

Applied Behavior Analysis: Current Myths in Public Education

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Abstract

The effective use of behavior management strategies and related policies continues to be a debated issue in public education. Despite overwhelming evidence espousing the benefits of the implementation of procedures derived from principles based on the science of applied behavior analysis (ABA), educators often indicate many common misconceptions in this area. These misconceptions contribute to a reluctance on the part of educators to implement strategies utilizing what we know to be true about the operation of behavioral law. Further, these misconceptions often impede educator effectiveness and student progress. This paper reviews 3 common misperceptions: 1) ABA is used exclusively for children who have autism; 2) ABA may only be implemented using a teacher/student ratio of 1:1, and; 3) negative connotations of terminology associated with ABA. Important legal issues, procedures, research, and philosophical issues related to the implementation of ABA is explored along with concluding recommendations for public school educators.

Applied Behavior Analysis: Current Myths in Public Education

Public education is, historically, a punitive institution. From suspensions and expulsions to verbal reprimands, the majority of consequences imposed by teachers and administrators are done with the idea that such consequences will decrease the rate of future behavior; thereby “sending a message that certain behaviors will not be tolerated” (Skiba, 1999, p. 2). Zero tolerance policies that involve removing a student from the classroom or campus for up to a year for certain offenses have been included in state and federal regulations (Skiba, 1999). Why are school policy-makers relying on zero tolerance policies over planning, prevention, and positive behavior supports? Axelrod, Moyer, & Berry (1990) write, “one source of difficulty is the process by which the most commonly used behavioral principle - positive reinforcement - operates” (p. 314).

Reinforcement is defined as an environmental change contingent on a behavior that increases the future frequency of that behavior (Cooper, Heron, & Heward, 2007). An environmental change could mean the addition of some stimulus (positive reinforcement) or the removal of some stimulus (negative reinforcement). Many teachers have commented that they would like more training in behavior management strategies, and then in the same conversation have said that they do not believe in using reinforcement. As Maag (2001) writes, “just because someone may not like something, does not consequently abolish its existence” (p. 180). Reinforcement is a law of nature. If a behavior increases, then it is being reinforced. This still seems to be a difficult concept for many in public education to grasp, whereas the practices of punishment are readily accepted. Why do teachers have an aversive reaction to reinforcement? The difficulty may stem from the idea that, to many, positive reinforcement means giving students candy and stickers when they are good. They may try giving candy and stickers, find the procedure ineffective, and then claim that positive reinforcement does not work. This is a pervasive and incorrect belief among those unfamiliar with the principle of reinforcement; if it looks like a reinforcer, and sounds like one, then it must be one. Ward (1995) writes, “It may look and sound like a reinforcer, but unless it increases the frequency of the behavior it follows, it’s not a reinforcer” (p. 490).

Still others in public education have the expectation that students should behave well in school. This irrational belief is referred to as demandingness: “a magical and ineffective attempt to change events to a more desirable outcome without engaging in any behavior other than saying either the word “expect” or “should” ” (Maag, 2001, p. 183). Asking teachers to use a strategy that promotes pro-social behavior by offering students reinforcing items or activities requires these educators to change their own behavior and challenges their previously held beliefs. Reinforcement procedures are not easily implemented; they are time and labor intensive, require consistent analysis of data, and expect educators to accurately identify the reinforcing functions of problem behavior. When these procedures are implemented appropriately and effectively, they will work.

Despite all the research that has been conducted on the benefits of positive reinforcement approaches, there is a debate over whether it should be used in public education. Hundreds of experimental studies have demonstrated that reinforcement can improve conduct and learning in public education (Chance, 1992). Reinforcers do not have to be candy, stickers, or trips to Disney World. Praise too can have a positive effect on students’ learning and conduct, and it is free for all teachers to give. Yet, these extrinsic motivators have been subject to intense criticism. Kohn (1993) makes a claim that “the evidence overwhelmingly demonstrates that extrinsic rewards are ineffective at producing lasting change in attitudes or even behaviors” (p. 783). His research has found that rewards are inherently controlling, ineffective, make learning less appealing, and ignore curricular questions (Kohn, 1993). Kohn further extols the exciting new trend in public education wherein lessons are designed and directed at how the student constructs his or her own ideas of the world.

