Chronic use of psychostimulants like amphetamine and cocaine induces behavioral and neural adaptations resulting in either tolerance or sensitization. My students and I are interested in how behavioral and pharmacological variables interact to produce these phenomena. For example, both the acquisition and loss of tolerance to the “anorexic” effect of amphetamine is contingent on behavioral experience. To understand the mechanism of this effect, we used intraoral delivery of a milk solution to dissociate the consummatory phase of feeding from the appetitive phase. This behavioral analysis revealed that amphetamine suppresses food intake by inducing stereotyped movements that are incompatible with feeding, not by suppressing appetite, as is commonly thought. By making intraoral infusions of milk contingent on maintaining a stationary head posture, we demonstrated that rats can learn to inhibit stereotyped movements in order to feed. Such learning represents an interaction between the behavioral and pharmacological effects of the drug. We are currently exploring the neural mechanisms by which rats learn to inhibit stereotypy.

Our results have important implications for understanding psychostimulant addiction. Learning to cope with the adverse side effects of drugs during the early stages of drug abuse allows the individual to maintain a normal lifestyle while gradually escalating the dose. This increases the risk of more serious side effects (paranoia, neurotoxicity) and delays the seeking of treatment.

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Pertinent References


Teaching Experience

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Federation of European Neuroscience Societies
International Behavioral Neuroscience Society (Fellow)
International Brain Research Organization
Society for Neuroscience
Society for Stimulus Properties of Drugs
Society for the Study of Ingestive Behavior

Publications


**Recent Presentations**


Wolgin, D.L.  Is amphetamine-induced stereotypy involuntary? Colloquium presented at the Departments of Psychology and Zoology, Tel Aviv University, Tel Aviv, Israel, 1993.


