

Arranging the Classroom

with an Eye (and Ear)

to Students with ADHD

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The child in your classroom who regularly squirms in his seat, who stares at walls, and whose desk is an avalanche of crumpled papers may not be a daydreamer or an idle, unmotivated student, but rather a prime candidate for an attention deficit/hyperactivity disorder (ADHD) classification. The National Information Center for Children and Youth with Disabilities (NICHCY, 1994) (www.nichcy.org) has characterized ADHD as developmentally inappropriate levels of inattention, impulsivity, and hyperactivity.

Although no one knows exactly what causes the condition, the genetic nature of ADHD suggests a neurobiological explanation. Though its characteristics were identified in students as early as 1902, the condition now known as ADHD has suffered through years of ambiguity and inaccurate labels, such as moral deficit and minimal brain dysfunction (Turnbull, Turnbull, Shank, & Leal, 1999). With the establishment of specific diagnostic procedures in the DSM-IV (American Psychiatric Association, 1994), however, as well as federal legislation (Individuals with Disabilities Education Act, IDEA) that provides special education services to children with ADHD under the categories of "other health impaired," "emotionally disturbed," or "learning disabled," public and professional aware-

ness of the disorder has improved (NICHCY, 1994). Presently, it is estimated that ADHD affects 3% to 5% of school-age children.

Inclusive Environments and ADHD

Because just half of these children qualify for special education and because of the trend toward more inclusive classrooms, general classroom teachers are being faced with increasing responsibilities for students with ADHD. These teachers, many of whom have minimal training in working with students with special needs, are likely to feel burdened, overwhelmed, and unconfident in tackling ADHD. Fortunately, the

abundance of literature discussing this condition can do much to assist in effective, pedagogical decision making.

This article describes how educators can *physically alter* a general education classroom in ways that support the strengths of children with ADHD, not exacerbate their problems (see box, "What Does the Literature Say?"). Too often, teachers make changes in the classroom *after* a child's inattention has caused him or her to fall significantly behind.

Here, I emphasize *antecedent* interventions, that is, classroom changes directed toward proactive change, before a problem becomes overwhelming. Through discussing the four major

What Does the Literature Say About ADHD and Classroom Design?

The literature on environmental accommodations for children with ADHD focuses almost exclusively on curricular adaptations, revamped instructional styles, and cognitive behavior training (Cherkes-Julkowski, Sharp, & Stolzenberg, 1997; NICHCY, 1994; Turnbull et al., 1999). The limited studies that examine the effect of physical classroom design changes on ADHD behavior of students reported a significant reduction in the frequency and duration of nonattending incidents (Greenewald & Walsh, 1996; Weinstein, 1976).

Although the effect of physical design has received attention for children with sensory and physical disabilities, populations of students with ADHD can also profit from structural interventions. Classroom accommodations are simple to implement, practical, and require little time and effort on the teacher's part.

Some students with ADHD appear to be driven by a motor, unable to hit the brakes when necessary.

“difficulties” of students with ADHD, this article presents general strategies for accommodating the instruction of children with attention problems. Then, for each difficulty, the article presents “structural responses”—to the *physical* environmental conditions—for children who generally fit the description. (*Note:* Of course, people being people, there will be overlaps and individual circumstances that require alterations.)

By no means do these suggestions call for a complete renovation of every inclusive classroom, but rather are designed as simple, easy-to-implement interventions to diminish the emergence of characteristic problems of children with ADHD.

Difficulty #1—Hyperactivity

The student often fidgets with hands or feet or squirms in seat; often leaves seat in classroom when expected to remain seated.

Characteristics

The two problematic symptoms of hyperactivity—fidgeting and out-of-seat behavior—are not found in all children with attention disorders, but are cited by parents and teachers as major challenges of ADHD (Cherkes-Julkowski et al., 1997). While some identified children are only slightly active and restless in specific contexts (i.e., boring lecture, math), others constantly exhibit a high activity level that not only prevents them from completing their own work, but that is also distracting to the performance of peers. These students appear to be driven by a motor, unable to hit the brakes when necessary.

Children who exhibit hyperactivity are also more prone to sleep problems, bedwetting, and temper tantrums and are often described as intrusive, bossy, show-offs, defiant, and unable to main-

tain friendships (Turnbull et al., 1999). This is manifested in their preference for less structured activities like climbing and cycling, rather than drawing and other fine-motor tasks. The strong emphasis on fine-motor skills observed in almost all schools is perceived by the child with ADHD as a constraint on his movement and inevitably sets up a scenario of frustration, aggression, and poor achievement.

Hyperactivity is closely related to theories of stimulation because, as Sydney Zentall noted (1983), gross-motor movements characterize low arousal, whereas repetitive fidgeting reflects overstimulation. If this is true, it is possible to conclude that subtle classroom changes to assigned tasks and the physical environment can regulate stimulation levels to the appropriate degree for the child with ADHD.

