

# Stimulant Drug Therapy and Children with Attention Deficit Disorder: An ethical issue

## Abstract

*Many children who experience learning difficulties in school are diagnosed to be suffering from Attention Deficit Disorder (ADD). In some cases amphetamines are prescribed to correct the disorder. It is assumed that once the child's attention is under control, the child will find it easier to learn. The attentional disorder is believed to stem from a neurochemical imbalance in the brain. Amphetamines are thought to correct the imbalance. The ethical issue of using drugs to correct learning problems is discussed. The efficacy of such a procedure is also debated. Finally, possible reasons to account for the onset of children's attentional problems are posited and a call is made for educators to provide environments that cater to children's unique styles of learning.*

## Résumé

*Les enfants qui éprouvent des difficultés d'apprentissage à l'école souffrent pour la plupart d'entre eux d'une carence d'attention. Dans certains cas, on prescrit des amphétamines pour y remédier. On estime en effet qu'une fois qu'on aura surmonté cette carence d'attention chez l'enfant, on aura du même coup réglé les troubles d'apprentissage. La carence d'attention provient, croit-on, d'un déséquilibre neurochimique dans le cerveau. Or, les amphétamines rétabliraient l'équilibre. Dans cet article, l'auteur examine l'enjeu moral que constitue l'emploi de produits pharmaceutiques pour venir à bout de problèmes d'apprentissage. Il analyse également l'efficacité de ce genre de procédé. Enfin, il expose les motifs possibles qui déclenchent l'apparition des carences d'attention chez les enfants et lance un appel aux éducateurs pour qu'ils offrent aux enfants des conditions qui tiennent compte de leurs différents besoins en matière d'apprentissage.*

## Physical and Cognitive Development: Ethical Issues

### *Introduction*

Some children experience learning difficulties in school and, as a result, are referred to either a physician, paediatrician, or child psychiatrist for assessment and treatment. Frequently, these children are diagnosed to be suffering from some form of attentional problem which is thought to restrict their ability to attend to school work. A neuropharmacotherapy treatment is usually advocated for these children. This consists of placing children on stimulant drugs in an attempt to improve their attention and hence rectify the learning disability. The stimulant drug is used to affect the neurochemical activity within the child's brain; such chemical readjustment is judged necessary in order to improve the child's attentional problem. However, is it morally acceptable to adjust a child's brain activity in order to control behavior? Further, is there any research evidence to suggest that neuropharmacotherapy treatment is an effective procedure for dealing with children who experience learning difficulties? These questions are addressed in this article. What follows is a debate on both the ethical and efficacy concerns surrounding the use of stimulant drug therapy with children who exhibit learning difficulties. The use of neuropharmacotherapy treatment is challenged. As an alternative, practical suggestions which do not require stimulant drug therapy treatment are forwarded to help deal with children who experience learning difficulties in school settings.

To introduce the ethical concerns surrounding neuropharmacotherapy treatment, two scenarios are presented. These scenarios are used to illustrate the ethical anomaly that exists between the current practices associated with children's cognitive development and children's physical development.

### *Physical development*

The first scenario considers physical development. Imagine an elementary school teacher who notices that one of his/her students, Susan, scores very low on the majority of activities covered in the *Canadian Physical Fitness Test*. Her leg strength is weak and although the teacher encourages Susan to try, she appears bored, unmotivated and continues to perform poorly. The teacher informs Susan's parents that her performance is well below the "norm" for her age level. They indicate that Susan is very lethargic when at home and merely spends her time in sedentary activities, mainly watching television. Because Susan is performing below the level of expectancy for her age level, a decision is made to administer anabolic steroids to her. Since steroids plus training will increase muscle strength, Susan now has the opportunity to improve her strength and hence, increase her fitness test score. She now performs a little better on the fitness test, so

the doctor's, parent's, and teacher's decisions to condone the administering of drugs to Susan appear justified. It might be claimed that since she now performs at an "expected" or "acceptable" level, there must have been a chemical imbalance in Susan's body preventing her from acquiring the prerequisite muscle strength necessary for the fitness test activities. Administering anabolic steroids merely corrected the chemical imbalance.

