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Learning Object Names from Visual Pervasiveness: the Visual Statistics Predict

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Abstract: Recent analysis of a corpus of infant-perspective head-camera images found an extremely right-skewed frequency distribution of objects present in 8- to 10-month-old infants' visual environments (Clerkin, et al., 2017). Furthermore, the objects most pervasively present in these scenes have names normatively acquired first by learners of English. New analyses show that the names for these objects occur only sparsely in infants' environments, and object name frequency is not correlated with object visual frequency. Therefore, we designed a simple associative model simulating word-object co-occurrence in order to investigate how visual pervasiveness without high-frequency naming could lead to learning of word-object correspondences. With random sampling from distributions reflecting the actual frequency of words and objects in infants' environments, we find that the most frequent objects have a distinct advantage over less frequent objects in their conditional probability. This suggests visual experience with objects may be the principal predictor of early word-referent learning.