

**STUDENT PAPER WINNER****COMBINATIONS OF RESPONSE-REINFORCER DEPENDENCE AND INDEPENDENCE IN HUMANS**

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Response-independent reinforcement (RIR) tends to weaken ongoing operant behavior. The seminal basic research which established general parameters of effects has used non-human subjects almost exclusively. Recently, RIR has been used as treatment for severe behavior problems, mostly with persons with developmental disabilities. The present study addressed two gaps in the RIR research tradition. First, there have been relatively few demonstrations of RIR effects in the human laboratory, and as a result, no standard methods exist for this line of inquiry with human subjects. In this sense, the present study can be regarded as a development-of-method endeavor. Second, the means by which RIR may weaken behavior has received little systematic attention. Basic researchers typically have assumed that RIR adventitiously strengthens competing behavior. This view is based largely on studies in which increases in spontaneous behavior were correlated with introduction of RIR (superstitious conditioning), but such effects often are seen in only a subset of the subjects studied, and have been idiosyncratically expressed in different individuals. Applied researchers largely have overlooked the alternative-reinforcement hypothesis (Roscoe, Iwata, & Goh, 1998) because casual observations during RIR treatment have not revealed obvious superstitious conditioning. The present study was designed to provide a means to systematically evaluate alternative reinforcement effects using a common metric for all subjects.

Alternative reinforcement effects are most easily evaluated in the context of concurrent schedules, but most previous RIR research has employed single reinforcement schedules, or, in the case of applied studies, superimposed RIR upon a single class of behavior not under experimenter control. When concurrent schedules have been used, "response-independent" reinforcement has been strictly contingent on one response alternative, effectively precluding the strengthening of alternative (experimentally-programmed) behavior.

In the present research, RIR could follow either of two response options imbedded in the concurrent schedule arrangement. College students worked for points worth course credit. A concurrent variable-interval 30 s variable-interval

10 s schedule of response-dependent reinforcement (0% RIR) established the baseline performance in a task modeled after Madden and Perone (1999). Across RIR conditions, 100%, 67%, and 33% of the previously-contingent rich-side (VI-10) reinforcers were delivered response-independently. These conditions were presented in ascending and descending sequence (cf. Lattal, 1974). RIR was independent of which alternative was currently activated, within the constraints posed by a 2-s changeover delay.

Response rate on the originally-rich alternative was negatively related to the percentage of response-independent reinforcers, a finding analogous to those of previous single-schedule studies (e.g., Lattal, 1974). Response rates on the other alternative increased concomitantly for 4 of 6 participants (Figure 1 shows one subject's data). When regressed against obtained relative reinforcement rates (including both response-dependent and response-independent reinforcers), response allocation data for individual participants conformed well to predictions of the matching law, suggesting that most of the variance could be accounted for in terms of competing reinforcement. The study thus demonstrates orderly RIR effects in human subjects under laboratory conditions, and illustrates a means by which alternative-reinforcement effects can be systematically investigated rather than observed opportunistically, as is the case in superstition experiments.

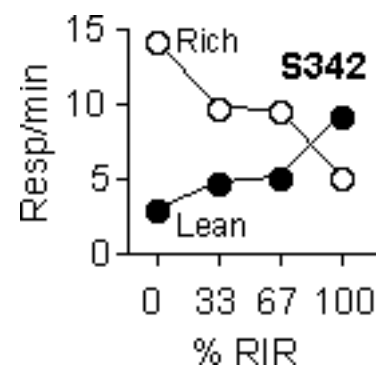


Figure 1

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