Could the above scenario happen in today's educational setting? Further, if it did, would it be equally logical to administer greater dosages of steroids, if increased strength were noted at each dosage? And if it were observed that the chemical imbalance still existed, would it be concluded that Susan will need even greater dosages to complete the correction? How much improvement in muscular strength do we allow to occur through steroid intake before declaring the imbalance has indeed been corrected? Certainly, the moral and ethical considerations associated with a scenario such as the one just presented would, it is hoped, deter even the hardest behavior modifier from tampering with Susan's physiological make-up. Further, the prognosis, diagnosis, and prescriptive solution to the low fitness test scores could all be seriously questioned. For example, should we expect Susan to score high on the physical fitness test? Information included in the *Canadian Physical Fitness Test* suggests children should aim to reach or exceed the 50th percentile of the norm referenced criterion scores. Obviously, it will be impossible for all children to reach this level since there has to be a group of children who fall below the 50th percentile who make up the lower end of the norm referenced distribution of scores. Hence, some children will score very low on the test. Further, Susan's sedentary lifestyle suggests she is probably unfit and, quite correctly, will score low on the fitness test items. Also, she may not be interested in physical education, failing to understand the educational and health benefits to be accrued from physical activity. Certainly, changing Susan's natural disposition through drugs would appear to be an unacceptable solution to resolve her low fitness scores. Indeed, society in general abhors the idea of drug taking to enhance physical performance. Take, for example, the Olympic athlete; millions of dollars are spent each year on refining drug testing, trying to ensure the athlete is only performing with the physical make-up endowed by nature. To tamper with nature is totally unacceptable and society does not condone such a position - or does it?

Consider the following "cognitive" scenario.

### *Cognitive development*

Johnny is performing quite poorly in reading and writing. He appears disinterested, has difficulty attending to the tasks set, frequently tries to answer the problem before the teacher completes the question, appears

bored in class, and performs frequently at levels below the "norm" for his age. Johnny's parents frequently visit his teacher to find out why he is doing so poorly on the tests he is given. The teacher is unsure and suggests some form of assessment. Based on observations such as his lack of attention, interest, etc., he is diagnosed as suffering from Attention Deficit Disorder (ADD) and prescribed methylphenidate (drug name: Ritalin) to correct his attentional deficit. It is "thought" that ADD stems from a chemical imbalance in the brain; methylphenidate is "believed" to correct this chemical imbalance (Solanto, 1984). Johnny's behavior in school improves slightly, he is less active and more sedentary, but he appears to be attending to task better and is, generally, fitting more in line with the "norm" of expectancy and tolerability of both parents and teacher. Johnny's genetic make-up, provided by nature, has now been tampered with in order to change his behavior to fit the expected pattern of normalcy defined by his teacher and the educational institution. Nurture alone, it was decided, could not provide the environment suitable to bring Johnny up to the expected standards. Instead, Johnny's genetic nature would be altered to make him capable of emitting the desired responses.

This second scenario is precisely what does occur in today's schools. On the one hand, the school expends a tremendous amount of energy declaring the unacceptable tolerance of society to the idea that drugs be taken to alter the mind or body. On the other hand, the very same institution condones the use of amphetamines to alter the behavior of children. Clearly, there is a case of mixed messages being sent to students. Further, the view that Johnny was "not blessed" by nature with a genetic endowment that would allow him to excel in academic disciplines, was not considered. Regardless of his true individual difference, the current view is that Johnny should perform to the "norms" society has set, and so chemical adjustment via stimulants is an acceptable solution. However, is such a solution morally acceptable?

