Strategy Brief, November, 2014.
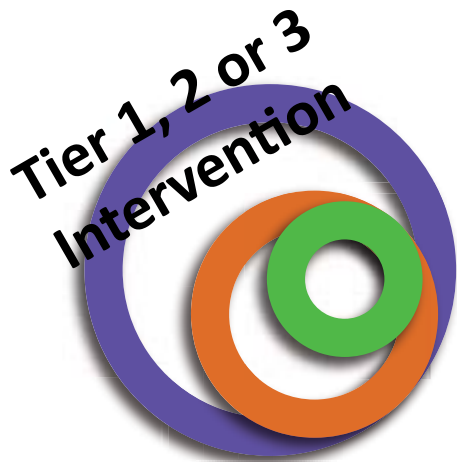
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Tier 1, 2 or 3 Intervention

Reinforcement should be one of the first strategies used to modify behavior. Reinforcement is an extremely powerful tool for schools; yet, it is often underutilized. The purpose of this strategy brief is to define and describe reinforcement in the context of schools, outline the research documenting its effects, and provide several examples of reinforcement strategies that have been used in schools.
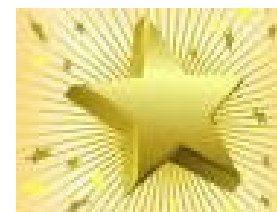
What is Reinforcement?

When a behavior is followed by a desirable consequence, that behavior is more likely to be performed in the future or performed more frequently in the future (Alberto & Troutman, 2006; Cooper, Heron, & Heward, 2007). The desirable consequence is called the reinforcer. Conversely, when a behavior is followed by an undesirable outcome, the behavior is less likely to be performed in the future. The undesirable outcome is called a punisher. These principles are at the core of operant conditioning, where a person's behavior is modified by its antecedents and consequences.

Distinguishing reinforcement from rewards. Reinforcement is sometimes confused with rewards. Rewards are something given in recognition of services, efforts or achievements. However, rewards do not necessarily result in a change in behavior (if that is a goal) even though adults may view the rewards as desirable forms of recognition. Some rewards or recognition simply may not be sufficiently important to some students to motivate change. Nevertheless, providing a variety of rewards and recognition for students' appropriate behavior or achievement is desirable, in most cases. However, if the goal is behavior change, reinforcers contingent upon the target behavior must be employed. That is, a reinforcer will only be given if the desired behavior is employed.

Many types of rewards are not reinforcers, because they do not result in changed behavior, although all reinforcers are rewards because of an effort to recognize an achievement. These two terms are sometimes confounded or used interchangeably, but both are usually desirable.

Reinforcement as part of ABC Analysis. Reinforcement comes from psychological research conducted by B.F. Skinner on the phenomenon known as operant conditioning. Essentially, "operant conditioning refers to the process determining and making use of the consequences of behavior to affect change

in behavior" (Cooper et al., 2007, p. 33). Therefore, reinforcement is aligned with the consequences portion in the three components of Antecedents, Behaviors, and Consequences (often abbreviated as "A-B-C analysis"; Cooper et al., 2007).

Positive and negative reinforcement. Reinforcement can involve adding something desirable contingent upon a desirable behavior (e.g., praise, free time, or a toy), or can involve taking away something that was undesirable (reduced homework, getting out of assignment, cancelling a quiz, etc.). Taking away something undesirable is called negative reinforcement (Alberto & Troutman, 2006). Negative reinforcement increases behavior by taking away something undesirable that would otherwise occur. Note that, in these definitions, positive and negative are not judgmental terms; instead, they refer to adding (positive) or taking away (negative).

