

Beyond binary: One small step across the artificial-naturalistic divide in understanding human category learning

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Abstract: The foundational six types problem (Shepard, Hovland, & Jenkins, 1961) offers a limited view of human category learning due to minimal ecological validity. The SHJ types actually do address the explanatory constructs historically proposed to explain natural categories (rules, exemplars, family resemblance), but do so in an impoverished manner due to binary-valued dimensions. We studied the SHJ types using stimuli with four values on each dimension. The SHJ types become more like natural concepts with more robust intension (internal structure) and extension (category size). This allows for richer evaluation of the representations and processes underlying learner performance. Results depart from the traditional ease of learning order (I>II>III,IV,V>VI) since Type IV (family resemblance structure) shows higher accuracy than Type II early in learning. Transfer to novel items and typicality ratings reveal graded structure even in rule-described categories and show distinct signatures of the categorization basis used by each learner.