

A PDP Account of Transitions in Conceptual Development

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Abstract: As children gain knowledge about the world, the organization of their conceptual knowledge becomes increasingly complex, as reflected by the successive emergence of sensitivity to different types of similarity over the course of development. At the start, when judging the similarity of two objects, infants rely on perceptual similarity. By age 3, children often make these judgments based on object co-occurrence, or thematic similarity. Finally, after ages 5-6, children reliably start to prefer taxonomic similarity. Though these phenomena have been well-studied, they are often explained by reference to separate mechanisms that are stipulated to come on-line at specific ages. We present a PDP model that learns from the structure of its environment and exhibits transitions in the relative salience of perceptual, thematic, and taxonomic similarity, as observed empirically, without any changes in its underlying learning mechanism or training environment.