Inviting Calm Within: ADD, Neurology, and Mindfulness

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Abstract

The fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM IV) describes ADD as behaviorally observed impairments in attention, impulsivity, and hyperactivity. Officially known as AD/HD, we use ADD here because we are dealing primarily with attention, organizational, and impulsivity issues. A more sophisticated model of the disorder is being developed as research in neurology, psychotherapy, cognitive psychology, and education as unified into a comprehensive view, offering more promising treatments than in the past.

In this robust model, ADD is viewed as a neurological condition where individuals struggle with regulating executive functions of the brain, as a result of impaired operation of the prefrontal cortex. In contrast to the DSM IV viewpoint, these impairments may or may not result in behavioral deficits, depending on the success the individual has in accommodating the symptoms. Acknowledging that these deficits create substantial challenges to the individual, this newer model acknowledges personal resilience and the self-creation of compensating factors that mitigate the difficulties that are required in the DSM IV diagnosis. Thus, an ADHD individual may be quite successful, but that success comes at a high price, from either continued struggles hidden carefully from others to control functions others take for granted, or enduring great underachievement when the intellectual ability of the individual is considered.

Although ADD is a substantial lifelong disorder, its effect can be mitigated by a number of factors. While medication is the front-line treatment, success typically involves a combination of strategies, including altering the immediate environment, education about the condition, and psychological therapy. This article describes additional approaches creating an inviting perspective to problematic organizational and concentration issues. This approach includes the traditional approaches, but reaches out to more experiences known to aid in the development of mindfulness and attention, in ways that can benefit the ADD individual. The purpose of the paper is:

- To counter negative stereotypes of ADD ;
- To provide an accurate basic explanation of the neurological and genetic basis of ADD;
- To describe the compatibility of Invitational Theory (IT) in creating classroom environments that foster ameliorative settings, situations, and activities for students with neurological differences; and
- To describe strategies for calming the mind, specifically adapted for ADD that consume minimal time, can be integrated into daily classroom functioning, and are appropriate for individual as well as classroom use.

Introduction

Attention Deficit Hyperactivity Disorder (ADD)[3] is a collection of neurological differences in specific brain functions, where individuals exhibit difficulty in controlling attention and impulsivity in variable and often unique ways (Antshel, 2009; Balint et al., 2009; Hallowell & Ratey, 2005; Jackson & Farrugia, 1997; Wender, 1995). Extensive study in neurology and brain functioning utilizing non-intrusive dynamic techniques, such as fMRI, SPECT, qEEG, and CAT scans have provided a description of ADD as more complex than a childhood disorder, where children demonstrate hyperactivity and the inability to pay attention to classroom lessons. This research reveals ADD to be a lifelong impairment, where a malfunctioning prefrontal cortex results in serious challenges, in regulating the brain's executive functions of attention, focus, effort, emotion, action, and memory (Kohler et al., 2009; Makris, 2007; Makris, et al., 2008; McLean et al., 2004; Weiss & Murray, 2003; Wender, 1995). When viewed in a neurological perspective, ADD is a highly varied collection of one or more specific disruptions, in the executive functions of the prefrontal cortex of the brain. Thus, two individuals with ADD may not share any similar behavioral symptoms, but still have the disorder, since different areas of the executive functions are involved. ADD is appropriately viewed as a chronic congenital disorder that remains with individuals for their entire lifetime and has a seriously negative impact on total quality of life measures, even among those who successfully compensate for the disability.

It is naïve to consider ADD as limited to being a childhood disorder that will mitigate itself as the child matures. ADD symptoms and the severity of the symptoms can vary greatly over the lifetime of the individual. At times the symptoms can abate, but they always present the potential for substantive disruption to attention and organization. Often, especially in resilient adults, the ADD diagnosis is made decades after childhood and only then, as a result of changes in the individual's life experiences (Able et al, 2007; Antshel et al., 2009; Balint et al., 2009; Faraone et al., 2009; Newton-Howes, 2004; Shaffer, 1994). This past experience, along with environmental conditions and learned adaptations, plays a significant role in the lives of ADD individuals.

