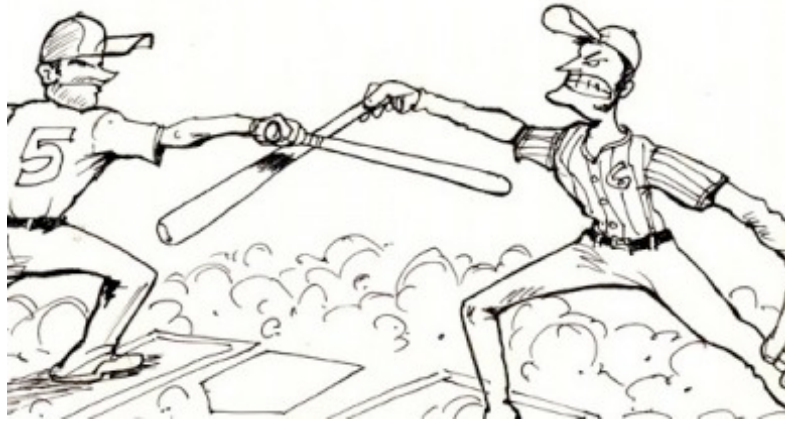


Instrumental vs. Pavlovian conditioning: the playoffs



PSY/NEU338: Animal learning and decision making:
Psychological, computational and neural perspectives

	Pavlovian	Instrumental
contingency (operational)		
association (theoretical)		
what does the reinforcer do?		
animal's response		

are these really two different learning processes?

- “Different rules for delivering reinforcers do not guarantee that the experimenter is studying different forms of learning”
(Mackintosh, 1983)
- What the experimenter describes is not necessarily the same (or even similar) to what the animal learns!
- examples?
- maybe these are both manifestations of the same learning mechanism?

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omission shows that Pavlovian contingencies exist

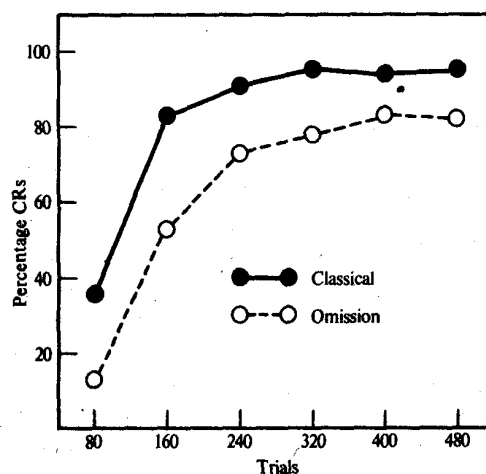


FIG. 2.1. Eyelid conditioning in the rabbit as a function of classical or omission schedules of shock reinforcement. (After Coleman (1975).)

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Conclusion #1

- We can't explain all learning in terms of instrumental responding: some responses appear *despite* and not *because of* their consequences
- We must assume that a classical principle of reinforcement (*a la* Pavlov) exists: responses that are elicited by a reinforcer start appearing earlier in time
- So: can this explain all of conditioning? Do we need the "law of effect" at all?

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Conclusion #2

- we can change (instrumental) behavior without changing Pavlovian contingencies
- Overall the evidence points to "two factor theory" - both instrumental and Pavlovian contingencies affect learning/behavior
- "Classical and operant conditioning are separable not because one can ever devise a pure classical or a pure instrumental experiment, but because it is possible to distinguish the ways by which each process modifies behavior"

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Caveats

- But: only way to determine what changed the animal behavior is by analyzing the animal's behavior appropriately (not by looking at what the experimenter planned!)
- Problem: omission contingencies tell us whether a behavior can be sensitive to an instrumental contingency or not, but not what contingency actually controlled behavior..
- Better tools: neural dissociation?