This student-centered learning appeals to many parents, educators, and administrators; however, Erickson (2001) rejects the constructivist view of education writing that constructivism as a meaningful concept has lost its power. He wants teachers to be actively engaged, providing

students with opportunities and consequences whether they are naturally occurring or contrived. In a constructivist view, if a student does not learn the way we teach, then the blame falls on the student. In a behaviorist view, if a student does not learn the way we teach, then we need to change the way we teach. The behaviorist view of education places the responsibility for student learning on the teacher. Perhaps this is why so many in public education settings ignore or reject behavior analysis. Reitman (1998) acknowledges that “behavior analysis, and interventions derived from this perspective, remain vulnerable to misrepresentation by those who find its precepts unpalatable or objectionable.” Without instruction on efficient and effective reinforcement strategies, educators will continue to behave as they have in the past: adopting the easier (and more reinforcing for the teacher) punishment strategies for all learning and behavior problems.

Reinforcement and punishment are technologies derived from the principles of behavior analysis. Regardless of where your personal beliefs fall on the issue of implementation of these technologies, the main goal of behavior analysis is to improve the society in which we live. So which technology should be used? Van Houten et al. (1988) made a few suggestions: individuals have the right to (a) a therapeutic environment; (b) services whose overriding goal is personal welfare; (c) treatment by a competent behavior analyst; (d) programs that teach functional skills; (e) behavioral assessment and ongoing evaluation; (f) the most effective treatment procedures available. Reinforcement and punishment are foundational concepts in the science of behavior. With the controversy surrounding these cornerstone technologies, it is no wonder that behavior analysis has had such a difficult time garnering widespread acceptance. In the following pages we will exam some myths about ABA and provide a foundation for implementing ABA in public schools.

ABA Myths

Myth 1: ABA is Exclusively for Autism

“The conventional wisdom within the field of ABA is that one of the most significant – if not the single most significant – empirically supported success story is ABA-based early intervention for developmental disabilities and childhood autism in particular” (Herbert & Brandsma, 2002, p. 45). In 1987, Lovaas’ study brought an immeasurable amount of public attention to the science of applied behavior analysis. Since this study, numerous additional studies have shown that complex behaviors can be built through behavioral treatment helping to suppress aggression, self-stimulatory behavior, and other pathological behaviors often seen in individuals with autism spectrum disorders (ASD) (Lovaas, 1987). The data show more people being diagnosed with ASD than ever before. It is unclear to which degree this increase can be attributed to improved efforts to diagnose and a broader definition of the disorder (Center for Disease Control and Prevention [CDC], 2011). According to Lovaas (1987), the etiology of the disorder is still unknown and the outcome may be poor. However, the CDC lists ABA as an important approach in the treatment of people diagnosed with ASD. ABA improves a variety of skills and encourages positive behaviors (CDC, 2011). Dr. David Satcher, United States Surgeon General from 1998 to 2002, wrote that ABA is the treatment of choice for individuals with ASDs (CDC, 2011).

Applied behavior analysis is the best empirically evaluated treatment among those available for helping to educate people with autism (Rosenwasser & Axlerod, 2001). ABA has recently emerged with widespread recognition beyond academic & behavior psychologists and special educators (Rosenwasser & Axlerod, 2001). It would be remiss, however, to assume that the public attention gained from its success in the ASD community has only served the science well. ABA has been marketed in the media by numerous magazines, newspapers, and television broadcasts as the best available treatment for children with autism. Herbert & Brandsma (2002) wrote that these publications frequently announce that ABA programs have the ability to result in dramatic developmental gains for many individuals with autism. It is even “claimed that many of these children can eventually function in normal education settings, and are indistinguishable from their peers,” (Herbert & Brandsma, 2002, p. 46). Such rash claims presented in the media can easily give the hopeful parent the idea that ABA can “cure” their child. The sensationalistic spin applied by the media and even some behavioral professionals about the results of ABA therapy; have the potential to cause lasting and even permanent damage to the reputation of the science. Although, few would argue that ABA is reputable method for instructing children with autism, to claim ABA as a “cure” can be misleading.

