GENERALIZATION AND RESPONSE MAINTENANCE OF CHANGE

Generalization
- Is one of the seven defining characteristics of ABA
- Is defined and stressed within important facets
  - Time
  - Settings
  - Behaviors
  - Etc.

Response Maintenance
- Extent to which a learner continues to perform the target behavior after the intervention has been terminated
- Both concepts are important

Setting / Situation Generalization
- Extent to which a learner emits the target behavior in a setting that is different from the instructional setting
  - Generalization Setting
    - Any place or stimulus that differs in some meaningful way from the from the instructional setting
  - Instructional Setting
    - Environment where instruction occurs
    - Includes all aspects of the environment
    - Can be planned or unplanned

Response Generalization
- Extent to which a learner emits untrained responses that are functionally equivalent to the trained target behavior
- Is what we strive for

Generalized Behavior
- Exists on a continuum
  - Some interventions produce a great deal of generalized behavior change
  - Some interventions produce a small amount of generalized behavior change
- Change can occur:
  - Isolation of one another
  - In combination with each other
Overgeneralization
- Learner emits the target behavior in the presence of stimuli that, although similar in some way to the instructional examples or situation, are inappropriate occasions for the behavior
- Behavior comes under the control of a stimulus class that is too broad

Faulty Stimulus Control
- Target behavior comes under the restricted control of an irrelevant antecedent stimulus

Other Types of Generalized Outcomes
- Stimulus equivalence
  - Responding to untrained and nonreinforced stimulus-stimulus relations following the reinforcement of responses to some stimulus-stimulus relations
- Contingency adduction
  - Behavior that was initially selected and shaped under one set of conditions is recruited by a different set of contingencies and takes on a new function in a person’s repertoire

Generalization Across Subjects
- Changes in the behavior of people that occur when contingencies are applied to other people
- Also called vicarious reinforcement, ripple effect, & spillover effect

Generalized Outcomes
- Requires Planning
  - Selecting target behaviors that will meet natural contingencies of reinforcement
  - Specifying desired variations of the target behavior
  - Specify situations where target behavior should (and should not) occur after instruction has ended

Target Behaviors
- Should be selected carefully
  - Need to be age appropriate
  - Must have a degree of skill which represents normalization
  - Choose only those behaviors that will produce reinforcers in the post-intervention environment
  - Don’t make behavior changes that will not meet natural communities of reinforcement
**Most Important Criterion**
- A behavior is only functional to the extent that it produces reinforcement for the learner
- Behaviors that are not followed by reinforcers (on at least some occasions) will not be maintained

**Naturally Existing Contingency**
- Any contingency of reinforcement (or punishment) that operates independent of the behavior analyst’s efforts
  - Includes
    - Contingencies that operate without social mediation
    - Socially mediated contingencies contrived and implemented by other people

**Contrived Contingency**
- Any contingency of reinforcement (or punishment) designed and implemented to achieve acquisition, maintenance, and/or generalization of a targeted behavior change

**Planning for Generalized Behavior Change**
- List all the behaviors that need to be changed
- List all the settings & situations in which the target behavior should (or should not) occur

**Pre-intervention Planning**
- Teach the full range of relevant stimulus conditions & response requirements
- Make the instructional setting similar to the generalization setting
- Maximize the target behavior’s contact with reinforcement in the generalization setting
- Mediate generalization
- Train to generalize

**Teach Relevant Stimulus Conditions and Response Requirements**
- Teach sufficient stimulus examples
- Teach sufficient response examples
- General case analysis
- Negative teaching examples
### Teach Sufficient Stimulus Examples
- Teach every desired form of a target behavior in every setting/situation in which it may be needed
  - Eliminates need to program for response generalization & setting/situation generalization
- Problem: Seldom possible & never practical

### Alternative
- Teach the learner to respond to a subset of all of the possible stimulus & response examples
- Then assess the learner’s performance on untrained examples (referred to as a generalization probe)

### General Rule
- More examples used during instruction, more likely the learner will respond correctly to untrained examples or situation
- Number of examples needed varies due to
  - Complexity of the target behavior
  - Teaching procedures employed
  - Learner’s opportunities to emit the target behavior under various conditions
  - Naturally existing contingencies of reinforcement
  - Learner’s history of reinforcement for generalized responding

### Teach Sufficient Response Examples
- Practice with a variety of response categories.
- Helps to ensure that acquisition of desired response forms
- Promotes response generalization
- Multiple exemplar training
  - Usually incorporates both stimulus & response variations

### General Case Analysis
- Method for selecting teaching examples that represent the full range of stimulus variations & response requirements in the generalization setting
- Also referred to as general case strategy

### Negative Teaching Examples
- Explicit teaching of where and when not to use the target behavior may also be necessary
- Don’t do the behavior under the following circumstances
- Provides practice for discriminating stimulus situations in which the target behavior should not be emitted
- Sharpens stimulus control
Have Instructional Setting Similar to the Generalization Setting