Types of reinforcers. Positive reinforcers can be categorized as tangible, social, or activity reinforcers (Alberto & Troutman, 2006; Zirpoli, 2005). Tangible reinforcement includes something physical the child can have, like a sticker, toy, magazine, or a snack. Examples of social reinforcement are praise or compliments from a parent, teacher, or peer, a smile, special attention, or acknowledgment of desired behaviors. Activities can also be used as potential reinforcers; reading a story, being first in the lunch line, having free time to work on an activity the student chooses, such

as listening to music, or using the computer or iPad. By providing these reinforcers contingent upon appropriate student behavior, teachers may provide more potent and salient motivation for students to learn academic concepts or adhere to behavior expectations (Alberto & Troutman, 2006).

Tokens. Sometimes when it is not practical or feasible to deliver these reinforcers immediately after the desirable behavior, a "token"

is given to the student that can be used to "purchase" other reinforcers at a later time. Thus tokens "stand in" for other reinforcers to be delivered in the future. Token systems need to clearly specify the way that later reinforcers will be made available, and how many tokens are needed to earn specified reinforcers. These systems have been widely used both at the classroom and school-wide levels.

What Do We Know About Reinforcement?

A search of the academic literature for the term "reinforcement" returns over 40,000 articles from the past 60 years! Collectively, this research has established reinforcement as an extremely effective means of behavioral change (Martin & Pear, 1996). It is a fundamental part of psychology with profound support for its effectiveness as a

behavior change strategy – arguably equivalent to the support for the theory of gravity (Maag, 2001). Similarly, reinforcement is likely the most critical principle of behavior and is an important component in most behavior change programs (Cooper et al., 2007). In many cases, the connections between behavior and reinforcement are not always obvious or apparent to the student whose behavior is being reinforced (Cooper et al., 2007).

Staff behavior. Adult behavior can also be explained through the principles of reinforcement. Teachers and staff go to work each day because it is reinforcing – they receive financial rewards, social rewards, and personal rewards for doing so. Reinforcement should be considered a natural and powerful influence on all human behavior; as such, it is a valuable tool for student behavior change in schools.

Effectiveness in classrooms. A seminal study in the first issue of the Journal of Applied Behavior Analysis, a peer-reviewed journal that publishes articles related to the experimental analysis of behavior, reported that reinforcement delivered through teacher attention increased study behaviors for six students (Hall, Lund, & Jackson, 1968). Specifically, teachers provided attention immediately following desirable study behaviors (e.g., sitting in one's desk, eyes on paper, writing down assignments) and ignored undesirable behaviors (e.g., disruptions, dawdling). Study behaviors increased for the students, decreased when the positive attention was removed, and were reinstated once attention was delivered again. Thus, simple reinforcement strategies that can be delivered in the classroom have been effectively documented for decades. This finding has been documented and expanded in a wide array of studies throughout the intervening years.

School wide reinforcement. Reinforcement has also served as the foundation for the most successful school-wide behavior programs. These programs, such as Positive Behavior Interventions and Supports (PBIS; see the PBIS Strategy Brief), seek to improve all students' behavior by establishing rules and reinforcing


instances of positive behaviors reflecting adherence to school values or rules. These programs have been very successful at the individual, classroom, school, and even state level (Bradshaw, Mitchell, & Leaf, 2010).

Summary of research. It is beyond the scope of this brief to attempt to summarize the vast extent of research on the use of reinforcement, much of which has been conducted in schools and educational environments and virtually, all of which supports the effectiveness of reinforcement in changing student behavior and improving school climates. That research has been conducted with individual students and groups of students. It has addressed students with differing levels of academic and behavioral needs, specifically including a variety of students with disabilities. It has also been conducted across student ages, student grade levels, and types of school environments. These studies have included a wide variety of types of reinforcement, as well as types of research design. The overwhelming conclusion is that reinforcement is effective if delivered in accord with well-known principles of Applied Behavior Analysis. If more information is sought, the school psychologist or PBIS coach may be a good place to start.