The science of applied behavior analysis is gradually becoming a subfield of developmental disabilities (Hayes, 2001). A growing number of professionals in the behavior analytic community are expressing concern that the practice of applied behavior analysis and behavior analysis as a whole is losing its identity due to a majority of research being conducted in autism spectrum disorders. According to a survey of publication trends in JABA, the trend found “most notable is the relative increase in the percentage of articles in developmental disabilities” (Northup, Vollmer, & Serrett, 1993, p. 535).

Along with concern regarding publication trends, the practice of ABA is becoming increasingly more autism specific in public knowledge, as well. While research in autism is most certainly needed and warranted in the behavior analytic community, expanding research in other important areas and not getting lost among interventions specific to ASD is vital to the future success of the science. We must not mistake ABA as a therapy for autism rather it is a science. According to Dillenburger & Keenan (2009), the knowledge base gathered from the science of ABA as a whole underpins all of these techniques and, therefore, learning a specific technique is not learning the complete science. Additionally, specific applications or programs, such as discrete trail training, should not be equated with ABA (Dillenburger & Keenan, 2009).

While public awareness and acceptance may be the cornerstone to the success of the science, it must not be ignored that ABA is, in effect, pigeonholing itself into one specific area. Cooper, Heron, & Heward (2007) define ABA as, “the science in which tactics derived from the principles of behavior are applied systematically to improve socially significant behavior and experimentation is used to identify the variables responsible for behavior change” (p. 20). This definition certainly indicates the reasons for which ABA has been successful in the treatment of ASDs, however it is the science of behavior change across all organisms that exhibit behavior. As Dillenburger & Keenan (2009) wrote, a wide range of techniques has been based on applied behavior analysis that has been used to help people with many behaviors and diagnoses. ABA has been used in clinical settings, geriatric nursing centers, prisons, and in numerous other

settings that have no relation to autism spectrum disorders. Furthermore, most therapies and autism specific interventions are to be implemented in a one-on-one, practitioner to participant environment. However, applied behavior analysis interventions can be conducted in any environment, across practitioners and participants. It has been shown that the most effective environment for conducting behavioral research is the natural environment (e.g., the classroom).

Myth 2: ABA is Exclusively for 1:1 Instruction

Despite the identified effectiveness of principles and procedures derived from ABA, educators seldom use these techniques in their classrooms (Axelrod, Moyer, & Berry, 1990; Pumroy, 1984; Rosenfield, 1985). Teachers are faced with the challenging task of providing instruction that will give students the ability to meet these increasing demands (Axelrod et al., 1990). Often during instructional time, general education teachers use “on-the-spot” management to address academic and behavioral concerns of their students (Skinner & Hales, 1992). ABA is often viewed as a procedure appropriate only for animals and institutionalized persons. According to Skinner & Hales (1992), the most common reason cited for classroom teachers’ resistance to ABA interventions is the explanation of why people behave the way they do. Classroom teachers tend to explain student behavior in the classroom as coming from factors within the individual, which is contradicted by ABA approaches that focus on observable behavior (Medway, 1979).

Project Follow Through, the largest and most expensive federally funded experiment ever, was conducted from 1968-1977 (Heward, 2000). This program examined nine approaches to teaching academic skills and involved more than 8,000 children in 20 communities. These children were divided into groups and taught using one of the nine different models. The only two models to show encouraging results were the behaviorally based ones: Direct Instruction and behavior analysis (Gersten, Carnine, & White, 1984). Despite these impressive findings, behavioral approaches do not appear to be used in classrooms for children who are nondisabled (Sulzer-Azaroff, 1986).

In order to gain greater access into the classrooms, ABA should add behavioral structure to existing programs (Enright & Axelrod, 1995). Peer tutoring is an accepted practice by many schools; therefore, a study was conducted to see whether peer tutoring could show increases in student sight-word vocabulary over traditional reading groups (Heron, Heward & Cooke, 1983). Specific tutoring procedures that included prompting, praising, plotting, and testing basic sight-words were taught using modeling and feedback procedures to first graders. Results showed an increase in student sight-word vocabulary words based on the behavioral structure implemented.