Contributors to the ADD Condition

Researchers have indicated that the unique neurological functioning of the ADD individual has been shown to have origins in four broad areas of influence: genetic, physiological, psychological, and environmental.

Genetic Factors

Genetic factors are heritable, that is, the suspected associated genes are neither dominant nor recessive and react to many factors in an individual's life, including experiences, diet, exercise, stress, education, and self-esteem. While symptoms typically emerge in early childhood, symptoms can be triggered, altered, or become more or less severe, as a result of life experiences and other factors. These factors

[3] ADD is the official designation by the DSM IV criteria of APA. However, not all researchers endorse the DSM IV description or diagnostic elements. In this paper, ADD refers to the inattentive subtype that the many researchers frequently refer to as Attention Deficit Disorder (ADD). The issue of hyperactivity is not addressed in this paper. Many researchers currently publish materials under the ADD designation referring the ADD inattentive subtype. The DSM IV treatment of ADD is currently under revision by APA with the unusual procedure of soliciting perspectives through open hearings.

result in genetically determined structural differences in the ADD brain, that affects physiological functioning in the brain's prefrontal cortex (Hallowell & Rately 2005; Wender, 1995).

Physiological Factors

The physiology of the ADD brain is not fully understood, but most current theories provide evidence that the neurotransmitter production and regulation varies significantly with the normal brain functions, as exemplified by non-ADD individuals. The research has indicated that the production and usage of neurotransmitters influences lifestyle (e.g. choices in exercise, diet, and sleep patterns), as well as cognitive functioning (e.g. attention, focus, and concentration) and emotional states (e.g. depression, anxiety, responses to stress, and sense of wellbeing). This relationship between physiology and experiences has been found to be bi-directional; that is, neurotransmitters affect behavior, but the reverse also happens: behavior alters neurotransmitter production and reception (Hallowell & Rately 2005; Wender, 1995). Among many behavior choices that can positively affect brain functioning, such as a proper diet, regular sleep patterns, moderate regular exercise, the practice of mindfulness and mindfulness meditation has been shown to be beneficial. Meditation practices are considered to be a substantial contributor to effective mental functioning (Kabat-Zin, 2005).

Psychological Factors

Psychological conditions that affect ADD refer to the impact of past and present experiences, which in turn, affect the individual's willingness to recognize problems and make efforts to modify thinking and behavior. Environmental influences (people, places, policies, procedures, and programs) are well established in IT as being critical for all students. However, for individuals with ADD, those factors have more serious consequences: positive experiences are more critical in establishing wellbeing, and negative experiences are more damaging to self-esteem.

Environmental Factors

Chaotic, busy, and distracting environments are known to be stressful. For the ADD individual, although they readily engage in activity that create this chaos, the stress of low or dysfunctional organization, typically results in an exaggeration of the current symptoms: focus becomes even more difficult, short term memory erodes, irritability increases inordinately to the environmental stimuli, etc. To counter this, typical adaptations for ADD students include alternate testing environments that are quiet and do not contain distractions, and seating that provides the least student movement and most commanding viewpoint for the teacher's lessons. But these accommodations are temporary measures at best, and are not likely to follow the child through the demands of adulthood. While environmental conditions can be altered to accommodate ADD student needs, accommodations cannot be provided in all circumstances in school, and they are rare in the social environment of the child or adult. Therefore, people with ADD need to learn adaptive strategies to deal with environmental factors. Successful adaptations can lead to success, which in turn, contribute to the psychological wellbeing of the person. Success and the confidence success creates are major stress reducers, and as such they can influence the brain's physiology in positive ways. Methods of calming the mind in stressful environments or when ADD symptoms are bothersome are important skills that can be learned through mindfulness practice and a variety of meditation techniques.