General Strategies

Educators and researchers have identified three general strategies for dealing with students’ excessive activity:

- *Incorporating movement* into classroom life, in the form of role play and other active curricular responses, is effective (Council for Exceptional Children, CEC, 1992).
- *Positive peer attention* can directly influence the behavior of students with ADHD (Cherkes-Julkowski et al., 1997; Reid, 1999).
- *Frequent teacher monitoring* is a well-documented strategy (Reid, 1999).

How can a classroom physically accommodate students’ needs for gross-motor exercise, active curriculums, peer attention, and consistent teacher feedback and supervision—which have been proven to increase the on-task behavior of students with ADHD? Whereas early management models emphasized confined settings (e.g., private cubicles, study carrels), today, “open classrooms,” loosely-structured arrangements offering multiple simultaneous instruction (e.g., centers), dominate (Harrell, 1996). Because critics have labeled these more open models as psychologically damaging or noisy and visually distracting (Greenewald & Walsh, 1996; Harrell, 1996), it appears that we need alternative structural

responses to manage students with hyperactive symptoms.

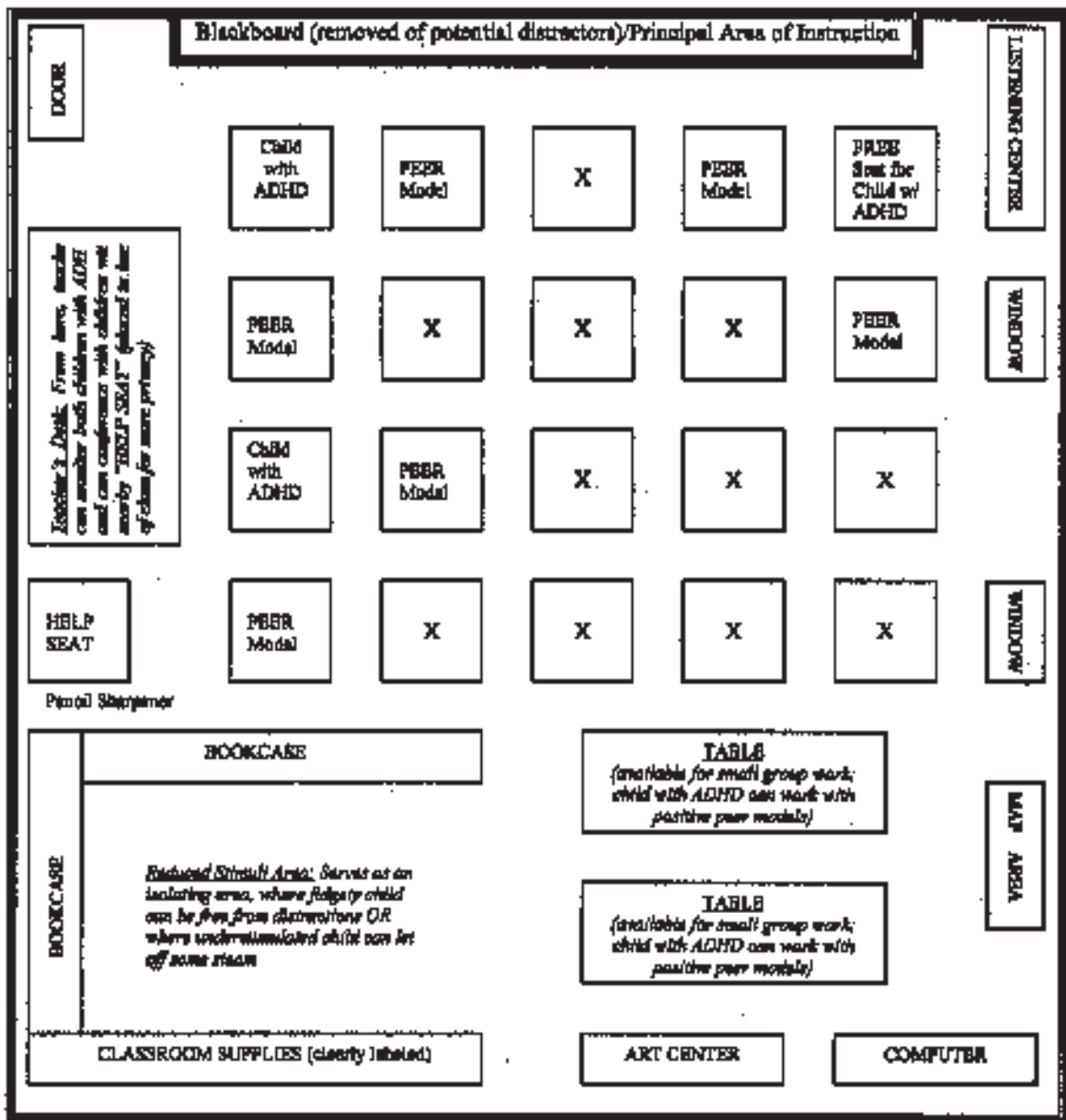
Structural Response

First, keep in mind the characteristic behaviors of these individuals (fidgeting, inability to sit, preferences for gross-motor activity), as well as the suggested general interventions (channel activity, peer role models, positive teacher reinforcement). It takes considerable thought and planning to select the child’s location in the classroom, as well as introduce supportive classroom features. Here are some suggestions (see Figure 1, page 74, for a visual summary):

