

Tutorial: Behavior Management: Contingency Management

(See also Tutorials on [Behavior Management: Prevention Strategies](#); [Discipline](#); [Noncompliance](#); [Motivation](#); [Positive Behavior Supports](#))

WHAT IS CONTINGENCY MANAGEMENT?

Contingency management is based on the principle that behavior is a function of its consequences. That is, what people do – how they behave – is related in a predictable way to the consequences of their behavior. For example, if an action is followed by a positive consequence (positive for that person), then the individual is likely to repeat that action. In contrast, if an action is followed by a negative consequence (negative for that person), then the individual is unlikely to repeat the action. Negative consequences include both no response (e.g., the person's action is ignored) and punishing responses.

From this perspective, behavior management of students with or without diagnosed behavior problems is largely the well-planned organization and implementation of consequences. Behavior specialists who rely heavily on contingency management do not neglect the antecedents of behavior. **(See Tutorials on [Behavior Management: Prevention Strategies](#); [Positive Behavior Supports](#).)** However, primary emphasis is placed on organizing the consequences of behavior with the goal of changing the student's behavior.

There are four categories of consequences (contingencies) that can influence behavior. Positive and negative reinforcement increase the likelihood of the behavior being repeated. Extinction and punishment decrease that likelihood.

Positive Reinforcement

Positive reinforcement is a response that follows a behavior and has the effect of increasing the likelihood of that behavior occurring again – by providing a positive experience as a consequence.

Examples:

- Giving a child food or a toy for a job well done (assuming that the food or toy is desirable in that context).
- Giving a child praise or a hug for a job well done (assuming that the praise or hug is desirable in that context).
- Giving a student a good grade for excellent work (assuming the student wants to succeed in school).

Potential Advantages:

1. Appropriate schedules of reinforcement have been shown to facilitate acquisition of many types of behavior in many types of people.
2. Shaping behavior with reinforcement for success rather than punishment for failure involves less risk of backfiring and creates a generally more positive learning and communication environment.

Potential Dangers:

1. When children (or adults) receive “payment” for virtually every positive behavior, they may learn to expect and grow dependent on such payment, thereby reducing the likelihood of engaging in positive behavior for other reasons (e.g., because the positive behavior is intrinsically rewarding; because of a sense of obligation; etc.). **(See Tutorial on [Motivation](#).)**
2. When the reinforcer is NOT natural and logical in relation to the behavior (e.g., a sticker or “Good talking, Johnnie” as a reward for producing a good sentence), then the student may fail to link the behavior with its natural and logical consequences. The natural and logical consequence of a request is that the request is honored., not “Good talking, Johnnie” or an M&M. The natural and

logical consequence of an intelligible question is an answer, not a sticker. Failure of generalization or transfer is often the combined consequence of teaching out of context and using reinforcers that are not real-world, natural and logical consequences.

3. When students feel that the reinforcement is meaningless or childish – or they object in general to being manipulated by a system of externally imposed consequences – the actual results of reinforcement may be the opposite of their intended results.

Negative reinforcement

Negative reinforcement is a response that follows a behavior and has the effect of increasing the likelihood of that behavior occurring again – by removing a negative stimulus.

Examples:

- A student receives help when he requests help after struggling with a problem.
- A student reduces anxiety and panic by asking for and receiving an extension on a paper.

Potential advantages and potential dangers: See positive reinforcement

Noncontingent reinforcement refers to rewarding experiences that are not dependent on the student engaging in any target behavior. For example, compliments, hugs, presents, pleasurable activities, and the like – when presented randomly and not as a “payment” – can have the effect of creating a generally positive culture, facilitating feelings of trust and affection, and increasing the individual's confidence.

Extinction

Extinction occurs when a behavior is followed by no response, which decreases the likelihood of the behavior occurring again.

Examples:

- John is disruptive in class and is placed in a time-out room where he cannot be rewarded for disruption.
- A therapist gives no response to the student's errors.
- A mother ignores her child's whining requests for candy in the supermarket line.

Potential Advantages

1. Ignoring undesirable behavior can have the effect of reducing the likelihood of that behavior, assuming the behavior was intended (consciously or unconsciously) to have an effect on others.
2. When undesirable behavior is not ignored, it often increases, especially if the child receives attention for undesirable behavior and no attention for desirable behavior.

