

The discrimination of facial expressions by typically developing infants and toddlers and those experiencing early institutional care

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Abstract

Early experience likely plays an important role in the development of the ability to discriminate facial expressions of emotion. We posited that compared to children reared with their biological families ($n = 72$), abandoned children being reared in institutions ($n = 39$) should demonstrate impairments in this ability. The visual paired comparison procedure was utilized to assess the abilities of 13- to 30-month-old children to discriminate among multiple pairs of photographs of facial expressions. Both groups exhibited a normative profile of discrimination, with no group differences evident. Such findings suggest that early institutionalization does not affect the ability of 1- to 3-year-olds to discriminate facial expressions of emotion, at least as inferred by the Visual Paired Comparison Procedure.

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The ability to recognize facial expressions of emotion is a fundamental ability in the preverbal child, and matures rapidly over the first years of life. For example, Field, Cohen, Garcia, and Collins (1983), Field, Woodson, Greenberg, and Cohen (1982) have shown that infants as young as 36 h are able to discriminate happy, sad and surprise expressions from one another when posed by a live model. And, studies with older infants reveal that by 3 months infants can discriminate happy from surprise faces (Young-Browne, Rosenfeld, & Horowitz, 1977) and smiling faces from frowning faces (Barrera & Maurer, 1981); however, they cannot consistently discriminate sad faces from surprised faces and show no evidence of discriminating sad faces from happy faces (Young-Browne et al., 1977). By 4 months of age, infants look longer at joyful expressions than angry or neutral ones (LaBarbera, Izard, Vietze, & Parisi, 1976) and look longer at happy faces with toothy smiles than sad faces (Oster & Ewy, 1980) but look equally long at angry and neutral expressions (LaBarbera et al., 1976) or happy faces with closed mouths when paired with sad faces (Oster & Ewy, 1980). At 5 months infants can discriminate between sad and fearful faces; they can also discriminate both of

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these expressions and an interest expression from angry, but only if they are first habituated to angry and then tested with fear, sad or interest, and not if they are shown the expressions in the opposite order (for discussion, see de Haan and Nelson (1998)). At the same age infants show no evidence of discriminating joy from anger or interest (Schwartz, Izard, & Ansul, 1985), and at 6 months they show no evidence of discriminating surprised from fearful expressions (Nelson & Horowitz, 1980). Finally, by 7 months infants look longer at fearful than happy faces (Nelson & Dolgin, 1985) and can discriminate happy from fearful faces, but only if first habituated to happy and not if first habituated to fear (Nelson, Morse, & Leavitt, 1979). Finally, it is around this age that infants begin to show evidence of categorizing facial expressions; thus, infants are able to generalize their discrimination of happy faces across multiple exemplars of happy, and then discriminate happy from fear; however, they are unable to generalize their discrimination of fear faces across multiple exemplars and discriminate fear from happy. This last finding has been frequently replicated, and points to constraints on infants' knowledge of facial expressions.

The ability to discriminate between facial expressions of emotion likely aids the infant in identifying another individual's emotional state and frequently provides cues on how to respond and behave in social situations. In the current study we examined the role of early experience in shaping the ability to recognize static, prototypical facial expressions. Based on the assumption that emotion recognition is an experience-expectant and activity-dependent process (see Nelson, 2001), we posited that children reared in deprived environments, specifically those being reared in institutions would exhibit impairments in emotion recognition. As we elaborate below, the basis for this prediction is that such care is characterized by exposure to atypical social visual experience.

Children reared in institutional care (particularly common in Eastern Europe, Russia, and China) experience serious disruptions of caregiver–infant interactions. In the first 1 – 1½ years of life (or until infants begin to locomote independently), infants have only limited face-to-face interactions with their caregivers, thus restricting their access to emotional information. This restricted experience occurs primarily because infants spend most of their time in individual cribs and have only occasional views of their caregivers' faces (mostly during feeding and changing). Thus, the lack of experience with emotional expressions may lead to impairments in emotion recognition.

Past work points to the potential effects of this limited experience on older children's social and emotional competence. One specific study examined the understanding of emotional expressions in 6- and 7-year-olds being reared in a Russian orphanage (Sloutsky, 1997). The study reported profound differences between orphanage-reared children and home-reared children in their identification of emotion states. Specifically, the orphanage-reared children identified significantly less frequently the emotions of anger, love, fear, and joy. Yet, the orphanage-reared children performed similar to the home-reared children on sadness and disgust, expressions that are presumably more common in the orphanage. In fact, the author points out that within the orphanage, displays of human emotion are deemed inappropriate for staff, thus the children may rarely witness adult emotional expressions.

Another study examined the play behavior of 4-year-olds adopted from Romania before 6 months or between 6 and 24 months of age (Kreppner, O'Connor, Dunn, Anderson-Wood, & the English and Romanian Adoptees Study Team, 1999). Both groups of adoptees exhibited lower frequencies of pretend play than the control group of children adopted from the United Kingdom. Pretend play, as assessed in this study, involved the child's ability to interact in a social way with the adult experimenter, and thus involved aspects of socio-emotional development. Facial expressions of emotion are social signals that, in part, act to dictate the social interplay between humans. The rules and skills guiding these normal social interactions are complex, but include the appreciation and understanding of other people's thoughts and intentions and, not surprisingly, the processing of affective facial expressions. Impairments in social interaction, similar to those reported in the Romanian adoptees, may include inadequate comprehension of social-emotional cues, poor use of social signals, and a lack of socio-emotional reciprocity. A number of investigators have suggested that infants are sensitive and responsive to their environments and that these experiences may be important to the child's ability to understand and discriminate emotional expressions and engage in social interactions with others (Nelson, 1987; Walker-Andrews & Lennon, 1991). Accordingly, the impairments in play behaviors observed in Romanian adoptees may primarily reflect deficits in socio-emotional development resulting from early deprivation.

In the current study we examined the impact of early experience on the discrimination of basic facial expressions of emotion in two groups of Romanian infants and toddlers. One group was reared within their families of origin in Bucharest, and the other consisted of children selected from several institutions for abandoned children within Bucharest (for details, see Zeanah et al. (2003)). Institutions characteristically retain a very high caregiver-to-child ratio (typically 12–15 children for 1 caregiver). The children who reside in these institutions, however, are typically adequately fed and clothed and receive some medical care. Thus, the employed measure was intended to capture

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