

School-Based Behaviour Modification for Students with Attention Deficit Disorders: Placebo or Panacea?

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Abstract

The efficacy of School-based Behavior Modification (BM) treatments for students with Attention Deficit Disorders (ADD) is being debated. This article explored several empirical studies carried out (in the last decade) on effectiveness of the various BM interventions with a view to determining whether such approaches are mere placebo or panacea. Also issues regarding the various developmental difficulties encountered by students with ADD over time and across content areas are discussed. Furthermore, results from studies designed to determine the efficacy of some behavioral techniques such as; Contingency Management Techniques, Good Behavior Game, Self-mediation, Self-evaluation etc. are equally reviewed. Based on this review and evidence advanced in this text, the paper posits that School-based Behavioral Modification (BM) treatments for ADD are effective in the short run and indeed a panacea for reducing disruptive behaviors and improving on-task behavior and academic performance of students with the disorder.

Keywords: Attention Deficit Disorders; Behavioral Modification; Placebo or Panacea

1. Introduction

Students, whether at primary, secondary or tertiary level often exhibit differential weakness in mental Attention Deficit Disorder (ADD) is a condition which affects a person's ability to concentrate and maintain attention to learning tasks (Crouse, 1999). The notable increase in the number of students diagnosed with ADD in the past few years has had important repercussions on the educational system. In fact, in the United States, additional expenditures by public schools on behalf of students with ADD amounted to over \$3.2 billion in 1995 (Forness, 1998). Although, this form of intervention is yet to be recorded in Nigeria, however, in addition to becoming a public health issue, ADD has also become a relevant educational issue (Haruna, 2015). Furthermore, after decades of research, there is no doubt that ADD has a chronic nature. It shows up in early childhood and continues to a troubling degree throughout childhood and adolescence and into adulthood (Crouse, 1999).

The symptoms of this disorder cause alterations in school and family functioning and in relationships with classmates, and they carry with them a poor long term psychiatric, social, and academic adjustment (Biederman et al., 2004). Given the high prevalence of ADD, its long-term repercussions, and its chronicity, the search for effective treatments to manage it has been a constant concern and debate in the last few decades. Among the wide variety of treatments used are traditional therapy, restrictive or supplemental diets, biofeedback, allergy treatments, perceptual motor training, or play therapy. Only three types of interventions, however, have received backing in the empirical literature: central nervous system stimulants, behavior modification, and a combination of the two.

Hundreds of studies document the beneficial effects of psychostimulants on the cognitive and behavioral functioning of people with ADD. The pharmacological interventions suffer, however, from a series of important limitations (Pelham, Wheeler, & Chronis, 1998). In the first place, in spite of their obvious benefits on daily class performance, it has not been demonstrated that stimulants produce long-term changes in the general academic performance of children with ADD or in specific areas. Along the same lines, although stimulants reduce the disruptive behavior, there is no evidence that they produce changes in the interpersonal relationships that are usually altered in adolescents and adults with ADD.

Furthermore, only between 70% and 80% of the children with ADD show a positive response to psychostimulants, with important individual differences in the magnitude and topography of the response, so that the medication produces benefits in some aspects of the behavior but not in others. Nor do the existing studies offer evidence that the stimulants improve the long-term ADD prognosis. As Pelham and Gnaggy (1999) highlighted, "Simply medicating children, without teaching them the skills they need to improve their behavior and performance, is not likely to improve the children's long term prognosis" (p. 226), rather it is a mere placebo. Summarizing, pharmacological intervention is not a panacea for treating the complex ADD symptomatology, so it becomes necessary to look for complementary support in interventions of a psychosocial nature.

Given that the appropriate development of the self-control mechanisms occurs in a complex network of social influences, these types of interventions must involve the natural contexts in which the daily life of the child takes place, that is, the home and school. Numerous studies show that family therapy, individual therapy, and parent training usually produce benefits at home. These approaches, however, rarely help to improve the academic and behavioral functioning in school of students with ADD. This fact indicates that the changes that

occur in one setting do not usually generalize to another setting without intervention. Consequently, the responsibility for improving the identification, assessment, and delivery of appropriate and effective interventions to students and youth with ADD falls on the school.

