & Emde, R. N. (1998). Emotional Availability Scales, Third Edition. *Attachment and Human Development*, *2*, 257-270.
- Black, M. M., Dubowitz, H., & Starr, R. H. (1999). African American fathers in low income, urban families: Development, behaviour, and home environment of their three-year old children. *Child Development*, *70*, 967-978.
- Boechler V., Harrison, M. J., & Magill-Evans, J. (2003). Father-child teaching interactions: The relationship to father involvement in caregiving. *Journal of Paediatric Nursing*, *18*(1), 46-51.
- Bornstein, M. H. (2002). *Handbook of parenting*. Mahwah, New Jersey: Lawrence Erlbaum Associates Inc.

THE ROLE OF PATERNAL RESPONSIVENESS IN INFANT DEVELOPMENT

Bowlby, J. (1969). *Attachment and loss: Volume one. Attachment*. New York: Basic Books.

Cabrera, N. J., Tamis-LeMonda, C. S., Bradley, R. H., Hofferth, S., & Lamb, M. E. (2000).

Fatherhood in the twenty-first century. *Child Development, 71*, 127-136.

Connor, D., Knight, D., & Cross, D. R. (1997). Mothers' and fathers' scaffolding of their

2-year-olds during problem-solving and literacy interactions. *British Journal of*

Developmental Psychology, 15, 323-338.

Crittenden, P. M. (2001). *CARE-Index coding manual*. Miami: Family Relations Institute.

De Wolff, M. S., & Van Ijzendoorn, M. H. (1997). Sensitivity and attachment. A meta-

analysis on parental antecedents of infant attachment. *Child Development, 68*, 571-

591.

Easterbrooks, M. A., & Golding, W. A. (1984). Toddler development in the family: Impact of

father involvement and parenting characteristics. *Child Development, 55*(3), 740-752.

Equal Opportunities Commission (2003). *Time use and childcare: Briefing paper based on*

analysis of the UK time use survey. EOC.

Field, T. (1980). Interactions of preterm infants born to lower SES, teenage mothers. In T. M.

Field, S. Goldberg, D. Stern, & A. Sostek (Eds.). *Interactions of high-risk infants and children*. New York: Academic Press.

Field, T. M., Hossain, Z., Malphers, J. (1999). Depressed fathers' interactions with their

infants. *Infant Mental Health Journal, 20*(3), 322-332.

Field, T., Morrow, C., Healy, B., Foster, T., Adlestein, D., & Goldstein, S. (1992). Mothers

with zero Beck Depression scores act more "depressed" with their infants.

THE ROLE OF PATERNAL RESPONSIVENESS IN INFANT DEVELOPMENT

Development and Psychopathology, 3, 253–262.

Fisher, K., McCulloch, A., & Gershuny, J. (1999). British fathers and children. Working paper. Essex: Institute for Social and Economic Research.

Goldberg, W., Clarke-Stewart, K. A., Rice, J., & Dellis, E. (2002). Emotional energy as an explanatory construct for fathers' engagement with their infants. *Science and Practice*, 2(4), 379-408.

Grossmann, K., Grossmann, K. E., & Zimmermann, P. A. (2002). A wider view of attachment and exploration: Stability and change during the years of immaturity. In J. Cassidy, & P. R. Shaver (eds.). *Handbook of attachment: Theory, research and clinical applications*. pp.760-786. New York: Guildford Press.

Hazen, N., McFarland, L., Jacobvitz, D., & Boyd-Soisson, E. (2010). Fathers' frightening behaviours and sensitivity with infants: Relations with fathers' attachment representations, father–infant attachment, and children's later outcomes. *Early Child Development and Care*, 180(1-2), 51-69.

Kelley, M. L., Smith, T. S., Green, A. P., Berndt, A. E., & Rogers, M. C. (1998). Importance of fathers' parenting to African-American toddler's social and cognitive development. *Infant Behaviour & Development*, 21, 733-744.

