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Which Statistic Matters? Effects of Category Size and Distribution on Statistical Category Learning

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Abstract: The present study investigates whether, and if so in what way, adult learners are sensitive to the properties of the statistical input, such as frequency and skewedness, when learning and generalizing category labels. Participants were presented with novel objects belonging to four different categories and heard category labels in a cross-situational learning task. The four categories were matched for the total amount of exposure but varied in category size and shape of distribution. Participants learned object-to-label mappings better for categories with a skewed distribution of fewer objects. Moreover, object-to-label mapping performance was positively related to the ability to extend category knowledge to novel items. Co-occurrence frequency or category size alone were not good predictors of label learning and generalization. The results indicate the importance of input distribution in word and category learning processes.