Face Recognition in Preschool-Aged Children
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Abstract
The current literature on children’s recognition of faces typically uses static faces as opposed to dynamic, moving faces (e.g., Brace, Hole, Kemp, Pike, Van Duuren, & Norgate, 2001; Freire & Lee, 2001). The present study explored whether 3- to 4-year-old children could differentiate between two faces when presented in a dynamic, unimodal (visual) display. Twenty-five preschoolers were familiarized to a series of female faces silently speaking a nursery rhyme. Test trials were pairs of novel and familiar faces in a forced-choice format. Results suggest significant improvement between the ages of three and four years in the ability to recognize moving faces, both in accuracy and reaction time.

Introduction
Infant face discrimination and recognition have been extensively researched. Infants demonstrate impressive capabilities such as newborn recognition of the mother’s face (e.g., Bushnell, 2001) and 6-month-old’s memory for an unfamiliar face after a 24-hour delay (Pascals, de Haan, Nelson, & de Schonen, 1998). Presently, limited research exists on face recognition in young children, particularly during the preschool period. Brace et al. (2001) demonstrated that 2- to 4-year-old children recognized static faces, both upright and inverted, when embedded in a storybook format. Freire and Lee (2001) found that 4- to 7-year-old children recognized static faces using configural and featural cues, and are sensitive to paraphernalia, such as glasses, clothing, or hairstyle. Newell and Strauss (submitted) demonstrated a significant improvement in accuracy between ages 3 and 4 in gender categorization of dynamic faces. Together, these results indicate that young children recognize static faces under a variety of conditions and that face perception skills improve significantly during early childhood. Moreover, research with infants and adults indicates that moving faces promote better recognition, learning, and memory than static faces (Bahrick, Moss, & Fadil, 1998; Knight & Johnston, 1997; Lander & Bruce, 2002; Pike, Kemp, Towell, & Phillips, 1997). Despite these findings, and the fact that faces are typically dynamic, research on face recognition in children has primarily focused on discrimination of static images.
Bahrick and Lickliter (2000) proposed the intersensory redundancy hypothesis (IRH) which states that in early development the detection of modality-specific properties (e.g., pattern, configuration, color) is facilitated when perceived in only one sense modality (e.g., unimodal visual), but is attenuated when perceived in more than one sense modality (e.g., bimodal audiovisual). Thus, face perception, which depends on modality-specific properties such as facial features and their configuration, should be facilitated in unimodal visual stimulation. The present study assessed face recognition in 3- and 4-year-old children to determine if preschoolers would show recognition for dynamic, unimodal visual faces, and 2) whether improvement in face recognition would be evident across this period. We used dynamic, unimodal visual faces to maximize discrimination among faces and to address the gap in the literature on children’s discrimination of dynamic faces.

Method
Children aged 3–4 (N = 12, M = 38.2 mo, SD = 2.25) and 4 years (N = 13, M = 45.5 mo, SD = 1.90) participated. After establishing rapport, preschoolers were told that they were going to hear a story about a birthday party. The story included practice, familiarization, and recognition test trials for 6 faces. The video clips associated with the story were presented on Microsoft PowerPoint.

Conclusions
The present study found significant evidence of face recognition in 4-year-old, but not in 3-year-old, children, and improvements in both speed and accuracy across age for recognition of dynamic, unimodal visual faces. These findings highlight that significant improvements in face recognition occur across the preschool years. The present study contributes to the limited research on face recognition in preschool-aged children and extends prior research on static faces to the recognition of dynamic faces. Future studies should further explore the transition in face perception during the preschool years and compare face recognition in infant visual perception with that of more naturalistic multimodal stimulation (e.g., audiovisual speech).

References