### **Attention Deficit Disorder**

#### ***Identifying the disorder***

Arguments put forward by physicians to defend their decision to administer drugs to children in order to change chemical activity within the brain, frequently revolve around comparisons with diabetics who must receive insulin to correct an imbalance in their blood-sugar levels. This argument, however, does not hold. First, the blood-sugar levels are scientifically checked for any imbalance and, if one is found to exist, exact intakes of insulin are prescribed and administered. Regular checks (in some cases four times per day) are then made on the blood-sugar level balance. In other words, the chemical activity within the body is accurately assessed

prior to intake of insulin and carefully monitored after intake has occurred. A scientific process occurs whereby each person is individually checked for any chemical imbalance. Compare this with some of the major criteria used to diagnose ADD. First, it should be noted that ADD is frequently associated with hyperactivity. However, many children diagnosed as having ADD and who, as a result, are placed on drugs such as methylphenidate, do not have associated hyperactivity. However, the criteria listed by the American Psychiatric Association's official guidebook, the *Diagnostic and Statistical Manual of Mental Disorders (DSM-III)* (1980), list the symptoms of ADD in conjunction with hyperactivity. They list three major criteria of inattention, impulsivity, and hyperactivity, and suggest the onset of the symptoms should have occurred before the age of seven and should have been noted for a duration of at least six months. The symptoms are as follows:

A. Inattention

1. Often fail to finish things they start
2. Often don't seem to listen
3. Easily distracted
4. Have difficulty concentrating on schoolwork or other tasks requiring sustained attention
5. Have difficulty sticking to a play activity

B. Impulsivity

1. Often act before thinking
2. Shift excessively from one activity to another
3. Have difficulty organizing work (this not owing to cognitive impairment)
4. Need much supervision
5. Frequently call out in class
6. Have difficulty awaiting turn in games or group situations

C. Hyperactivity

1. Run about or climb on things excessively
2. Have difficulty sitting still or fidget excessively
3. Have difficulty staying seated
4. Move about excessively during sleep
5. Always "on the go" or act as if "driven by a motor"

According to the manual, children may be diagnosed ADD with hyperactivity if they exhibit three symptoms from category A, three from B, and two from C. A total of eight symptoms out of the sixteen stated is enough for an ADD with hyperactivity diagnosis. For ADD without hyperactivity, the criteria for this disorder are the same as those for ADD with hyperactivity except the child does not exhibit any of the symptoms

associated with category C. In other words, six symptoms are sufficient for a diagnosis of ADD. The *Diagnostic and Statistical Manual of Mental Disorders* (1980) also notes the "vagueness" associated with the identification of the symptoms. The manual states:

Typically, the symptoms of this disorder in any given child vary with situation and time . . . It is the rare child who displays signs of the disorder in all settings or even the same setting at all times. (p. 42)

Given the imprecise nature of the symptoms, coupled with the variability associated with their manifestation, accurate assessment of ADD is obviously **not** an exact science. One could monitor children during any typical school day and observe most of the criteria associated with ADD assessment in almost every child. Should all of these children be placed on amphetamines? The real question is: Why do children exhibit attentional deficit patterns? The answer is obviously very complex, but to give up on nurture, i.e., our teaching environment, and attempt to change nature, is a sad reflection on today's educational practice.

### *Styles of learning*

The *DSM-III* (1980) states that ADD symptoms are typically variable and signs of the disorder "may be absent when the child is in a new or one-to-one situation" (p. 43). This would suggest that under certain circumstances children with ADD can sustain attention. Therefore, do children with ADD have a brain dysfunction, a chemical imbalance where neurotransmitter chemicals within their brains need adjustment via drugs? Or is there merely a need to adjust their learning environment to "capture" the way they prefer to attend to information? A need to cater to their unique styles of learning? The manual also states that in some cases "home adjustment may be satisfactory and difficulties may emerge only in school" (p.43). Surely, if the child does not exhibit attention problems in the home environment and difficulties emerge only in school, would this not suggest that for this child there is a problem with the "school environment" and not with his cognitive brain functioning? From the evidence cited in the psychiatric diagnostic manual, it would appear that children diagnosed as having ADD probably exhibit unique styles of learning. They need to be individually catered to since, under the right circumstances, children with ADD may be capable of normal well adjusted behavior and of sustaining attention.

