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Biederman (1967) has recently reported data which he interprets as supporting one possible explanation of the overlearning reversal effect (ORE). D'Amato & Jagoda (1962) suggested that the aversiveness of S- in a simultaneous discrimination does not increase monotonically with continued training, but that S- may become less "negative" in the course of overlearning because the S has little contact with S- at a high level of accurate performance. This could account for the facilitation of discrimination reversal found after overlearning. Biederman gave rats unequal amounts of training on two concurrent simultaneous discrimination problems, with 48 trials on the more trained problem and 12 trials on the less trained problem. He found that the S- from the less trained problem was preferred when the negative stimuli were presented together. After 96 and 24 training trials on each problem respectively, a different group of rats showed no reliable preference for either of the two negative stimuli.[1] Thus, with more extensive training, the relative aversiveness of the more trained S- decreases.

This experiment (and the previous study of Deutsch & Biederman, 1965, which it replicates) does not in fact have any clear relevance to the explanation of the ORE. In neither group were the animals anywhere near an acceptable criterion of discrimination performance; the best performance of the group receiving more extensive training did not exceed 65% correct. A discrimination criterion of 90-100% correct is usually required before overtraining begins; Biederman's Ss were not overtrained in any sense. A relationship between the nonmonotonic negativity of the S- and the ORE can only be demonstrated if (1) the animals are brought to criterion on one problem and overtrained past the same criterion on a second problem, (2) the S- involved in overtraining is clearly shown to be preferred over the criterion S-, and (3) the ORE is actually demonstrated in the comparative speed of reversal learning of the two problems in the same situation. None of these conditions are met in the Biederman or the Deutsch and Biederman experiments. In particular, neither study demonstrated a significant *preference* for the more trained S-.

It is possible, of course, that such a preference would emerge if overtraining were actually carried out. Nevertheless, there are other factors which may be equally relevant to the explanation of the ORE, and which may actually work against the mechanism suggested by Biederman. For example, Biederman reports a strong preference for the more trained S+ in both of his groups when the positive stimuli were presented together. If the attractiveness of S+ increases throughout training, it may well retard discrimination reversal and counteract the presumed decreases in the aversiveness of S-. It would surely be difficult to make predictions based on processes interacting in such a complex fashion. The stimulus analyzer theory proposed by Sutherland (1964), Mackintosh (1965), and Lovejoy (1966) may well prove to be a much simpler explanation of the ORE.

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Note

1. The actual number of training trials is surmised from Biederman's graph, according to which one group had four blocks consisting of 12 trials with the more trained problem and three trials with the less trained problem. The other group received eight such training blocks. Thus, one group apparently received 60 trials and the other, 120 trials. Biederman refers to these groups as 64 trial and 128 trial groups. This discrepancy is not explained.