Potential Dangers

1. Often what is called “no response” is actually a reinforcing response. For example, “time-out from reinforcement” is often misused in this way. Time out MAY actually be negative reinforcement (e.g., removing a disruptive child from an undesirable activity from which he wants to be removed, as in school suspension) or positive reinforcement (e.g., having the child spend time with a friendly aide or in a time-out room with friends). In both cases, the actual result is the opposite of the intended result. That is, the negative behavior increases in frequency because the consequence is unintentionally reinforcing.

2. It is very hard to ignore a child's irritating or aggressive behavior. If an authority figure tries to ignore the behavior – but finally loses patience and reacts – the result may be the very worst possible result. That is, the child is rewarded for persisting with undesirable behavior.

Punishment

Punishment is a response that follows a behavior and has the effect of decreasing the likelihood of that behavior by providing an undesirable experience as a consequence.

Examples:

- A convicted thief is imprisoned for robbery.
- A mother yells at her child for misbehavior.
- A principal expels a student for serious infractions of school rules.

Potential Advantages

1. If the punishment is natural and logical (e.g., being forced to clean up a room after trashing it), the individual learns about the relation between behavior and its predictable consequences in the real world.

Potential Dangers

1. Apparent punishment (e.g., parental spanking; expelling a student who does not want to be in school anyway) may in fact be reinforcing if the child receives desirable attention, relief from stress, or some other reward as a result. This is one of the reasons that punishment is rarely a successful behavior management procedure in the long run.
2. Many types of punishment, corporal or psychological, are illegal in many settings (e.g., school) in many states.

WHY IS CONTINGENCY MANAGEMENT IMPORTANT FOR MANY STUDENTS AFTER TBI?

Effective management of consequences (contingencies) is important for all children, especially in a school context. Compliance and orderly behavior are critical in creating an effective learning environment. Following severe TBI, students may experience an extended period of time during which usual behavioral expectations have been suspended or reduced. For example, in a hospital, rehabilitation setting, or even in school, disruptive or resistive behaviors, particularly during the early recovery after TBI, may be tolerated more than in a typical school setting. In addition, the student may become accustomed to short work sessions and to controlling activities more than is allowed in school. For this reason, a consistent and well implemented behavior management system, including careful management of consequences, is particularly important when the student returns to school and resumes a normal school schedule.

Well implemented behavior management systems are additionally important because behavioral difficulties are a common consequence of brain injury. Among the most common concerns after TBI are difficulties with impulsiveness and risk taking. This is particularly true of students who are injured at a young age and who subsequently fail to mature adequately in the areas of impulse control and safety judgment. Students with damage to the bottom parts of their frontal lobes typically think and act impulsively – much like young children or children who experienced their TBI early in life. They often present with increasing challenges in this domain as they age. Their impulsive behavior naturally leads parents and teachers to worry about effective disciplinary practices. **(See Tutorial on Discipline.)**

However, caution must be exercised in using contingency management procedures with students with TBI. Many students with TBI have difficulty benefitting from feedback or learning from the consequences of their behavior. This difficulty results from damage to the bottom parts of the prefrontal lobes of the brain, commonly injured in TBI. This neurological problem makes behavior management a difficult issue. Most adults believe that consequences are the primary instrument of discipline. That is, if a student misbehaves, he should receive some sort of punishing consequence so that he will learn not to engage in that behavior again. However, this form of behavior management assumes relatively intact capacity to learn from prior consequences – precisely what many students with brain injury are (relatively) incapable of doing. The student might learn on an “intellectual” level that behaving in a certain way leads to negative consequences, but knowing this intellectually and guiding ones behavior with that knowledge are two very different matters. Students with frontal lobe injury are known to have difficulty guiding their behavior with their intellectual knowledge. **[See Tutorials on Positive Behavior Supports; Behavior Management Prevention Strategies.]**

WHAT ARE THE MAIN THEMES IN INSTRUCTION AND SUPPORT ASSOCIATED WITH CONTINGENCY MANAGEMENT?