- Arrange the classroom in a *traditional row-seating pattern*, because this is the most structured and predictable option. Placing the child at a table with five other classmates detracts from the child’s attentiveness.
- Simply placing the child in a desk is not enough; his *placement* in the room is crucial. That desk should be positioned in the front row, where he or she is less likely to be disturbed by a neighbor’s new hairstyle or flashy sweater.
- Remove the child from *potentially distracting areas*, such as near windows or pencil sharpeners.
- To provide for *immediate feedback and close monitoring*, place the child directly next to your desk. Close proximity to the instructor may also alleviate an additional dilemma of the child with ADHD—reluctance to ask for help when experiencing difficulty (Zentall, 1993).
- Surround the child with ADHD with well-behaved, attentive classmates as desk neighbors. This placement will automatically *encourage positive peer interactions*. Additional opportunities for peer interaction can be arranged

Arrange the classroom in a traditional row-seating pattern, because this is the most structured and predictable option.

Figure 1. Classroom Model of Suggested Structural Interventions for Children with ADHD



by placing tables in the back of the classroom for occasional cooperative learning activities.

The child's proximity to the token-chart area is important because it increases the likelihood of self-monitoring.

- For children who seem to be *over-stimulated*, designate a stimuli-reduced area of the room, where a child who is fidgety and overly aroused can complete his or her assigned task. One way of achieving this is by creating an *isolated peninsula* in the back of the room, a square-shaped area surrounded on three sides by bookcases (books facing outward to prevent distractions) or other "obstacles." Clear this area of any overly-stimulating visual infor-

mation so as to prevent overload. You could include some plush chairs and pillows to provide the child a safe, comfortable place in which to focus. If the area is large enough, you could even use it as a whole-group meeting/presentation area.

- For children who seem to be *under-aroused*, allow them to use this get-away place to jump around and let off some steam. Another structural accommodation for the child would be a seating placement on the far

right or far left rows, where he or she can stretch out while interrupting as few neighbors as possible.

- You may consider providing *additional desks* for students to move to if they need to. Explain that when they feel restless or need physical movement, they can quietly pick up their materials and temporarily move to a new, “free” desk. This serves to provide an outlet for physical stimulation while still maintaining the child on task.
- To address the hyperactive child’s reluctance to tackle fine-motor activities, small *interactive centers* requiring fine muscle control (art center, computers, map skills area) should dot the classroom to provide plentiful practice opportunities.
- Because children with ADHD are often self-conscious about their need to take daily medication (Zentall, 1993), provide children with a secure place to keep and take pills.

Of course, these structural suggestions assume that a traditional row seating pattern is both feasible and supported by teachers, administrators, and students. However, current trends toward cooperative learning and “open classrooms” have reduced the practicality and popularity of this arrangement.

Even though parallel row seating remains the ideal layout for students with ADHD, teachers in more modernly arranged classrooms can still find ways to make room for the suggested strategies. You can create quiet, stimuli-reduced areas in almost any environment; and you can still provide the child with ADHD or other attentional difficulties with a “second seat,” albeit at an alternate table. Similarly, creative teachers can still persuade “positive” peer role models to surround the child with ADHD at a designated table or center.

The structural classroom changes described here are not designed to be definitive or inflexible. Rather, they are suggested as starting points, which you can creatively tailor to your needs and those of your students.

Difficulty #2—Impulsivity

The student often blurts out answers before questions have

been completed; often has difficulty waiting his or her turn; often interrupts or intrudes on others.

Characteristics

The second detrimental dimension of ADHD is impulsivity. The child who presents impulsive behavior requires immediate gratification, and so appears to act before thinking (NICHCY, 1994). This disregard for the consequences of an action often leads the child with ADHD to break classroom rules and social norms without a specific intention or plan to do so. Consequently, whereas the impulsive child experiences frequent teacher reprimands early in his school years, his or her adolescence is characterized by social rejection and isolation and peer labels of “immature” and “weird” (Cherkes-Julkowski et al., 1997).

In addition to social consequences, impulsive responding produces academic errors because the person with ADHD fails to wait long enough to consider alternative information and consequences (Zentall, 1993). Inability to delay responding often manifests itself in:

- Poor test-taking performance, specifically on multiple-choice formats.
- Poor planning skills.
- Failure to carefully read directions, because this requires waiting (Zentall et al.).

These academic consequences indicate a desperate need for classroom interventions.

General Strategies

The general impression that impulsiveness is an issue “internal” to the child has led to a wealth of research examining the effect of various behavioral strategies on the child’s internalization of social norms. These strategies typically take the form of three behavior modification approaches—cognitive-behavior therapy; timeouts; and positive reinforcement.

- *Cognitive-behavior therapy* and its emphasis on self-assessment and metacognition have proven inadequate for children with ADHD (Fiore, Becker, & Nero, 1993).