Maheady, Sacca, & Harper, (1988) conducted a study to teach tutoring behavior such as presentation of material, prompting, then praising using modeling, practice, and corrective feedback. In the same study, the researchers taught the participants behavior such as attending, responding in a timely manner, and accepting correction to high school students with and without disabilities in a general education social studies class (Maheady et al., 1988). Alners & Greer (1991) studied the effects of the three-term contingency used in the classroom and found immense improvement in learning when the teacher gave immediate feedback on the student’s responses.

Another easily implemented behavioral approach is the use of response cards during group discussions. When comparing response cards to hand raising, results indicate an increase in student-initiated opportunities to respond, and overall, student responses were higher (Christle & Schuster, 2003). Sutherland, Alder & Gunter (2003) compared the effect of varying rates of opportunities to respond to academic requests and results suggest that increases in opportunities to respond were associated with increased correct responses and task engagement, and decreased disruptive behavior.

Applied behavior analysts have identified specific student and teacher behavior and curricular material features that increase the likelihood of positive academic results (Stanley & Greenwood, 1983). Token economies are another example of an accepted practice used today in general education classrooms. Research shows with behavioral structure, a token economy can help overcome some of the challenges affiliated with assessing classroom participation (Junn, 1994).

Boniecki & Moore (2003) wrote that the use of a token economy with rewards for correctly answering questions had many benefits such as an increase in class discussion and an increase in the number of students who made attempts to answer questions correctly. Nelson (2010) conducted a study using classrooms that currently used token economies. Nelson studied whether the effects of students earning bonus points (BPs) token slips for asking good questions during specific classes would increase participation leading to improved student performance. The results suggested using token economies are effective for encouraging classroom participation and using BPs may have encouraged students to generalize the behavior of participation from one setting to another. The ease of implementing a token economy, in addition to the small amount of preparation time, should support its widespread use in classroom settings (Nelson, 2010). Fantuzzo & Atkins (1992) explain how we must develop school-based strategies that are both sensitive to the needs of our diverse student population and suitable for use in schools.

Behavior analysts should consider the efficacy of the intervention. The question, “*Can and will* teachers and school personnel actually use the intervention?” should always be considered when suggesting behavioral approaches to classroom settings (Fantuzzo & Atkins, 1992, p. 37). In order to promote the use of a behavioral approach, the behavior analysts should consider practices that enable and empower teachers to effect relevant behavior change (Fantuzzo & Atkins, 1992).

Myth 3: Public Misconception of ABA Terminology

Yes, ABA uses punishment. That is not a myth. In the past, behavior analysis and behavior modification procedures were given a negative connotation in the public media partially due to the punishing aspect. In 1978, Turkat & Feuerstein conducted a review of public literature because of a growing concern about the negative media coverage that behavior modification seemed to be amassing. They examined articles in the *New York Times* and found that, “time and again, behavior modification was equated incorrectly with such procedures as psychosurgery, brainwashing, drugs, sensory deprivation, and even torture” (p. 194). Could these gross misrepresentations by a respected newspaper have an effect on society at large?

Woolfolk, Woolfolk, & Wilson (1977) looked at labeling bias in a series of two simple experiments, where they compared the names “behavior modification” and “humanistic education.” A video was shown to two groups of college students (experiment 1 used undergraduates and experiment 2 used graduate students) that displayed a teacher in an elementary special education class using positive reinforcement techniques. In both experiments, one group was shown the video and told that they were watching “behavior modification” while the other group was told they were watching “humanistic education.” Members of both groups were then given a questionnaire about the video and its practices. Overall, the video labeled “behavior modification” was rated less favorably than the same video labeled “humanistic education.” The punitive nature of behavior modification presented by the media in the past has led many people to oppose its practices without fully understanding its processes. With the growing success of behavior analytic procedures in areas like autism and developmental disabilities, people are now seeing the truth of behavior analysis and its benefits for society as a whole.

