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Why are we (un)systematic? the (empirical) costs and benefits of learning universal constructions

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Abstract: A theoretical challenge for cognitive science is to explain both the presence and absence of systematicity. One explanation (Phillips & Wilson, 2010) says systematicity derives from universal constructions. We tested this theory with an experiment that required learning cue-target pair maps whose underlying structures were either products (universal construction), or non-products (control). Each series was learned in either ascending or descending order of size: number of unique cue/target elements constituting pairs, which varied from three to six. Only performance on the product series was affected by order: systematicity was obtained universally in the descend group, but only on large sets in the ascend group. The results suggest that learning small maps directly, without reference to the underlying product, may be perceived as more cost-effective, i.e., acquisition of a universal construction, hence systematicity, depends on an empirical cost-benefit tradeoff.