Example of stimulus control in aba

Review common prompts that are used to promote learning Define stimulus control and transfer of stimulus control Describe stimulus control transfer procedures to fade prompts (in order to allow learners to become more successful at new learning tasks) Review case examples of stimulus control transfer procedure with learners There is much research on the success of ABA methodologies to teach a variety of skills to learners of all types, not just those with ASD or other developmental disabilities. A critical component to the success of ABA teaching is the systematic use of prompts. Prompts A prompt is a supplemental stimulus that controls the target response but is not a part of the natural SD that will eventually control the behavior (Touchette & Howard, 1984). Essentially, it is an additional cue or hint that is paired with the instruction that is used to help the learner give an appropriate response. Prompts help the learner understand how to respond, and allow for immediate success and reinforcement. Prompts are critical for successful teaching during the initial stages of acquisition especially when working with learners who have ASD or other developmental disabilities. In the initial stages of learning, prompts allow for fewer errors and increase the efficiency of the learning process in addition to making learning more successful for the learner. Types of Prompts Stimulus Prompts – Prompts that are added to the stimulus, or SD, or Antecedent that are going to help the learner better respond. In other words, it is a cue that is used in conjunction with the SD or instructional materials, meaning that it is paired with that instruction or task. There are three main types of stimulus prompts: Movement Cues: Gestures, pointing, tapping, glancing, etc. Position Cue: manipulating the proximity of the target, distractor items or stimuli are placed further away from the learner Redundancy: physically altering or exaggerating part of the stimuli to emphasize it to the learner Response Prompts – Prompts that are added to the learner's response to help them react more effectively to the new instruction Verbal Directions: telling the learner what to say or do in order to respond appropriately (can be vocal or written or visual) Modeling: physically demonstrates the desired response to the learner which allows them to imitate Physical Guidance: manually guiding the learner through part or all of the desired response Stimulus Control So when we add prompts to a new instruction, to a new SD, or to a new target we are helping the learner appropriately respond to that target, however the prompt is what controls the response. So the control over the learner's response is held by the prompt and not the SD, which is not natural in the learner's environment and therefore control must be shifted from the prompt to the stimulus. When we pair the prompt with the stimulus instruction we are attempting to transfer control of the behavior over to the instruction. Over time, this prompting is faded, so that the stimulus is able to gain complete control. Example: Learner receives instruction "come here" with complete physical guidance to walk to the instructor. Learner receives praise and a hug. Learner receives instruction "come here" with partial physical guidance to walk to the instructor. Learner receives praise and a hug. Learner receives instruction "come here". Learner walks to instructor. Receives praise and a hug. So, when the prompt that was first required for the learner to respond to the SD is no longer needed, and the SD itself elicits the behavior we say that there has been a transfer of stimulus control. The transfer of stimulus control is the goal of all new learning tasks. Transfer of Stimulus Control There are various ways to transfer stimulus control from the prompt to the SD Methods for transferring stimulus control Prompt fading – Used for fading response prompts. It is the gradual removal of a prompt over several teaching trials until the SD alone evokes the response and the learner is able to respond accurately and independently to the target SD. Prompt fading is used for fading response prompts. There are two procedures for fading prompts: Most-to-least prompting: Prompt intrusiveness gradually decreases as correct responses occur, typically used when teaching a new skill (errorless learning). This is done several ways one of which is the therapist using a stronger prompt, which is then reduced over time until the prompting is faded. Similarly, it can be done by reducing the intensity of one prompt or switching to less intrusive prompts. Can also be used when a combination of prompts are required to teach a skill, and whether faded in tandem or one at a time the process is the same. Least-to-most prompting: Amount of assistance is gradually increased until the learner gives an appropriate response. Typically used when prompting a previously learned skill, however it can be used when teaching a new response as well. Here, when the learner makes an