Three important themes dominate behavior management. First, careful assessment is required to ensure that the problem is behavioral and not medical, cognitive, emotional, or some other sort of problem. The hypothesis-testing guides on this web site should help with this determination. If it is determined that the problem is behavioral, then the same hypothesis-testing procedures are used to identify the meaning (i.e., function) of the student’s negative behavior. Second, the student’s functioning and injury profile should be understood so that staff are in a position to know if contingency management procedures hold the promise of being effective.

Third, most of the student’s everyday communication partners, including staff at school and parents at home, need to be involved in the planning and implementation of the intervention. The student is unlikely to change behavior patterns unless the behavior plan is implemented across many contexts of his life. If not well oriented to the plan, communication partners may unintentionally trigger negative behavior with inappropriate demands or interaction (on the antecedent side) or unintentionally reinforce negative behavior with ill-advised responses, like removing a disruptive child from an undesirable task (on the consequence side).

Difficulty Learning From Consequences

Many students with brain injury experience behavioral difficulties while in the rehabilitation hospital and also upon return to home and school. The tradition of behavior intervention in both hospitals and schools focuses on contingency management and consequence-focused learning. As stated above students with brain injury often do not respond to this contingency management and consequence-focused behavior management approach. This difficulty is the direct result of damage to the frontal lobes, vulnerable in TBI. Frontal lobe damage results in a variety of behaviors that make learning from consequences difficult for these students. Therefore behavioral management strategies need to shift from consequences to antecedents to address these student’s needs **(See Tutorial on Positive Behavior Supports.)**

Emphasis on Positive Consequences: Reinforcement

If consequence-oriented behavior management (contingency management) systems are used, the emphasis should be on rewarding positive behavior rather than on extinguishing or punishing negative behavior. Reward systems create a more positive culture for students and adults alike. Systems that rely on ignoring or punishing negative behavior create a more negative culture and tend to backfire.

Strengthening Positive Behaviors

Reinforcement (reward) procedures can be used to strengthen already positive behaviors or to teach alternatives to negative behavior. (See Tutorial on Teaching Positive Alternatives to Negative Behavior.) In strengthening positive behaviors, teachers and parents make a point of rewarding positive behavior (e.g., completing homework) with praise or some other desirable consequence. Whether or not adults choose to make primary use of contingency management procedures, reinforcement for positive behavior should be a salient component of the classroom and home cultures.

Teaching Alternative Behaviors

Reinforcement procedures can also be used to teach positive alternatives to negative behavior. These procedures are referred to as differential reinforcement of incompatible behaviors (DRI), of alternative behaviors (DRA), or of other behaviors (DRO). The general idea is to provide a rewarding consequence for behaviors designed to replace the student's negative behavior. For example, if a student requests a break rather than being disruptive or aggressive, then that request is followed by praise and a break. **(See Tutorial on Teaching Positive Alternatives to Negative Behavior.)**

Natural Versus Artificial Rewards

See the Tutorial on Motivation for dangers of artificial rewards. Artificial rewards often create dependence on the rewards and reduce the student's intrinsic motivation. For students who are distractible, artificial rewards (e.g., stickers and toys) have the added danger of causing off-task behavior.

Systematically Reducing Negative Behavior

Negative behavior can be targeted with extinction or punishment procedures (see below). They can also be targeted with a reinforcement procedure called differential reinforcement of low rates of negative behavior. That is, the student is rewarded for systematically decreasing the frequency of negative behavior. For example, a student who frequently talks out of turn may be rewarded for a small number of disruptions during an academic period. Typically this number would be negotiated in advance. This procedure may not be effective for students with TBI because of their need for more immediate consequences and for the general reason that consequences may not have an enduring impact on their behavior.

Time Out Procedures

"Time out" is short for "time out from reinforcement." Time out can either mean time out on the spot ("TOOTS") or removal to a special time-out room or other special place. In time out on the spot, adults simply remove their attention from a student who has misbehaved and ensure that there are no other reinforcing events occurring at the time. Use of a time-out room requires removal of the student from an activity following negative behavior.

