The Sufficiency Principle: Predicting when children will regularize inconsistent language variation

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Abstract: Children exposed to inconsistent language variation regularize this variation in their productions (Hudson-Kam & Newport, 2005). Existing demonstrations of regularization observe this behavior when the signal-to-noise ratio is greater-than-or-equal-to 40%, but whether regularization occurs when the dominant form is less widespread has not been investigated. A recent computational model, the Sufficiency Principle, quantifies when a pattern is widespread enough to generalize (Yang, 2016): Let R be a generalization over N items, of which M are attested to follow R. R extends to all N items iff: $N-M<N/\ln(N)$. To test this model, we exposed children to artificial languages in which the dominant form occurred either above or below this threshold for generalization. We found that, as predicted, children regularized only under circumstance in which the Sufficiency Principle threshold for generalization is met. Thus, regularization may be governed by a basic principle of generalization that is well captured by this model.