- Timeouts, or *reflective cooling periods*, have also been criticized as psychologically damaging and have the potential to backfire if the child misinterprets the removal from an uninteresting classroom as a reinforcer (Fiore et al., 1993).
- *Positive reinforcement* is an excellent tool for reducing impulsive activity and improving on-task behavior and academic performance (Chesapeake Institute, 1994; Fiore et al., 1993; Reid, 1999).

Plan carefully when you establish a schedule of positive reinforcement for the child with impulsivity. First, children with ADHD respond better to *secondary reinforcers*, that is, material rewards like food and small toys, rather than “natural” reinforcers like verbal praise (Fiore et al., 1993; Terry, 1981).

Second, *response cost*—a system of removing tangible reinforcers for inappropriate actions—has proven more effective than reward-only programs in maintaining desired behaviors (Fiore et al., 1993). Because response cost only reduces inappropriate behavior (it does not directly teach expected behavior) (Reid, 1999), a combination of positive reinforcement and a penalty system appears like a most effective behavioral strategy. How then can the impulsive child’s unusual sensitivity to rewards and fines be applied to the *structural* organization of a classroom?

Structural Response

The implementation of a *token economy* is a first step. Token systems reward appropriate behavior with points or other items that are valueless by themselves. At designated periods (i.e., weekly, monthly), those accumulated tokens are “cashed in” for rewards with previously ascribed point values. The token economy can be of great value to

Construct a group-reward chart that reinforces the entire class on a monthly basis for their collective cooperation.

the impulsive child because it offers a tangible reason to act appropriately and avoid a “fine.”

The implementation of a response cost program is a five-fold process between teacher and student:

- Discuss the problem behavior with the child.
- Mutually agree on a reinforcer.
- Establish the amount of the fine.
- Establish the means to communicate the fine.
- Ensure that reinforcement outweighs “fines” (Reid, 1999).

It is the fourth step, the “means,” that can directly involve the physical environment. Children with ADHD must know that they have been fined so that they can begin to internalize those behaviors that are expected. If you write a check-minus in your grade book, will

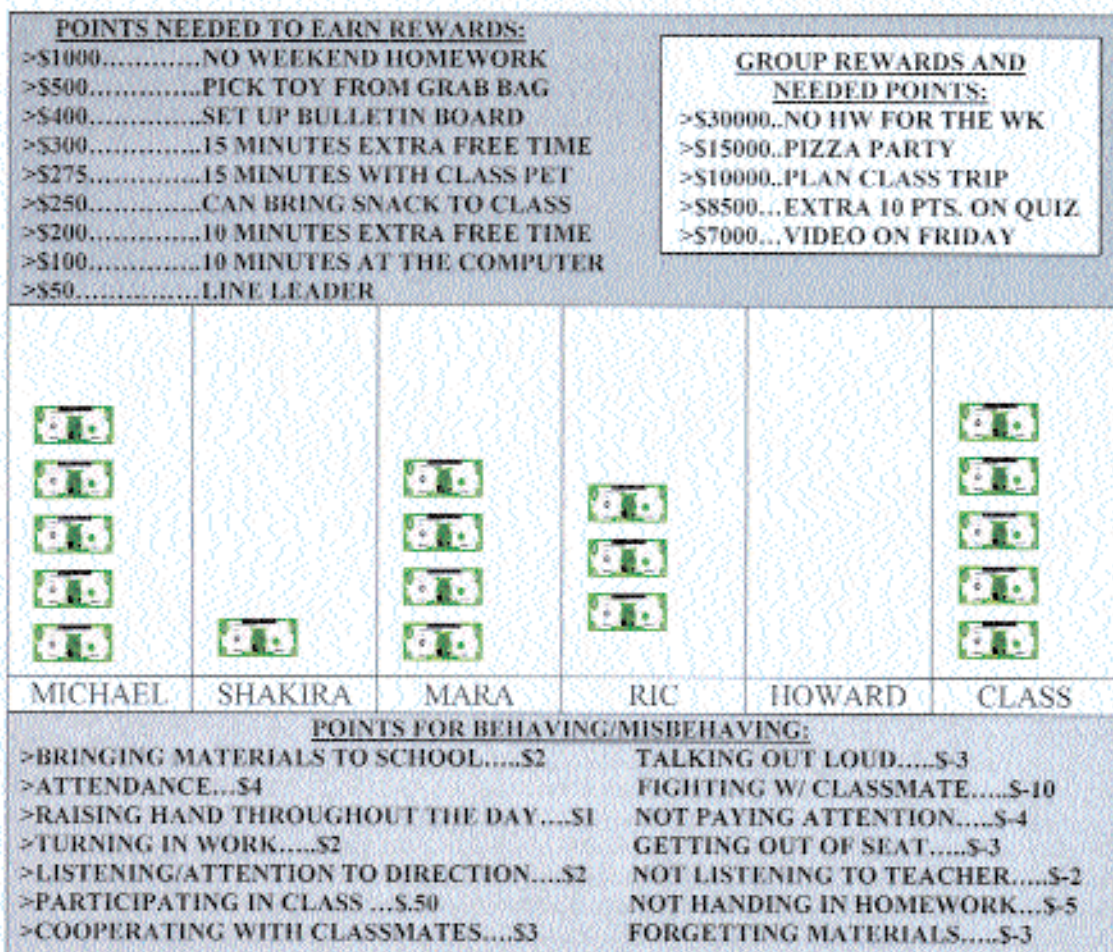
the child with ADHD learn that his or her impulsive actions need to be self-regulated?