Calming the Mind

Current neuropsychological research supports theoretical explanations and practical foundations for implementing instructional and personal strategies in calming the distracted mind through meditative practices (Butler & Hope, 1995; Kelley et al., 2007; Kinder, 1994; Ornish, 2008; Ramsay, 2010; Wadsworth & Harper, 2007). Davidson (2008), Davidson and Lutz (2008), Lee et al. (2009), Lutz et al. (2009a & 2009b), Perlman et al. (2010), and many others have convincing evidence that trained individuals can immediately induce brain functioning that corresponds with neurological patterns, believed to represent specific emotion, as reported by test subjects. These states include the establishment and maintenance of a calm demeanor, empathy, and compassion. The intensity of these states, the starting and stopping of these states at will, and the consistency of the findings, all lead to the conclusion that neuroplasticity is a predictable result of meditative practices.

Meditation has been found to promote not only neural plasticity, but also a wide range of physiological benefits, such as increased immunity to disease, reversal of arteriosclerosis, and enhanced effectiveness of flu vaccines (Davidson & Lutz, 2008, Kabat-Zin, 2005; Ornish, 1998 & 2008; Yongey, 2007). Advantageously, there are *no indications* that involvement with mindfulness and meditation practices has *any* negative outcomes or risks.

There is strong evidence that certain "habits of mind" (that is, practicing thinking patterns repetitively), change both the structure and the functioning of the brain. The linkage between the knowledge found in emerging neuroscience and the ancient knowledge of mindfulness meditative practices, permits an adaptation of these formal practices to the classroom environment. Two of the key barriers to developing and implementing this adaptation are the relative immaturity of students, compared to the demands of mental self-discipline and the scarcity of time for meditation practices in the classroom, with the expectation of predictable results. This paper approaches the problem by adapting mindfulness meditation techniques to the current environmental factors of today's schools (such as time constraints and an externally imposed curriculum), to create the most effective inviting environment for *all* children, but especially those with ADD and other neurological challenges.

Invitational Theory and the Perceptual Tradition

Integral to Invitational theory (IT) is a demonstrated respect for differences in perception, regardless of the stimulus of the perception. Differences that result from learned experience, cultural factors, or a differentiated neurological predisposition are to be respected (Purkey & Novak, 1996). Through IT's RIOT (respect, intentionality, optimism, and trust) educators and helping professionals manage the 5 P's (People, Places, Policies, Program, and Procedures) to optimize the environment for successful learning (Purkey & Novak, 1996). IT provides the theoretical and practical basis for an ameliorative approach to dealing with student differences with neurological origins, through modification of practices, procedures, and context.

Methods, Techniques, and Modes of Inquiry

Combining meditative practice of mindfulness with the type of strategies advocated by invitational learning can enhance student performance, satisfaction, and happiness (Bunaratana, 2002; Chodron, 2002; Goldstein, 2003; Hagen, 1997). These practices, if exercised in the classroom setting, should obtain

similar results. A number of meditation strategies hold great promise in assisting ADD individuals in adapting to school demands, by increasing concentration and eliminating the incessant background "chatter" of iterative second guessing of one's actions. As schools have become increasingly focused on singular cognitive processing objectives as measured by high stakes tests, students with ADD will have even more difficulty in the classroom. To mitigate these difficulties, students can be taught adaptive practices explicitly designed to assist in concentration and focus. The process of combining well-defined and validated principles in neurology, psychotherapy, and mindfulness meditation, can establish a carefully defined component in the treatment of ADD.

Inattention

Invitational learning provides the mechanisms for linking mindfulness outcomes, with classroom practices that are flexible and well-grounded in a theoretical base. The first task in this endeavor is to examine the neuropsychological work on ADD, to see which elements of cognitive processing are most troublesome and, if countermanded, would yield the greatest benefits.