### *Attentional deficit patterns*

Children who exhibit difficulties in attending to task may not have a brain deficit needing correction by drugs. Indeed, these children may be a

product of their environment, conditioned into this form of information processing. Children watch, on average, six and one-half hours of television each day (Forbes, 1987) and, by the age of 18 years, an average child will have spent more time watching television than attending school (DeWaal, 1982). David Elkind (1986) points out that children's programs, such as *Sesame Street*, provide too much information in too short a period of time. The information appears too quickly for children to process. Consequently, they do not gain a deep understanding of the material but instead are merely conditioned toward rapidly switching their attention to new tasks. Further, in order for children's interest to be maintained television program designers provide fast moving, novel, interesting, colourful, and exciting material. Classroom teachers frequently do not provide such an environment; indeed, the teacher requires the child to stay on the task at hand and not to flit from task to task.

Children conditioned into dealing with fast moving material which they process at a very low level of meaning (Craik & Lockhart, 1972) are not likely to be too enthusiastic about a school environment requiring a different form of selective attention and information processing. Further, television programs require only a passive listener, not an active learner. Schools require an active learner who can demonstrate through evaluation and testing procedures, a condition not easily achieved via television. Although care must be taken not to assume cause and effect relationships based on correlations, Elkind (1986) does make the interesting point that in the twenty years the educational learning programs have been on television, attentional deficits have become the leading form of learning disability.

### Should Drugs be Used?

#### *In defence of drugs*

The short-term efficacy of methylphenidate therapy with ADD children has been well established (Brown, Borden, & Clingerman, 1985; Douglas, Barr, O'Neill, & Britton, 1986; Gadow, Torgesen, Greenstein, & Schell, 1986; Pelham, Milich, & Walker, 1986; Pelham & Murphy, 1986). Stimulants such as methylphenidate decrease gross motor activity, diminish impulsive responding, and improve attention (Solanto, 1984). In some cases, it has been demonstrated that while on stimulant medication, ADD children have improved to the point of being indistinguishable from normal children (Abikoff & Gittelman, 1985; Gittelman, 1983). However, despite the plethora of research in the last 20 years, the therapeutic mechanism of action of stimulants remains poorly understood. Halliday, Callaway, and Lynch (1984) claim that stimulant drugs exert their influence on response selection processes, leaving stimulus evaluative stages untouched. Hence, gains in academic performance can be expected.

A word of caution, however, is offered by Famularo and Fenton (1987). They suggest that although stimulant drugs have been found to affect attentional processes, they may not affect higher cortical processes that are required for sustained academic gains. Another view relating to the mechanism of action is put forward by Kupietz, Winsberg, and Sverd (1982) who suggest that methylphenidate plasma concentration may hold the key to understanding stimulant action. They concluded from their research that methylphenidate blood level may be linked to changes in a child's academic performance.

Although several hypotheses have been put forward to explain stimulant action, specific neurochemical activity responsible for a child's academic gain has not been clearly identified. There is, however, a wealth of evidence from animal studies concerning the neurochemical sites and molecular mechanisms of action of stimulant drugs and concomitant behavioral changes (Solanto, 1984). The applicability of this research to humans is limited by the need to assume comparability of specific animal and human behaviors. Even so, it is this neuropharmacological basis of stimulant drug action which is frequently quoted in defence of administering stimulant drugs to children. Basically, the claim is that ADD children have a neurochemical imbalance which causes attentional problems. Methylphenidate's neurochemical action is believed to readjust this imbalance, thus producing the correct neurotransmitter activity within the brain.

#### *A case against drugs*

Famularo and Fenton (1987) studied the effect of methylphenidate on the academic performance of ADD children. They reported that academic performance during drug treatment was significantly superior to performance prior to drug therapy. However, when taken off the medication academic performance decreased significantly to the level noted prior to drug treatment. Such results are typical of research findings and have led researchers to refer to the "short-term efficacy" of methylphenidate, since any beneficial effects dissipate rapidly upon discontinuation of the medication. It appears that methylphenidate does affect performance (Brown, 1986) but there is substantial evidence to suggest that methylphenidate has only minimal effect on the improvement of academic learning (Ballinger, Varley, & Nolen, 1984). Postulated reasons for such effects centre on behavioral changes influencing the outcome on academic and laboratory tests.

