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Infant categorization of faces: Ladies first ☆

Jennifer L. Ramsey [a,*], Judith H. Langlois [a], Nathan C. Marti [b]

[a] *Department of Psychology, The University of Texas at Austin, USA*
[b] *The Community College Survey of Student Engagement, The University of Texas at Austin, USA*

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Abstract

We review and provide empirical evidence to show that infants categorize and process male and female faces differently, with an advantage in processing female faces. To understand this asymmetry in categorization and processing of male and female faces, we evaluate three mechanisms influencing infant categorization of male and female faces: differential experience with female and male faces; early visual preferences for female vs. male faces; and range of physical differences among category exemplars. The paper concludes with a developmental trajectory for infant acquisition of face categories proposed within a framework that reflects current knowledge and theory in the infant categorization and face processing literatures. The proposed developments have important implications for the existing infant face perception literature and infant learning about females and males.
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* Corresponding author. Present address: Department of Psychology, University of Nevada Las Vegas, USA. Fax: +1 702 895 0195.
E-mail address: ramseyj2@unlv.nevada.edu (J.L. Ramsey).

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Do infants process and categorize male and female faces similarly? Although a few studies suggest infants categorize both female and male faces naturally and effortlessly (Cornell, 1974; Leinbach & Fagot, 1993; Younger & Fearing, 1999), this paper will review literature and provide empirical evidence showing a substantial developmental asymmetry in infants' processing and categorization of male and female faces with male faces being significantly more difficult for young infants. We then review research to suggest three reasons underlying this asymmetry. Last, we propose a developmental trajectory for infant learning of faces and subsequent grouping into male and female. Because developmental differences in infants' learning of male vs. female faces may affect conclusions from the existing face perception literature, the paper concludes with caveats for generalizing results from infant studies using female faces to *all* faces.

Categorization

Categorization of natural objects is a fundamental cognitive activity for all human beings (Mervis & Rosch, 1981). Cognitive categorization guides the grouping of objects and events in the world into different classes. Category members are distinguishable, but share particular characteristics, and individuals treat or act upon these objects or events similarly (e.g., Mervis & Pani, 1980; Mervis & Rosch, 1981). Through cognitive categorization, people can, on average, consistently respond to novel members of a category based upon their knowledge of that category. Although such simplification of the world results in some information loss, the value of predicting the utility or behavior of a particular object based on prior experience with members of that category would have been adaptive for the survival of ancestral humans (e.g., Humphrey, 1980; Quinn & Eimas, 1987).

Given the importance of categorization, it is not surprising that even young infants demonstrate this ability (e.g., Eimas, 1994; Mandler, 1992; Mervis & Rosch, 1981; Quinn & Eimas, 1987, 1996). Infants are equipped with a predisposition to develop a system of categories given appropriate experience (e.g., Behl-Chadha, 1996; Cohen & Strauss, 1979; Eimas & Quinn, 1994; Humphrey, 1980; Sherman, 1985). Infants categorize both natural objects (e.g., cats and dogs; Quinn, Eimas, & Rosenkrantz, 1993) and artificial objects (e.g., dot patterns; Younger & Gotlieb, 1988) within a laboratory setting after only minimal exposure to exemplars. Natural categories form as a result of exposure to exemplars in the regular environment. In contrast, artificial categories form as a result of exposure to exemplars within an experimental setting.

Infant knowledge of female and male face categories

One presumably natural category that infants learn is the distinction between male and female faces. Although some studies suggest that infants readily categorize both male and female faces (e.g., Cornell, 1974; Leinbach & Fagot, 1993; Younger & Fearing, 1999), we argue that the data from categorization studies more accurately

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