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# Beside the point: Mothers' head nodding and shaking gestures during parent–child play☆

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ABSTRACT

Understanding the context for children's social learning and language acquisition requires consideration of caregivers' multi-modal (speech, gesture) messages. Though young children can interpret both manual and head gestures, little research has examined the communicative input that children receive via parents' head gestures. We longitudinally examined the frequency and communicative functions of mothers' head nodding and head shaking gestures during laboratory play sessions for 32 mother–child dyads, when the children were 14, 20, and 30 months of age. The majority of mothers produced head nods more frequently than head shakes. Both gestures contributed to mothers' verbal attempts at behavior regulation and dialog. Mothers' head nods primarily conveyed agreement with, and attentiveness to, children's utterances, and accompanied affirmative statements and yes/no questions. Mothers' head shakes primarily conveyed prohibitions and statements with negations. Changes over time appeared to reflect corresponding developmental changes in social and communicative dimensions of caregiver–child interaction. Directions for future research are discussed regarding the role of head gesture input in socialization and in supporting language development.



## 1. Introduction

In the first years of life, infants encounter and interpret communicative signals in both verbal and non-verbal forms. Understanding the context for children's social learning and language acquisition requires consideration of such multimodal (speech, gesture) messages. A rich body of research exists on children's use and interpretation of pointing gestures (see Tomasello, Carpenter, & Liszkowski, 2007). Infants typically begin using this deictic gesture around 11–12 months (Carpenter, Nagell, & Tomasello, 1998). A number of studies have also elucidated the information that infants can gain from others' pointing gestures, such as the location of hidden objects (Behne, Liszkowski, Carpenter & Tomasello, 2012; Gliga & Csibra, 2009).

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Interactions involving additional gestures, beyond pointing, may also be foundational for the child's social learning. The current study seeks to expand our understanding of gestural input by considering the role of adults' head nodding and head shaking gestures, subsequently referred to as head gestures, in their messages to young children. We focus on these gestures because, although they are ubiquitous in adult–adult communication, little empirical work exists on their frequency in caregiver–child interaction or the role they play in those interactions.

Existing research suggests that head gestures enter into children's communicative repertoire in the second year of life. In terms of head gesture production, infants in the U.S. typically begin to shake their heads *no* by around 12 months, and nod their heads *yes* by 14 months, some months earlier than the typical emergence of the corresponding verbal forms "no" (15 mos.) and "yes" (19 mos.; Fenson et al., 1994). Children use head gestures to convey various communicative intentions, including refusal and answering questions (Carpenter, Mastergeorge, & Coggins, 1983; Crais, Douglas, & Campbell, 2004; Fusaro, Harris, & Pan, 2012). As an initial exploration of children's comprehension of head gestures, Fusaro and Harris (2013) tested 18- and 24-month-olds' use of an adult's head gestures to disambiguate competing pieces of information in object-labeling and object hiding tasks. Children were invited to choose an object or a hiding location on the basis of an adult's head nods or head shakes. These gestures were produced in response to the assertions or yes/no questions of an interlocutor who proposed either the correct or incorrect choice. The 24-month-olds readily used the adult's head nodding and head shaking gestures to identify the correct object and hiding location. Further, the 18-month-olds showed some sensitivity to head gestures when they were responses to a speaker's yes/no questions about hiding locations.

Previous observational studies of mothers' gestural input have not focused on head gestures specifically. Instead, these have been grouped with other gestures, like waving hello and goodbye, into a broader category of *conventional* gestures (Bekken, 1989; Iverson, Capirci, Longobardi & Caselli, 1999; Iverson, Capirci, Volterra & Goldin-Meadow, 2008; Iverson & Goldin-Meadow, 2005; Rowe, Özçaliskan, & Goldin-Meadow, 2008; Shatz, 1982). These studies provide some insight into the frequency of caregivers' gesture use. Based on observations of mother–child dyads during the child's second year of life, about 10–15% of US and Italian mothers' communicative messages to young children include some kind of gesture (Bekken, 1989; Iverson et al., 1999; Rowe et al., 2008; Shatz, 1982). Mothers use gestures in tandem with speech more often than in isolation (Iverson et al., 1999; Rowe et al., 2008).

Iverson et al. (1999) examined twelve Italian caregivers' use of a broad range of gestures with their children at 16 and 20 months of age. Dyads were observed in their homes, playing with familiar objects and with the experimenter's standard set of toys, as well as during snack or meal time. Mothers' head gestures were grouped with other conventional gestures for analysis (e.g., turning the palms up for "all-gone," finger to cheek for "good"). On average, mothers used conventional gestures approximately 30 times per 45-min observation at both time points. Although a great deal of variability among mothers was detected, the relative frequency of conventional gesture use did not differ significantly between the 16- and 20-month observation periods. The functions of mothers' gestures were examined at a general level. Most often, mothers' gestures served to reinforce the mother's verbal message. Gestures sometimes disambiguated a message (e.g., pointing to a particular location while saying "that one"). Rarely, they added new information to the verbal utterance (e.g., pointing to a toy while saying "pretty"). This broad description provides insight into mother's gestural communication with infants, but it does not elucidate potential differences in the relative frequency of caregiver head gestures over time, and the meaning behind these gestures in parent–child interaction.

Like other conventional gestures, head gestures used within dialog can convey meanings that may be roughly translated into an equivalent verbal expression (e.g., "Yes," "No," "That's right"). Given these features, head gestures can be considered as equivalent to speech acts, and their illocutionary force can be analyzed as such (Austin, 1962; Guidetti, 2000). In particular, head gestures can be used to convey messages such as willingness or refusal to carry out a requested behavior, agreement or disagreement with substantive claims, as well as answers to yes/no questions (Fusaro et al., 2012; Guidetti, 2000, 2005; Kendon, 2002). It is possible that adults support the development of children's communication by modeling these messages with their own visible head gestures.

Caregivers may also use head gestures, in tandem with vocal input, to guide children's behavior, as a means for socialization. For example, in response to a child's disruptive use of a toy, a caregiver might lower her prosody, tell the child to "stop," and simultaneously shake her head "no" and remove the toy. Importantly, the role of parents' head gestures might change over time, as children's social and language skills develop from infancy through early childhood. More research is needed on head gesture input and function to begin to address these questions.

Understanding the frequency and role of head gestures in communication and social learning requires a fine-grained analysis of the gestural environment. The current study describes mothers' spontaneous use of head gestures with their young children in laboratory-based play sessions. To examine how caregivers' messages to children might change over time, head gesture production was observed longitudinally at three points during early childhood, based on videotaped interactions of mother–child dyads from the New England corpus of the Child Language Data Exchange System (Pan, Imbens-Bailey, Winner, & Snow, 1996; Snow, Pan, Imbens-Bailey, & Herman, 1996). The primary research questions were:

1. How often do mothers use head gestures during play interactions with their young children in the second and third years of life? Does the frequency of mothers' head gesture production differ when children are 14, 20 and 30 months of age?
2. For what communicative purposes do mothers use head gestures with their young children? Do mothers use head gestures for similar functions when children are 14, 20, and 30 months of age?