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Exploratory play, rational action, and efficient search

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Abstract

Play is a universal behavior widely held to be critical for learning and development. Recent studies suggest children's exploratory play is consistent with formal accounts of learning. This "play as rational exploration" view suggests that children's play is sensitive to costs, rewards, and expected information gain. By contrast, here we suggest that a defining feature of human play is that children subvert normal utility functions in play, setting up problems where they incur needless costs to achieve arbitrary rewards. Across three studies, we show that 4-5-year-old children not only infer playful behavior from observed violations of rational action (Experiment 1), but themselves take on unnecessary costs and perform inefficient actions during play, despite acting efficiently in non-playful, instrumental contexts (Experiments 2-3). We end by discussing the value of apparently utility-violating behavior and why it might serve learning in the long run.