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[Can Children with ADHD Benefit From Instruction in Social and Emotional Intelligences?](#)

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Ben talks out, disrupts other students and won't stay in his seat. Cindy can't stay on task long enough to complete one activity. Samuel doesn't have friends because he says hurtful things to his peers. David takes things that belong to others. These remarks and other similar observations are typical of teachers who daily monitor students with Attention-Deficit Hyperactivity Disorder (ADHD).

Since their establishment, schools have played a central role in the socialization process of children. Children and youth of diverse backgrounds, socioeconomic status, and varying ability are brought together in large numbers on a daily basis. For many students, the hours they spend in school are the best hours of the day to develop behaviorally and academically. The schools are responsible for helping these individuals develop critical skills and essential life skills in order to live successful lives. The repertoire of abilities goes further than the slender band of word-and-number skills that schools traditionally focus on. By giving students the opportunity to improve, these educational institutions have an enormous opportunity for gaining shared and collective values that help children sustain a safe and healthy society.

This article hopes to address the following questions: How is information about social and emotional intelligence learned? How do the intrinsic properties of brain cells facilitate social and emotional intelligence? And, what are the best ways to incorporate social and emotional intelligence lessons into the real world of the classroom for all students with a focal point on children with Attention-Deficit Hyperactivity Disorder?

Teachers need the skills to help students learn more about appropriate behavior, and students need to become more responsible and more self-controlled in order to have power over the consequences in their lives rather than become victims of their own behaviors. School becomes an education in life skills by helping children develop not only a full range of abilities required for success, but also the skills necessary for fulfillment in their lives.

Social and Emotional Intelligences

Researchers, such as Dr. Daniel Goleman (2001), maintain that competencies such as empathy, the ability to manage difficult emotions, and self-motivation make up a person's Emotional Quotient (EQ), and that the EQ includes essential skills for life success. These skills include self-awareness, knowing how to handle one's emotions, self-motivation, empathy, and the capacity to handle and respond effectively to someone else's emotions. Goleman further notes that the emotional lessons learned in

childhood are inherently flexible.

Children with Attention-Deficit Hyperactivity Disorder often appear to be in desperate need of strategies to raise their EQ. Developmentally abnormal levels of sustained attention, impulse control, and excessive activity (Barkley & Murphy, 1991) characterize Attention-Deficit Hyperactivity Disorder (ADHD). This disorder arises early in childhood, typically between the ages of 3 and 7. These children characteristically experience school failure and develop conduct disorders, delinquent activities, and antisocial personalities (Barkley, 2000). The main problem associated with attention is diminished persistence of effort in accomplishing tasks, especially tasks of little intrinsic value to the child or immediate consequences for completion (Barkley, 1990). As a result of the problem of impulse control, ADHD children have difficulty in following instructions, make careless errors in school work, fail to reflect upon the consequences of negative behavior, and engage in frequent, unnecessary risk-taking (Barkley, 1991). Steven Hinshaw, a speaker at the Brain Connection to Education Spring Conference in 2000 claims that children with ADHD are more disliked by their peers than any other group of children. This is extremely important, because research demonstrates that the extent to which a child is disliked in first, second, and third grade is the strongest predictor of school dropout, delinquency, and later mental health problems (Ruenzel, 2000).

Poor self-regulation is an indicator of ADHD and includes the following: the inability to inhibit, the inability to delay, the inability to separate thought from feeling, the inability to separate experience from response, the inability to consider an experience and change perspective, the inability to consider alternative responses. Poor self-regulation is synonymous with poor self-control. It leads to impulsive behavior, inconsistent and unpredictable behavior, the illusion of incompetence, and problems with automatic behavior.

Another indicator of ADHD is excessive or developmentally inappropriate levels of motor or vocal activities (Spitzer, Davies & Barkley, 1990). Other distinctions of ADHD include off-task behavior, out of seat conduct, talking out of turn, and making unusual vocal noises (Luk, 1985). These children generally fall behind in intellectual development compared to their peers. Barkley (1990) notes that ADHD children show a lower standard IQ score of 7 to 15 points. Ross and Ross (1982) report that these children are likely to show standardized academic achievement test scores that are as much as 10 to 15 standard score points lower than their classmates.

Genetic and environmental factors contribute to the expression of the disorder of ADHD. Risk factors include a strong familial transmission (Faraone & Biederman, 1999). Pre/peri-natal events also can lead to children at risk, including chronic exposure to hypoxia, which can alter brain development. Pregnancy and delivery complications increase the risk of ADHD. Prenatal substance abuse, dietary factors, and chronic exposure to lead are all associated with ADHD (Tuthill, 1996). Environmental factors that impact child development, such as large family size, low social class, paternal criminality, maternal mental disorder, and the like, correlate with impaired cognitive development (Faraone & Biederman, 1999).