There are still many who oppose behavior analysis because of its use of punishment. As a concept, punishment is defined as an environmental change contingent on a behavior that decreases the future frequency of that behavior (Cooper, Heron, & Heward, 2007). An environmental change could mean the addition of some stimulus (positive punishment) or the removal of some stimulus (negative punishment). While that definition seems fairly straightforward, applied researchers are apprehensive about exploring its usefulness as an intervention due to societal constraints. Lerman & Vorndran (2002), in an effort to help further the field of behavior analysis, suggested that a better understanding of the punishment processes must be obtained if these processes are to be used effectively. As Horner (2002) acknowledges, “punishment is a natural and ongoing part of life” (p. 465). Teachers, parents, friends, and society in general employ punishing strategies in the form of reprimands, red marks on papers, parking tickets, spankings, and social jibes (Horner, 2002). Without a better understanding of punishment, it can easily be abused. “To ignore punishment as an application is akin to ignoring the benefits and limitations of seemingly, overly invasive medical procedures. Of course, such research needs to be conducted in an ethical and humane manner,” (Vollmer, 2002, p. 469). Punishment is an effective behavior change strategy that, when used appropriately, has been shown to benefit individuals when other techniques did not.

Two camps have formed on either side of this punishment debate. Between these two camps, there are those who see the benefit of punishment in certain situations, but they assert that punishment has been misused and abused by people implementing behavior change strategies. Horner & colleagues (1990) called for the development of a “non-aversive” behavioral intervention that emphasizes lifestyle changes, functional analyses, multi-component interventions, setting event and antecedent interventions, teaching of adaptive behaviors, building environmental arrangements, minimizing punishment, distinguishing between emergency and proactive programming, social validation, and dignity. This has come to be known as Positive Behavior Supports (PBS), and it has put a spotlight on previously unregulated technologies in behavior analysis and given strength to the non-aversive movement.

One extreme strategy that emerged from the non-aversive movement is Gentle Teaching. While Gentle Teaching (GT) does recognize and support the use of behavioral techniques such as

errorless teaching, task analysis, and choice making, what makes it distinct from ABA, according to McGee & Menolascino (1991), is its main assumption of “unconditional valuing.” The effects of this unconditional valuing, observed as a feeling of companionship (e.g., warm gazes, hug, smiles,), is proposed as a solution to the problem encountered when positive reinforcement techniques have not had the desired effects (McGee, 1992). Bailey (1992) counters this argument by writing; “behavior analysts do not disagree with the philosophy of GT toward clients (because it is congruent with our own) but abhor GT’s total disregard for science and the scientific method” (p. 882). Jones (1994) furthers this argument with the idea that even “unconditional valuing” can be perceived as aversive. While Gentle Teaching was developed with good intentions, its lack of science and data based decision-making, as a foundation, should caution users from adopting it or other similar approaches. Gentle Teaching has faded from mainstream behavior analysis, but not the non-aversive movement.

Positive behavior support is “an applied science that uses educational and systems change methods (i.e., environmental redesign) to enhance quality of life and minimize problem behavior” (Carr et al., 2002, p. 4). Fifteen years after the Horner et al. (1990) article, it is evident that many PBS components introduced into behavioral science have taken root. Techniques such as functional behavioral assessment (FBA), multi-component interventions, antecedent manipulations, teaching adaptive behavior, minimizing punishers, and building environments with effective consequences have all demonstrated significant positive change both in the literature and in practice (Snell, 2005). This growth of values and technologies is not without its limitations. As Snell (2005) writes, there is the “inevitable gap between what we know about addressing problem behavior and what we typically do in school, home, and community settings” (p. 13).

Implementing ABA in Public Education

Despite the challenges that applied behavior analysis faces in disseminating its ideas and practices into the mainstream, there is cause for hope. In 2004, the Individuals with Disabilities Education Improvement Act (IDEA, 2004) was passed that mandates that public education use behavioral methods to handle classroom behaviors (P.L. 108-446). These methods include functional behavior assessments, positive behavioral supports, classroom and student management, behavioral interventions, and prevention of behavioral problems (Bloch & Axelrod, 2008). While it does not specifically define the strategies to implement these methods, the recognition of behavior analysis as a legitimate tool for the improvement of our classrooms is a step in the right direction.