Although co-morbid conditions, particularly mood disorders, present great challenges, arguably the most difficulty aspect of ADD to ameliorate is the combined effect of inattention, distractibility, and difficulties in the regulation of focus. All of these can be managed more effectively by the ADD student, if multiple treatments are employed and the ADD student can make significant contributions to the classroom climate. Yet, there is a strong, negative stereotypical view of these students as having behavior problems, that inevitably disrupt the student's and others' classroom learning.

This negative stereotype is a "built in" aspect of the traditional view of ADD that has evolved on the necessity of negative behavior observation (see DSM IV), rather than on neurological analysis. Using a clinical diagnosis (based on observed behavior) and using the DSM IV criteria, (as stated earlier) "realized failures" are required for the ADD diagnosis (Balint et al., 2009; Hollowell & Ratey, 2005; Wender, 1995). That is, if a student compensates for difficulty in attending to classroom lessons and tasks and does well in school, but that same student's neurological functioning was consistent with that of an ADD diagnosis, the student would *not* qualify for an ADD diagnosis. As a result, the student would not receive any assistance in accommodating the challenging neurological condition, because the student is meeting the minimal expectations of the school, while it is ignoring the student's greater potential, nor recognizing the emotional drain that results from expending much more effort to succeed, than other students require.

In looking at which areas are the most difficult for ADD students to address, inattention, combined with the effects of focus impairments and distractibility, is at the forefront and is typically the impetus for co-morbid disorders, including generalized anxiety disorder and depression. Inattention results in missing critical information needed for daily functioning. For example, an ADD individual may hear the time and place of an important meeting, but forget the day. Or hear a negative sentence, but not attend to the "not" of prohibition: When told, "Do not open the door," the inattentiveness results in receiving and interpreting the statement as "Open the door." Such minor lapses in attention have major consequences that cumulate over time to incredible levels of frustration and stress, as well as feeding the "pathological self" that demeans and devalues an individual's estimation of worth.

Inattention is characterized by:

- Being easily distracted, missing details, forgetting things, and frequently switching from one activity to another, or in speech, from one topic to another;
- Having difficulty focusing on one thing, or paradoxically, not being able to terminate focus ("hyperfocus") on one thing and transition to the next topic or activity;
- Becoming bored with a task after only a few minutes, unless they are doing something enjoyable, where hyper-focus makes it difficult to leave the task;
- Having difficulty focusing attention on organizing and completing a task or learning something new; in general having difficulty in getting started on a task;
- Having trouble completing or turning in homework assignments, often losing things (e.g., pencils, toys, assignments) needed to complete tasks or activities; and
- Not appearing to listen when spoken to.

Consequently, the result is a combination of one or more of the following:

- impaired performance or failure;
- confusion and emotional distress;
- expending greater time on tasks than is needed;
- poor self-esteem; and/or
- the failure cycle: "I fail, I can't do it, I won't do it, I fail again."

These traits, when left unregulated and uncontrolled, offer few benefits. This list may seem familiar to educators who find that all children demonstrate these characteristics from time to time. These are natural traits occurring in everyone; however with the ADD student, these traits happen with greater, often near constant frequency and often dominate cognitive functioning. Examples of these difficulties include managing simple tasks, such as remembering an idea long enough to write it down, keeping track of pencils or the paper that is already completed, and when out of the classroom seat, remembering what task prompted movement.

Instead of a single focus, ADD individuals attempt to attend to many perceptual "channels" at the same time (listening to the teacher, looking out the window at the oncoming storm, listening to two students discuss a project, watching a bumble bee find nectar, and so on). This, in part, is one of the reasons these children often notice things that others ignore.