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Maximizing the Effectiveness of Reinforcement

A variety of factors affect the successful outcomes associated with the use of positive reinforcement in schools.
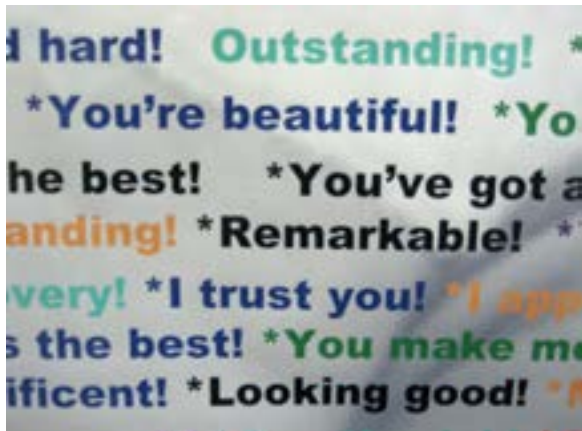
Clearly identifying the target behavior. If a target behavior is to be reinforced, it should be clearly defined, taught, and demonstrated. Without this important step, it is extremely difficult for students to correctly perform the desired behavior. It is not effective to provide reinforcement for undefined behaviors like "being good." Instead, teachers and staff should identify for students the specific behavior they wish to increase or improve upon. Alberto & Troutman (2006) suggest using "if… then…" statements so that a clear and explicit association is established between the behavior and receiving the reinforcer

Identifying reinforcers for specific students. Although potentially challenging, identifying effective reinforcers is critical for students, particularly those with emotional and behavioral disorders (Paramore & Higbee, 2005). Something that is reinforcing for one individual is not necessarily reinforcing for another. For example, many students are motivated by public praise, but some students may find that sort of public attention undesirable. Publicly praising such a student would actually be a negative consequence, resulting in the behavior being less likely to be per-

formed in the future. This is called punishment, and more detail can be found in the Strategy Brief on this topic. While a reinforcer may be effective for a student initially, it may not be effective over time. Reinforcing value depends on the student's reinforcement history (how often the student receives reinforcement), deprivation state (what the student wants but does not receive easily or frequently), consistency (whether reinforcers have been delivered consistently in the past), and age appropriateness (Alberto & Troutman, 2006).

Effective reinforcers are often best identified on an individual basis (Pence, St. Peter, & Tetreault, 2012). Behavior will not change if the reward chosen is not reinforcing for the individual student (Alberto & Troutman, 2006). Giving students a choice between several rewards increases the likelihood that an effective reinforcer will be used, and thus leads to greater behavior change (Kern et al., 1998). This can be done by performing a reinforcement inventory, where the student is presented with several reinforcement alternatives and is asked to rank by preference his or her choices (e.g., a stimulus preference assessment, reinforcement inventories, reinforcement menus). Using direct preference assessments with students have been found to accurately predict reinforcer effectiveness across studies (Paramore & Higbee, 2005). However, sometimes they are determined based on educated guesses based on age, knowledge of the student and preferences of similar students, and then tested for their effectiveness (Pence et al., 2012).

Timing of reinforcement. Reinforcement is most effective when it is delivered immediately following the performance of the desired behavior (Cooper et al., 2007). Reinforcement can still work if it is delayed, but its power will be diminished unless it is a particularly large reward (that is, small reinforcement should be delivered immediately, while larger reinforcement can be slightly delayed). Current researchers recommend providing reinforcement within 60 seconds of the desirable behavior (Cooper et al., 2007). As mentioned earlier, tokens can be used when immediate reinforcement is not practicable.

Building the transition to social reinforcement. Tangible reinforcers, activity reinforcers, or tokens should be paired with the delivery of social reinforcers in order for students to associate their appropriate behavior with positive social consequences.

Consistency. Behavior will change more quickly if it is reinforced after each occurrence. Behavior change will have more longevity if it is reinforced after each occurrence initially, but then only reinforced a percentage of the time after the skill has been mastered (i.e., intermittent reinforcement; Cooper et al., 2007). Behavior change will be most effective if the behavior is reinforced across settings; such as the classroom, home, or lunchroom. In all of these situations, delivering the reinforcement at the appropriate level of consistency is important.

