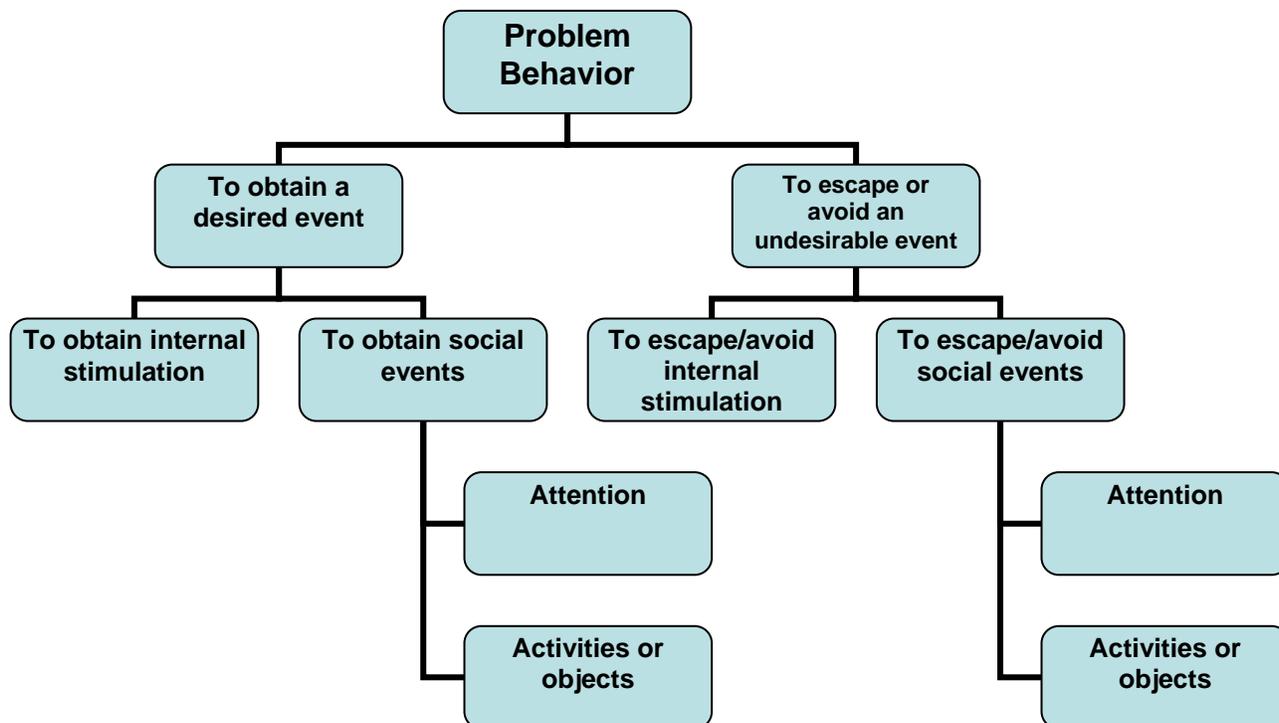


Differentiating Between Internally and Externally Motivated Behavior: Automatic Reinforcement vs. External Reinforcement of Behavior

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Introductory flow chart downloaded from: Center for Autism and Related Disabilities, University at Albany SUNY

While most behaviors are maintained by an external event (consequence), there are, on less frequent occasions, puzzling behaviors that may be specific to the individual's internal state rather than external events. These behaviors may be triggered by an internal stimulus, e.g. hunger, pain, anxiety. They may be maintained because they produce either a desired internally generated outcome, e.g. pleasure or because they remove or weaken or reduce an aversive or unpleasant condition.

Although these behaviors can often be altered through positive behavior strategies and supports and other interventions, they do not easily fit a Functionally Equivalent Replacement Behavior (FERB) paradigm, i.e., these behaviors are not always occurring in response to something gained or avoided/escaped in the environment.

