



Full length article

## The influence of parents, older siblings, and non-parental care on infant development at nine months of age

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## ABSTRACT

**Background:** The majority of research examining the influence of social environment on early child development suggests benefits to two-parent households, but contradictory evidence for the effects of siblings. The aims of the present study were to examine the influence of the child's proximal social environment, and the effects of interactions between socioeconomic status and social environment on developmental outcomes.

**Methods:** Primary caregivers of a representative sample of 10,748 nine-month-old infants in Ireland completed the Ages and Stages Questionnaire and provided information on social environment. Adjustment was made for infant and maternal characteristics, household income, and area where the child was living at the time of the study. Further analyses tested for interactions between social environment and household income.

**Results:** Binary logistic regressions indicated no effects for number of parents in the household. However, the presence of siblings in the household was a consistent predictor of failing to reach milestones in communication, gross motor, problem-solving, and personal-social development. Furthermore, there was a gradient of increasing likelihood of failing in gross motor, problem-solving, and personal-social development with increasing numbers of siblings. Care by a grandparent decreased the likelihood of failing in communication and personal-social development.

**Conclusions:** These findings do not support the majority of research that finds positive benefits for two-parent households. Similarly, the findings suggest limited effects for non-parental care. However, the observed negative effects of siblings support both the confluence and resource dilution models of sibling effect. Examination of follow-up data may elucidate current findings.

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### 1. Introduction

There are growing concerns about the increasing prevalence of childhood socioemotional/behavioural problems (Brauner & Stephens, 2006; Cooper, Masi, & Vick, 2009) and the impact of these on longer term outcomes (Fergusson, Horwood, & Ridder, 2005; Jokela, Ferrie, & Kivimaki, 2009). Moreover, developmental delay is a cause for concern, with even subtle delays being sufficient to impact on school readiness, educational outcomes, and employment prospects (American Academy of Pediatrics Committee on Children with Disabilities, 2001; Shonkoff & Phillips, 2000).

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As disruptions to developmental trajectories may stem from the child's proximal social environment, there is an imperative to understand how the social environment of the child impacts on developmental outcomes. The majority of research suggests that children's behaviour and development benefit by living within a stable, two-parent household, either because of the greater availability of assets/resources (McLanahan & Sandefur, 1994), or because a single parent is less able to provide adequate and appropriate monitoring and structure (Carlson & Corcoran, 2001; Hofferth & Anderson, 2003; Magnuson & Berger, 2009; Wu & Martinson, 1993). However, older studies (Belsky, 1979, 1981; Lytton, 1979) suggest that there can be 'second-order effects' on children whereby the presence of two parents may result in reduced interaction with the infant as the parents are focused on interacting with each other.

Siblings are another important proximal influence on a young infant. The confluence model by Zajonc and Markus (1975) (see also Zajonc, 2001) argues that parental resources are stretched with each additional child, meaning younger children may spend increased amounts of time with older siblings who cannot provide the quality of cognitive stimulation that would be provided by parents. Similarly, resource dilution theory proposes that all resources within the family, be they financial or in terms of parental time and energy, are 'diluted' as the family size increases (Blake, 1981). There have been suggestions that the effects of resource dilution are modified by socioeconomic status, with children from lower income families being more adversely affected than those from higher income families (Marjoribanks, 1997; Rodgers, 2001). Moreover, it is reasonable to hypothesise that children being raised by a single parent may be especially susceptible to the effects of increasing family size.

Studies that have found negative effects for the influence of siblings would appear to support resource dilution theory and the confluence model. For example, a recent study by Koutra et al. (2012) found that the presence of older siblings had a negative effect on specific areas of development (cognitive, gross motor, and communication) in 18-month-old infants. However, not all studies show negative effects for siblings. In a study among 551 children aged five years, Freijo et al. (2008) did not find any effects for the presence of siblings on cognitive development, while Brody (2004) has suggested that younger siblings may benefit by learning from older siblings. Similarly, Hetherington (1988) suggested that the presence of siblings allows the developing child to learn how to resolve conflict, and that siblings represent an additional source of nurturance. Conversely, Bank, Patterson, and Reid (1996) argue that problem behaviour in older children can transfer to their younger siblings. Given the lack of consistency in the findings of previous studies in relation to the effects of siblings, further research is clearly warranted, and should also consider the effects of both single-parent households and low household income. Moreover, it should be noted there was wide variability in the age groups of children in previous studies that have examined the effects of siblings, but fewer that included children of younger ages. Further research is therefore warranted examining the effects of siblings at the early stages of development.

Whilst most young children will be exposed to multiple influences from key figures other than parents and siblings (i.e., usually relatives, friends, and neighbours), some will receive more concentrated forms of non-parental care, usually whilst the primary caregiver is at work (Belsky et al., 2007). Such care may be provided by a grandparent or other relative, a non-relative, a formal centre-based childcare provider, or any combination of these. It is beyond the scope of the present study to provide an in-depth examination of the effects on development of different types and intensities of childcare (however, see Belsky et al., 2007; Gray, 2005; Hank & Buber, 2009; Koslowski, 2009 for recent overviews relating to childcare); the present study is primarily interested in the social environment of the developing infant, and for some infants this will include an element of non-parental care. Therefore, we have considered whether or not the child receives non-parental care, and whether that care comes primarily from a relative, non-relative, or formal centre-based childcare provider.

The primary aim, therefore, of the present study was to examine the influence of parents, siblings, and aspects of non-parental care on infant development. However, it is acknowledged that these factors are potentially confounded by a number of other factors that are known to influence infant development. A brief overview is provided below.

### 1.1. *Infant characteristics*

Both infant gestational age and infant birthweight may be associated with longer-term negative outcomes (e.g., McCormick, Litt, Smith, & Zupancic, 2011; Richards, Hardy, Kuh, & Wadsworth, 2001). Moreover, there may be an interaction between birthweight and birth order insofar as firstborns tend to have lower birthweights than later borns (e.g., Khong, Adema, & Erwich, 2003; Wilcox, Chang, & Johnson, 1996). Therefore, this variable must be controlled for when examining the effects of siblings, as birth position may influence birthweight.

It is acknowledged that birthweights for male children are traditionally higher than for female children (Kramer, 1987; Kramer et al., 2001) which may convey an advantage. However, research also indicates that boys are at increased risk of preterm birth and perinatal complications (Brettell, Yeh, & Impey, 2008; Di Renzo, Rosati, Sarti, Cruciani, & Cutuli, 2007; Sheiner et al., 2004). As such, it is important to adjust for gender in any analyses that seeks to examine the effects of social environment on developmental outcomes as there may be interactions between gender, gestational age, and birthweight.

### 1.2. *Socioeconomic status and maternal characteristics*

The most obvious possible confounding variable to take in to consideration is that of socioeconomic status (SES) and family/household income. There is ample evidence for the negative effects of low SES on child health and developmental outcomes (cognitive and social/emotional/behavioural) (e.g., Bradley & Corwyn, 2002; Duncan & Brooks-Gunn, 1997; McLoyd, 1998; Votruba-Drzal, 2003, 2006).

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