Conditioned Taste Aversion and Latent Inhibition: A Review
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Review: Anthony L. Riley

For the month of November, we are highlighting Chapter 3 of Reilly and Schachtman's "Conditioned Taste Aversion: Behavioral and Neural Processes". This chapter by Lubow is entitled "Conditioned Taste Aversion and Latent Inhibition: A Review".

Latent inhibition (LI) in taste aversion learning is a phenomenon in which exposure to the to-be-conditioned taste stimulus interferes with aversion learning. At the outset, it is important to read Lubow’s overview of LI in taste aversion learning in the context of the larger phenomenon of LI in general. As Lubow notes, “That conditioned aversion to a familiar stimulus appears to be weaker than to the same stimulus when it is novel is, of course, identical to the results from scores of LI experiments that have used a variety of learning paradigms.” As early as 1973, Lubow wrote a seminal paper on LI and provided subsequent descriptions of the effect within taste aversion learning (see Lubow, 1989). This current chapter illustrates how LI in taste aversion learning is similar to and different from that in other learning preparations.

Lubow begins his chapter with a brief introduction to LI in aversion learning by noting that conditioning is weaker to the flavor CS when it is familiar than when it is novel (similar to work on LI in other conditioning preparations). He follows this parallel with a host of cautions in which he notes how the specific preparation of taste aversion learning might impact any generalizations one might make regarding LI in general. Such caveats included whether LI reflects an associative or interference effect (a function of the specific CTA paradigm), the possible role of changes in conditioning and test context, how neophobia might impact behavioral displays, the potential problem of analytic vs. synthetic processing of flavors (in other words, whether a compound taste is processed as a set of distinct flavors or as a unitary whole) and ceiling and floor effects in consumption. All of these issues are relatively unique to taste aversion conditioning and ones that might uniquely impact LI.

He follows these specific caveats and cautions with an overview of the various parameters reported to impact LI in aversion learning. These factors included the variety of taste stimuli for which LI has been reported (or not, e.g., polycose), the methods by which the taste stimuli have been presented (e.g., licking vs. intraoral; LI is generally unaffected by the method), the amount of solution given during preexposure (LI generally increases with amount), the intensity of the preexposed taste (LI generally increases with concentration and intensity), stimulus specificity (LI is generally stimulus specific), the number of conditioning and test trials (LI weakens with greater conditioning), the duration of the retention interval (between preexposure and conditioning, between preexposure and testing and between conditioning and testing; LI generally weakens with delays under all conditions) and the nature of any change in context from preexposure to conditioning and/or test, e.g., local context changes impact LI; global ones do not. Other parameters of importance include whether preexposure
and conditioning occur to specific flavors or flavors in compound. In general, outcomes could be predicted by generalization decrements and/or local (thus specific) changes in preexposure, conditioning and testing contexts.

One interesting effect of flavor preexposure (above and beyond latent inhibition) is the fact that such flavor exposure improves its discriminability from other flavors, e.g., in terms of its subsequent generalization to other conditioned aversive tastes. In these cases, generalization is weakened. Such effects are impacted by the similarity of the two flavors (the more similar, the less generalization) and how they are presented during preexposure and conditioning, i.e., serially or alternating (with alternating presentations yielding greater discrimination).

Lubow closes his chapter with a summary of the possible mechanisms mediating LI in taste aversion learning and suggests that the mechanisms may be multifaceted and dependent upon processes occurring during preexposure and testing (based on the fact that preexposure is a function of many factors that often interact in their eventual effect). He notes that during taste preexposure, animals may be learning the stimulus specific properties of the preexposed taste as well as the relationship of that taste to other sensory stimuli (or their absence), effects that may impact subsequent conditioning (so called A or attentional/associative theories). On the other hand, during testing previously learned relations (or associations) acquired during preexposure may compete with those acquired during conditioning (i.e., when the taste was paired with the US) affecting retrieval (so called R or retrieval/competition theories). He concludes by noting that a comprehensive account of the effects of flavor preexposure on aversion learning is likely some amalgamation of these two processes, as either alone is insufficient in accounting for the complexity of the data in LI assessments.

Anyone interested in understanding the nature of taste preexposure in conditioned taste aversion learning and how such effects relate to LI in general will learn much from this chapter.