For example, a student may excitedly repeat swear words to get or maintain a social attention sequence, e.g., sustained attention from adults attempting to make him stop the behavior. This can be addressed through standard behavior support procedures, including a functionally equivalent replacement behavior.

Alternatively, the excited swearing could be maintained due to enhancement of the arousal state, e.g., an internal function maintaining the behavior; the student is not attempting to gain a response from the environment. Not all repetitive behavior has a maintaining external consequence!

CAUTION: Do not consider internal states as a hypothesis until significant data collection and analysis has been conducted to examine external consequences that may be maintaining the behavior.

These internally motivated behaviors can occur with and without disabilities. Some individuals with disabilities such as Tourette's syndrome and Autism are especially susceptible to engaging in behavior for an internally generated outcome. However, this does not mean that all repetitive behavior from these individuals has an internal function. As with all individuals, their behavior primarily occurs as a result of external conditions and therefore is amenable to behavior plans emphasizing environmental changes, functionally equivalent replacement behaviors and reactive strategies.

It is important that we do not conclude that a student engages in a particular problem behavior, "because that's what students' with that disability do!" For example, we cannot conclude that a student with autism is hitting his head just because he has autism, and therefore it is not a behavior that can be reduced or eliminated through behavioral interventions and supports. We need to pay attention to the antecedents preceding and consequences following the behavior. For example, a student might engage in hitting his head in response to a request. Hitting his head could be an attempt to escape or protest the request. A change in the environment (materials, timing, form of the request, etc.) and teaching an alternative way to protest or escape the request may serve to reduce or eliminate the behavior.

All behavior is maintained by the consequence attained, either external or internal. Always gather data about environmental and social factors supporting the behavior. Only proceed to hypothesize an internal function if an external function has not been identified.

Example: Echolalia with External Function – Get

Echolalia can be used by the individual for the function of communicating consent. "Do you want a hamburger?" can result in the student stating, "Do you want a hamburger! (Shrieking voice tone, repeating the statement over and over) to communicate, "Yes."

Example: Echolalia with External Function – Reject/Avoid

Echolalia can be used to escape or avoid an undesired social event. "The power of Gray Skull! The power of Gray Skull!" (script from He-man) said to escape a peer who is attempting to engage in a game with a student who does not wish interaction.

Example: Echolalia with Internal Function – Get

Echolalia can be used to maintain or heighten a pleasurable internal state with no regard for how the environment responds to the behavior. Student repeats movie scripts (“video talk”) to self while rocking back and forth with a pleased expression on his face.

Example: Echolalia with Internal Function – Reject/Avoid

Echolalia can be used to reduce an aversive internal state. The student feels a seizure is approaching, and begins running around the room screaming, “Call the fire department! Call the fire department!”

Example: Self Injurious Behavior

Head banging can be used to protest an undesired environmental condition, or, less frequently, for attention. Thus, the behavior occurs for an external environmental condition. Occasionally, however, this behavior has been shown to serve an internal function.

Example: Genital stimulation

Repetitive genital rubbing can be used to draw adult or peer attention. It can also occur to gain a pleasurable internal response. Careful observation of facial expression and eye gaze can often give clues as to the behavior’s purpose.

Guidelines

- Never assume an internal state is driving the behavior until data has been collected and analyzed. Often attempting to identify the functionally equivalent replacement behavior in a pathway chart will highlight the fact that a FERB can not be found, and a possible internal function for the behavior should be considered. Even children with complex neurologic conditions use purposeful behavior, including repetitions that appear to be compulsive and look to be non-goal directed but are actually occurring to attain a specific outcome.
- Your data needs to show that no access to a reinforcer or escape from a punisher in the environment is maintaining the behavior, i.e., the internal state itself is the reinforcer. This requires diligence, data analysis and observation skills.
- Remember, all behaviors have antecedents and consequences! However, some behaviors are repeated due to “automatic reinforcement” rather than a desired response from the environment (positive reinforcement given or removal of an aversive). These behaviors are either to achieve, maintain or enhance an internal pleasurable state, or to escape an undesired internal state.