These traits are not the result of poor decision-making or lack of personal effort. Instead, these traits are a result of cognitive processing differentials. However, since all students do experience these difficulties from time to time, the student strategies outlined in this paper can benefit all students with learning tasks, but also with emotional wellness. Mindfulness practice via meditation or other associated activities, such as yoga, tai chi, even properly taught martial arts are well known to reduce stress. Stress reduction is very important to ADD individuals, in that stress can trigger symptoms (e.g. lack of focus, restlessness, etc.) or intensify those that are already prevalent (e.g. argumentativeness, frustration, etc.). The Mayo clinic states that the benefits of mediation, include gaining a new perspective on stressful situations, building

skills to manage your stress, increasing self-awareness, focusing on the present, and reducing negative emotions (Mayo Clinic, http://www.mayoclinic.com/health/meditation/HQ01070).

Using invitational learning, educators and other helping professionals are directed toward assisting the individual by modifying the environment and by exploring exemplary practices in dealing with the individual. It also advocates the modification of the practices and procedures to meet the needs of students. Mindfulness practices can assist in controlling and neutralizing the negative effects of wandering thoughts and inattention. When mindfulness practices are viewed as life skills and are practiced frequently each day, greater control over the executive functions can be developed (Butler & Hope, 1993; Godstein, 2003; Gunaratana, 2002; Ralston & Smart, 2004). Adaptive strategies for ADHD can be found in a variety of texts (Hollowell & Ratey, 2005; Kabat-Zinn, 2005; Weiss, 2005). However, it must be kept in mind that true mastery of these mindfulness skills, can require rigorous mental training over years.

Fortunately, the most fundamental elements of mindfulness have strategies than can be adapted to time intervals, as short as three to five seconds (Riner, 2009a & 2009b). The effectiveness of mindfulness training is not dependent on single extended periods of time devoted to meditation, although extended practice is very effective. In order to develop mindfulness for those whose daily work requirements provide little sustained time for meditation (as, for example, in school), many meditation masters of the Buddhist tradition advocate frequent, short duration, and informal meditative practices. This approach is considered highly effective, particularly in the time prior to the development of the self-discipline sufficient for sitting meditation (Thich Nhat Hanh, 1999; Yongey Mingryur Rinoche, 2007).

These practices, described later in this paper, include using a mindfulness clock, three second breathing, and three-second postures. The use of "yoga type" stretching or keeping a particular focus on breathing can effectively be used in frequent three-to-ten second time units and can be inserted into the daily routine. For example, the transition time from the skill presentation in a lesson, to readying for guided practice, provides four seconds to take two deep slow breaths while concentrating on the sensation of the air passing over the nostrils. There are many "versions of the vision" of mindfulness practice, and many that are provided in this paper. All are derived from generalized "basic principles" of mindfulness practice.

- Maintenance of a focus: Students focus on some engaging object, sound, action or thought that is provided for practice.
- Processes for "bringing the mind back": Mindfulness is perception of the immediate situation, but our minds spend a great deal of time judging, wishing things were different, or wandering off from the present in consideration of desires that things are different from what they are. Attempting to experience events as they are, and not attempting to judge them, is a basic skill in mindfulness.
- Awareness: Awareness is the process of consciously knowing what the mind is doing in the present moment. Mindfulness practice cannot be done incorrectly if awareness is present. When a mind wanders off, there is no mindfulness; but ironically when the mind recognizes it has wandered and the mind returns to the present focus, then mindfulness is now present and the process of being mindful has been practiced. This is the fundamental

cycle of "practice": the mind wanders off, awareness recognizes it, and mindfulness returns the mind to the present. There is no such thing as "bad" mindfulness practice and there is no "failure" in one's attempt to be mindful: If one realizes that the mind has wandered, then the mind's awareness is being practiced and that significantly contributes to future efforts at keeping the mind focused. This is the primary purpose of mindfulness training.

- Frequent practice: The mind's wandering and the awareness to bring the mind back to the present is a process that must be repeated many times, until it becomes habitual. Developing the "habit" of bringing the mind back to the present is the key to keeping the mind in the present. Oddly, keeping the mind focused on a task for the future, for example planning a picnic, is keeping the mind in the present, which is devoted to the current task of planning and not allowing the mind, it to wander to other tasks.