The classroom should make room for an area devoted exclusively to a progress chart of token accumulation. This chart should clearly label all students’ names and use Velcro icons to indicate points and should be placed in direct view of the students on the chart, for example, on the left blackboard in Figure 1. All students, classified or not, should participate in the proposed token economy, as this lends itself nicely to the use of group contingency models and positive peer pressure from typical students onto those identified with ADHD. The child’s proximity to the token area is important because it increases the likelihood of *self-monitoring*, because the child is continually

aware of potential consequences—negative and positive—of his or her behavior. To ensure the child’s awareness of these consequences, post lists of “fineable” behaviors and “redeemable” reinforcers with their corresponding point values. See Figure 2 for a sample progress chart.

To address the previously noted negative social repercussions experienced by impulsive children, try constructing a *group-reward chart* that reinforces the entire class on a monthly basis for their collective cooperation. In this way, group-contingency reward systems may encourage classmates to support and assist impulsive or disruptive peers. For the child with ADHD, positive social interaction may be a greater benefit than any material reward. Addressing the impulsivity of children in a struc-

Figure 2. Model of Token Economy Progress Chart for a Typical Elementary Grade Class



tured way is especially difficult considering the neurological nature of the disability. An environment that surrounds the child with physical, observable warnings to think before acting, however, is a step in the right direction.

Difficulty #3—Inattention and Distractibility

The student is easily distracted by extraneous stimuli; often does not seem to listen when spoken to directly; often fails to give close attention to details or makes careless mistakes.

Characteristics

Attention is a multitask process, requiring us to focus, select something to attend to, sustain focus for a necessary period, resist distractions, and finally shift our attention elsewhere (NICHCY, 1994). ADHD affects a child at one or more of these processing steps, as reflected in often-used adjectives of inattentive students as “lost in a fog,” internally preoccupied, confused, and apathetic (Turnbull et al., 1999).

Some people have argued that children with ADHD struggle to filter out irrelevant sensory information (Cherkes-Julkowski et al., 1997; Turnbull et al., 1999). See Zentall (1983) for a discussion of the *optimal stimulation* theory. This argument has generated support for classrooms devoid of environmental stimulation (e.g., removal of colorful bulletin boards or brightly hued paints; use of Venetian blinds instead of clear windows).

The literature indicates, however, that this blank physical arrangement fails to improve the attention and academic performance of children with ADHD (Zentall, 1983). Why? Perhaps because it emphasizes the *quantity* of external stimuli rather than its *quality*. Children with attention disorders, like all others, are attracted to environmental conditions that are novel, that is, unfamiliar or unexpected (Cherkes-Julkowski et al., 1997). An unusual cloud pattern, or a teacher’s new pin may be novel and, therefore, more distracting than the continuous hum of a fan.

General Strategies

Strategies for improving student attention have emphasized the use of interesting and varied tasks, such as games, role-play, and educational videos, to place novelty on instruction rather than the extraneous environment. The hope is that the pull of the creative task will be stronger than any potential distractor in the physical classroom. Though researchers have applauded the addition of visual stimulation to classroom tasks (Zentall, 1983), be wary of how you integrate novel qualities (color, size) into instruction. In one study, experimenters applied novel changes (color) to unimportant features of a task (e.g., random use of colored chalk) and found that it interfered with the task performance of students with ADHD more than a control group (Zentall, 1993). Further research indicated, however, that color (and presumably other novel qualities) can improve the performance of children with ADHD only when it is added to *increase important task features* (Zentall, 1993).

In addition to being sensitive to visual novelty, the child who appears inattentive is also especially sensitive to changes in sound. Classroom noise produces negative effects on the performance of children with ADHD because auditory processing cannot be shut out as easily as visual stimuli (Zentall, 1983).

Further research, though, revealed that, like visual stimuli, not *all* noise is detrimental (Zentall, 1983). Only during complex, multiple-step or unfamiliar/newly introduced tasks does added noise produce inattention and increased errors. When students work on familiar tasks with structured responses, the addition of moderate levels of classroom noise yields better results and attention to task than quiet conditions (Zentall, 1983). Apparently, silence can be just as much of a distraction as high noise levels.

The use of novel sounds during simple tasks is supported through the research of Thomas J. Scott (1970). Scott documented the enhanced productivity of four hyperactive-inattentive boys on arithmetic problems in musical classroom settings, where background

Bins and mailboxes help children organize their assignments, notebooks, and folders.

sound was provided by Beatles albums. The complete removal of sensory stimuli from the physical environment of children with ADHD is unwarranted. What is needed, though, is careful planning and creativity on teachers’ parts to develop instruction that is more attractive than factors in the external world.

Structural Response

How can an altered physical environment help children who are easily distracted?

