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# Uncertainty-driven little alchemists: Differences in exploration strategies between adults and children in an online game

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## Abstract

Past research examining developmental differences in exploration behavior has shown that children are more likely than adults to seek out uncertainty. However, children's exploration behavior may be shaped by their distinct prior experiences and assumptions, differing from those of adults. We investigate these differences and their potential impact on exploration, using the game "Little Alchemy", in which players can create new elements (e.g. clay) by combining previously discovered elements (e.g. stone and mud). Previous work found that adults use an empowerment strategy: They combine elements with the goal of creating new elements with the potential for many successful combinations. We observed that children were less likely to use an empowerment strategy, but relied more on their uncertainty compared to adults. This discrepancy decreased over age. In a follow-up experiment, we showed that this difference was indeed due to children using different strategies rather than the influence of different semantic priors.