The mindfulness versions presented here represent only several of many possibilities for calming the mind of the ADD student, along with other students and the teacher as well. Slogans can be added that remind students to be mindful: For example, for upper elementary students "calm fosters calm; hurt fosters hurt" can be used by the class to self-direct in time of competing interests or minor conflict. It also focuses the teacher's attention that aggressive discipline and threatening or unwanted ADD behavior increases stress, which in turn, increases the ADD individual's aggressive behavior. This is a vicious self-defeating cycle. Keep in mind the observation of staff at the Mayo Clinic: "Meditation is an umbrella term for the many ways to a relaxed state of being. There are many types of meditation and relaxation techniques that have meditation components. All share the same goal of achieving inner peace" (Mayo Clinic, http://www.mayoclinic.com/health/meditation/HQ01070/NSECTIONGROUP=2.

The Exercises

In doing these exercises, keep in mind that mindfulness and concentration are not quite the same. Concentration is a subset of mindfulness states. That is, one can be mindful without concentrating, but one cannot concentrate without being mindful. The distinction is not particularly critical to the practices advocated in this paper, other than for the teacher and students to realize that the mind during meditation is almost certainly likely to wander. A wandering mind is not concentrating, but realizing that the mind has wandered and bringing it back to the present is most certainly mindfulness. With that in mind, the basic principles relevant to mindfulness and concentration are below.

To Practice Mindfulness

- Stay in the present.
- Return when thoughts drift away…just note the thought and return.
- Be non-judgmental.
- Welcome whatever arises.
- Open your heart.
- Let go.

To Develop Concentration

- Be deliberate, think first and know what you need to achieve at the moment.
- Be controlled, know why you are doing something and know the likely outcomes.
- Be directed, know what must be done, how it is to be done, and when it is to be done.
- Be aware of your mental attention, remind yourself periodically what you are doing and what you need to be doing. If different, then reconcile and gently get back to what you need to be doing.

The following practices employ mindfulness and most can be taught and used many times during a lesson while others become the impetus for integrating the curriculum with high interest activities, combining kinesthetic experiences, cognition, and awareness of the present moment.

Deep Breathing

- Periodically between lessons or stop a lesson (during a transition or when children are inattentive and need to refocus) and have children take a series of deep breaths.
- Have them breathe quietly, slowly, deeply in and completely out as peacefully as they possibly can.
- You may add a focus to the activity. For example, have children try to do this, so the other children will not know if they are breathing in or breathing out. Or have them following your hand, breathing in as you raise your hand, exhaling as you lower it.
- Do four or five breaths.

Deep Breathing Variation (for a three or four minute experience)

- Periodically have children take a series of deep breaths, as in deep breathing.
- Introduce a smell to the air from a single location with air freshener, candle, incense, open window, or microwave popcorn.
- Have children notice how the smell comes…and goes.

Labeling Negative Thoughts

- When beginning an activity that is difficult or unpleasant, explicitly ask children their negative thoughts about the work ahead.
- Label the thoughts with a name. Feel free to create imaginary labels ("grumpy giraffes," "tumultuous tornados," "boring beetles," etc.).
- Discuss why these thoughts are normal.
- Ask if these thoughts help students succeed and be happy.
- Ask students what other thoughts could be substituted that helps the student succeed and be happy, but more so (Almost always…"The harder I work the sooner it will be over").

Tracking Attitudes

- Help students make a continuum of attitudes, from good to bad (e.g. stinker, aromatic, sweet).
- Ask children to rate their attitude about a specific upcoming (or completed) activity.

- Record the results and chart (can convert labels to a Likert type number scale and calculate cumulative averages, make graphs, or chart on-going repetition).
- After a week or so of recording the same (or different) activities discuss the results: Did the attitudes change over time? Why? Why are there differences among individuals (unless every child agreed on every activity, this will be the case).

