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Behavioral Contrast: A New Solution to an Old Problem?

Sara J. Estle

Illinois Wesleyan University

Karin A. Beaumont

Illinois Wesleyan University

James D. Dougan, Faculty Advisor

Illinois Wesleyan University

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Poster Presentation 13

BEHAVIORAL CONTRAST: A NEW SOLUTION TO AN OLD PROBLEM?

Sara I. Estle and Karin A. Beaumont and James D. Dougan*
Department of Psychology, Illinois Wesleyan University

Reynolds (1961) discovered that when the rate of reinforcement in one component of a multiple schedule changed, the response rate in the other, constant component changed in the opposite direction. He labeled this effect behavioral contrast. At least four major theories have been proposed to account for behavioral contrast: additivity theory (Gamzu & Schwartz, 1973), competition theory (Ettinger & Staddon, 1982; Hinson & Staddon, 1978), matching theory (Herrnstein, 1970; Williams, 1983), and most recently, habituation theory (McSweeney & Weatherly, 1998).

The effects of component presentation on behavioral contrast were examined in rats. The additivity, competition, and matching theories do not make direct predictions about the effects (if any) of component presentation. Habituation theory, however, does make a prediction regarding component presentation: conditions providing randomly alternating multiple schedule components should produce more robust contrast than conditions providing strict alternation of components. Each rat was exposed to a series of six multiple variable-interval schedules, divided into two three-schedule series. Each series consisted of a standard contrast design (baseline phase, contrast phase, and baseline recovery phase). The presentation of multiple schedule components within these three phases varied as a function of condition. In condition one, rats were presented with the traditional strict alternation of multiple schedule components. In condition two, rats were exposed to randomly alternating multiple schedule components.

Component presentation did not have a significant effect on behavioral contrast. Robust contrast was observed in both conditions, at both VI 15 and VI 30 baseline reinforcement rates. These results fail to support the predictions made by habituation theory, although not to the extent that habituation theory should be dismissed as a possible explanation of behavioral contrast. Further research is needed to determine the applicability of habituation theory to behavioral contrast.