- Pay attention to removing *potentially distracting features* from the room (e.g., flashy bulletin boards). But direct most of your effort at making the classroom conducive to novel/varied tasks that compete against the external characteristics of the area for the child’s attention.
- Make sure that *furniture and classroom structures* are designed to provide for an easy transition to a variety of instructional approaches. Administrators should remove any chairs bolted to the floor so desks can be manipulated for activities requiring greater amounts of space. The classroom shown in Figure 1 is a good model because it enables small groups to work at tables, allows for teacher-centered whole-class instruction, and provides for student-directed work at centers.

Use listening centers to provide homework instructions, play background music, and filter out distracting classroom noise.

- Use *color and other novel qualities* to highlight important task features as you modify instruction.
- Place an *overhead projector* in the classroom. This provides a strong visual impact to draw students' attention. The overhead also allows you to face the students and monitor who is attentive and who is not.

Figure 3 shows two examples of overhead transparencies of the same 12-item math quiz. After you carefully explain a test like this using the overhead, you can distribute worksheets to each child. The test on the left of Figure 3 uses color and interesting pictures to draw student attention *away* from test items. Pictures also take up space on the paper and may lead to organizational problems. The example to the right uses larger fonts, bold lettering, italics, and underlines to highlight *critical* aspects of the task. They are attractive enough to draw a child's attention, but not too overwhelming to pull him off task. In this example, color is used to improve the child's organization and prevent him from skipping items, a common

mistake by many children with attention difficulties.

- To address a child's aversion to classroom noise during unfamiliar and difficult tasks, set up a *listening center* as an important structural accommodation. This center would consist of earphones connected to a listening device.
- When the center is not being used for instructional purposes, you might recommend that a child with ADHD complete a *new, complex* task while "tethered" to the center. In addition to restraining the child, these earphones can help filter out distracting levels of classroom conversation for the inattentive student.
- The listening center has another advantage in its capacity to hold pre-recorded instructions or verbal homework assignments on tape, which would be at the easy disposal of the child with attentional problems. The literature indicates the positive contribution of background noise on attentive behavior during the completion of *familiar* and *simple* tasks; thus, the

listening center should be stocked with stereo equipment.

- While the class is in a transition or is doing a daily free-writing activity, play some music or run a fan.

It is unrealistic to try to remove all visual stimuli from a classroom and construct soundproof walls, as a way of providing structural adaptations for a class with an ADHD population. The overhead projector and listening center, though, are must-haves in any classroom so teachers can monitor environmental stimuli accordingly for those students with attention problems.

Difficulty #4—Disorganization

The student often has difficulty organizing tasks and activities; often loses things.

Characteristics

Though the DSM-IV (American Psychiatric Association, 1994) classified ADHD characteristics into categories of hyperactivity, impulsivity, and inattention, two symptoms—difficulty organizing tasks and losing things—reflect the

Figure 3. Model of Two Different "Stimulating" Quizzes; left shows "distracting" elements; right illustrates "attractive" designs

Directions: Complete any eight of the following math items. Do all work on the back.

1. $12 \times 6 =$
2. $32 + 4 =$
3. $21 + 7 + 98 =$
4. $987 - 356 =$
5. $342 + 2 =$
6. $129 - 30 =$
7. $88 + 11 =$
8. $3 \times 33 =$
9. $32 + 8 =$
10. $144 \times 2 =$
11. $876 - 877 =$
12. $4 + (6 \times 2) =$

Wrestle with these problems for 15 minutes. Then put your paper in the homework box.

DIRECTIONS: Pick any 8 of the following math problems. Do these *eight* problems in the appropriate box and place your answer in the colored square. You have 15 MINUTES to finish these problems. Place your finished paper in the homework box.

$12 \times 6 =$ <input type="checkbox"/>	$342 + 2 =$ <input type="checkbox"/>	$32 + 8 =$ <input type="checkbox"/>
$32 + 4 =$ <input type="checkbox"/>	$129 - 30 =$ <input type="checkbox"/>	$144 \times 2 =$ <input type="checkbox"/>
$21 + 7 + 98 =$ <input type="checkbox"/>	$88 + 11 =$ <input type="checkbox"/>	$876 - 877 =$ <input type="checkbox"/>
$987 - 356 =$ <input type="checkbox"/>	$3 \times 33 =$ <input type="checkbox"/>	$4 + (6 \times 2) =$ <input type="checkbox"/>

ADHD child's problems with organization. Children with attentional problems often have difficulties with three areas of organization—tidiness of school materials, time management, and handwriting.

- Children with ADHD often *misplace or lose their belongings and school-work* and have problems handling materials that have multiple pieces (Cherkes-Julkowski et al., 1997). They are easily identified in the general education classroom by the messy, haphazard appearance of their desks and even acknowledge their own organizational deficiencies (Zentall, Harper, & Stormont-Spurgin, 1993). It is not difficult to understand how these problems can affect the classroom performance of students with ADHD.
- Children with ADHD struggle in *planning activities* within a time framework. These time-estimation skills are needed in the classroom to arrive on time, complete tasks within defined limits, and monitor test taking (Grskovic, Zentall, & Stormont-Spurgin, 1995). Research indicates serious deficiencies in these abilities for ADHD populations. In particular, individuals with attention disorders tend to overestimate the length of time intervals (Grskovic et al., 1995;

Turnbull et al., 1999), posing serious implications for classroom performance, including procrastination and failure to complete tests and assignments.