Typical Sequence for Internally Supported Behavior

Example:

- **Antecedent** – exciting activity
- **Behavior** – flapping and shrieking
- **Consequence** – automatic reinforcement, enhanced arousal state

Typical Data Analysis Evidence: Behavior occurs under all conditions: peers, activities, situations, locations and does not change based on a response from peers or adults.

Typical Sequence for Externally Supported Behavior

Example:

- **Antecedent** – exciting activity
- **Behavior** – flapping and shrieking
- **Consequence** – attention from peers given

Typical Data Analysis Evidence: Behavior does not occur when no peers are present.

- Automatic reinforcement or internally supported behavior refers to situations in which the maintaining consequence is NOT an event from the social environment. When the primary reinforcer is internal, identifying other sources of reinforcement to change the behavior is often difficult or impossible to identify, manipulate or control. For example, what is more reinforcing than pleasure from genital stimulation?
- Even behaviors that are internally motivated can become purposefully selected behaviors in response to consequences from the environment as the individual learns that the impact of his or her behavior results in a desirable external event.

Hypothesis – unconditioned stimulus: Hunger (internal state)

Can lead to arousal and screaming (internal motivated behavior, i.e., an unconditioned response).

Example Behavior: Screams

Result: Food is procured from the environment. After multiple trials screaming for food becomes conditioned, i.e., now serves a function, and is no longer simply an automatic response to the state of hunger.

Conclusion: Student has learned to scream to request food, i.e., has become a conditioned response.

Hypothesis – unconditioned stimulus: Emotional Tension (internal state)

Example Behavior: Cutting

Comments: Cutting can be a response to an internal state. It can transform into an externally maintained function when the individual learns that showing cuts to others results in a desired outcome, e.g., social status and attention. (Thus, cutting is never treated in group therapy formats!) Thus, the primary maintaining consequence and motivation for cutting has changed from trying to gain a desired internal state to behavior also (or primarily) maintained and motivated by achieving social attention. Thus, whether cutting is a private act, or done in the presence of others, or shown to others is an important variable when considering how to treat the problem.

Hypothesis – unconditioned stimulus: Compulsion to perform a behavior
(internal state)

Example Behavior: Pica, i.e., the ingestion of non-nutritive substances

Comments: Pica can be a response to an internal state. On some occasions, Pica can transform into purposeful behavior when reinforced by external consequences, e.g., when the individual experiences desirable social response, e.g., social engagement and attention. In some individuals a nutritional deficiency can be addressed, reducing or eliminating the behavior.

Typical arousal-seeking or arousal-responding behaviors (observable, pleasurable excitement): Often these behaviors have a compulsive quality and may not be considered problematic when they occur with less intensity. The frequency, duration or intensity data helps determine whether they interfere with quality of life or learning of self or others and require intervention. The following samples MAY have an internal function:

- Prancing on toes, while loudly barking or whooping in response to an external stimuli that the student appears to enjoy (data shows no reinforcer or escape from a punisher is maintaining the behavior)
- Repetitive tongue clicking in response to an external stimuli the student appears to enjoy
- Genital rubbing for the sensation, rather than for the response given to the behavior from others.
- Bruxism (teeth grinding) during an activity.
- Twirling hair between two fingers while thinking of an answer
- Chewing on tongue while performing a difficult task
- Pacing back and forth or rocking while watching a favorite television program
- Chewing on glasses or pencil while participating in a discussion
- Repeating TV scripts to self, with high vocal volume with no observable antecedent or consequence
- Coprolalia (difficult to suppress language bursts of tic-like utterances of swear words) sometimes occurring with Tourette Syndrome
- Talking back to imaginary voices (auditory hallucinations secondary to mental illness) can be periodically observed with internal state fluctuations

