What Makes a Reinforcer a Reinforcer?

Circularity of the Reinforcer Concept
- By definition, if a consequence of a response strengthens the response, then the consequence is a reinforcer.
- But why is the response strengthened by this consequence? Because the consequence is a reinforcer.
- Notice that we are just going in circles.
- We need some independent reason, other than the fact that it reinforces, to identify some event as a reinforcer.
- Here we review several proposals.

Need Reduction
- In this view, an event will serve as a reinforcer if it reduces a biological need.
- This works for things like food or water, which organisms need for their survival.
- However, it does not work for things like no-calorie sweeteners or sex, which reinforce without reducing a need.
- And it does not explain why some things we need (e.g., certain vitamins) do not serve as reinforcers.
Drive Reduction

- In this view, an event can serve as a reinforcer if it reduces a drive (even if reducing the drive does not reduce a need).
- According to this view, any strong stimulus is aversive and will activate a drive.
- However, this cannot be the whole story, because some things that act as reinforcers (e.g., sexual arousers) actually increase the level of drive.

Trans-Situationality

- Paul Meehl (1950) proposed to break the circularity of the reinforcer concept in the following way:
  - Show that the event will serve as a reinforcer in one situation (e.g., for a given response). This qualifies the event as a reinforcer.
  - Use the fact that the event is a reinforcer to explain why it will strengthen behavior in another situation (e.g., using a different response).
- This shows that the ability of the event to reinforce is trans-situational, i.e., applies across situations.

Premack’s Principle

- Reinforcers traditionally have been defined as stimuli or stimulus events.
- David Premack (1959) proposed to redefine reinforcers as behaviors:
- Premack’s Principle:
  - Given two behaviors, the more probable behavior will reinforce the less probable behavior.
The Paired-Baseline Design

- **The Paired-Baseline Phase**
  - Subject is given the opportunity to engage in two activities and the proportion of time spent doing each is recorded.
  - These proportions estimate the probability of each activity when each is freely available.

- **The Contingency Phases**
  - Access to one activity (the contingent behavior) is made contingent on completing a certain amount of the other activity (the instrumental behavior).
  - Premack found that contingent access to the more probable activity would serve to reinforce the less probable activity, but not vice versa.

Premack’s Principle and Trans-Situationality

- Premack’s principle implies that the principle of trans-situationality will be violated under some conditions.
- **Example:**
  - Assume that wheel-running is more probable than digging but less probable than drinking.
  - According to Premack’s principle, wheel running would serve as a reinforcer for digging, but not for drinking.

Violating Premack’s Principle

- Bill Timberlake and Jim Allison showed that Premack’s principle fails under certain conditions. One example:
  - Imagine that drinking is more probable than wheel-running in the paired-baseline phase.
  - Now arrange a contingency such that the rat must drink a certain amount to gain access to running. Premack’s principle says that drinking will not be reinforced. However:
  - The rat will drink more than during baseline if by drinking the baseline amount, it ends up deprived of its baseline amount of running.
Response Deprivation

To explain their results, Timberlake and Allison (1973) proposed their response deprivation analysis:

- A behavior will serve as a reinforcer if, and only if, by engaging in the preferred amount of the instrumental behavior (as determined in the paired baseline), the subject is deprived of its preferred amount of the contingent behavior.

Response Deprivation: A Worked Example

- Paired Baseline Results
  - Probability of running = .20 or 20%
  - Probability of drinking = .10 or 10%
- Contingency
  - Require 40 seconds of running to earn 10 seconds of drinking (4:1 ratio).
  - By running 20% of the session, subject can only spend 5% of session drinking, or only half of the preferred 10%.
  - The contingency deprives the subject of the preferred amount of drinking, so the subject will increase running over the preferred amount to restore the preferred amount of drinking. That is, running will be reinforced.

A Personal View

- My own take on all this is as follows:
  - Behaviors are not reinforcers. Certain perceivable changes in sensory experience are reinforcers. Thus, drinking is not a reinforcer, but under certain conditions the sensory experience associated with drinking may serve as a reinforcer.
  - When an organism has a reference level for a given experience (perception), it will act as necessary to produce and maintain that level.
  - Experiences associated with performing the instrumental behavior may be experienced as pleasurable or unpleasurable; these experiences combine with those of the contingent event to determine whether the instrumental behavior will be elevated or suppressed.