Ratio of reinforcement to correction. Although the focus of this brief is related to reinforcement in schools, Dr. John Gottman has been using reinforcement principles to predict discord and divorce in couples for the last three decades. Dr. Gottman's work with couples, as well as domestic violence, has led to the dissemination of the 5:1 "magic ratio" of positive to negative comments (Gottman, 1993). In other words, Gottman and his research team advocate that couples that provide one another with five positive comments to every one negative comment will last longer and experience more positive outcomes. Gottman's research has shown that he was able to predict divorce in 700 newlywed couples by observing their positive to negative interaction ratios for only 15 minutes. Ten years following the initial observations, the investigators predicted divorce rates with 94 percent accuracy (Gottman, Coan, Carrere, & Swanson, 1998). Further, "the magic ratio" has been generalized to many settings beyond couples' therapy, including business management and schools. Although Gottman's research does not specifically investigate teacher-student or student-student interactions, these findings have been incorporated through the PBIS framework and teachers are encouraged to offer more praise-related statements than corrective statements to students often using this 5 to 1 ratio (Rodriguez & Sprick, n.d.).

Generalization. It is unrealistic to assume that an outside reinforcer will be delivered consistently to maintain a particular behavior throughout a student's life. It is therefore important in many cases to gradually reduce the amount of reinforcement given and/or to use reinforcers that will be naturally provided by the student's environment. Similarly, if possible, it is often a goal to transition from tangible reinforcers to social reinforcers. For example, it is appropriate to initially provide a prize for

performing a behavior, but over time the prize should gradually be replaced with a more natural reinforcement such as praise.

School-Wide Reinforcement Systems

School-wide systems may include tokens, bucks, tickets, certificates, or other reinforcers that students are given when they display positive behaviors consistent with school rules or values. These are intended to improve behavior of all students. Many schools choose tokens that coincide with their school mascot or motto. At a designated time, these tokens can be cashed in any of a variety of pre-designated reinforcers, such wearing a hat to school, a preferred field trip, extra recess time, ice cream parties with friends, or being the principal for a day (Bohanon-Edmundson, Flannery, Eber, & Sugai, 2004; University of Southern Mississippi, n.d.). Students can also be given the opportunity to enter their tokens or tickets into a school-wide raffle for larger rewards, or participate in
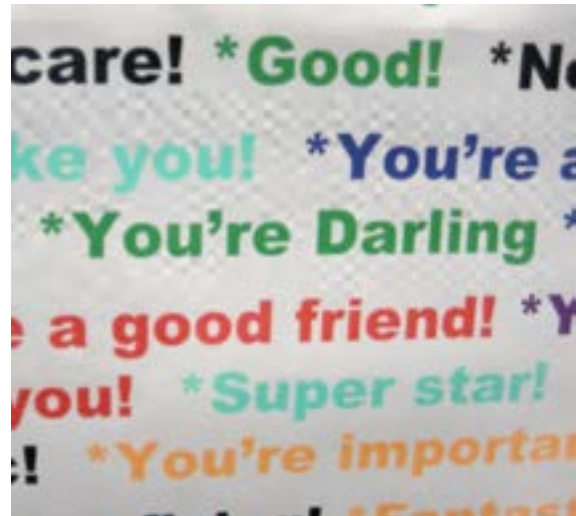
appropriate competitions between classrooms with special reinforcers provided for the winning class (Bohanon-Edmundson et al., 2004). Additionally, many students who are "caught" following the rules or demonstrating positive behaviors at the school-level may, in addition to the designated reinforcer, choose to have the teacher write a positive note to take home or call their parent and detail the positive behavior- thus adding positive parent feedback to the other reinforcement.