error the therapist uses the weakest possible prompt, and continues to increase the strength of the prompt until the learner is successful. Least-to-most is used to promote the greatest level of independence that the learner is capable of and helps to avoid prompt dependency. PROMPT FADING HIERARCHY: In order to determine what type of prompt to use first (which is determined by the BCBA), or the order in which prompts should be used, it is helpful to determine a prompt hierarchy. This applies to both forms of prompt fading. And the hierarchy will look different for every task and every learner based upon their abilities and their individual program. For example: Prompt delay: Increases the amount of time between the SD and the prompt. The therapist presents the SD and waits a specific amount of time, and then presents of the prompt if the response is not made. There are two types of prompt delays: Constant time delay: A constant time delay begins with the presentation of the SD and no delay to the prompt. In the next trial, the SD is presented followed by a fixed delay of 3 seconds and then the prompt. The hope here is that in the 3 second delay the learner will respond with the correct answer. Progressive time delay: In progressive time delay the process is similar to the above, except that you begin at 0 and for each trial you extend the delay by 1 second until the student is answering independently and accurately to the SD. Stimulus fading: Prompts that have been paired with the stimulus are gradually reduced and then removed. In other words, prompts are faded–made smaller, lighter, less salient. For example in pairing a picture of a train with the word train, over successive trials the picture would remain the same but the font in the word would fade until the word was no longer visible. The type of procedure used to fade assistance will depend on the type of prompt used as well as the needs of the learner and the specific skill being taught Response Prompts: prompt fading, prompt delay Stimulus Prompts: stimulus fading The BCBA will instruct therapists to use a specific procedure to fade prompts In order to help a learner to become as independent as possible, it is important for therapists to consistently apply and fade prompts according to the supervisor's instruction. Remember, the goal of ABA is to help learners become as successful and independent as possible. Transfer of stimulus control by fading prompts and other supports is a critical part of this process. Learn More… ABA Program Books: Understanding Key Components In behavioral psychology (or applied behavior analysis), stimulus control is a phenomenon in operant conditioning (also called contingency management) that occurs when an organism behaves in one way in the presence of a given stimulus and another way in its absence. A stimulus that modifies behavior in this manner is either a discriminative stimulus (Sd) or stimulus delta (S-delta). Stimulus-based control of behavior occurs when the presence or absence of an Sd or S-delta controls the performance of a particular behavior. For example, the presence of a stop sign (S-delta) at a traffic intersection alerts the driver to stop driving and increases the probability that "braking" behavior will occur. Such behavior is said to be emitted because it does not force the behavior to occur since stimulus control is a direct result of historical reinforcement contingencies, as opposed to reflexive behavior that is said to be elicited through respondent conditioning. Some theorists believe that all behavior is under some form of stimulus control.[1] For example, in the analysis of B. F. Skinner,[2] verbal behavior is a complicated assortment of behaviors with a variety of controlling stimuli.[3] Characteristics The controlling effects of stimuli are seen in quite diverse situations and in many aspects of behavior. For example, a stimulus presented at one time may control responses emitted immediately or at a later time; two stimuli may control the same behavior; a single stimulus may trigger behavior A at one time and behavior B at another; a stimulus may control behavior only in the presence of another stimulus, and so on. These sorts of control are brought about by a variety of methods and they can explain many aspects of behavioral processes.[4] In simple, practical situations, for example if one were training a dog using operant conditioning, optimal stimulus control might be described as follows: The behavior occurs immediately when the discriminative stimulus is given. The behavior never occurs in the absence of the stimulus. The behavior never occurs in response to some other stimulus. No other behavior occurs in response to this stimulus.[5] Establishing stimulus control through operant conditioning Main articles: Operant conditioning, Three-term contingency, and Contingency management Discrimination training Operant stimulus control is typically established by discrimination training. For example, to make a light control a pigeon's pecks on a button, reinforcement only occurs following a peck to the button. Over a series of trials the pecking response becomes more probable in the presence of the light and less probable in its absence, and the light is said to become a discriminative stimulus or SD.