2. Academic and social difficulties of students with ADD

The school is a setting where students are required to have skills in the planning, control, coordination, and evaluation of the procedures involved in following the norms, in appropriate interactions with adults and classmates, and in active participation in the teaching/learning process. Therefore, the school constitutes an appropriate context for promoting self-control. At the same time, however, school presents a great challenge to those students who have not achieved sufficient self-regulatory development to respond to the demands it makes. Globally, around 70% of children with ADD present some type of learning difficulty (Mayes, Calhoun, & Crowell, 2000), and they are three to seven times more likely than other children to receive special education, be expelled or suspended, and repeat a grade (Le Fever, Villers, & Morrow, 2002). Furthermore, although the diagnosis of ADD does not constitute its own separate category of special education, three quarters of the students receiving special education services for behavioral difficulties (Dery, Toupin, Pauze, & Verlaan, 2005), and about a fourth of the children in programs for learning disabilities (LD; Forness & Kavale, 2001), meet the criteria for ADD.

The academic and behavioral problems of children with ADD are caused to a large degree by a self-regulation problem, a system that essentially includes three components: an attentional component, an inhibitory component, and a strategic and organizational component (Douglas, 2005). The attentional component refers to the effort or “energetic” aspect of the cognitive processing. The inhibitory component refers to the processes that control the impulsive or inappropriate responses. Finally, the strategic component refers to the “higher order” organizational processes that direct the cognitive processing, among which preparation and planning, working memory, and set-shifting stand out.

Students with ADD fail at the learning tasks that require adequate levels of attention, inhibition, and active involvement. There are observable signs in the classroom related to failure in attentional effort, such as the number of errors made by students with ADD on easy items even though they are capable of doing more difficult ones, the increase in errors at the end of performing activities, or the difficulties in finishing assigned tasks. To this situation is added a low motivation toward success: Students with ADD spend less time studying and put out less effort to achieve educational objectives (O’Neill & Douglas, 1991). Likewise, the students with ADD usually fail at performing tasks requiring organizational capabilities due to an ineffective use of the higher order processes: using working memory, working fluently, being alert, and monitoring their work. Error monitoring, that is, the ability to detect the error and adjust performance while working is another higher order organizational process impaired in students with ADD (Schachar, Chen, & Logan, 2004). These deficits appear to especially affect students with ADD who present comorbid LD (Seidman, Biederman, Monuteaux, Doyle, & Faraone, 2001).

Finally, the academic performance of students with ADD is negatively affected by the disturbing behaviors that they frequently manifest in class (being out of their seats, interrupting the teacher during explanations, making inappropriate noises, fidgeting, etc.), which are serious obstacles to the teaching/learning process. On the other hand, students with ADD usually also suffer some form of social rejection from their peers. Various factors related to low behavioral inhibition may explain this situation. In the first place, deficits in the self-regulation of affect, a lack of ability to separate the affect or emotional charge from the informational content, produce a low tolerance to frustration, a tendency toward emotional outbursts, an excessive personalization of events, and a less objective approach in evaluating conflictive social situations.

Another of the explanatory factors for the low social competence of students with ADD has to do with a delay in the internalization of language, which is the basis for acquiring the norms that direct behavior and moral development (Barkley, 1997). Furthermore, students with ADD usually experience problems in the everyday use of communicative language, that is, they do not use it correctly as a cognitive and social tool for transmitting information and habitually resolving conflictive situations in social interactions (Tannock & Schachar, 1996). Finally, students with ADD in schools exhibit a high rate of disruptive and antisocial behaviors.

2.1 Auditory processing

Auditory processing involves how well a student can understand auditory information, such as differences between sounds/voices, remembering specific words or numbers, remembering general sounds patterns, understanding even when they miss some sounds, blending parts of words together and music (Crouse, 1999; and Hammill & Bryant, 1998). Students with a general processing weakness usually have most difficulty with general reading, general writing and language expression. Such students are likely to have dyslexia (www.ABCsofLD/ADHD.htm). Holons cooperate with peers in order to organize and reorganize themselves based on mutually acceptable plans. This is for solving any problem or conflict they might encounter from time

to time, and ultimately, serving the goals of the larger whole.