- Children with ADHD often have *poor handwriting*—often, haphazard and illegible. Although studies looking at potential differences in manual dexterity and coordination between populations with and without attention disorders have been inconclusive, most experts agree that the ADHD child's slower motor-response speed is the result of visual-motor deficits (Zentall, 1993). Their disorganized penmanship has also been interpreted as a failure to sustain attention to the repetitive nature of writing (Zentall, 1993).

Structural Response

Although you can directly teach organization skills to your students with ADHD, you can also manipulate the physical classroom to aid all children's tidiness of materials, time-estimation skills, and handwriting.

- Set up and use *individual student mailboxes*, similar in construction to those for teachers found in most school offices (see Figure 4). To ensure that the child with ADHD remembers homework assignments

and other school notices, the teacher can easily drop off those items in the child's mailbox.

- Add a routine *end-of-the day check* of the mailboxes into your classroom procedures so that students do not forget these notices.
- Rather than having the students solely responsible for maintaining their notebooks and materials in their desks, you may want to *allocate classroom space for bins* that can house those objects. When they need something, students can easily retrieve their books and notebooks without wasting time rummaging through disheveled desks for a particular text or notepad.
- These shelves can also hold student folders and work so that papers are kept neatly and *organized by content area*. You can code (e.g., with paint) the folders and bins that hold student work of the same subject area, using a matching color scheme.

Each of these structural interventions—mailboxes, bins, and color-coded materials—serve to decrease the child's tendency to lose or forget those items needed to successfully complete in-class and homework assignments. Consider designing additional or alternative organizational structures that are suitable to

Figure 4. Model of Student Mailboxes

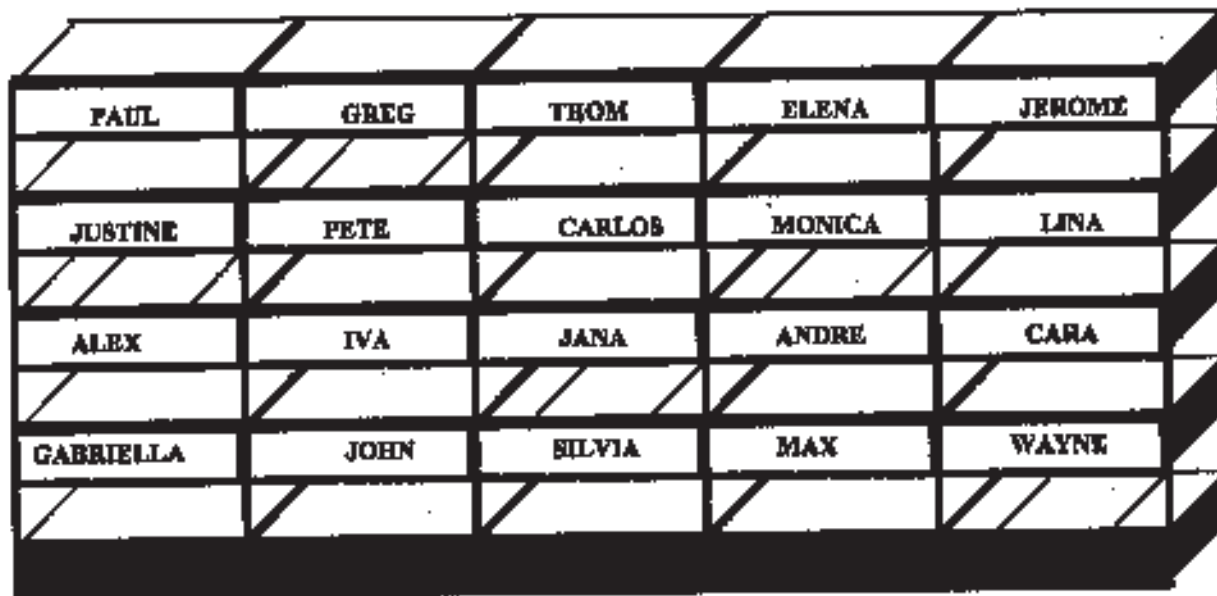


Figure 5. Summary of Behavioral Characteristics and Structural Responses for Students with ADHD