The specific strategies we should use are still a matter of debate. While functional behavior assessment methods are very clearly outlined, “positive behavioral supports” remains open to interpretation. This interpretation has led to many school districts adopting practices that have no evidence base. How do we, as behavioral educators, convince administrators and school board members to insist on implementing evidence-based practice? Axelrod (1993) outlined seven possible steps toward achieving that goal. The first is to make our main priority the dissemination of effective technology. We have the research demonstrating our effectiveness; we have mentioned just a few examples in the previous sections. Now we need to put this information into the hands of the policy makers in language that they can understand. His

second suggestion is to develop comprehensive educational systems. Axelrod claims that a major disconnect between public education and behavior analysis is the fact that teachers need a plan for an entire year, “not a piecemeal collection of procedures” (1993, p. 2). Shaping and fading are effective strategies, but they do not explain how to design a math or reading curriculum.

The third suggestion is to simplify and beautify existing effective practices. Direct Instruction (DI), while not very pretty to many educators, is an efficient system that is based on research. It would be a daunting, but worthwhile, task to make DI more *aesthetically pleasing*. The fourth idea is to better market effective educational practices. There should be standards in place for the practices used in education that are considered scientific. Also, many educators are put off by the mechanistic language and labor intensiveness of behavior analysis. We are aware of this, yet little has been done to make our practices more “user friendly.” Obtaining new measures of educational success is Axelrod’s fifth suggestion. He argues that student performance should not be the only measure, but the efficacy of adopted curriculums as well. He further argues that educational reform should not be targeting teachers; “professors and other educational decision makers should be held responsible for poor teaching procedures and curricula” (p. 6). His final suggestion is that we forage into new fields. This goes back to the issue of dissemination. We need to contact a broader audience with user-friendly language and procedures.

Some of the procedures that can be easily adapted to be implemented by classroom teachers include group discrete trial teaching, differential reinforcement, response cost, and token economies. Discrete trial teaching in a group setting can employ the use of opportunities to respond (OTR). “An OTR can be defined as the interaction between a teacher’s academic prompt and a student’s response,” (Haydon, Mancil, & Van Loan, 2009, p. 268). Choral responding is one group method of an OTR/discrete trial. The teacher asks a question, all students verbally respond in unison, and the teacher provides feedback in the form of reinforcement or error correction. Differential reinforcement can employ group contingencies in which a consequence is contingent on the behavior of one or all members of a group (Cooper, Heron, & Heward, 2007).

Token economies can also be very valuable tools in classroom or school-wide settings. This is a “behavior change system consisting of three major components: (a) a specified list of target behaviors; (b) tokens or points that participants receive for emitting the target behaviors; and (c) a menu of back-up reinforcers that participants obtain by exchanging tokens they have earned” (Cooper et al., 2007, p. 560). Token economies have been proven effective in small and large groups. The strength of the back-up reinforcers chosen is paramount to the success of the system.

Some additional interventions that employ behavioral principles and can be implemented in the classroom setting are; pivotal response training, direct instruction, verbal behavior, shaping, chaining, task analyses, extinction, and response cost. According to Hursh (2007), applied behavior analysts have resources that can be brought to the classroom, implemented teacher training programs, and then be transferred into the classroom by identifying, coaching, and maintaining those practices.

One example of implementing behavioral procedures in public school systems is the 1969 study by O’Leary, Becker, Evans, & Saudargas. This was a replication of a previous study by O’Leary and Becker on implementing a token reinforcement system in a public school. The replication was conducted in order to study how treatment effects from the token economy system could be maintained. The goal of this study was to decrease disruptive behavior in seven children in a second-grade class of 21 children. Main & Munro (1977), in a review of the 1969 study, stated that researchers obtained the operant level of unacceptable classroom behavior for six students receiving an individualized program of instruction in mathematics and science in a nonacademic grade-nine class in a public junior secondary school. “Rules, educational structure, and praising appropriate behavior while ignoring disruptive behavior were introduced successively; none of these procedures consistently reduced disruptive behavior,” (O’Leary et al., 1969, p. 3). Researchers in this study found that when a token system was introduced with the initial two conditions, a dramatic decline of inappropriate responses was reported in all subjects (Main & Munro, 1977). Withdrawal of the token economy resulted in an increase in inappropriate behavior. When it was reintroduced with contingency contracts, the behavior reduced below the mean of the first token condition for all subjects. The token economy was thinned and eventually removed which left teacher praise and attention as conditioned reinforcers along with the contract system. During a four-week follow-up, data indicated that low levels of inappropriate behavior were maintained in all subjects (Main & Munro, 1977).

