

## Specialization and generalization in perceptual development: The case of the other-race effect in the first year of life

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It has been a longstanding debate whether perceptual development is primarily a pruning or branching process. While the developmental literature on perceptual narrowing emphasizes declined sensitivities to rarely exposed stimuli, research of perceptual learning highlights improved sensitivities to frequently exposed stimuli. By examining infants' developmental changes in processing own- and other-race faces, studies of the other-race effect provide a unique window into understanding the dominant form of experience-shaped neuroplasticity and have favored the pruning view (i.e. perceptual narrowing). However, here we reveal the branching aspect of perceptual development (i.e. perceptual learning). Using the familiarization paradigm, we presented 4-, 6- and 9-month-old Taiwanese infants with oval-masked faces of three ethnic groups (Taiwanese, Caucasian, Philippine) that looked more similar across races than unmasked faces, and the infants showed an own-race advantage at 4 months and improved rather than declined discriminability for other-race faces between 4 and 9 months. This race-generalized improvement of face recognition implies a more specialized neural representation of the facial features shared by own- and other-race faces. Our study and other studies that used unmasked faces complementarily suggest that, during perceptual development, the neural representations of familiar and unfamiliar perceptual features compete and undergo branching and pruning processes, respectively.

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