	Hyperactivity	Impulsivity	Inattention/Distractibility	Disorganization
Characteristics of Child	<ol style="list-style-type: none"> 1. Fidgets with hands/feet (overstimulated). 2. Squirms in seat/leaves seat unexpectedly (understimulated). 3. Shows preferences for gross motor activities (i.e., running). 4. Shows frustration during fine motor tasks (i.e., writing, art projects). 	<ol style="list-style-type: none"> 1. Inability to delay responding. 2. Difficulty waiting turn in social and academic situations. 3. Interrupts/intrudes on others. 4. Emotional outbursts/ reacts based on feelings not facts. 5. Poor performance on tasks requiring planning (i.e., tests). 	<ol style="list-style-type: none"> 1. Difficulty filtering irrelevant sensory information. 2. Attraction to “novel” environmental conditions. 3. Restriction of activity when experiencing excessive stimulation (inattention). 4. Initiation of sensation-seeking activity when insufficiently stimulated (distractibility). 	<ol style="list-style-type: none"> 1. Misplaces or loses belonging. 2. Difficulty handling materials with multiple pieces. 3. Messy desk appearance. 4. Difficulty completing tasks and tests within a time framework. 5. Overestimates time intervals. 6. Haphazard, illegible penmanship.
General Strategies	<ol style="list-style-type: none"> 1. Incorporation of gross motor activity and active responses into curriculum (i.e., role play, math manipulatives). 2. Positive peer attention. 3. General education teacher monitoring and feedback. 	<ol style="list-style-type: none"> 1. Cognitive-behavior therapy and metacognitive self-monitoring of impulses. 2. Timeouts. 3. Positive reinforcement using tangible or material rewards. 4. Response cost/removal of reinforcers. 	<ol style="list-style-type: none"> 1. Use of varied and interesting tasks (i.e., games, videos, centers). 2. Use of novel qualities (i.e., color, size) to highlight important written task features. 3. Moderate levels of noise (i.e., music, fan) during completion of repetitive, familiar, and structured activities. 	<ol style="list-style-type: none"> 1. Predictable location and labeling of classroom materials. 2. Metacognitive self-talk to monitor organization. 3. Use of alternate means of producing student responses (i.e., oral, transcribed).
Structural Responses	<ol style="list-style-type: none"> 1. Traditional row seating. 2. Placement of child in front of class, close to teacher’s main area of instruction, and away from potential distractions such as windows, door, etc. 3. Placement of child in an area surrounded by attentive, well-behaved peers. 4. Cooperative learning tables for positive peer interaction. 5. Stimuli-reduced classroom area (i.e., bookcase peninsula) to serve as a quiet place or space for “letting off steam.” 6. “Free seats” available for movement around classroom. 7. Centers providing practice in fine muscle control (i.e., computers). 8. Secure area to keep/take ADHD medication in privacy. 	<ol style="list-style-type: none"> 1. Use of token economy system with clear display of token accumulation in the form of a progress chart. 2. Charted displays of “fineable” classroom behaviors (i.e., shouting out) and desired behaviors with their corresponding rewards/penalties. 3. Group-contingency token system progress charts. 	<ol style="list-style-type: none"> 1. Movable furniture (i.e., unbolted desks/tables) to provide for classroom movement, space, and transition to novel and active activities. 2. Construction of classroom space for small group, whole-class, and center work. 3. Overhead projector. 4. Listening area (functions as an “isolation booth,” device for providing pre-recorded oral assignment instructions and music center). 	<ol style="list-style-type: none"> 1. Individual student mailboxes. 2. Use of color-coded bins for notebooks, texts, and student work of the same content. 3. Time clocks. 4. Computers or word processing center.

your instructional goals and classrooms' physical limitations.

Two more organizational problems that you can address through structural adaptations are poor time management and handwriting.

Place a small clock that counts *down* time on the child's desk. This is an easy method of increasing children's awareness of remaining time and spurring on the development of an appropriate plan of action.

Although the clock may initially be a source of distraction, attention can be restored after repeated exposure and practice using the timing device.

Remedy poor penmanship by *reducing the need for handwriting* (CEC, 1992). This can be accomplished by making room in the class for several computers or word processors. These devices prevent children from becoming overly frustrated with the chore of handwriting, while simultaneously assisting them in the fine-motor control many children need to develop.

Computers, time clocks, and color-coded bins and mailboxes are simple physical adaptations to make in any classroom to improve student organization, and consequently, attention.

Final Thoughts

The structural suggestions provided here are just that—suggestions and ideas, not definitive guarantees of success in reducing the problematic characteristics of children with ADHD (see Figure 5, page 81) for a summary of ideas presented here). In fact, most authors of behavior-modification strategies caution against the appearance of a “honeymoon effect,” that is, a brief period of student compliance followed by an inevitable return to negative original behaviors.

This novelty effect may be especially true of children with ADHD, who, as already documented, are particularly receptive to new sensory changes in their environment and equally quick to tire after repeated exposure. If teachers are to adopt the strategies mentioned here, they must do so cautiously, without unrealistic expectations. Teachers should probably regularly update the suggested structural responses (e.g.,

return to brief period of student self-seating; use of blackboard instead of overhead) when signs of waning interest and diminished novelty begin to surface. No single recipe of structural changes can be applied to all students with attention disorders.

The far-ranging success of the child with attentional problems in the general education setting depends on a multimodal approach to intervention, using instructional and physical accommodations, as well as medication, positive home-school partnerships, and proven behavioral strategies. Only then will the apparent “fog” surrounding the child with ADHD begin to evaporate.

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