A wealth of research has attested to the efficacy of stimulant medication on laboratory measures of attention and behavioral ratings (Brown, 1986), but few studies have demonstrated impressive stimulant



drug effects on standardized measures of academic learning (Douglas *et al.*, 1986). Improved performance on laboratory tests may have been mediated by the effects of amphetamines on areas other than the encoding and consolidation processes associated with learning. For example, the short-term benefits of stimulant therapy may be attributable to improved attentional control (Barkley & Cunningham, 1978) and/or changes in perception, motor control, and arousal during testing (Solanto, 1984), rather than to any real gains in learning. Hence, children perform better on the tests while on medication but when taken off the stimulant both behavior and performance almost immediately return to the same levels noted prior to commencement of drug therapy (Ballinger *et al.*, 1984). This point is echoed by Brown, Wynne, *et al.*, (1986) who state that:

It is so often disappointing to see our ADD patients return as adolescents, only to find that they are still faring poorly despite the intensity of our pharmacotherapy treatment efforts with them during childhood. In fact, follow-up studies of these children have not provided any real evidence to suggest that ADD children maintained on stimulants fare any better in the long haul than their ADD peers who have not been treated with medication. (p.169)

It may be tempting to suggest that since improvement in performance occurs only when ADD children are on medication, then permanent pharmacotherapy is warranted. However, Brown, Wynne, *et al.*, (1986) warn against such a proposal stating that little is known about possible side-effects associated with long-term stimulant intake. Also, there is the known paradoxical effect of stimulant action as children mature into adulthood. Moreover, researchers investigating the long-term effects of methylphenidate therapy provide little empirical support for the effectiveness of long-term stimulant treatment on academic learning (Riddle & Rapoport, 1976). Findings such as these led Ashman and Schroeder (1986) in their review of drug therapy to conclude that we are "nowhere near" understanding the effects of stimulant medication on the central nervous system and we have but a "shadowed view" of such treatment on cognition (p. 321).

There is sufficient evidence to suggest that drugs such as methylphenidate do not enhance children's academic learning. Then why do physicians prescribe them to children? Certainly, methylphenidate has been shown to have a modifying effect on children's attention, motor control, and impulsivity. Hence, it is not surprising to find the behavior of some hyperactive children being rated as significantly improved when these children are placed on stimulant drug therapy. However, the rationale for prescribing methylphenidate to ADD children who are not hyperactive must be seriously questioned, especially considering the dreadful array of possible

side-effects associated with methylphenidate (see Mendelsohn, 1987, for a review.) Further, not all children respond positively to stimulant therapy. Studies suggest that hyperactive behavior may be worsened in 12% or more of all cases treated with stimulants (Barkley, 1977). In addition, there is growing evidence of responders and non-responders to drug therapy. The non-responders frequently exhibit uncharacteristic behavior and deteriorate even further in their academic performance (Kimball, 1986; Kupietz *et al.*, 1982; Ullman & Sleator, 1986). It is plausible to concur with Brown, Borden, Wynne, Schleser, and Clingerman (1986) who offer the following summary:

The short-term efficacy of methylphenidate therapy with ADD children has been extremely well documented. . . . By contrast, efforts to establish its long-term efficacy have failed repeatedly. . . . Thus the need for alternative treatments is apparent. (p. 493)

### **Ethical Considerations and Summary**

As educators we must be prepared to resolve educational problems by adjusting our environment to cope with the variety of individual differences associated with any group of students. Environmental influences outside of school, such as television, home life, day care, and nutrition, all play their part in moulding children into unique individuals. As society changes, children change. Schools must be flexible in order to cater to the dramatic changes occurring in the school population. Educators must be flexible and accommodating, and allow for each child's uniqueness. To bend toward the tampering of nature to get all children to "fit" into an expected criterion of "normal," is to err.