3. School-based Behavioral Modification as a panacea for Attention Deficit Disorders

Specifically, the purpose of this review is to describe and establish the empirical effectiveness of school-based BM treatments for students with ADD, thus understanding its panacea from a pedagogical perspective. The reviews were focused on studies relating to Attention Deficit Hyperactivity Disorder, Attention Deficit Disorders, and ADD with other key words associated with interventions in the school context: Classroom Behavior Modification, Educational Programs, School Based Intervention, and Special Education.

The school-based interventions that were included in this category focused on the application of behavior modification techniques (Fabiano & Pelham, 2003; Northup et al., 1999; VanLier, Muthen, VanderSar, & Crijnen, 2004), cognitive-behavioral techniques (Ardoin & Martens, 2004; DuPaul & Hoff, 1998; Mathes & Bender, 1997), or environmental changes that involve modifications in the usual classroom dynamics (Powell & Nelson, 1997; Ridgway, Northup, Pellegrin, LaRue, & Hightsoe, 2003).

3.1 Contingency Management Techniques: a school-based BM study

The studies in which contingency management techniques were applied exclusively to reduce the characteristic problems of ADD differed in their sample sizes, the diagnostic status of the participants, the duration of the intervention, and the prior training of the teachers. In both cases, however, they basically applied reward procedures that proved to be effective in managing disruptive behaviors in the classroom. Fabiano and Pelham (2003) used a single-subject design. The intervention was carried out by the teacher in the normal classroom for two weeks with a primary school student diagnosed with ADD who was not receiving stimulants. The training of the teacher was carried out by a consultant, although neither the length of time nor the type of training done is specified. The intervention, which produced a reduction in the disruptive behavior and an increase in the task focused behavior, included three key elements: (a) provide the student with rewards frequently, (b) provide immediate feedback when the child breaks the rules of the classroom, and (c) withhold the reward when the student breaks each class norm three times.

3.2 Good Behavior Game: a school-based BM study

In the study by Van Lier et al. (2004), the children who participated were in the first grade, but they did not have a clinical diagnosis of ADD. The teachers received three training sessions on the functioning of the Good Behavior Game, a behavior management program that is based on obtaining rewards for performing appropriate behaviors and following the class norms. To do this, the teachers and students together chose the norms of the class and the rewards for following them, dividing the children into four teams with the same number of disruptive and non-disruptive children. Furthermore, the teachers received supervision by advisors or internal school supervisors throughout the duration of the program. The intervention, which was carried out at the group level and maintained for a prolonged time (24 months), considerably reduced the ADD-related problems compared to the participants in the control group.

3.3 Medication versus Placebo: a school-based BM study

The information provided in the study by Northup et al. (1999) is of great practical interest as it highlights the interactive effects between common classroom contingencies and methylphenidate (MPH) on disruptive and off-task behaviors in children with ADD. The intervention was performed by graduate and undergraduate students in psychology and education during a summer program with four second and third grade students treated individually. A condition was also introduced called "medication versus placebo," which was alternated daily for each student. The psychosocial intervention consisted of four conditions: (a) contingent teacher reprimands: The teacher gave immediate feedback every time an unacceptable behavior occurred; (b) brief non-exclusionary time-out: The child's chair was immediately turned to face away from the desk and all other people and activities, and staff members moved away from the student contingent on the occurrence of a target behavior; (c) no interaction: Staff members always maintained a proximity of approximately three meters, but ignored all student behavior; and (d) alone: Students were assigned tasks that they did by themselves, without the presence of the teacher. The students presented fewer disruptive behaviors and completed a greater number of mathematics problems in the conditions of time-out and reprimand than in the other conditions and in the medication condition than in the placebo condition. Consequently, the results suggest that, to achieve the most beneficial medication effects, active supervision and monitoring of student's behavior is needed, and the addition of behavioral consequences may further enhance the MPH effects.

3.4 Self-mediated strategies: a school-based CBM study

In the "Cognitive Behavior Modification" (CBM) approach, students develop self-controlled behavior by means of self-mediated strategies, such as self-instructions, cognitive modeling, problem-solving strategies, self-

monitoring, self-evaluation, and self-reinforcement. Paradoxically, although the internalization of self-statements is the basic determinant in the normal development of the regulatory process of behavior, the CBM techniques have not been used very much with participants diagnosed with ADD. Only three of the studies selected in our review analyzed the efficacy of a cognitive-behavioral approach—specifically, self-evaluation—although this was applied with some different nuances.

