

Gradual Change Models

---

Fading

---

---

---

---

---

---

---

---

*Fading*

---

- A gradual change, on successive trials, of a stimulus that controls a response, so that the response eventually occurs to a partially changed or completely new stimulus.
- Fading often involves using fewer and fewer prompts, verbal direction, or adult intervention in teaching a behavior.

---

---

---

---

---

---

---

---

*Fading occurs along a variety of dimensions of the stimulus: e.g.*

---

- the loudness of the direction
- the length of the direction—from full command to just cue words
- the number of prompts
- the pressure of a teacher's hand on a student's hand in learning to print
- the number or clarity of dots to connect in learning to form letters

---

---

---

---

---

---

---

---

*Fading facilitates errorless transfer of a discrimination.*

- It was once believed that making mistakes was important to know what *not* to do. However, it is undesirable because:
  - • errors consume valuable time
  - • the occurrence of one error increases the likelihood of other occurrences of the error
  - • and the nonreinforcement that occurs when errors are being extinguished often produce emotional side effects.

---

---

---

---

---

---

---

---

*How fading differs from shaping:*

- **Shaping** involves reinforcement of **slight changes in a behavior** so that it gradually comes to resemble a desired target behavior. The behavior gradually changes, but the stimulus situation generally stays the same.
- **Fading** involves reinforcement of a specific response in the presence of **slight changes in the stimulus** so that the stimulus gradually comes to resemble the stimulus that you wish to control that particular response. Thus, in fading, the stimulus gradually changes while the response stays about the same.

---

---

---

---

---

---

---

---

*Example from the authors: teaching an autistic boy to count objects and number-quantity association.*

- Cards were presented to the child with the number at the top and the specified number of circles. He was asked "what number is this?" When he identified the number, he filled in the outlined circles with circles cut from felt. He then received teacher approval and reinforcement.
- On the next trial, the circles were light. Other aspects were the same.

---

---

---

---

---

---

---

---

*Example from the authors: teaching an autistic boy to count objects and number-quantity association.*

- On the next trial, the circles were broken lines.
- On the next trial, there were no circles, only the number.
- Next there was no card, just a number cut out of felt and was asked to identify the numeral and place five circles on his desk.
- Finally, he was shown the numeral, and was asked to place the specified number of circles in his teacher's hand.

---

---

---

---

---

---

---

---

*Factors Influencing the Effectiveness of Fading:*

- Choosing the final desired stimulus.
- It is important to select the final desired stimulus so that the occurrence of the response to that particular stimulus is likely to be maintained in the natural environment.
- Don't choose a final stimulus which is so artificial that it will not occur in the natural environment where you want the behavior to occur.

---

---

---

---

---

---

---

---

*Factors Influencing the Effectiveness of Fading:*

- Choosing the starting stimulus. Choose a starting stimulus that reliably evokes the desired behavior.
- This involves the proper use of *prompts*: supplemental stimuli that are not part of the final desired stimulus. They can be verbal, gestural, modeling, physical guidance, and environmental prompts.

---

---

---

---

---

---

---

---

*Factors Influencing the Effectiveness of Fading:*

- Verbal--words as hints, cues, instructions, directions
- Gestural--pointing or motioning
- Modeling--demonstrating the behavior
- Physical guidance--physically guiding / directing the movements of the learner
- Environmental--rearranging the physical surroundings

---

---

---

---

---

---

---

---

*Factors Influencing the Effectiveness of Fading:*

- Environmental prompts are further divided into *extra-stimulus prompts* and *within-stimulus prompts*.
- *Extra-stimulus prompt* -- something that is added to the environment to make a correct response more likely, e.g. drawing the outline of a spoon, fork and knife on a place-mat to teach a child how to set the table.

---

---

---

---

---

---

---

---

*Factors Influencing the Effectiveness of Fading:*

- *Within-stimulus prompt* -- an alternation in the  $S^D$  and  $S^A$  to make them more noticeable and easier to discriminate.
- (Using a stimulus that belongs in that situation, but making it more obvious)

---

---

---

---

---

---

---

---

*Factors Influencing the Effectiveness of Fading:*

- Choosing the fading steps.
- Performance must be monitored closely to ensure that prompts are not faded too quickly or too slowly.

---

---

---

---

---

---

---

---

*Summary: Guidelines for the Effective Application of Fading*

- Choose the final desired stimulus. Specify very clearly the stimuli in the presence of which the target behavior should eventually occur.
- Select an appropriate reinforcer.
- Choose the starting stimulus and the fading steps. Specify clearly the conditions under which the desired behavior now occurs, specify clearly the dimensions that you will fade to reach the desired stimulus control, and outline the specific fading steps to be followed and the rules for moving one step to the next.

---

---

---

---

---

---

---

---

*Summary: Guidelines for the Effective Application of Fading*

- Put the plan into effect by presenting the starting stimulus and reinforce the correct behavior.
- Gradually fade the cues or prompts so that there are as few errors as possible.
- If an error occurs, move back to the previous step for several trials and provide additional prompts.
- Wean the learner from the program when the desired stimulus control is obtained.

---

---

---

---

---

---

---

---