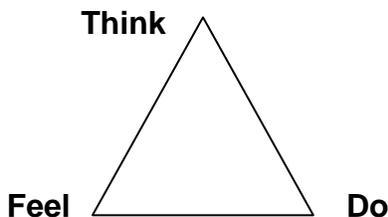
- Pressured, staccato, rapid speech (occurring in Bipolar Disorder) can result from an internal hyper arousal
- Other behaviors in an altered mental state: alcohol and drug induced behavior, obsessive compulsive behavior

Typical arousal avoiding behaviors (escaping/avoiding internal stimulation):

- Flapping and screaming in response to a loud noise such as a smoke alarm, vacuum (resembles a startle response)
- Covering head with jacket and/or covering ears while attempting to participate in a school assembly
- Chewing on fingers or skin picking repeatedly **in all activities**, i.e., behavior is independent of discernable antecedents or consequences for the behavior
- Throwing off clothes or shoes independent of discernable antecedents or consequences for the behavior
- Obsessive hand washing in response to an internal drive to complete the ritual and the individual states action relieves anxiety
- Phobias and Panic Disorders can produce avoidant behavior with no immediately discernable external factors present. The behavior occurs in response to the aroused negative mental state as the individual thinks of the stressor not yet present. This is often addressed through systematic desensitization.
- Selective Mutism, e.g., speaking fluently in home environment, and not speaking in a school context. The behavior is best addressed through systematic desensitization in combination with mental health treatment which often includes anti anxiety and anti depressant medication.

Three Approaches for Altering Behavior

All approaches to address behavior strives to change what the student does by altering what the individual does, what he or she thinks about the environment and social world, or how the person feels in response to environmental and social events.



DO: Behavior analysis alters what the student does, by manipulating antecedents and consequences so the desired behavior is attained, and competing undesired behavior is eliminated or reduced. Functional behavioral assessment begins the process of analysis, and behavior intervention and support plans outline the changes. This approach is mandated for use in schools when students with IEPs have behavior that is a “manifestation of disability” and when that behavior “impedes the learning of the student or peers,” positive behavioral interventions and strategies must be considered.

Functional assessment is used to determine how to change the behavior when “default behavioral interventions” have not been successful.

THINK: Cognitive behavior therapy addresses faulty processing. For example, students with emotional disturbance sometimes attribute “negative intention to neutral stimuli,” e.g., “You hate me and want to put me down!” attributed to a staff member attempting to help the student correct a math problem, or “See how he’s looking at me! He wants to fight with me!” attributed to a casual glance from a peer without the intent to fight. This approach is typically used when default behavior interventions and function-based behavioral interventions have not successfully changed the behavior. It is often considered a “related service” provided by trained implementers

FEEL: Medication, systematic desensitization and other direct treatments directly addressing feeling states are sometimes used with students whose anxieties or affectual dysregulation impact their behavior. These direct treatments are provided by skilled implementers with specialized training, following evidence based treatment protocols. Medication is not provided by school districts, however systematic desensitization and other treatments can be provided as part of the education program for a student with an IEP if the team has identified an educational goal that needs to be met through this service.

Systematic Desensitization Procedures may mean different things to different people. It is NOT forcing a person to confront a stimulus. Systematic desensitization is a specific behavior therapy technique that breaks the link between the anxiety-provoking stimulus and the anxiety response. This treatment systematically exposes a feared or anxiety provoking stimuli in very small doses, allowing the person to cope with the internal state produced by the stimuli *slowly*. This technique is used in behavior therapy to treat phobias and other behavior problems involving anxiety. The client is exposed to the threatening situation under relaxed conditions until the anxiety reaction is extinguished *If you move too fast, or do not have adequate training or attempt this procedure not under relaxed conditions, the behavior can become much worse.* This treatment requires the patient to gradually confront the aversive or uncomfortable or fearful situation or object. of fear. There are three main elements to the process: dukehealthsystem.adam.com/content.aspx. Do not use these procedures if you have not been well trained.