[6] Virtually any stimulus that the animal can perceive may become a discriminative stimulus, and many different schedules of reinforcement may be used to establish stimulus control. For example, a green light might be associated with a VR 10 schedule and a red light associated with a FI 20-sec schedule, in which case the green light will control a higher rate of response than the red light. Generalization After a discriminative stimulus is established, similar stimuli are found to evoke the controlled response. This is called stimulus generalization. As the stimulus becomes less and less similar to the original discriminative stimulus, response strength declines; measurements of the response thus describe a generalization gradient. An experiment by Hanson (1959)[7] provides an early, influential example of the many experiments that have explored the generalization phenomenon. First a group of pigeons was reinforced for pecking a disc illuminated by a light of 550 nm wavelength, and never reinforced otherwise. Reinforcement was then stopped, and a series of different wavelength lights was presented one at a time. The results showed a generalization gradient: the more the wavelength differed from the trained stimulus, the fewer responses were produced.[7] Many factors modulate the generalization process. One is illustrated by the remainder of Hanson's study, which examined the effects of discrimination training on the shape of the generalization gradient. Birds were reinforced for pecking at a 550 nm light, which looks yellowish-green to human observers. The birds were not reinforced when they saw a wavelength more toward the red end of the spectrum. Each of four groups saw a single unreinforced wavelength, either 555, 560, 570, or 590 nm, in addition to the reinforced 550 wavelength. The birds were then tested as before, with a range of unreinforced wavelengths. This procedure yielded sharper generalization gradients than did the simple generalization procedure used in the first procedure. In addition, however, Hansen's experiment showed a new phenomenon, called the "peak shift". That is, the peak of the test gradients shifted away from the SD, such that the birds responded more often to a wavelength they had never seen before than to the reinforced SD. An earlier theory involving inhibitory and excitatory gradients partially explained the results,[8] A more detailed quantitative model of the effect was proposed by Blough (1975).[9] Other theories have been proposed, including the idea that the peak shift is an example of relational control; that is, the discrimination was perceived as a choice between the "greener" of two stimuli, and when a still greener stimulus was offered the pigeons responded even more rapidly to that than to the originally reinforced stimulus.[10] Matching to sample In a typical matching-to-sample task, a stimulus is presented in one location (the "sample"), and the subject chooses a stimulus in another location that matches the sample in some way (e.g., shape or color).[11] In the related "oddity" matching procedure, the subject responds to a comparison stimulus that does not match the sample. These are called "conditional" discrimination tasks because which stimulus is responded to depends or is "conditional" on the sample stimulus. The matching-to-sample procedure has been used to study a very wide range of problems. Of particular note is the "delayed matching to sample" variation, which has often been used to study short-term memory in animals. In this variation, the subject is exposed to the sample stimulus, and then the sample is removed and a time interval, the "delay", elapses before the choice stimuli appear. To make a correct choice the subject has to retain information about the sample across the delay. The length of the delay, the nature of the stimuli, events during the delay, and many other factors have been found to influence performance on this task.[12] Cannabinoids Psychoactive cannabinoids from the marijuana plant (phytocannabinoids), from the body (endocannabinoids), and from the research lab (synthetic cannabinoids) produce their discriminative stimulus effects by stimulation of CB1 receptors in the brain.[13] See also Behavior therapy Behaviorism Motivating operation Quantitative analysis of behavior Signal detection References ^ Baum, William M. (2005). Understanding behaviorism : Behavior, culture, and evolution (2. ed.). Malden, MA: Blackwell Pub. ISBN 140511262X. ^ Skinner, Burrhus Frederick (1957). Verbal Behavior. Acton, MA: Copley Publishing Group. ISBN 1-58390-021-7 ^ Skinner, B.F. (1992). Verbal behavior. Acton, Mass.: Copley. ISBN 1583900217. ^ Catania, A. C. "Learning" 3rd ed, 1992, Prentice Hall, Englewoood Cliffs, NJ. ^ Pryor, Karen (2002). 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