The Origins of Conditioned Taste Aversion Learning: A Historical Analysis
Kevin B. Freeman and Anthony L. Riley

Review: Andrey Verendeev

For the month of October, we are highlighting Chapter 2 of Schachtman and Reilly’s “Conditioned Taste Aversion: Behavioral and Neural Processes” (Chapter 1 is a brief introduction by the editors of the collection). This chapter by Freeman and Riley is entitled “The Origins of Conditioned Taste Aversion Learning: A Historical Analysis”.

To fully understand a phenomenon, it is important to know its history, and the chapter by Freeman and Riley is an attempt to do just that for the field of conditioned taste aversion (CTA) learning. This chapter gives a comprehensive account of its beginnings as a serendipitous finding, the challenges it posed for the general field of learning and conditioning, the initial attempts to accommodate the phenomenon into contemporary learning theory, its growth into an independent field of inquiry and its development as an applied clinical (and experimental) tool.

At the outset of the chapter, the authors focus on the empirical history of the avoidance of foods (or solutions) after some aversive experience and how it developed from two quite unrelated areas of research, i.e., control of rats and mice (from Rzoska) and radiation exposure (from Garcia). Although the phenomenon had roots in two separate empirical findings, it was the work of Garcia and his colleagues that set the stage for what is now conceptualized as taste aversion learning. In this context, Freeman and Riley focus on the origins of CTA as a learning phenomenon with its interpretation based in the learning theory championed by Pavlov (thus, conditioned taste aversion). Indeed, from its very beginning CTA was interpreted in terms of associative learning. As noted by the authors, CTA arose from Garcia’s quite serendipitous observation that animals exposed to radiation avoided fluids that were present during the radiation experience, an avoidance based on the apparent pairing of the distinctively tasting water (from plastic bottles) with radiation sickness. Garcia’s training in learning theory allowed him to investigate this peculiar finding. This resulted in the seminal paper published in *Science* in 1955 that is now recognized as the beginning of taste aversion research.

From the beginning, the unique nature of CTA learning was noted by Garcia and others in several papers addressing, among other issues, the robust nature of CTA, its acquisition despite long inter-stimulus delays and the apparent selectivity to gustatory (but not exteroceptive audio-visual) stimuli. As discussed by Freeman and Riley, these demonstrations put CTA quite at odds with contemporary learning theory and were the focus of several important review papers in the emerging field. While for some authors (Garcia and Ervin, 1968) long delay learning and selective associations demonstrated the exceptional
nature of CTA, others (Rozin and Kalat, 1971) argued that such adaptive specializations shaped all forms of learning.

Following the initial demonstrations and interpretations, Freeman and Riley note, quite importantly, that CTA developed into an independent and burgeoning field of inquiry. For example, although some papers continued to address CTA as a unique form of learning, the majority of work focused on CTA as an empirical phenomenon to be characterized. Various aspects of CTA were elucidated, including the conditions under which it was demonstrated (such as salience, amount and duration of the CS and the wide variety of agents capable of inducing taste aversions, including drugs of abuse) and the effects of various manipulations on its acquisition (such as route of administration and drug history). The authors finish their chapter with a summary of how conditioned taste aversion matured from its demonstration as a specialized form of learning to a rich field of inquiry and an application as a tool in basic and clinical research.

Andrey Verendeev