Time-out procedures are intended to be extinction or "no response" procedures, thereby reducing the frequency of the negative behavior. However, as stated above, often what is called "no response" is actually a reinforcing response. Time out may actually be negative reinforcement (e.g., removing a disruptive child from an undesirable activity from which he wants to be removed) or positive reinforcement (e.g., having the child spend time with a friendly aide or in a time-out room with friends). In some cases, the interaction involved in moving the student to a time-out place can itself be reinforcing. In all of these cases, the actual result is the opposite of the intended result. That is, the negative behavior increases in frequency because the consequence is unintentionally reinforcing.

Punishment Procedures

Most forms of punishment, including both physical and emotional punishment, are prohibited by law or school policy. Furthermore, behavior management systems that rely on punishment are dangerous for many reasons. First, they focus attention on negative behavior which can paradoxically be reinforcing for some students (thereby increasing the frequency of negative behavior) and, for others, cause a deterioration in their fragile sense of self. Second, they fail to target the development of alternative positive behaviors. Finally, they create a generally negative school culture in which the avoidance of punishment is valued over attempts to engage in positive behavior.

Response-Cost Procedures: Response-cost behavior management systems are used in many elementary schools and programs for students with behavior disorders. The student begins the day or a period within the day with a certain number of points (or stars, etc.) and then loses points for specified misbehavior. The number of points at the end of the day (or period) dictates the nature or magnitude of a reward at that time. This is a punishment procedure in that a negative consequence (loss of a point) follows a negative behavior.

Response-cost systems have been shown to be useful for some students, but are dangerous for many students with TBI, including those who seek attention and those who respond only to immediate consequences. For attention-seeking students, the interaction with the adult around loss of points is in fact reinforcing of the negative behavior. For students who require immediate consequences, the long wait for the pay-off makes response-cost systems ineffective. In general, response-cost systems should be avoided for students with brain injury.

EVIDENCE SUPPORTING THE USE OF BEHAVIORAL INTERVENTION PROCEDURES FOR CHILDREN AND ADOLESCENTS WITH TBI

This summary of evidence is written for teachers and others who may be required to support their intervention practices with evidence from the research literature or who may simply be curious about the state of the evidence. This summary was written in 2007. Evidence continues to accumulate.

Ylvisaker and colleagues (2007) reviewed the available evidence for behavioral interventions used with children and adults with TBI. Their search yielded 65 published reports with a total of 172 participants, 54 of whom were under age 18. (The studies of children and adolescents are listed in the Resources section of this web site.) Their conclusion was that the evidence is sufficiently strong to support a clinical guideline, namely that well selected behavioral interventions and supports should be used with children and adults with behavior disorders after TBI in both acute and post-acute settings. Both traditional contingency management procedures and positive behavior intervention and support procedures (antecedent-focused procedures) were labeled evidence-based clinical options. **(See Tutorials on Positive Behavior Supports and Behavior Management: Prevention Strategies.)**

All 65 of the studies yielded positive results. However, only two of the studies were Class I randomized controlled clinical trials. Most were either Class III single-subject experiments or Class IV case studies. Therefore it is difficult to generalize the findings to all individuals with behavior disorders after TBI, or even large sub-groups within that population. Nevertheless the single-subject experiments do offer strong evidence for their conclusion – that the intervention improved functioning in the individual who received it – and can be used judiciously to support clinical decisions about individuals who substantially resemble the participant in the single-subject study.

Both of the randomized controlled trials in this review, one of which was a pediatric study, used positive behavior intervention and support procedures (i.e., antecedent-focused procedures versus near exclusive reliance on manipulation of consequences). Shari Wade and her colleagues (2006) implemented a family-centered proactive problem-solving intervention program to assist children with TBI to participate effectively and prevent problem behaviors. The procedures that families learned included many of the support

procedures listed in the **Tutorials on Behavior Management: Prevention Strategies and Positive Behavior Supports**. The families spoke highly of the intervention and the effects on the children were positive.

The traditional contingency management procedures discussed in the current tutorial has a long history of supportive research with many disability groups. Selected contingency management procedures have also been used effectively with some children with problematic behavior after TBI.. However the review by Ylvisaker and colleagues demonstrated a strong shift from primary use of contingency management strategies in the 1980s to primary use of proactive antecedent-focused strategies in recent years. A possible explanation for this shift is the mounting evidence that damage to the undersides of the frontal lobes (common in TBI) creates inefficiency in learning from the consequences of behavior (Damasio, 1994; Rolls, 1998; Schlund, 2002). Contingency management procedures assume reasonable efficiency in learning from consequences. Therefore antecedent-focused procedures may have a neurological rationale for many children with TBI.