- Include typical features of the generalization setting in the instructional setting
- Vary noncritical aspects of the instructional setting within and across the teaching session

Benefits of Programming Common Stimuli

- Conducting instruction in natural settings is not always possible
- Community-based training may not expose learners to the full range of examples they are likely to encounter later in the same setting
- Instruction in natural settings may be less effective & efficient than classroom instruction because the trainer cannot halt natural flow of events to contrive variety of training trials
- Instruction in simulated settings can be safer

Two step process

- Identify salient stimuli that characterize the generalization setting(s)
- Incorporate those stimuli into the instructional setting

Benefits of Teaching Loosely

- Reduces the likelihood that a single or small group of noncritical stimuli will acquire exclusive control over the target behavior
- Including noncritical stimuli during instruction increases the probability that the generalization setting will include at least some of the stimuli that were present during instruction

Teaching Loosely Suggestions (Baer, 1999)

- Use two or more teachers
- Teach in two or more places
- Teach from a variety of positions
- Vary your tone of voice and choice of words
- Show stimuli from a variety of angles
- Vary the reinforcers
- Teach in varying lighting, temperature and noise level conditions
- Vary decorations, furniture, & their locations
- Vary times of day for training sessions
- Vary the of the training settings
- Vary the smells in the training settings
- Vary the content of what’s being taught (within limits possible)

Maximize Contact with Reinforcement

- Teach behavior to levels required by natural contingencies
- Program indiscriminable contingencies
  - Intermittent schedules of contingencies
    - Delayed rewards
    - Set behavior traps
- Ask people in the generalization setting to reinforce the behavior
- Teach the learner to recruit reinforcement
Maximize Contact with Reinforcement

- Indiscriminable contingency
  - A contingency in which the learner cannot discriminate whether the next response will produce reinforcement
  - Reinforcement is contingent on some, but not all, occurrences of the target behavior in the generalization setting
  - The learner is unable to predict which responses will produce reinforcement

Intermittent Schedules of Reinforcement

- Behaviors that have a history of intermittent schedules of reinforcement continue to be emitted for longer periods of time after reinforcement is not available

Success of Delayed Rewards Depends on

- The indiscriminability of the contingency
- The learner understanding the relation between emitting the target behavior at an earlier time and receiving a reward later

Some Guidelines for Programming Indiscriminable Contingencies

- Use CRF during initial acquisition or when strengthening little-used behaviors
- Systematically thin the schedule of reinforcement
- Gradually increase the response-to-reinforcement delay when using delayed rewards
- Explain what the reward is for when using delayed rewards

Behavior Traps

- Interrelated contingencies of reinforcement can be powerful, producing substantial and long-lasting behavior changes
- Relatively simple responses are necessary to enter the trap, yet once entered, the trap cannot be resisted in creating general behavior change

Behavior Traps Share Four Features

- Are “Baited” with irresistible reinforcers that “lure” the learner to the trap
- Only a low effort response already in the learner’s repertoire is necessary to enter the trap
- Once inside the trap, interrelated contingencies of reinforcement motivate the learner to acquire, extend, & maintain targeted academic and/or social skills
- Remains effective for a long time because learners show few, if any, satiation effects
### Mediate Generalization

- Arranging for some object or person to act as a medium that ensures the transfer of the target behavior from instructional setting to the generalization setting
  - Contrive a mediating stimulus
  - Teach self-management skills

### Mediating Stimuli

- Must be made functional for the target behavior during instruction
  - Functional if it reliably prompts the learner in performing the target behavior
- Must be transported easily to the generalization setting
  - Transportable if it easily goes with the learner to all important generalization settings

### Mediate Generalization

- Teach self-management skills
  - The learner is one element that is always present in every instructional and generalization setting
  - If the learner is taught a behavior that serves to prompt or reinforce the target behavior in all relevant settings, appropriate times, and relevant forms, then the generalization of the target behavior is ensured

### Train to Generalize

- Reinforce response variability
  - Emitting a variety of responses; valued behavior, viewed as novel or creative
  - Lag reinforcement schedule: reinforcement contingent on a response different in some defined way from the previous response
- Instruct the learner to generalize
  - Tell the learner about the possibility of generalization
  - Ask the learner to perform the behavior

### Modifying and Terminating Interventions

- Withdrawal of a successful intervention should be carried out in a systematic & careful fashion
- When deciding how soon or how swiftly to withdraw intervention components consider:
  - Complexity of the intervention
  - Ease or speed with which the behavior changed
  - Availability of naturally existing contingencies of reinforcement for the new behavior

### To Accomplish

- Modifying one or more parts of the three-term contingency
  - Antecedents, prompts, or cue-related stimuli
  - Task requirements and criteria
  - Consequences or reinforcement variables
Conclusion

- Is an important part of the training process
- Is important for real life situations
- Want natural occurring stimuli to reinforce the participant.