Examples of systematic desensitization gone wrong: A student with autism ran every time the school bell rang. The plan called for blocking him and holding “so he could get over the fear.” (Non-systematic, non-relaxed condition, not in small doses or under his control to terminate). This resulted in hitting to escape, and school staff containing him near the bell, “so he could get over it.” Staff holding a student in circle to “desensitize him to aversion to singing,” and forcing a student to taste undesired foods “to expand the diet” are other examples of non-skilled erroneous interventions.

A hypothesized “self esteem deficit” is not a periodically occurring internal state fluctuation. Behavior therapy does not address “self esteem” directly. Through provision of a Tier 1 reinforcing environment and/or success in learning activities “self esteem” may be altered because mastery has been achieved.

“Self Esteem” is an abstract term not addressed in behavior analysis nor in behavior plans because it attempts to very indirectly affect behavior rather than focusing on direct behaviors to be taught and reinforced. There currently is no evidence based specific intervention to address self esteem for the purpose of altering behavior.

Treatment Protocols for Internal Functions may include:

- Medical Treatment (may include medications or titration of current medications)
 - Although medication or medical interventions do not significantly affect most behaviors, at times they do, and should be considered.
- Direct Mental Health Assessment and Services
 - Cognitive Behavior Therapy
 - i. Externalizing: Aggression, such as “Coping Power” protocol (see references)
 - ii. Internalizing: Anxiety, such as “Coping Cat”
 - Family Therapy
 - Other direct treatment (see below)
- Direct Treatment: Systematic Desensitization Procedures
 - This treatment can be used for school and other phobias, school refusal, anxiety, heightened arousal due to touch sound or visual input, and for selective mutism.
- Altering or controlling antecedents to reduce occasions that trigger internal states (may be included in an accommodation plan)
 - Stimulus satiation
 - Environmental engineering
 - Altering stimulus control
- Altering consequences
 - Stimulus change following the behavior
- Direct Treatment: Teaching behavior modulation (reducing intensity and duration)
 - Feedback Systems
 - Relaxation, breath control
 - Anger Management
 - Coping Strategies
 - Mindfulness Treatment

Does the behavior really need to be addressed?

Behavior plans in school need to be developed when behavior impedes learning of the student or his or her peers and other Tier 1 or Tier 2 interventions have not been successful. These are appropriate for behaviors which are externally motivated, and for which a functionally equivalent replacement behavior can be identified, taught and reinforced.

For behavior that serves an internal function, affecting quality of life or for medical reasons, treatment may be provided (see above) to reduce the negative impact, if any, of the behavior. If this behavior is to be addressed in school, the following guidelines may be helpful.

- Is addressing this behavior necessary for the student to benefit from the provision of special education? If so, the IEP team must consider “related services” to address the behavior. This may include medical services (for diagnosis only), mental health, occupational and physical therapy, speech and language services, etc.
- If the student does not have an IEP, and the school has determined that no disability is present, provision of treatment, if necessary, can be given as a general education service, if resources permit, e.g., school counseling. Alternatively, the school can refer the parents, at their request, to outside agencies or providers.
- For many internally motivated behaviors, e.g., hair twirling, toe walking, excited vocalizations, repetitive hand movements, etc., there may be no need to alter the behavior if it does not interfere with goal attainment nor interfere with quality of life or significantly affect classroom functioning.
- Sometimes attempting to change a repetitive behavior results in elimination of that behavior, but another, even more troublesome repetitive behavior could possibly take its place.
 - For example, a young child with Autism repetitively squeezed a block throughout his day. His mother was determined to eliminate this behavior, and was successful. However, the child replaced block squeezing with rapid flicking of his fingers in front of his eyes, a behavior that impacted his safety while walking, and was viewed by all as a problem behavior interfering with learning and quality of life, increasing his need for adult supervision.
- For psychiatric conditions, e.g., selective mutism, separation anxiety, bipolar disorder, psychosis, etc., the primary treatment is mental health services. The school may, however, develop a treatment protocol to reduce the impact of behaviors associated with the disorder, and/or an accommodation plan that describes how the staff will respond to exhibited behaviors. These conditions require good home/school/medical management team communication to assure information flows smoothly between all parties. A case manager is required.