A current comprehensive model for applying behavioral principles to schools is the comprehensive application of behavior analysis to schooling (CABAS). According to R. Douglas Greer (1992), designer of the CABAS system, “the school environment must be specifically designed to maintain and improve upon the applications of the science of behavior in order to be successful in its implementation. This model integrates behavioral principles in rules for all persons (students, teachers, and administrators) in which it is implemented. In the CABAS system, the use of behavior analysis is systemic, with continuously evolving applications of behavior analysis that are based on the relationship between the different parts of the system which are the students, teachers, parents, supervisors, and university personnel (Greer, 1992). The students in schools where the CABAS program has been employed “learned from four to seven times more after CABAS was implemented than before its implementation” (Greer, 1992, p. 66). This is not a simple task, however it is potentially much easier and more cost effective than the current practices being used in our public school systems.

“As schools and their populations are growing, their budgets are shrinking in an inversely proportional direction” (Greenberg & Martinez, 2008, p. 221). The United States Department of Education statistics released in March of 2011 delineate that the “total public and private elementary and secondary school enrollment reached 55 million in fall 2007, representing a 10 percent increase since fall 1994. Between fall 2007, the last year of actual public school data, and fall 2019, a further increase of 6 percent is expected, with increases projected in both public schools and in private schools.” Some states, such as Texas, which is currently facing a 3 billion dollar state-wide cut in education funding, is projected to have an increase in enrollment of more than 15% between 2007 and 2019.

Greenberg & Martinez (2008) reviewed the relative cost for implementing an ABA program for early intervention (EI) center where children were diagnosed with pervasive developmental

disorder (PDD). The cost measured was for pull out services. The researcher found that “it can be projected that the monetary savings observed will be exponential and are likely to reach hundreds of thousands of dollars when compared across years” (Greenberg & Martinez, 2008, p. 223).

Greenberg (2007) applied teacher-training packages to teachers using ABA. In this study, costs were lowered after exposure to the treatment package occurred showing that the relative cost of implementing an ABA program will decrease over time. These projections could be comparable to retaining a student that might otherwise be sent to an alternative campus for undesirable behavior. Alternative placements are paid for out of school district funding and alleviating the need for this expenditure has the potential to save more money than the cost of training teachers in simple behavioral methods to prevent those undesirable behaviors from occurring.

Conclusion

The data for the interventions are clear: they have been shown to effectively improve behavior and academic performance. With education budgets invariably shrinking and populations in schools continuing to grow, it is imperative that the model used to improve, maintain, and excel academic and behavioral performance be considered for change. Applied behavior analysis has been empirically validated across numerous interventions that have the potential to change the way public education functions as a whole.

Both individual and group contingencies have been shown to produce greater student achievement, and they are methods that can be counted within the requirements of IDEA. The passing of IDEA, 2004 and the upcoming reauthorization of the Elementary and Secondary Education Act are the stepping-stones that will aid in the adoption and acceptance of behavior analysis in our public education system, but merely having it in our legislation is not enough. There is still a long way to go as far as making applied behavior analysis a household strategy. The need for effective educational practices remains increasingly critical, consistently effective practices are neither widespread, nor appropriately implemented. “Behavior analysts have been trained to develop, deliver, and monitor educational programming that is driven by the results it produces with students. Collaborative consultation with the moment-to-moment coaching it entails can assist educators to create their own evidence-based practices” (Hursh, 2007, p.44). Behavioral principles offer a wealth of effective and empirically validated practices to offer public education. The research is here. The desire is here. As Bloh & Axelrod (2008) write, “The means and justification are here. Let us now serve” (p.55).

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