Experimenting with Thoughts

- Pick an activity that can be repeated quickly and can be measured (e.g. standing broad jump, completing worksheet on basic addition facts, etc.).
- Help students create a positive thought and have them think that thought for a few trials of the activity…measure and record.
- Help student create a negative thought and have them think that thought (as above).
- Discuss the results.
- (Note that this activity is used in sports psychology, as a performance enhancement technique).

Measuring and Charting Attitudes

- In general, have student measure their attitudes about classroom activities, such as tests (invent a process or use a process similar to "tracking attitudes" above).
- Measure attitudes before and after the event.
- Have students create the scale (e.g. dichotomous: Spiderman or Venom; or continuous: Mickey Mouse, Donald Duck, or Goofy).
- Measure and record actual outcomes (e.g. grades).
- Record, chart, graph, and compare.
- Do attitudes predict or reflect results? Do results predict or reflect attitudes?

Meditative Redirects

- Correct students by acknowledging their mindfulness

Example:

S: I don't want to do this; it's stupid!

T: (smiles) Wonderful! You are being mindful of the connection between our lessons and your feelings!

S: It is still stupid.

T: OK, let's think what you can do that's NOT stupid, but makes you smarter and practices what we are learning.

- The student either comes up with an idea or doesn't. If the idea is a good one, the teacher adopts the idea thus achieving on-task behavior, as well as promoting the student's problem solving prowess, and developing the student's sense of power and self-efficacy. If the student's idea is helpful, but not sufficiently complete in order to meet the lesson's goals, the teacher guides the student with questions to shape the strategy for use. If the student says, "I don't know," the teacher replies, "Well, until you think of a better idea, let's use mine. But please do think about ways we can do things better or at least more enjoyable, and share them with me."

Imagery as Meditation

- Imagery is either a teacher-guided exercise, or if the student has some mindfulness skills, a self-directed mental creation of sense images (pictures, smells, sounds, etc.).
- There are many types of imagery exercises. In this case, we are envisioning the teacher "talking" the student through a particular situation or the student "re-thinking" through mental imagery (rather than thinking with language) how a particular incident can be accommodated. For example, the student (or with the teacher guiding) imagines the worst possible outcome from the situation at hand. such as failing an upcoming test. The student then imagines "backward in time" the conditions and decisions that led to the failure. The student then thinks forward to the present situation, then imagines choices that can lead to a different outcome. Another example might be having the student imagine in fantasy, what the student would actually like to do, but cannot because of the consequences. Live the fantasy for a moment, then, again, work back to the present moment and begin imagery of what can actually be done appropriately. In this case, granting the student in fantasy what the student cannot do or have in reality. If sharing with the teacher, the teacher can show empathy, "Yes, I can see how satisfying it would be to tear up the test and tell me to 'Give me an "A," or else!' but right now you need to take the test. Would you like to choose a different place to sit?"

Reasons why Imagery Helps

- The body can respond and use images and treat them as real.
- In calm (meditative states) of mind, the body can resolve problems more successfully with less time.
- Provides a "sense of mastery" by seeing the potential for success in challenging circumstances that reduces stress.
- Imagery of successful or satisfying effort tends to calm the mind.

Attending to Everyday Activities

The teacher asks students simple questions involving mindful observations. This can be done several times a day before, immediately before, and after the event.

- Do you start walking with your left or your right foot?
- Do you put on your left or your right shoe first?
- Do you put your left or right arm into your jacket first?
- What is on the outside door of the classroom?
- How many trees or on the playground? …in front of the school?

Using Activity to Redirect Attention

- Redirection and "legitimizing" unwanted behavior for learning purposes could involve shooting paper balls into the trashcan (flying paper airplanes, shooting peas, running to one point in the classroom and back again, etc.) then varying the distance and ball size. For example, collecting data, charting and graphing results, obtain averages, and range.