- For medical conditions, such as Tourette's Syndrome, repetitive behaviors such as tongue clicking, swearing, facial grimacing, touching others, etc. may occur. With Diabetes, disorientation may occur when blood sugar is low. With allergies, repetitive throat clearing or eye rubbing may occur. In Obsessive Compulsive Disorder, a strong drive to engage in a repetitive behavior such as pencil sharpening, using the bathroom, touching, etc. may be observed as the student attempts to address the underlying anxiety of a non completed ritual. These students may require accommodations outlined in either a 504 plan, or another accommodation plan to address negative impact of the condition on educational performance. See accommodation planning at www.pent.ca.gov. They will also likely require good home/school/medical team communication. Often a case manager is identified to facilitate this process. It is important to remember, however, that students with these conditions may be using behavior to achieve an external function as well and also will benefit from behavior plans with functionally equivalent replacement behaviors!
- For students with seizure disorders and migraine patterns, sometimes the approaching internal state results in a strong behavioral response, such as running around the room, hitting people, moaning, screaming and other behaviors not associated with environmental conditions or social interactions. The student knows the internal state currently being experienced will intensify as the condition advances. These students require staff to be able to "read" the purpose or function of their behavior. Under the condition of an approaching internal undesired event, the student may be unresponsive to supports that work under other conditions and require an accommodation plan.
- For medical conditions, such as encopresis (bowel movements, including persistent leakage/diarrhea in underwear after toilet training has been attained) and enuresis (bladder "accidents" after toilet training has been achieved) careful assessment is required. These conditions often have a purely medical basis (e.g., sequelae of an impacted bowel/constipation or parasites or of urinary tract or bladder infection). However, on occasion these conditions can also be indicative of a life trauma, or life transition or a more enduring problem, such as emotional disturbance. Determining the school based intervention will require careful assessment and rule out of medical reasons before other interventions are developed or assessment is conducted.
- For students with behaviors associated with attention deficit/hyperactivity disorder it is important to remember that not all of these students will require either an IEP or a 504 plan. Accommodations may be specified to address problems associated with the condition, if necessary, either as part of Tier 1/Tier 2 school interventions or as part of an IEP/504 plan. To require an IEP not associated with a learning disability, the student must need "specialized instruction in terms of content or methodology due to the nature of the disability" (i.e., special education for OHI, Other Health Impairment).

- For example, students with AD/HD often blurt out answers during a class discussion. Sometimes these behaviors are externally motivated, e.g., to get attention from peers and/or teacher. Sometimes, however, these behaviors are internally motivated, due to a heightened arousal and a short auditory memory span. The student blurts out because the thought will not be available when his or her turn finally comes. The motivation to speak under heightened arousal is great, and although the teacher may attempt to punish blurting out, it may not be effective in suppressing the behavior. This behavior is often seen when the student is engaged in social interactions as well. She may not wait her turn to speak, and may blurt out the comment, talking over her peers in response to an internal state. An accommodation plan as well as using more active responding techniques during class discussions, e.g. turn to your partner, etc., may not only reduce blurting, it may increase all students' active engagement!

