

3. Animal Learning

Operant-Pavlovian Interactions

Edited by HANK DAVIS and HARRY HURWITZ (1977)

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Participant in conference: "I put this as an open question: what is the nature of the interaction which typically occurs between Operant and Pavlovian conditioning?"

Editor of conference proceedings (after some silence): "Is someone going to attempt an answer?"

No-one ever does, perhaps not surprisingly, as this exchange is recorded following Black's conclusion that "the attempt to distinguish between Operant and Pavlovian conditioning... is a futile endeavor." But, although there was no agreement on general answers to questions about types of conditioning, important conclusions to some individual disputes seem to be contained in these ten chapters, and the extensive reports of apparently pretty fierce discussion periods add highly entertaining light relief.

This is the proceedings of a conference held at Guelph, Canada, in 1975, but it provides extremely useful reviews, by distinguished contributors, of issues which reflect the "constraints on learning" difficulties of the last ten years, as much as the Operant-Pavlovian distinction. In general, the constraints are loosening. It's true that there's a very reflexive aspect to the pigeon's key peck, but Jenkins and Boakes, in separate chapters each involving high quality experimentation, re-establish that beak activities are also a) extremely sensitive to reward operations and b) independent from the unconditioned response (if an illuminated loop signals food, pigeons are as likely to tug at it as to peck it).

I first thought that Davis had reached a new peak of Skinnerian irrelevancy by choosing as his independent variable the brand name of his apparatus, but it is instructive to find that British-made Skinner boxes seem to prevent rats from using their normal "instinctive" response of leaning on the lever throughout escape conditioning, so that the animals are forced to adopt a more creative, and less constrained, strategy.

Two of the figures most involved in initiating the "constraints on learning" doubts are Seligman and Garcia. Seligman's main contribution here was in adding weight to discussions: his paper on safety signals was short and slight. But Garcia provides a most impressive final chapter with a discussion of his work on bait-shyness in wild animals. The paradigm is that wolves are given lithium in sheep's clothing. If it is assumed that wolves are naturally prepared to hunt sheep, then this plays one constraint off against another. But for wolves and coyotes at any rate, the conflict is soon over, for a single bout of illness after eating lithium-doped mutton wrapped in sheep hide was sufficient to inhibit some of the carnivores from killing captive sheep. There may be a special organ of taste-aversion learning, the nucleus solitarius or its equivalent in non-mammalian vertebrates (hawks, like rats, learn taste-aversions better than sight-aversions if fed with a black, quinine-flavoured, poisoned mouse).

Garcia also suggested a possible answer to the Operant/Pavlovian question, though it was firmly resisted. Certain stimulus pairings lead to shifts in hedonic evaluations. Once the hedonic status of a stimulus has changed, it may elicit various new behaviours (withdrawal from sheep, approach and investigation of a light bulb) and thus have an immediate effect on response performance, as well now being a reinforcer of some kind. Certain other stimulus pairings lead, more mysteriously, to the learning of "bloodless" 'if-then' contingencies.

In either case the stimulus pairings will have a pronounced effect on the workings of reward and punishment. Hence Operant/Pavlovian interactions.

Among several other interesting chapters is one by Rescorla covering second-order conditioning, which may further increase the variety of interactions. Obviously the book is worthwhile for anyone teaching animal learning, but should probably only be given to undergraduates in small doses.

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