Drive Theories

- Relate well to regulatory/physiological ideas like homeostasis.
- Emphasis on "energizing" behavior.
- How does "imbalance" cause a particular change in behavior?

1) Need: An excess or deficiency of some product related to survival. Need often, but not always, results in activity which restores proper balance. Need alone cannot explain behavior.

2) Drive: Is not directly observed – it is inferred from behavior. Need and drive may often be correlated.

3) Goal: Some commodity that will address need or reduce drive.

NEED → DRIVE → BEHAVIOR/ACTIVITY → GOAL

Examples of drive theory: Clark Hull (1943) *Principles of Behavior*

Hull distinguished behavioral performance from the variables that determine it. Used drive as an important intervening variable.

$sEr = sHr \times D$

Drive does not direct, guide or select responses. Drive energizes behavior.

Drive can often be operationalized by simple objective procedures such as amount of deprivation.

Parametric manipulations of both Drive and Habit Strength support the syntax of Hull's theory. Spence & Taylor (1951).

Criteria for Drive as an intervening variable:

1) Increase in the level of the variable energizes a wide range of responses. Drive is non-specific.

2) Decrease in the level of the level of the variable is reinforcing. For Hull, reinforcement works through "drive reduction".

3) Increase in the level of the variable is punishing. Drive is aversive.

Critique of Drive Theory

Increasing drive will increase "general" activity, but may also impact the organism's reaction to the goal object.

Increasing drive should increase all activity regardless of how the drive is produced. However, Campbell (1964) compared different types of activity and different types of deprivation and did not support this prediction. Many other examples given in class.

Rats trained to barpress for food on one lever and for water on another lever will respond on the correct lever when deprived of either food or water.

Modify theory to incorporate both "specific" and "nonspecific" drives:

$E = sHr \times (Dr + Di)$

Test the idea with "drive substitution" experiments. One problem is the food and water regulation are not independent. Eating affects drinking and vice versa.

Adjunctive behavior: Support for drive in that animals that cannot reach goal will engage is in other unrelated behaviors. e.g. "Schedule-induced polydipsia (Falk, 1961)

Acquired Drives

Need is normally defined as "tissue need" – primary biological significance. Therefore, Hull's theory can have difficulty explaining a wide range of behavioral phenomena. Drive theoriest used concepts from learning to show that drive can be controlled by more than just deprivation and tissue need.

Concepts from Learning Theory

Learning as a relatively permanent change in behavior resulting from experience.

Non-associative learning
- Habituation
- Sensitization

Associative Learning
- Pavlovian (classical) conditioning
- Operant (instrumental) conditioning

“Procedure” versus “Process”

Nature of what is learned
- S-S* (stimulus-outcome association)
- S-R (stimulus-response association)
- R-S* (response – outcome association)

Nature of how learning happens

- Contiguity theories
- Contingency theories
- Information processing

Kamin (1961) and the “blocking” effect. Supports contingency based accounts

Rescorla (1967) manipulated the information that the CS provided by controlling UCS probabilities.

Learning versus Performance distinctions.

Learning is always measured through behavior but all changes in behavior do not result from learning. Ways to address experimentally:
1) response prevention
2) post-conditioning “revaluation” of the UCS

Escape versus Avoidance learning

Positive Punishment
Positive Reinforcement
Negative Punishment
Negative Reinforcement

Incentive Theories and Reinforcement

Reinforcement in the absence of drive and drive reduction.

Rats continue to run in a maze for access to receptive female even though they do not experience ejaculation and drive reduction.

Powerful reinforcing effects of electrical brain stimulation in the absence of deprivation or drive points to brain systems for pleasure and reward.

Incentive theories emphasize anticipation or expectancy of a goal as important for motivation.

Tolman and "latent learning" experiments. Excellent example of learning / performance distinctions. Rats learned maze in the absence of reward.

Incentive shifts and reward contrasts. Animals behave according to the expectancy of reward based on the outcome of the previous trial. Moving from a small reward to a large one has a greater effect than having the large reward the whole time. Crespi – "elation" and "depression".

Fear as an Acquired Drive?

Psychodynamic (Freud's) ideas about fear and anxiety.

Watson and "Little Albert".

Conditioning concepts applied to fear and anxiety.

Brown, Kalish & Farber – fear can increase the amplitude of the acoustic startle respons.

Does fear motivate avoidance behavior? Solomon & Wynne – dogs continue to perform responses even though they don't get the shock. Rescorla & Solomon – signal for shock or shock-free periods will modulate the rate of avoidance responding.

Why do rats prefer signaled to unsignalled shock? Fanselow – Naloxone and PFSS

Understanding fear as a motivational "state". Intervening variable that links a series of stimulus inputs to a coordinated set of behavioral and physiological outputs.

"Behavior systems" approach and evolutionary perspective.

Aggression and Altruism

Problems of defining behavior in terms of an individual's "intent".

Types of behavior classified as aggression.

- Predatory aggression - consumatory behavior, little arousal
- Defensive aggression – response to attack/predation , high arousal
- Social (intraspecific) aggression – establish territory, submission/dominance

Brain mechanisms of predatory aggression differ from those of defensive aggression (e.g. Flynn, 1972).

Environmental/Social factors

-Temperature ?
- Crowding/ proximity ?
- Social learning / role models (Bandura)
- Stimuli associated with aggression (Berkowitz "weapons effect") ?
-Characteristics of the victim?
- Obedience to authority? (Milgram)

The relationship of aggression to frustration. Role for "drive"?

Altruism

Theories of prosocial behavior

Attitudes and Cognition

Trait theories of personality

Nomothetic versus ideographic goals and incentives

The "need for achievement" (McClelland)
Development of nAch as a concept.

Attitudes and "cognitive consistency".

Cognitive Dissonance Theory (Leon Festinger)

Inconsistency as a motivational force.

Dissonance as "drive".