Induce Rules by Stimuli Presentation Sequences: Evidence from Switch Cost

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People tend to find correlations among different events and create specific rules to follow. Previous studies have shown that switching between different rules takes time; this is called the switch cost. Dreisbach, Goschke, and Haider (2007) introduced two stimuli at a time in each section and found that without debriefing the underlying rules of these stimuli, no switch cost could be observed. However, we argue that, with a proper sequence of adding stimuli to the experiment, participants should be able to generate rules by themselves. We hypothesize that successively presenting stimuli with the same rule (the induction group) could promote generation of the rule, as compared to mixed presentation of stimuli with different rules (the stimulus-response group). In Experiment 1, we asked participants to press keys following specific stimulus-response mappings without telling them the underlying rules, and found significant switch cost in the induction group but not in the stimulus-response group. Experiment 2 demonstrated that if the two underlying rules were highly perceptible, the stimulus-response group as well as the induction group could show significant switch cost. Experiments 3 and 4 revealed that when only one of the two underlying rules was perceptible, regardless of which rule was introduced first, only the induction group showed significant switch cost. Taken together, our findings suggest that rules can be induced via appropriate presentation sequence, except that the hidden rules are highly perceptible.

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