Lamb, M. E. (2010). *The role of the father in child development*. New Jersey: John Wiley & Sons.

THE ROLE OF PATERNAL RESPONSIVENESS IN INFANT DEVELOPMENT

Lamb, M. E., Pleck, J. H., Charnov, E., & Levine, J. A. (1985). Paternal behaviour in humans. *American Psychologist*, *25*, 883-894.

Lawrence P. J., Davies, B., & Ramchandani P. G. (2013). Using video feedback to improve early father-infant interaction: A pilot study. *Clinical Child Psychology & Psychiatry*, *18*, 61-71.

Lewis, S. N., West, A. F., Stein, A., Malmberg, L. E., Bethell, K., Barnes, J., Sylva, K., & Leach, P. (2008). A comparison of father-infant interaction between primary and non-primary care giving fathers. *Child Care, Health and Development*, *35*(2), 199-207.

Magill-Evans, J., & Harrison, M. J. (1999). Parent-child interactions and development of toddlers born preterm. *Western Journal of Nursing Research*, *21*, 292-307.

Magill-Evans, J., Harrison, M., Benzies, K., Gierl, M., & Kimak, C. (2007). Effects of parenting education on first-time fathers' skills in interactions with their infants. *Fathering*, *5*(1), 42-57.

Magill-Evans, J., Harrison, M. J., Rempel, G., & Slater, L. (2006). Interventions with fathers of young children: Systematic literature review. *Journal of Advanced Nursing* *55*(2), 248-264.

Masten A. S., Hubbard J. J., Gest, S. D., Tellegen, A., Garmezy, N., & Ramirez, M. (1999). Competence in the context of adversity: Pathways to resilience and maladaptation

THE ROLE OF PATERNAL RESPONSIVENESS IN INFANT DEVELOPMENT

- from childhood to late adolescence. *Developmental Psychopathology*, *11(1)*, 143-69.
- Murray, L., Fiori-Cowley, A., Hooper, R., & Cooper, P. (1996). The impact of postnatal depression and associated adversity on early mother-infant interactions and later infant outcomes. *Child Development*, *67*, 2512-2526.
- Pearson, R. M., Heron, J., Melotti, R., Joinson, C., Ramchandani, P., & Evans, J. (2011). The association between observed maternal sensitivity at 12 months and later infant development: A longitudinal study. *Infant Behaviour and Development*, *34(4)*, 525-533.
- Pleck, J. H. (2010). Paternal involvement: Revised conceptualisation and theoretical linkages with child outcomes. In M.E. Lamb (ed.). *The role of the father in child development (5th ed.)*. Hoboken New Jersey: John Wiley & Sons.
- Ramchandani, P. G., Domoney, J., Sethna, V., Psychogiou, L., Vlachos, H., & Murray, L. (2013). Do early father–infant interactions predict the onset of externalising behaviours in young children? Findings from a longitudinal cohort study. *Journal of Child Psychology & Psychiatry*, *54(1)*, 56–64.
- Sarkadi, A., Kristiansson, R., Oberklaid F., & Bremberg, S. (2008). Fathers' involvement and children's developmental outcomes: a systematic review of longitudinal studies. *Acta Paediatrica*, *97*, 153–158.
- Schore, A. N. (2005). Regulation, and the developing right brain: Linking developmental

