



## Differential effect of ill-being and chronic stress on cradling behavior of first and multi-time parents

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### ABSTRACT

A preference for cradling infants on the left side has been demonstrated in women, as has a relation of reduced left-cradling and stress/negative affect. This relation has not yet been investigated in male participants. Due to less left-cradling in non-fathers compared to fathers it was suggested that fatherhood might have an influence on cradling behavior. The present study investigated the cradling preference of first- and multi-time parents before and after birth, and its relation to ill-being and stress. Results revealed that cradling behavior of first-time fathers was not different before and after the birth of the infant. Thus, fatherhood does not seem to have an acute influence on cradling behavior. Furthermore, cradling behavior of first- and multi-time parents was differentially influenced by ill-being and stress.

These results present new information about the course of cradling preference from pregnancy to postpartum and indicate that the relation of cradling and ill-being/stress is more complex for parents than for non-parents.

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### 1. Introduction

Infants spend a lot of time in the arms of their parents, not only for feeding or transportation but also for soothing, social interaction, and monitoring (Rheingold & Keene, 1965; Tronick, 1995). Studies have shown that the majority of mothers prefer to hold their babies on the left side of their body midline (Bogren, 1984; Vauclair & Scola, 2009). Not only mothers cradling their babies, but also 60–80% of female students cradling a baby-like doll, demonstrate this left side preference (Lucas, Turnbull, & Kaplan Solms, 1993; Matheson & Turnbull, 1998; Suter, Huggenberger, & Schachinger, 2007). A left side preference was also found in studies where participants had to imagine cradling a baby (Harris, Almerigi, & Kirsch, 2000; Harris, Almerigi, Carbary, & Fogel, 2001) and in photographic images (Harris, Spradlin, & Almerigi, 2006). This behavior is unique for objects with baby-like features, whereas other objects matching the size and the weight of an infant do not elicit a left holding bias (Almerigi, Carbary, & Harris, 2002; Souza Godeli, 1996).

Little is known about when this holding bias appears ontogenetically. Some studies found that girls at the age of four to six years already show a clear preference to hold a doll on their left side (De Chateau & Andersson, 1976; Saling & Bonert, 1983). There are two lines of explanation for why the left cradling preference manifests so early and reliably in females. A study

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of trans-generational family photographs revealed that left side cradling frequency was significantly correlated between female relatives (Manning & Denman, 1994) but less between female and male relatives. The authors speculated that there might be sex-linked genes determining lateral cradling preferences that run only in the female line, or that female infants learn from an early age the cradling preference of their female relatives. Support for the suggestion that a lateral cradling preference might have a biological basis stems from research with great apes (Begg-Reid & Schillaci, 2008; Hopkins, 2004; Manning & Chamberlain, 1990), which showed that a leftward cradling bias is also present in non-human primates.

Whether the left cradling preference has a biological basis or a social learning basis, or is based on an interaction of the two, one would assume that there has to be an evolutionary advantage for cradling on the left side. An obvious advantage could be that by left side cradling for the majority of the population the dominant arm remains free to engage in other tasks. Indeed, there is a clear tendency to cradle baby-like dolls in the non-dominant arm while reaching for a pacifier and giving it to a doll (Van der Meer & Husby, 2006). On the other hand the vast majority of research on lateral cradling preference investigated cradling while participants were not occupied with tasks other than simply holding the infant or doll. There is consensus in the results that non-functional cradling is not related to handedness (Bogren, 1984; Donnot & Vauclair, 2007; Turnbull & Lucas, 1996). Apart from handedness, other explanations for the left cradling preference are the soothing effect of the maternal heartbeat (Salk, 1973), the newborn head turning preference (Ginsburg, 1979), better monitoring of the infant due to the right hemisphere specialization for decoding emotional information, and stronger expression of emotions on the left side of the caregivers' face (Bourne & Todd, 2004; Huggenberger, Suter, Reijnen, & Schachinger, 2009; Manning & Chamberlain, 1991; Sieratzki & Woll, 1996).

Lateral cradling preference of males is not as well documented as cradling behavior of females, and the existing results are inconsistent. Preschool girls holding dolls exhibited a left cradling preference (Saling & Bonert, 1983), but data for boys the same age are inconsistent – one study showing that boys also demonstrated a left side preference (Souza Godeli, 1996) and another study finding no such preference in boys (De Chateau & Andersson, 1976). Findings concerning male college students are also inconsistent: several studies report a significant left cradling preference of 59–70% in male participants (Harris et al., 2000; Vauclair & Donnot, 2005) whereas other studies fail to find such a preference (Erber, Almerigi, Carbary, & Harris, 2002; Matheson & Turnbull, 1998; Turnbull & Lucas, 1991). In a study of father–infant photographs, no left side preference in fathers was found (Lockard, Daley, & Gunderson, 1979). Other non-photographic studies contradicted these results; they found a left cradling preference of 80–85% in fathers holding their own infants (Bogren, 1984; De Chateau, 1983). The lower frequencies of left cradling in male participants (non-fathers) compared to the higher frequencies in fathers resulted in the suggestion that fatherhood is an influential factor of cradling behavior. This suggestion was further supported by a study that directly compared cradling preference of fathers and non-fathers (children aged: 3–4 days old) and found a lower left side cradling preference in non-fathers (De Chateau, 1983).

Several studies have demonstrated that stress and psychological well-being may influence cradling behavior of female participants. A decreased left side cradling preference or even a right side preference was found in mothers separated shortly after delivery from their newborns (De Chateau, 1991), in mothers who experienced stress according to the Parental Stress Index (Reissland, Hopkins, Helms, & Williams, 2007), and in mothers with affective symptoms (Vauclair & Scola, 2008; Weatherill et al., 2004). To our knowledge, there exists no research about the relation of stress and cradling in male participants.

To be able to make statements about the development of a lateral cradling preference and the influence of stress and ill-being in men and women it is necessary to have data from longitudinal studies that compare cradling preference of the same individuals before and after the birth of their own child. The existing longitudinal studies concentrate either on the cradling behavior after birth or on cradling behavior of females. Results of these studies show that parents prefer to cradle leftward, with no significant difference between mothers and fathers (Dagenbach, Harris, & Fitzgerald, 1988), that the left side cradling preference of mothers decreases over time (Todd, 2001), and that a significant increase of the left side cradling bias occurs from pregnancy to two month after delivery (Vauclair & Scola, 2009).

The present study aimed to use a longitudinal design to investigate the relationship between cradling behavior, stress, and ill-being of men and women before and after the birth of their child. Perceived stress and ill-being in women may underlie many fluctuations during pregnancy and the postpartum period. These periods are characterized by hormonal changes and mood intensifications, and these changes are perceived differently by primiparous and multiparous mothers (Corter & Fleming, 1995). As being a first-time parent may have an influence on holding behavior, stress, and psychological well-being, first- and multi-time parents were included in the sample. Apart from a general description of cradling preferences during pregnancy and in the first four postpartum months, the following hypotheses were investigated: (1) First-time fathers would show lower left side preference before birth than in the postpartum period, and (2) mothers and fathers would show a reduced left side cradling bias or even a right side bias in relation with chronic stress and ill-being.

## 2. Methods and materials

The present research was a longitudinal single-centre study coordinated by the University of Basel in cooperation with the county hospital in Bülach and local gynecologists. The research obtained ethical approval, and all participants gave their written informed consent.

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