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Commentary

Conditioned taste aversion: a database

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Abstract

The present commentary describes the availability of a database on conditioned taste aversion learning, the avoidance of fluids and foods previously associated with the aversive effects of a variety of drugs. The database includes articles as early as 1955 by Garcia and his colleagues [Science 122 (1955) 127] (reporting such avoidance in rats) and papers just published given that the database is ongoing and constantly updated. At the printing of this announcement, approximately 2600 papers are included in the database. The database allows the user to search for articles by author(s), key word(s), date, title and journal. These terms can be used as single entries or multiple combinations. Finally, the full database can be viewed by performing the search function without entering any terms in the query window. The database can be accessed at http://www.CTALearning.com.

Keywords: Conditioned taste aversion; Food avoidance; Database

In the mid 1950s, John Garcia and his colleagues at the Radiological Defense Laboratory at Hunters Point in San Francisco reported that rats exposed to ionizing radiation subsequently avoided consumption of solutions that had been present during radiation (Garcia et al., 1955). This avoidance presumably reflected the association of the taste of the solution with the aversive effects of the radiation and was termed a conditioned taste aversion. Subsequently, Garcia and his colleagues demonstrated that these aversions were acquired often in a single conditioning trial, selectively to gustatory stimuli and even when long delays separated access to the solution and exposure to the radiation. Together these unique characteristics appeared to violate the basic tenets of traditional learning theory and were instrumental in introducing the concept of biological constraints on learning and in initiating a reconceptualization of the role evolution played in conditioning and learning (Garcia and Ervin, 1968; Revusky and Garcia, 1970; Rozin and Kalat, 1971).

Although the initial investigations into conditioned taste aversions focused on conditioning and learning and the relative impact of biology and evolution on these processes, research in this area soon assessed the basic generality of the phenomenon, specifically, under what conditions aversions were or were not acquired. A variety of tastants were reported as effective conditioned stimuli, and an extensive list of drugs with diverse consequences were reported as effective aversion-inducing agents. Aversions were established in a range of strains and species and under several experimental conditions, although a number of factors including sex, age, training and testing procedures, deprivation level and drug history affected the rate of their acquisition and their terminal strength (Klosterhalfen and Klosterhalfen, 1985; Riley and Freeman, in press).

Work on conditioned taste aversion learning has more recently expanded to include investigations into its research and clinical applications (Braveman and Bronstein, 1985). For example, taste-aversion learning has now been applied to the management of wildlife predation (Gustavson, 1977), the assessment of the etiology and treatment of cancer anorexia (Bernstein, 1999), the determination of taste psychophysics (Scott and Giza, 1987), the treatment of autoimmune diseases (Ader and Cohen, 1985) and the evaluation of the role of malaise in drug-induced satiety (Ervin et al., 1995). Of particular relevance to the readership of *Pharmacology, Biochemistry and Behavior* are its applications to the study of drugs, including the characterization and classification of drug toxicity (Riley and Tuck, 1985a), the etiology and control of alcohol use and abuse (Baker and Cannon, 1982), the receptor characterization of the motivational effects of drugs (Chester and Cunning-

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ham, 1999), the occurrence of drug interactions (Etkind et al., 1998), the characterization of drug withdrawal (Stephens and Dunworth, 2000), the demonstration of the stimulus properties of abused drugs (Riley, 1997) and the assessment of the vulnerability to drug use (Cunningham et al., 2000). Because conditioned taste aversion learning is so rapidly acquired and relatively robust, it has become a widely used, highly replicable and sensitive tool in behavioral pharmacology.

In 1976, we published the first of three bibliographies on conditioned taste aversion learning. In our initial publication (Riley and Baril, 1976), over 400 papers in the field were listed and annotated. Subsequent bibliographies published in 1977 (Riley and Clarke, 1977) and 1985 (Riley and Tuck, 1985b) listed 632 and 1373 papers, respectively. Over these years, we have maintained a bibliography on taste aversion learning utilizing both journal and on-line searches. We have also benefited from the generous contribution of preprints, reprints and pdf files from colleagues in the field. To date, the number of papers on conditioned taste aversion learning is approximately 2600. We are now reporting the creation of a database on conditioned taste aversion learning (http://www.CTALearning.com) that lists these papers and provides a mechanism for searching the articles using a variety of terms, including author(s), key word(s), date, title and journal. One can search for single or multiple items within any specific category, and one can search a single category or a combination of categories. Furthermore, the full database can be viewed in its entirety by performing the search function without entering any terms in the query window. Hopefully, such a database will provide those interested in aversion learning access to an expanding literature with both historical importance and clear research and clinical applications.

Questions about the database or submissions of papers to be included can be addressed to CTAlearning@american.edu.

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