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The Discriminative Functions of Primary and Conditional Reinforcers: Signalling the Local and Global Contingencies of Reinforcement

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Abstract

In 4 experiments, pigeons worked in two-key concurrent schedules for food and non-food response-contingent events. Choice after one of these events was a function of the global and local relative probability of a same-alternative food. Experiment 1 was a steady-state two-alternative concurrent-schedule procedure with added response-contingent red keylights, whose left: right ratio was positively, negatively or zero-correlated with the left: right food ratio. Local preference after a red keylight was always towards the just-productive alternative, regardless of the stimulus ratio-food ratio correlation. Pairing the stimuli with food enhanced this effect. In Experiment 2, response-contingent keylights signalled the likely location (p = .9) of the next food, and preference was towards the locally richer alternative, whether this alternative was the just-reinforced or the not-just-reinforced alternative. When the two alternatives were equally likely to produce the next reinforcer, preference was towards the just-reinforced alternative. This was because the post-event changeover contingencies biased the local obtained food ratio. This was confirmed in Experiment 3 in which the post-food illuminated alternative was varied and food was the only response-contingent event. Local preference was always towards the post-food illuminated alternative when the reinforcers randomly alternated. When the reinforcers strictly alternated, preference was initially towards the post-food illuminated alternative before changing to the not-just-reinforced alternative. This finding confirmed that previous difficulties with strict-alternation were likely due to the post-food changeover contingencies biasing the perceived post-food obtained local reinforcer ratio. Experiment 3 also revealed that preference was shifted by same-alternative reinforcers (continuations) regardless of the post-food changeover contingencies, suggesting a response-strengthening function of temporally

distant reinforcers. Experiment 4 revealed that control by temporally distant reinforcers is apparently not discriminative: there was no control by the local probability of a same-alternative reinforcer (p = 0 or 1) when sequences of same-alternative reinforcers strictly alternated. Preference was instead a function of the global probability of a continuation reinforcer. Together, these experiments demonstrate that response-contingent stimuli (appetitive and non-appetitive) function as signals indicating the likely location of subsequent appetitive stimuli. They can signal the short-term, or the long-term contingencies of further appetitive stimuli, or both.

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