Positive office referrals. One approach to employing school-wide reinforcement is to provide teachers with "positive" office referral forms. Students who are "caught" performing the desired behavior are referred to the office. When called in, the student is given strong social recognition from the administrator, as well as some other reinforcer, such as a free food coupon at a local restaurant donated by community merchants or a special privilege.

Benefits of school-wide reinforcement. School-wide reinforcement programs can increase the frequency of desirable behaviors, focus student and staff attention on positive behaviors, and create a positive school climate. They can also increase instructional time since students are not removed from class as in traditional exclusionary discipline (University of Southern Mississippi, n.d.). Some guidelines for developing school-wide reinforcement include ensuring that everyone has access to reinforce-

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Ways to Say Good Job!

Wow!
You're fantastic!
You figured it out!
How smart!
Way to go!
Nice work!
Beautiful work!
You made my day!
A+ Job!
You're incredible!
I knew you could do it!
I'm proud of you!
Dynamite!
You're on your way!
Remarkable job!
I appreciate you!
You're unique!
Nothing can stop you now!
Phenomenal!

Adapted from material developed by the
National Association of School Psychologists

ment, choosing reinforcers which appeal to 85-95% of students, and reminding students daily of the system and its components on morning or afternoon announcements (University of Southern Mississippi, n.d.).

Challenges of school-wide reinforcement. Particular challenges for school-wide reinforcement relate to the consistency of reinforcement delivery implementation across staff. However, this challenge can be alleviated by providing frequent trainings to staff, keeping the reinforcement system simple, and monitoring that all teachers are delivering reinforcers appropriately. Measures must also be taken to make sure that tokens cannot be gained inappropriately by students. Accurate record keeping is essential.
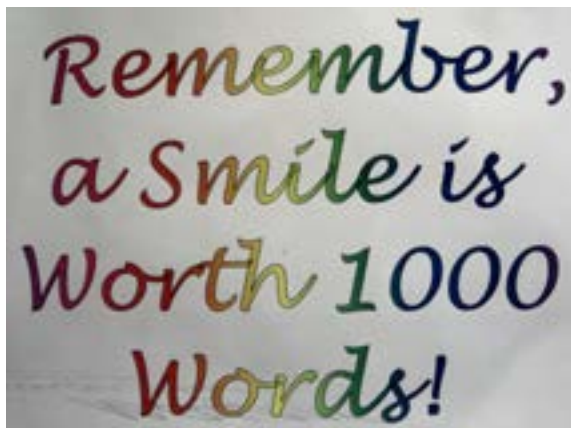
Obtaining or Developing Reinforcers

Tangible reinforcers such as food, tokens, toys, etc. may require purchase costs. Funds for reinforcers may be difficult to attain. Many teachers purchase items for student reinforcers with their own personal funds, although it is appropriate to use school funds for this when available. Outside funding through grants or donations is helpful. Many community businesses and organizations may donate items for this purpose such as free meals or food items, hats, t-shirts, balls, pencils, and stickers (Bohanon-Edmundson et al., 2004). Forming partnerships with local businesses and organizations may also lead to the acquisition of diverse rewards for students (e.g., football tickets, gift cards to

the mall or a restaurant). However, often powerful reinforcers in school settings have little or no costs. For example, being the first in a lunch line, sitting with a friend, or extra time at recess have no direct cost, but may be highly valued by students. School staff can be creative and seek student input to identify these types of reinforcers.

Identifying staff reinforcers. The University of Southern Mississippi (n.d.) also suggests offering reinforcers to staff for meeting goals, such as casual Friday, off-campus lunch, special parking spots, Teacher Appreciation Days, and vacation days. Reinforcement for staff must be highly regulated and requires extensive planning if implemented. These principles work to improve and maintain appropriate adult behavior, just as they do for students.

The effect of a reinforcement rich environment is that both students and adults focus on positive behaviors, and may internalize the desired positive behaviors. Also, the availability of reinforcers for both students and adults can make the learning environment a positive, welcoming school climate.