Executive Functions of the Brain

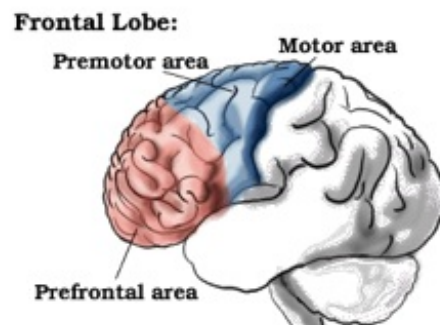
Innovative methods, such as brain-imaging technologies, have made visible the operation of the brain cells and connections. Neurobiological data can be monitored while a person thinks, feels, and imagines giving scientists a clear understanding of the way the brain's centers for emotion control a

reaction. Barkley (2000) explores the underlying mechanisms that contribute to the disorder through the concept of executive functioning and the role that the frontal cortex has in regulating mental skills that are required to sustain attention and inhibit impulsive behavior. Director of the Brain Research Institute, Alarik Arenander (2000) reports that functional brain imaging in the study of ADHD has utilized primarily SPECT (single photon emission computer tomography), PET (positron emission tomography), or magnetic resonance imaging (MRI) techniques. The view of the brain illustrates an abnormal pattern of blood flow for ADHD individuals. Brain blood flow is related to the degree of neural activity, or brain function. In some individuals with ADHD, brain activity in specific areas is greatly reduced. Areas of chronic dysfunction appear as “holes” in the brain. Dysfunction often occurs in the prefrontal areas of the brain, and may be expected to cause significant loss of impulse control, decision-making, learning ability, and emotional stability.

The prefrontal cortex regulates specific mental activities that allow for self-control. The executive functions of the prefrontal cortex incorporate volition, planning, and purposive, goal-directed, or intentional action. Inhibition and resistance to distraction occurs in this area of the brain. The prefrontal cortex controls problem-solving, strategy development, selection, monitoring, and attributes to self-awareness across time (Barkley, 2000). Arenander in a presentation entitled, *Meditation Over Medication: A Safe, Non-Drug Treatment for ADHD*, concurs that the prefrontal cortex deals with esteem, values, motivation, decisions, and self-control. He concludes that environmental factors are more important than genetics in making connections in the prefrontal cortex, even though genes may be the origin of the disorder.

Working memory is a component of the executive function of the prefrontal cortex. Working memory is defined as the capacity to hold a mental representation in mind to guide behavior. It is remembering in order to do. Critical to the working memory is response inhibition. Response inhibition is the capacity to delay a response to an immediate environmental event. Delayed responding provides the foundation on which self-regulation develops. Response inhibition protects working memory from distractions. It also acts to interrupt ongoing response patterns in working memory should they prove ineffective in attaining a goal. Self-regulation is impossible without a delay in the response directed toward immediate reinforcement. Response inhibition allows the internalization of the executive functions, eventually becoming covert in form (Barkley, 2000). Research overwhelmingly finds a deficit in response inhibition in persons with ADHD. Hallowell and Ratey (1994) suggest teaching little tricks, like mnemonics, cues, rhymes, codes, and the like to enhance memory. The diagram from Johnson (2006) [A Guide to Brain Anatomy](#) illustrates the prefrontal cortex or the prefrontal area.

Neurologists and neuroscientists collaborate in findings that damage to the cortex can affect the ability to be empathetic, that problems in the cerebellum can cause social ineptness and that deficits in the right hemisphere can make it hard to make social decisions. The ventromedial cortex is a section of the frontal lobes, and it is responsible for the emotion that triggers our decision-making processes, especially in the personal-social realm (Hallowell & Ratey, 1994). ADHD impairs social intelligence through the deficits it creates throughout the executive function, including working memory, sense of self, self-regulation of emotion and motivation, self-directed play, and goal-directed behavior. Deficits in other executive



functions appear in areas of social intelligence and academic performance. Delays occur in nonverbal working memory, verbal working memory, internalized emotion and motivation, and reconstitution (Barkley, 2000). Barkley (2000) refers to attention deficit as intention deficit (attention toward the future).

As neuroscientists study the mapping of the social brain, they find widely dispersed circuitry. In other words, which neural networks are involved depend largely on what social activity one engages in. Numerous circuits and sites play their role in the social brain (Goleman, 2006).