THE ROLE OF PATERNAL RESPONSIVENESS IN INFANT DEVELOPMENT

- neuroscience to Paediatrics. *Paediatrics in Review*, 26, 204-217.
- Shannon, J., Tamis-LeMonda, C. S., London, K., & Cabrera, N. (2002). Beyond rough and tumble: Low-income fathers' interactions and children's cognitive development at 24 Months. *Parenting*, 2, 77-104.
- Shannon, J. D., Tamis-LeMonda, C. S., & Cabrera, N. J. (2006). Fathering in infancy: mutuality and stability between 8 and 16 months. *Parenting Science and Practice*, 6(2-3), 167-188.
- Shin, H., Park, Y., Ryu, H., & Seomun, G. (2008). Maternal sensitivity: A concept analysis. *Journal of Advanced Nursing* 64(3), 304-314.
- Shore, A. N. (2005). Attachment, affect regulation, and the developing right brain: Linking developmental neuroscience to paediatrics, *Paediatrics in Review*, 26(6), 204-217.
- Smith, A. J. (2004). Who cares? Fathers and the time they spend looking after children. *University of Oxford Sociology Working Papers: 2004-05*. Oxford: Department of Sociology, University of Oxford.
- Sumner, G., & Spietz, A. (1994). *Caregiver/parent-child interaction teaching manual*. Seattle: NCAST Publications.
- Sutcliffe, A., Soo, A., & Barnes, J. (2010). Predictive value of developmental testing in the second year for cognitive development at five years of age. *Pediatric Reports* 2 (2), 48-50.
- Tamis-LeMonda, C. S., Bornstein, M. H., & Baumwell, L. (2001). Maternal responsiveness

THE ROLE OF PATERNAL RESPONSIVENESS IN INFANT DEVELOPMENT

and children's achievement of language milestones. *Child Development*, 72, 748–767.

Tamis-LeMonda, Shannon, J. D., Cabrera, N. J., & Lamb, M. E. (2004). Fathers and

mothers at play with their two and three year olds: Contributions to language and

cognitive development, *Child Development*, 75(6), 1806-1820.

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Appendix A: Psychological Review- Instructions to Authors

APA Journals Manuscript Submission Instructions for All Authors

Overview

The following instructions pertain to all journals published by APA and the Educational Publishing Foundation (EPF).

Please also visit the web page for the journal to which you plan to submit your article for submission addresses, journal-specific instructions, and exceptions.

Manuscript Preparation

Prepare manuscripts according to the *Publication Manual of the American Psychological Association* (6th edition). Manuscripts may be copyedited for bias-free language (see Chapter 3 of the *Publication Manual*).

Double-space all copy. Other formatting instructions, as well as instructions on preparing tables, figures, references, metrics, and abstracts, appear in the *Manual*.

If your manuscript was mask reviewed, please ensure that the final version for production includes a byline and full author note for typesetting.

Review APA's Checklist for Manuscript Submission before submitting your article.

Supplying Supplemental Materials

APA can now place supplementary materials online, available via the published article in the PsycARTICLES database. Please see *Supplementing Your Article With Online Material* for more details.

Abstract and Keywords

All manuscripts must include an abstract containing a maximum of 250 words typed on a separate page. After the abstract, please supply up to five keywords or brief phrases.

References

List references in alphabetical order. Each listed reference should be cited in text, and each text citation should be listed in the References section.

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Journal Article: Herbst-Damm, K. L., & Kulik, J. A. (2005). Volunteer support, marital status, and the survival times of terminally ill patients. *Health Psychology, 24*, 225–229. doi: 10.1037/0278-6133.24.2.225

Authored Book: Mitchell, T. R., & Larson, J. R., Jr. (1987). *People in organizations: An to organizational behaviour* (3rd ed.). New York, NY: McGraw-Hill.

Chapter in an Edited Book: Bjork, R. A. (1989). Retrieval inhibition as an adaptive mechanism in human memory. In H. L. Roediger III & F. I. M. Craik (Eds.), *Varieties of memory & consciousness* (pp. 309–330). Hillsdale, NJ: Erlbaum.

Figures

Graphics files are welcome if supplied as Tiff, EPS, or PowerPoint files. The minimum line weight for line art is 0.5 point for optimal printing.

When possible, please place symbol legends below the figure instead of to the side.

Original colour figures can be printed in colour at the editor's and publisher's discretion provided the author agrees to pay

\$255 for one figure

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