Token Reinforcement (aka Token Economy)

Definition: A set of contingencies involving the use of conditioned reinforcers (tokens), which are later exchanged for other reinforcers (backups)

Underlying Mechanisms:
- Conditioned reinforcement: Tokens acquire reinforcing properties due to pairing with backup reinforcers
- Generalized reinforcement: Tokens substitute for a variety of backup reinforcers and are not dependent on specific deprivation states (EOs)
- Delayed reinforcement: The token-backup exchange is delayed in time from the occurrence of the target behavior
- Multiple contingencies and schedules

Components of a Token Economy

Target Behaviors
Reinforcers
- Token reinforcers
- Backup reinforcers

Contingencies:
- Behavior → token: (Sr+, Response Cost, DRO, etc.)
- Token → backup: Usually Sr+

Reinforcement Schedules:
- Behavior → token delivery (interval, ratio)
- Token → backup exchange (interval)
- Token → backup exchange rate (ratio)

Token Economy: Advantages & Disadvantages

Advantages:
- Efficient method for delivering reinforcement (token delivery)
- Accommodates a variety of contingencies (Sr+, DRO, response cost), reinforcers, and schedules
- Allows management of a wide range and large number of target behaviors
- Bridges time and setting gaps between occurrence of target Rs and delivery of reinforcement

Disadvantages (minor):
- Complexity
- Cost

Phillips, Phillips, Fixsen, & Wolf (1971)

“Achievement Place: Modification of the behaviors of pre-delinquent boys within a token economy”

General program:
Participants: Court-adjudicated boys
Setting: Group home with “teaching parents”
Target behaviors: Academic, social, self-care, inappropriate

Point cards:
- Sr+ and response cost contingencies
- 1500 daily points required (or no weekly privileges)

Back-ups: Daily and weekly privileges

Purpose of study: To examine the effects of varied point contingencies on appropriate and inappropriate behaviors

Experiment 1: Promptness
Participants: N=4
DV: Minutes late for dinner (latency from dinner bell)
Conditions:
- A (BL): No contingencies in effect
- B (Points): 100 pts lost for each min late (definition of late?)
- C (Threats): Same as BL but point loss threatened

Experimental design: Reversal (ABCB)
Results: (a) Point loss reduced lateness, (b) Threats lost effectiveness across applications: learning process?
Experiment 2: Room Cleaning
Participants: N=4
DV: 10 room areas each with max score; Max = 100 x 4 boys
Conditions:
   B (Points): Score ≥ 80 → + 500 pts; Score < 80 → - 500 pts
   A (BL, No Points): Feedback, threats, instructions, demands
   B (Fading points): Points on 100%, 50%, 32%, 16%, 8% of days but accumulated across days
   C (Post-check): 8% schedule for 6 months, data on pt days only
Experimental design: Reversal (BABC)
Results: Removal of point contingency → Δ cleanliness
          Demands had transient effect
          Cleanliness maintained during fading and follow-up

Experiment 3: Savings
Participants: N=5
DV: Piggy bank deposits, observed / recorded by teaching parent
Conditions:
   A (BL): No contingencies in effect
   B: 10 pts per penny deposited, any day of week
   C: 10 pts per penny deposited on certain days
Experimental design: Reversal (ABABCABC)
Results:
   A (BL): Little money deposited
   B: Deposits correlated with Friday (point exchange day)
   C: Deposits correlated with bonus day

Experiment 4: News
Participants: N=6
DV: Quiz answers based on Huntley-Brinkley
Controls: independent questions, news/no news/different news
Conditions:
   A (BL): No contingencies in effect
   B (Sampling 100+): 100 pts/correct answer, rotating pairs watched
   C (100+): 100 pts, no one required to watch
   D (600+): 600 pts, no one required to watch
   E (600+/-): 600+ if ≥40%, 600- if <40%, no one required to watch
   F (600-): 600- if <40%, no one required to watch
   G (Sampling 1000+W): 1000 for watching only, half required
   H (Sampling 600+/-): Same as “E” but half required to watch
Experimental design: Reversal (ABCDCDEDFDEGH)
Results:
   Highest scores during 600 +/-; next highest during 600-
   Greatest effect on # watching (less on scores of watchers)

Implications and Extensions
Major contributions:
   Generality of token Sr across performances
Examined several behavioral processes:
   Exp 1 (promptness): Response cost vs. prompts and threats
   Exp 2 (cleaning): Intermittent reinforcement (maintenance)
   Exp 3 (saving): Schedule control over deposits
   Exp 4 (news): token value, +/- points, watching vs. quiz
Limitation: Relevance to delinquent behavior?
Extensions:
   Application with more problematic behaviors:
   Argumentative behavior
   Theft or other rule violations
   Behaviors entering into natural contingencies (boy scouts, choir, band, etc.)