End Note: The authors wish to acknowledge that not all behaviorists embrace the conceptual framework that includes internal states producing internal functions of behavior. However, a growing number of behaviorists do acknowledge the important role of cognitive behavioral therapy and other treatment protocols outlined above to address behaviors that have not responded to traditional behavior-based interventions that focus on environmental and socially mediated antecedents and consequences. The PENT Cadre has focused primarily on designing behavior plans for a wide range of problem behaviors that are socially mediated and environmentally supported, e.g., ones that serve external rather than internal functions. The authors are providing this document in recognition of the other approaches to consider when behavior support plans are not successful. They wish to emphasize that the hypothesis of internal states as the sole cause of ongoing behavior should never be entertained without examining the antecedents, behavior and consequence analysis.

Terminology

Automatic Reinforcement: Automatic reinforcement is reinforcement that is not socially mediated but follows automatically from the behavior. Automatic reinforcement has the same defining properties as “reinforcement”

- Follows behavior
- Increases behavior
- Under the stimulus conditions in which it occurs

Automatic reinforcement can be unconditioned, conditioned, positive, negative or intermittent.

Example: Student experiences pain from reflux sucks on fingers producing an increase in salivation, which reduces reflux symptoms. Finger sucking is “negatively reinforced, i.e., it removes the aversive of reflux discomfort, and therefore is likely to reoccur.

Behavioral (Stimulus-response) Chain: is a series or sequence of responses that results in some important reinforcer at the end of the sequence. Each response in the chain serves as a stimulus for the next response.

Differential Reinforcement: reinforcement that is provided for behaviors when the behaviors occur under certain conditions, at certain times and places. Reinforcement is then not provided when the behaviors occur under other conditions, at other times and places.

Intermittent Reinforcement: reinforcement occurring on a thin schedule. This often maintains high rates of behavior if the behavior has been sufficiently reinforced and gradual reductions in reinforcement systematically provided.

Example: Ms. Smith periodically provides a glowing note home for a student after daily report cards have been thinned from daily to biweekly to intermittently.

Internal States (private events): behaviors that are maintained by consequences internal to the person.

Negative Reinforcement: occurs when a stimulus is removed or reduced contingent on a behavior. It increases the probability that the response will occur in the future.

Example: The teacher pounds on the desk or flicks the lights in response to a high noise level, and the students become quiet. Desk pounding or light flicking will likely occur again because the aversive, “noisy classroom” has been temporarily removed.

Example: The student swears at the teacher, who sends him to the office. The work was difficult, and now the student has removed the aversive work by being sent to the office. This behavior will likely occur again to avoid future difficult work.

Operant Behavior: any behavior whose probability of occurrence is determined by its history of consequences.

Operant Conditioning: the use of consequences to modify the occurrence and form of behavior, operant conditioning deals with the modification of voluntary behavior or operant behavior

Positive Reinforcement: occurs when a stimulus is gained, contingent on a behavior. It increases the probability that the response will occur in the future.

Example: The student is patted on the back for staying on task. He smiles, and says, “Thank you.” The on task behavior occurs again.

Reinforcement: occurs when an event following a response causes an increase in the probability of that behavior occurring again in the future. Reinforcement can be something gained (positive) or something removed (negative).

Reward vs. Reinforcer: a reward is something the giver thinks will result in the desired behavior occurring again. A reinforcer is something we have evidence that the behavior will likely occur if the reinforcer is available.

Shaping: occurs through reinforcing closer and closer approximations to an end goal.

Example: Student is reinforced for staying in circle time for three minutes, and gradually earns reinforcers for staying an increasing amount of time. Student is praised (which maintains his behavior; is a proven reinforcer) for approximations in writing his name until full name writing has occurred.

Stereotypy: a repetitive or ritualistic movement, posture, or utterance.

Systematic Desensitization: a technique based on the principles of behavior analysis used to treat phobias and other extreme fears. Treatment typically involves teaching the individual relaxation skills followed by creating an "anxiety hierarchy." The hierarchy is a list of anxiety-provoking situations or stimuli arranged in order from least to most distressing. The individual proceeds through the anxiety hierarchy, responding to the presentation of each fearful or anxiety provoking image or act by producing the state of relaxation until the stimuli no longer evoke a phobic, fearful or anxiety response.

