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# Expressive timing and interactional synchrony between mothers and infants: cultural similarities, cultural differences, and the immigration experience

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## Abstract

The spontaneous vocal interactions of 30 mothers and their 2- to 5-month-old infants from India, France, and the United States were analyzed using an acoustic analysis method. Similarities and differences in vocal interactional patterns were highlighted between the three groups. On the one hand, in the three cultural contexts mother–infant vocal interaction was found to be organized around hierarchical temporal intervals of the same approximate length, had the same balance between regular rhythm and variation (“expressive timing”), and manifested the same coordination between mother and infant vocalization (“interactional synchrony”). On the other hand, the three groups also revealed cultural variability. The Indian mothers had more togetherness with their babies, as indexed by less space between vocal turns and more overlap of mother and baby vocalizations. They also produced a higher ratio of nonverbal to verbal vocalizations. The spontaneous vocal interactions of a group of 30 Indian immigrant dyads were also studied. With respect to culturally variable characteristics, the vocal interaction of immigrant dyads living in the United States showed signs of change in the direction of the host culture. With respect to characteristics shared by all three nonimmigrant groups, the immigrant dyads showed lower levels of expressive timing and interactional synchrony than the nonimmigrant group as a whole. © 2003 Published by Elsevier Inc.

*Keywords:* Mother–infant; Vocal interaction; Immigration

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By 8 weeks of age infants have become active participants in expressive nonverbal exchanges with adults. Much research has focused on the precise timing and subtle prosodic attunement that characterize vocal interaction between infants and mothers in the first 6 months of life (Beebe, Feldstein, Crown, & Jasnow, 2001; Beebe, Stern, Jaffe, 1979; Stern, 1971; Stern et al., 1977; Trevarthen, 1974, 1977; Tronick, Als, Adamson, Wise, & Brazelton, 1978). These interactional patterns constitute implicit knowledge: they are not taught to either mothers or babies; yet they carry durable marks of social affiliation.

There are indications that these interactional patterns could have both universal and culture-specific components. On the one hand, studies have highlighted a remarkable cross-cultural stability in patterns of intuitive maternal speech to infants in the first 6 months, suggesting a universal correspondence between prosodic contour and affective meaning (Fernald, 1989; Fernald & Mazzie, 1991; Fernald et al., 1989; Papoušek, Papoušek, & Bornstein, 1985). On the other hand, researchers have found distinct interactional styles and parenting behavior in diverse cultural communities (LeVine et al., 1994; Stork, 1986; Tronick, Morelli, & Winn, 1989). Few studies, however, have analyzed how cultural ways of communicating are woven into early nonverbal vocal exchange. Implicit cultural scripts and parenting cognitions have been shown to guide and influence care-giving behavior and child development (Cote & Bornstein, 2003; Greenfield & Suzuki, 1998), but their role in shaping mother–infant interaction at the micro level has not been addressed.

## **1. Questions and study design**

How are potential universals and actual cross-cultural differences interwoven in early nonvocal exchanges between mothers and infants? How do cultural differences reflect implicit cultural scripts? The present study begins to address these questions by comparing the vocal interaction of mother–infant dyads who are natives of widely varying cultural communities.

In addition, because of the importance of cross-cultural contact and immigration in our global world, still other questions revolve around the role of these processes in early interaction. Emigration/immigration processes provide a kind of natural experiment for investigating changing parental cognitions, early forms of cultural learning, and the mechanisms by which parents and infants share culturally embedded experiences. However, effects of emigration and immigration have not been studied at the micro level in parent–infant interaction. The research reported here addresses this gap as well.

To explore universals and basic cultural differences in early nonverbal communication, I compare online vocal interaction between infants and their nonimmigrant mothers in three countries: France, the United States, and India. To explore the role of emigration and immigration, I add a group of mothers recently emigrated from India to the United States. To assess cultural change from emigration,

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