Like TBI, ADHD designates a population of students with executive function/self-regulatory impairments associated with possible pathology in frontal lobe structures. The ADHD intervention research literature is much larger than the TBI literature and can, therefore, be used with discretion as a guide to successful interventions for students with TBI. Zentall (2005) summarized a large number of studies demonstrating the effectiveness of environmental support and task modification procedures to increase the likelihood of successful academic performance and behavioral self-regulation for students with ADHD. Many of these studies are individually summarized in her 2006 book. Although these procedures were not specifically discussed as “behavior management” procedures, any approach that increases the student’s successful engagement in activities can be considered behavior management, especially in the case of impulsive, oppositional, or otherwise poorly regulated students.

Russell Barkley has frequently reviewed the research on behavioral interventions for students with ADHD (e.g., Pfiffner, Barkley, & DuPaul, 2006). Most of the interventions that have been studied with that population have been delivered within the framework of traditional contingency management (e.g., point systems, response-cost procedures, and the like). Barkley typically concludes that these procedures can be used to control behavior, but the contingencies (i.e., rewards and punishments) need to be more salient (i.e., powerful), consistent, and immediate than one might otherwise expect for a student of that age. Furthermore, maintenance of the treatment effect over time or transfer to other contexts is unlikely. This is another reason to explore the usefulness of proactive, antecedent-focused procedures.

Regardless of the state of evidence in the research literature for specific behavioral procedures, the selection of such procedures in the case of a specific student should be made on the basis of a functional behavior analysis. Chandler and colleagues (1999) showed that teams of educators in a classroom context can successfully implement both functional behavior analyses and positive behavior supports.

Chandler, L.K., Dahlquist, C.M., Repp, A.C., & Feltz, C. (1999). The effects of team-based functional assessment on the behavior of students in classroom settings. *Exceptional Children*, 66(1), 101-122.
Damasio, A.R. (1994). *Descartes’ error: Emotion, reason, and the human brain*. New York: Avon Books.
Pfiffner, L.J., Barkley, R.A., & DuPaul, G.J. (2006). Treatment of ADHD in school settings. In R.A. Barkley (Ed.) *Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment* (3rd Edition)(pp. 547-589). New York: Guilford Press.
Rolls, E.T. (1998). The orbitofrontal cortex. In A.C. Roberts, T.W. Robbins, & L. Weiskrantz (Eds.), *The prefrontal cortex: Executive and cognitive functions* (pp. 67-86). Oxford: Oxford University Press.
Schlund, M.W. (2002). Effects of acquired brain injury on adaptive choice and the role of reduced sensitivity to contingencies. *Brain Injury*, 16, 527-535.
Wade, S.L., Michaud, L., & Maines-Brown, T. (2006). Putting the pieces together: Preliminary efficacy of a family problem-solving intervention for children with traumatic brain injury. *Journal of Head Trauma Rehabilitation*, 21(1), 57-67.
Wade, S.L., Wolfe, C.R., Brown, T.N., & Pestian, J.P. (2005). Can a web-based problem-solving intervention work for children with traumatic brain injury? *Rehabilitation Psychology*, 50, 337-345.

Wade, S.L., Wolfe, C.R., Brown, T.M. & Pestian, J.P. (2005). Putting the Pieces Together: Preliminary efficacy of a web-based family intervention for children with traumatic brain injury. *Journal of Pediatric Psychology*, 30, 437-442.

Ylvisaker, M., Turkstra, L., Coehlo, C., Yorkston, K., Kennedy, M., Sohlberg, M., & Avery, J. (2007). Behavioral interventions for individuals with behavior disorders after TBI: A systematic review of the evidence. *Brain Injury*, 21(8), 769-805.

Zentall, S.S. (2005). Theory- and evidence-based strategies for children with attentional problems. *Psychology in the Schools*, 42(8), 821-836.

Zentall, S.S. (2006). *ADHD and education: Foundations, characteristics, methods, and collaboration*. Upper Saddle River, NJ: Pearson, Merrill, Prentice Hall.

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