



Sensitivity to the context of facial expression in the still face at 3-, 6-, and 9-months of age

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Abstract

Thirty-eight 3-, 6-, and 9-month-old infants interacted in a face to face situation with a female stranger who disrupted the on-going interaction with 30 s Happy and Neutral still face episodes. Three- and 6-month-olds manifested a robust still face response for gazing and smiling. For smiling, 9-month-olds manifested a floor effect such that no still face effect could be shown. For gazing, 9-month-olds' still face response was modulated by the context of interaction such that it was less pronounced if a happy still face was presented first. The findings point to a developmental transition by the end of the first year, whereby infants' still face response becomes increasingly influenced by the context of social interaction.

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1. Introduction

The still face paradigm has been widely used to assess human infants' early social expectations (Adamson & Frick, 2003; Tronick, Als, Adamson, Wise, & Brazelton, 1978). As young as 2-months

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of age, infants avert their gaze, smile less, and self-comfort when they encounter a suddenly still faced partner who had been communicating with them (Cohn & Tronick, 1987; Field, Vega-Lahr, Goldstein, & Scafidi, 1986; Toda & Fogel, 1993). Such findings index infants' rudimentary expectations about the nature of face to face interactions with people (see also Gusella, Muir, & Tronick, 1988; Muir & Hains, 1993; Rochat & Striano, 1999).

Modifications of the still face paradigm reveal that the still face response is robust but also selective. Based on a variety of careful manipulations to rule out alternative explanations, it has been shown that the still face situation is not due simply to a general loss of stimulation or fatigue over time (e.g., Gusella et al., 1988; see also Muir & Hains, 1993). The still face effect is reserved for people and not objects (i.e., Ellsworth, Muir, & Hains, 1993), and shows that infants are attuned to more than the presence or absence of stimulation.

While the still face paradigm has been systematically used with infants in the first half of the first year, it has not been commonly used to investigate the social competencies of older infants. Once infants start to systematically coordinate attention between people and objects by 9–12 months of age (i.e., Tomasello, 1999), researchers have turned to triadic paradigms which involve the integration of people and objects (e.g., Bakeman & Adamson, 1984; Carpenter, Nagell, & Tomasello, 1998). However, the still face effect may be used to track the development of social competencies over the course of the first year (see also Striano & Rochat, 1999).

The current study assessed infants' still face responses at 3, 6, and 9 months of age. The procedure was based on prior research that assessed infants' response to "emotional" still faces. In a study with 5-month-old infants, D'Entremont and Muir (1997) found that infants manifested a small but significant effect for smiling when their mother presented a happy still face compared to a neutral and sad still face. Taking a developmental approach, Rochat, Striano, and Blatt (2002) compared 2-, 4-, and 6-month-olds' responses to 30 s Happy, Neutral, and Sad still face episodes presented by a stranger. Two-month-olds did not show a reduction in gazing for the Happy still face. The authors suggest that between 4 and 6 months of age, infants become more sensitive to the timing and structure of face to face interactions (see also Rochat, Querido, & Striano, 1999), whereas younger infants are focused on the presence or absence of positive facial expressions.

In the current study, we extended the research of D'Entremont and Muir (1997) and Rochat et al. (2002) by presenting different emotional still faces to 3-, 6-, and 9-month-old infants. Developmental transitions that happen by the end of the first year, such as the capacity for joint attention (Carpenter et al., 1998) and social re-engagement efforts (Cohn & Tronick, 1987; Striano & Rochat, 1999) are thought to reflect, in part, the infants' developing capacity to understand the underlying motives and goals of others. Considering prior actions assists in understanding the meaning of others' behaviors (i.e., Carpenter, Call, & Tomasello, 2002). Similarly, a sensitivity to others' facial expressions is a necessary precursor to recognizing the meaning behind others' emotions and predicting how people will behave in the future (Walker-Andrews, 1997). Interestingly, by the end of the first year, infants categorize various static expressions based on their underlying meaning rather than perceptual similarity (i.e., Ludemann, 1991; Nelson, 1987), and to use these expressions to interpret others' future actions (Phillips, Wellman, & Spelke, 2002; Poulin-Dubois, 1999) and to guide their own behavior (Campos & Sternberg, 1981; Moses, Baldwin, Rosicky, & Tidball, 2001; Sorce, Emde, Campos, & Klinnert, 1985).

In the current study, infants were presented between normal interaction periods with a happy still face and a neutral still face episode, with the order counterbalanced. We expected that infants at all ages would discriminate facial expressions (see Nelson, 1987; Serrano, Iglesias, & Loeches, 1992; Striano,

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