Children with ADHD are typically low in emotional intelligence (a term coined by Peter Salovey and John Mayer, 1990) because their disorder affects the areas of the brain that manages emotions. Emotional Intelligence is the ability to perceive, understand, and manage feelings. Children with ADHD often experience greater frustration, lower self-esteem, and more peer rejection than their peers. According to Goleman (1995) despite their intellectual potential, these are the children at highest risk for problems like academic failure, alcoholism, and criminology because their control over their emotional life is impaired. These circuits that are formed from emotional habits are sculpted during critical windows of opportunity in childhood and adolescence. And, we leave those experiences utterly to chance. According to Howard Gardner's (1982) book, *Art, Mind, and Brain: A Cognitive Approach to Creativity*, in the day-to-day world, no intelligence is more important than the interpersonal. Without skill in the interpersonal intelligence, people make poor choices about who to marry, what job to take, and other important life decisions. Gardner stresses that schools need to train children in the interpersonal skills. Social intelligence is a key ingredient of what makes people do well in practicalities of life.

Educator's Role in Providing Accommodations at School

Teachers and principals have a responsibility to students, teachers, and parents to understand areas of disabilities, as well as health impairments, that can affect the school climate and learning. Some common interpersonal concerns of children with ADHD include impulsive comments to others, demonstrating emotion quickly, low stress tolerance, poor adherence to rules, excessive talk, and poor listening skills. These children have problems sustaining friendships and are often viewed by others as immature. These concerns impact the achievement of the child and the learning of others.

Social and executive level skills, like personality, motivation, the ability to plan and follow a process with several steps, the ability to organize actions over time, social graces, and the ability to behave appropriately for the social situation are located in the frontal lobes of the brain. The frontal lobes are the last part of the brain to develop, and therefore schools can be a crucial factor in helping youngsters develop this area to its highest potential.

Principals should be conscientiously aware of the accommodations that build a productive environment for all students with ADHD. Accommodations often seen at the school level for children with ADHD are making tasks interesting, using a reward system, allowing more trials for mastery, and allowing more time for change. Psychosocial interventions may include environmental manipulations, such as frequent breaks, fewer items on a page, testing in a separate room, and preferential seating.

Modification of the cognitive functions can also be helpful, like reducing choices on multiple choice questions, adding white space to a page, allowing oral answers rather than written responses, and

repeating or rephrasing directions. Self-monitoring strategies, problem solving, and social skills training are all effective methods of working with ADHD children. By learning more about the topic of ADHD, a person can rethink or reshape his self-image. By setting up structure and organization in his life, one can reduce stress for day-to-day living.

Treatments

Several treatments have been used to treat ADHD, including psycho-stimulant medication, traditional talk therapy, restrictive or supplemental diets, allergy treatments, chiropractics, biofeedback, perceptual-motor training, inner ear treatments and pet therapy (Arenander, 2000).

Behavior modification treatments have been used successfully to improve on-task behavior, in-seat behavior, and attention span. Cognitive therapy approaches, which emphasize teaching the child a general set of self-control and problem solving skills, have also shown some benefit. These approaches require expertise and a major time commitment (Arenander, 2000). These treatments are an active process involving work and study.

The use of restrictive diets, such as additive-free diets and the elimination of sucrose have been found to have limited or no effect in treating ADHD (Arenander, 2000). Contrastly, Benton and Roberts (1988) found that multivitamin and mineral supplements have positive effects on IQ. Schoenthaler (1991) reports that vitamin-mineral supplementation improves brain function by providing added nourishment to the brain. Compounds and herbs that may be useful for treating ADHD include pycnogenal, melatonin, ginkgo biloba, and valerian (Arenander, 2000).

Neuroscience has determined that the sheer design of the brain makes it sociable, and interactions with others create a brain-to-brain linkage. Reactions to one another have biological impacts, for example sending out hormones that regulate the heart or the immune system. Good relationships make one feel great and poor relationships can act like a poison to a person's body. Social Intelligence lies between what Dr. Daniel Goleman (2006) characterizes as two basic brain capacities: our low road, or subliminal, reading of non-verbal signals, such as facial expressions or eye movements; and our high road or cognitive skills, the ability to understand another person's feelings and intentions, and how to shape the outcome of social interactions.

Goleman, Salovey, and Sluyter (2001) describe Emotional and Social Intelligences by including four skills:

- The ability to perceive and express accurately one's own emotions and those of others (Awareness)
- The ability to use emotions to facilitate thinking (Regulation or Management)
- The ability to understand emotions (Awareness of Others)
- The ability to manage emotions (Social Skills)

These skills can be learned and can help the school performance of children with ADHD.

Goleman (1985) notes that the underlying basis for our level of ability is neural. But, the plasticity of the brain allows lapses in emotional skills to be remedied. Social intelligence is a result of habit, and with

the correct response, changes can be made.