Further Reading on Automatic Reinforcement (Internal States)

Functional analysis of aberrant behavior maintained by automatic reinforcement:
Assessments of specific sensory reinforcers

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Résumé / Abstract

The purpose of this study was to develop a systematic functional assessment package for aberrant behaviors maintained by nonsocial (automatic) reinforcement. The assessment package included four components: (1) functional analysis, (2) antecedent assessment of specific automatic reinforcement sources, (3) stimulus preference assessment, and (4) treatment evaluation. Functional analysis data indicated automatic reinforcement functions of the stereotypy exhibited by a 10-year-old male and the self-injury (SIB) exhibited by a 30-year-old male. Antecedent assessments of sensory classes indicated that auditory stimulation and tactile stimulation were associated with stereotypy and SIB, respectively. A multiple-stimulus-without-replacement procedure was conducted with each participant to identify the most- and least-preferred stimuli within the identified sensory classes. In an attempt to validate the assessment package for each participant, a DRO procedure was implemented using a reversal design with a multielement component. DRO procedures using stimuli within the targeted sensory classes were successful in eliminating the aberrant behaviors of both participants. The

results are discussed in the context of improving the methodology for assessing and treating automatically reinforced behaviors.

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Res Dev Disabil.

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The concept of automatic reinforcement: implications for behavioral research in developmental disabilities.

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Automatic reinforcement refers to situations in which behavior is maintained by operant mechanisms independent of the social environment. A number of difficulties exist in conducting an adequate functional analysis of automatically reinforced aberrant behavior. For example, sources of reinforcement are often difficult or impossible to identify, manipulate, or control. Further, the development of treatments is often difficult because many behavioral interventions, such as timeout, involve manipulation of the social environment--an approach that may be functionally irrelevant in the case of automatic reinforcement. This article discusses the problems inherent in the analysis of automatically reinforced behavior and reviews four classes of treatment that are compatible with that behavioral function. The four types of intervention reviewed include manipulations of establishing operations, sensory extinction, differential reinforcement, and punishment. Suggestions for future research are discussed.

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Mark Sundberg ppt

How Does Stimulus Control Develop with Automatic Reinforcement?

http://www.marksundberg.com/files/Automatic_Reinforcement_ABA_2005bb.ppt#256,1,
How does Stimulus Control Develop with Automatic Reinforcement?

Brief Report:

Functional analysis of self-injury maintained by automatic reinforcement: exposing masked social functions

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Abstract

Two functional analyses for self-injurious behavior (SIB) exhibited by a child diagnosed with mental retardation and autism were conducted. Responding was high and undifferentiated in the first functional analysis, indicating that SIB was maintained by automatic reinforcement. During the second functional analysis, the client wore a padded helmet and all SIB was blocked. SIB decreased in all conditions except attention, suggesting that SIB was multiply controlled (social positive *and* automatic reinforcement). Copyright © 2001 John Wiley & Sons, Ltd.

Behavioral Interventions: <http://www3.interscience.wiley.com/journal/24375/home>
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John T. Rapp. (2006) Toward an empirical method for identifying matched stimulation for automatically reinforced behavior: A preliminary investigation. *Journal of Applied Behavior Analysis*, 39, 137-140.

The effects of noncontingent matched stimulation (NMS) and response blocking on a boy's stereotypic behavior were evaluated using a multiple schedule that contained three 15-min components (preintervention, intervention, and postintervention). Results showed that stereotypy was always higher after response blocking than before response blocking and was always lower after NMS than before NMS. These results suggest that response blocking may have produced deprivation for the product of stereotypy and that NMS may have provided stimulation that was similar to the product of stereotypy.

DESCRIPTORS: automatic reinforcement, multiple schedule, noncontingent reinforcement, response blocking, stereotypy