Conclusion

There is overwhelming evidence that the use of reinforcement can change behavior. Reinforcement is a beneficial tool for teachers and administrators and can be used to improve both academic and behavioral performance of students. It can be readily adapted to fit individual, classroom, and school-wide behavioral goals. Key implementation considerations can maximize the effectiveness of reinforcement. Reinforcement allows schools to equip students with the knowledge and skills they need to be functional members of society, and can maintain a positive school climate. It is one of the most powerful tools available, and should be one of the first strategies employed both to prevent inappropriate behavior, and to address specific behavior problems.

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References on Reinforcement

Alberto, P. A., & Troutman, A. C. (2006). *Applied behavior analysis for teachers (7th ed.)*. Upper Saddle River, NJ: Pearson.

Bohanon-Edmundson, H., Flannery, K., Eber, L., & Sugai, G. (2004). *Positive Behavior Support in high schools: Monograph from the 2004 Illinois High School Forum of Positive Behavioral Interventions and Supports.* Unpublished manuscript, University of Oregon, Eugene, OR.

Bradshaw, C. P., Mitchell, M. M., & Leaf, P. J. (2010). Examining the effects of schoolwide positive behavioral interventions and supports on student outcomes: Results from a randomized controlled effectiveness trail in elementary schools. Journal of *Positive Behavior Interventions, 12,* 133-148. doi: 10.1177/1098300709334798

Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behavior analysis (2nd ed.).* Upper Saddle River, NJ: Pearson.

Gottman, J. M. (1993). The roles of conflict engagement, escalation, and avoidance in marital interaction: A longitudinal view of five types of couples. *Journal of Consulting and Clinical Psychology, 61*, 6-15.

Gottman, J. M., Coan, J., Carrere, S., & Swanson, C. (1998). Predicting marital happiness and stability from newlywed interactions. *Journal of Marriage and the Family, 60,* 5-22.

Hall, R. V., Lund, D., & Jackson, D. (1968, Spring). Effects of teacher attention on study behavior. *Journal of Applied Behavior Analysis, 1,* 1-12.

Kern, L., Vonda, C. M., Hilt, A., Ring Dahl, J. E., Edelman, B. E., & Dunlap, G. (1998). Choice as an intervention to improve behavior: A review of the literature. *Journal of Behavioral Education, 8*, 151-169.

Maag, J. W. (2001). *Rewarded by punishment: Reflections on the disuse of positive reinforcement in schools. Exceptional Children, 67*, 173-186.

Martin, G., & Pear, J. (1996). *Behavior modification: What it is and how to do it (5th ed.).* Upper Saddle River, NJ: Prentice Hall.

Paramore, N. W., & Higbee, T. S. (2005). An evaluation of a brief multiple-stimulus preference assessment with adolescents with emotional-behavior disorders in an educational setting. *Journal of Applied Behavior Analysis, 38*, 399-403. doi: 10.1901/jaba.2005.76-04

Pence, S. T., St. Peter, C. C., & Tetreault, A. S. (2012). Increasing accurate preference assessment implementation through pyramidal training. *Journal of Applied Behavior Analysis, 45,* 345-359. doi: 10.1901/jaba.2012.45-345

Rodriguez, B. J. & Sprick, R. (n.d.). *Why a positive approach to behavior: A research summary.* Eugene, OR: Safe and Civil Schools.

University of Southern Mississippi. (n.d.). *Critical element: Developing a school-wide reinforcement System.* Retrieved from http://www.reachms.org/docs/swpbis/DevelopingSchool-WideReinforcementSystem.pdf

Zirpoli, T. J. (2005). Behavior management: Applications for teachers (4th ed.). In A. P. Sharp & K. S. Burk (Eds.), *Establishing a reinforcement program* (pp.189-224). Upper Saddle River, NJ: Prentice Hall

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