Many areas of brain research are clear, and educators should use the knowledge to improve learning for all students in their classrooms. For example, researchers report decreased memory capacity in stressed individuals. As stress hormones increase, the brain senses the change through detection of cortisol and other stress related hormones. The receptors sensing these changes are located in the hippocampus found in the limbic system, the area of the brain involved in memory formation and spatial awareness. Anxiety is initiated and routed from here to the hypothalamus, which drives a person's motor responses to perceived threats (Edlstein, 2000). This information does little to address the dominating assessment instruments that our educational systems are using to compare students to one another as a result of No Child Left Behind. These external goals have created considerable anxiety and potentially unhealthy classrooms.

Jaak Panksepp (1998) explores the neural circuitry of play in pursuing new therapies for ADHD children. His findings indicate that the child who exhibits hyperactivity, impulsivity, and unfocused, rapid shifting from one activity to another is displaying neural activity for play. His proposal is that younger children should vent their urge to play in an early-morning recess. After the urge to play is satisfied, they can more easily pay attention. Hallowell and Ratey (1994) concur that one of the best treatments for ADHD is exercise, which helps work off excess energy, helps focus attention, and stimulates certain hormones and neurochemicals that are beneficial for concentration.

Programs in schools should address managing stress and getting along with others to build on social and emotional intelligences. Plans to teach social intelligences may include teaching the meanings of gestures, postures, the uses of touch, eye contact, tone of voice, and pacing. Emotional intelligence entails perceiving emotions in self and in others, regulating emotions, using language to describe emotion, and connecting emotion to motivate. Children with ADHD need to develop empathy, impulse control, anger management, and other personal skills. These skills should be taught broadly and consistently, as all children can benefit from practicing proficiencies of emotional and social intelligence. Hallowell and Ratey (1994) advise using social coaching, for example, say, "Look at the other person when he's talking." Many children with ADHD are viewed as uncaring or selfish, when in fact they haven't learned how to interact. This skill does not come naturally to these children, but it can be taught or coached. Bradberry and Greaves (2005) report that by practicing emotional intelligence skills, one strengthens the pathways in the brain from the rational to the emotional center. This means that if a person typically displays one response to feeling angry, for example, he will have to learn to choose an alternative reaction. By practicing this reaction many times, one can replace the prior response with the new one.

Some of the techniques aimed at enhancing self-regulatory brain processes that are currently being used to treat ADHD include hypnotherapy, guided imagery, biofeedback, and relaxation training. Donney and Poppen (1989) show from their research that relaxation training reduces disruptive behaviors and increases positive adaptive behaviors in hyperactive children. Training includes becoming aware of body changes when stressed, for example upset stomach, sweaty palms, and elevated heartbeats. Once aware of the bodily changes, one learns to add relaxation techniques, such as deep breathing, using imagery, and self talk. These children also benefit from structure. They need lists, reminders, previews, and limits to help with self-regulation.

Personal competence is about knowing oneself and allowing inner feelings to inform and guide

behavior. To develop self-awareness one must accurately recognize his emotions, including the thoughts and physical signs that accompany a feeling (Bradberry and Greaves, 2005). For example, a person may experience feeling hot, or cold, or numb; his heart may skip a beat; his throat may become tight. Recognizing these feelings can help one prepare for a difficult situation, and therefore improve the ability to manage the moment. Self-talk is a powerful method for impacting behavior (Bradberry and Greaves, 2005) and can be used when these physical signs occur. Using feedback is another way to help a child become more self-observant. Children with ADHD are often poor self-observers. To give them information in a constructive way, a teacher may ask questions, like, "Do you know what you just did?" or "Why do you think the other girl looked sad when you said what you said?" (Hallowell & Ratey, 1994).

Cooperative learning strategies play a critical role in shaping pro-social skills by using cooperation as a tool for learning. Group goals and individual accountability contribute to conforming to social ideals, such as cooperation, communication, decision-making, responsibility, active listening, appreciation of diversity, and the appropriate expression of feelings.

Goleman (2006) supports that social intelligence was the primordial talent of the human brain, and what is now termed intelligence was developed in response to neural systems used for getting along in a complex group. He purports that general intelligence is a derivative of social intelligence. Thus, the need to navigate the social world came before the need to get straight A's, and our culture still highly values those skills. Schools should validate these ideals by training teachers to incorporate social intelligences in their lessons to pupils.

There are many proven methods for increasing the teaching of social and emotional skills to all students with special emphasis on children with ADHD. As advances are made in brain research as it deals with education, curriculum talk and prescriptions for schooling must also progress. The role of intellect should change the schools, not just analyze them. Researchers must work collaboratively with teachers and administrators to develop practical tools and strategies that assist students in the learning process.

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