3.5 Self-evaluation: a school-based CBM study

In the research by Mathes and Bender (1997), the self-evaluation was carried out individually in the classroom. The teacher also evaluated the students at 10 daily intervals lasting one-minute each. In these observations, the behavior was considered on-task behavior if the student was seated and directing his or her attention toward the right place (chalkboard, teacher, class notebook, or self-evaluation notebook). Any behavior different from those previously named (e.g., looking around, playing with objects, or getting out of his or her seat without permission) was considered off task behavior. The results indicated that the self-evaluation proved effective for increasing the “task-centered” behavior of the students. Even in the follow-up phase, where the students were told not to self-evaluate themselves and their record book was taken away, the percentage of task-centered tasks continued to be higher than the baseline.

3.6 Self-evaluation versus Self-management: a school-based CBM study

Likewise, the study by DuPaul and Hoff (1998) suggests that self-management, and specifically self-evaluation, is available alternative to the traditional contingency management approach for decreasing the disruptive behavior of students in elementary school exhibiting ADD behaviors. The three students who participated in this study were trained by their teachers in the use of self-evaluation according to the following stages: teacher evaluation, matching training, and systematic fading. Due to this three-stage sequence in the intervention, however, the decrease in the level of disturbing behaviors with self-evaluation cannot be attributed to the self-management procedure alone. Furthermore, the behaviors of the participants were first brought under control through an externally managed token economy system and later transferred to the control of the students themselves. In conclusion however, the results are promising because the students maintained the changes in the absence of teacher feedback, with the gains observed across both structured and unstructured environments. At any rate, it has yet to be seen whether students can continue to use self-management effectively for long periods of time, as DuPaul and Hoff did not collect follow-up data for disruptive behavior, nor did they evaluate the effectiveness of self-management alone for an extended period of time.

3.7 Self-evaluation versus Accuracy Training: a school-based CBM study

Additional information about the self-evaluation approach comes from the study by Ardoin and Martens (2004), whose objective was to examine the accuracy and sensitivity of students’ ratings before and after training, as well as the effects of accuracy training on performance. In their study, the participants were four students between the ages of 9 and 11 who exhibited behaviors consistent with ADD. Although none of the students accurately rated his or her behavior prior to training, all of them met the criteria of two consecutive matches of their target behaviors, which suggests that accuracy training can be effective. Furthermore, self-evaluation alone decreased disruptive behavior for only one student, whereas self-evaluation plus accuracy training decreased the disruptive behavior of all four students. The importance of the accuracy training becomes even clearer due to the fact that once this training was withdrawn, the level of disruptive behavior increased for three of the four students.

3.8 Modifications in classroom dynamic

The introduction of modifications into certain conditions of the normal school dynamic has also been shown to result in an improvement in typical hyperactive behaviors in students with ADD in primary school. Specifically, the study by Ridgway et al. (2003) showed that the existence of arrest period or recess during the school morning significantly reduced behaviors that were “off task,” such as inappropriate verbalizations, getting out of one’s seat, being disobedient, and playing with objects, compared to when this rest period was eliminated.

In their study, Powell and Nelson (1997) demonstrated that allowing the student to choose between performing three different tasks that made up part of the academic curriculum, rather than not letting him choose, reduced inappropriate behaviors like disobedience, getting out of his seat, bothering others, and not working.

4. Conclusion

The review of studies on interventions in classroom settings with children with ADD shows their effectiveness in controlling the main symptoms of the disorder, as well as other problems commonly associated with it (e.g., disruptive behaviors in the classroom or off-task behaviors). Various arguments support the practical value of these findings. In the first place, it is important to note that the interventions in classroom settings involve

strategies that can be used with success in a real-world setting, the school. It is also true that up to 30% of students treated with medication respond negatively to this kind of intervention (which is a placebo) and that parents often prefer treatments that include psychosocial intervention (a panacea) to medication alone. Finally, it is the fact that providing routine Behavioral Modification for students with ADD in school setting may adequately address their educational needs.

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