- Take an activity (making a sandwich, washing dishes) and list ALL the things needed and the actions to be taken to complete the task. Then follow directions literally as if absolutely no knowledge existed other than what has been recorded.
- Look out the window or look at a large photograph.
    - List and count ALL the things you see.
    - Note that students will interpret this differently. They may see trees, a flower, the road (three things), or 12 trees, 20 flowers (things counted), or 12 trees with too many leaves to count, 20 plants with hundreds of flowers (can see but can't count).

Other Activities to Redirect Attention

- From memory, write down everything in your backpack (purse, locker) and then compare results. How many objects were unlisted? How many objects were listed, but not there?
- Pick a color and then imagine an object that is that color and keep imaging objects linked to the present thought (two ways to do this: red leads to apple, fire truck, rose OR red leads to red tree, red grass, red milk).

Confined Motion

- Stretching (three to ten seconds in a short series of yoga stretches)
- Isometric exercise (muscles exert force onto unmovable object or muscles exert pressure against each other so that no movement is produced)
- Very slowly walking in a tight circle or taking a step forward and a step back, breathing in with the left and exhaling with the right foot (establish a pattern of slow breathing, then have students take a half step forward when inhaling, then bring it back upon exhaling alternative feet with each breath)

Additional Exercises that Require Mindfulness to Complete

- Close your eyes and make a wave of cold ice (hot stones, "pricklies," etc.) move from the toes to the head. Have the feeling move to an arm then to a toe then to an ear.
- Have students write down the name of everyone in the class without looking (1st period, your soccer team, etc.) Afterward, compare answers with the actual list.
- Drink a glass of water in exactly 30 "same size" sips.
- Eat a slice of bread in 10 bites, chewing each bite 10 times, allowing 10 seconds between swallowing and taking the next bite.
- Close your eyes; visualize yourself (or another person) being happy [distinguish between pleasure and happiness]. What are you (they) doing? Why are you (they) happy?
- Stand on your tiptoes as long as you can, while singing your favorite song.
- Say the alphabet backwards. Spell full name backwards. Spell vocabulary words backwards.
- Point your finger with an outstretched arm at something distant for 30 seconds, without shaking.
- Take slow deep breaths. Breathe so that the other students can't tell whether you are inhaling or exhaling. With the breathing in, imagine the air coming in as one color, and while breathing out, imagine it as another color.
- Stand a coin on its edge.
- Stare at an object for 60 (30) seconds and then imagine it and change its color. Make it melt, blow up, vaporize, or morph into something else.
- Suck on a piece of candy. ONLY think about its flavor. Do not bite it. Let is dissolve naturally in your mouth (if an idea pops up, take note of it, and let it go and return to the flavor of the candy).

Conclusion

Mindfulness practices have the potential to promote neuroplasticity and mental self-discipline, through the use of meditation techniques. These techniques can be adapted to school environmental to match time limitations and the students' levels of maturity. These practices offer a supplement and possible alternative to behavior management, via external controls for all students, but are particularly effective with those students with ADD traits. With students who have difficulties adapting to the schools' focus on cognition through information acquisition, mindfulness practice can provide opportunities to integrate kinesthetic-affective-cognitive activities using short duration exercises that can be practiced many times during the day.

The schools' typical focus on behavior management via rewards and punishments, such as grades, limiting or granting privileges, and other externally manipulative practices, are not particularly effective with ADD students. Inviting approaches that teach practices of mental self-discipline and promoting meditative practices that develop both skill and capacity in focusing the mind, constitutes an attractive alternative.

The practices illustrated in this article, can be implemented informally into the routine activities of students in any classroom. Narrowly defined and prescribed practices with a rigid set of procedures are not needed. Instead, creative, consistent, and ameliorative practices can be developed and implemented by the thoughtful teacher, by employing a few basic mindfulness principles. For optimal benefit to students, additional study must be done to develop and integrate methods for developing mindfulness that can be used in busy classrooms, where the established curriculum is not always attuned to student needs.

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