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Caloric Content and Unit Price Theory

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Poster Presentation 9

CALORIC CONTENT AND UNIT PRICE THEORY

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Behavioral economics has been an important approach in behavior analysis for over 20 years, and the law of supply and demand has often been of particular interest. According to the law of supply and demand, there should be an inverse relationship between the price of a commodity and the consumption of that commodity. Typically, this is simulated in the laboratory using Fixed Ratio (FR) schedules, in which the rat must press a lever a fixed number of times (the FR requirement) in order to obtain the reinforcer. The number of reinforcers earned is a measure of "consumption." The relationship between price and consumption is known as a demand function, and the slope of that function is known as elasticity. Recent theories have argued *unit price* is a critical variable in determining elasticity. Unit price is calculated by considering both the price of the reinforcer (the FR requirement) and the size of the reinforcer (for example, the drug dose or the number of food pellets). A schedule providing 1 pellet on an FR 10 schedule would thus have the same unit price as a schedule providing 2 pellets on an FR 20 schedule. According to Unit Price theory, demand functions for a particular reinforcer should be identical when consumption is plotted in terms of unit price. Recent evidence from our laboratory, however, has failed to support unit price theory when rats responded in an open economy. Schedules providing two food pellets for high FR requirements were more elastic than schedules providing one food pellet for low FR requirements. One reason for this failure may be that rats are less sensitive to the magnitude of reinforcement than to the rate of reinforcement. It is possible that other dimensions of reinforcer magnitude (such as "caloric content") might produce a different effect. In our most recent studies, six rats pressed bars for condensed milk in an open economy. On one FR series, the rats were required to complete a small FR requirement to receive a diluted milk solution. On a second series, the rats were required to complete an FR requirement double that used in the previous FR series, but received a reinforcer with twice the concentration. The results have implications for behavioral economics in general and unit price theory in particular.