The medical profession must also consider its moral responsibility in this regard. Using drugs to change the behavior of children who exhibit learning disabilities is an issue that needs to be raised. Unfortunately, any debate on this topic is frequently weighted in favour of the medical profession's point of view. This is mostly due to the influence the medical profession enjoys in society as it would not appear to be based on the weight of arguments such as that of comparing a child's learning problems in school with the chemical imbalance associated with diabetes.

The medical profession might benefit from a study of the anthropologist. The anthropologist frequently spends many years living on a daily basis with a small group of people in an effort to glean a small degree of understanding of their behavior. Field notes, journals, interviews, record keeping, and other forms of ethnographic data collection are all carefully gathered as the anthropologist painstakingly goes through years of data

collection, analysis, reformulation, and further analysis. Cross-checks with other data sources, checking for trustworthiness and reliability, and other such factors all occur in an attempt to get to a true understanding of the "lived" experience of the people under study. Compare this process with the medical practitioner's analysis of why a child is experiencing difficulties in a classroom setting. Does the practitioner visit the child in the school setting – the real world of the child? In all likelihood the practitioner will not visit the school nor is the practitioner likely to possess any formal qualifications in pedagogy or instruction, and, as a result, would be unqualified to offer a professional pedagogical opinion. Further, the symptoms associated with ADD may not be visible to the practitioner. As the *DSM-III* (1980) states, "the symptoms are typically variable, they may not be observed directly by the clinician" (p. 43). The practitioner may have to rely on verbal reports of the symptoms from others, especially since "signs of the disorder may be absent when the child is in a new or one-to-one situation" (p. 43). Whereas the anthropologist needs to be in the actual environment (often for a period of years) living through the experience to really understand the situation and the person under study, the medical practitioner is prepared to offer a diagnosis of the child's problem (ADD) after a relatively short medical consultation, where the symptoms may or may not be observed directly, and then is prepared to go on and administer a course of amphetamines as a solution! Surely a more morally acceptable solution is warranted.

A step in the right direction comes from the Canadian Paediatric Society (1988) who recently outlined guidelines for helping children with ADD. Indeed, their recommendations include many of the procedures adopted by the anthropologist. A thorough interdisciplinary approach is advocated with teachers playing a major role in the entire process. This is in marked contrast to the views of Ullmann and Sleator (1985) who suggest that the physician should consider the classroom as "his laboratory" and view teachers as only "skilled technicians" (p. 550). To be viewed merely as a technician by the medical profession seriously denigrates the professional expertise of teachers. It should be viewed that teachers are the anthropologists, the professionals who live on a day-to-day basis with children. They are the professionals who must seek to understand children with ADD and attempt to provide environments which best suit children's individual needs.

One change that may prove beneficial is the make-up of the school timetable. At the elementary level, language arts activities dominate the school timetable, frequently claiming the entire morning of each school day. Further, other academic core subject areas take up large portions of the afternoon timetable, leaving very little time for subject areas such as physical education. However, there is research evidence to suggest that children benefit academically when physical education time is increased and

academic core time is decreased (Fishburne, 1984a). Intuitively, this might seem odd, especially since the usual educational practice is to give an even greater emphasis to the basic academic core areas when children exhibit learning problems. However, there is sufficient research evidence to indicate that large gains in overall performance can be expected with school timetables which allocate as much as one-third of curriculum time to physical education (Fishburne, 1984b, 1984c; Forbes, 1987). Changing the allocation of time to be spent on each discrete subject area may be one variable that offers the potential for changes in both student behavior and academic learning.

It is not suggested here that educators have all the answers to the complex problems children, parents, and teachers face when low achievement scores occur, but an ethical and moral issue that must be debated is raised, that is, should educators give up on nurture and our educational environment, and attempt to change a child's brain functioning through drugs in order to enhance achievement. Perhaps David Elkind (1986) is right when he succinctly points out that at the present time, decisions made regarding children "derive more from the needs and priorities of adults than from what we know of good pedagogy for young children" (p. 636).

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