Abstract Perceptual Learning of Hidden Patterns

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Abstract: 'Perceptual learning' (PL) refers to experience induced improvements in the extraction of information from the environment. Although early work emphasized that PL often involved discovery of abstract invariants from stimulation (Gibson, 1969), most recent work has focused on concrete, low level stimulus properties. We describe research to understand abstract perceptual learning (APL), which requires discovery of structural relations between features, and compare it to concrete PL. Learners discovered hidden targets – 10 squares of the same luminance embedded in 12x12 'grids' of varying luminance noise. Concrete targets maintained pixel position and luminance across trials. Abstract targets changed either position or luminance across trials. In a discovery task, humans were able to discover both concrete and abstract patterns. We show that existing computational models can describe concrete but not abstract learning and we suggest models that can account for abstraction in PL.