

LEARNING
TO
breathe

A Mindfulness Curriculum for
Adolescents to Cultivate Emotion Regulation,
Attention, and Performance

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Chapter 17

The Adolescent Period: Challenges and Opportunities

What is happening in the adolescent brain? Adolescence is a time of unique possibilities and challenges in development. Recent research has highlighted some dramatic transformations in the adolescent brain that bear directly on education (Blakemore & Frith, 2005). In adolescence, these changes mainly occur in the frontal and parietal cortices, which are the site of executive functions, a general term used to describe higher-order cognitive processes (Blakemore & Choudhury, 2006). Myelination of the frontal cortex, which allows for smooth and efficient processing of information, proceeds continuously over the course of adolescence but is not complete until early adulthood. During adolescence, the creation and myelination of new synaptic connections occur, as well as the pruning of unused, unpracticed connections. These activities are most pronounced in the prefrontal cortex, located right behind the forehead—which plays a role in self-control, judgment, and emotion regulation—and in the temporal lobes, serving language functions and contributing to emotion regulation (Sawyer et al., 2012; Casey, Giedd, & Thomas, 2000; Sowell, Thompson, & Toga, 2007).

Because the adolescent brain is, in many ways, rewiring itself depending on what is learned and experienced, this stage of synaptic reorganization may be particularly sensitive to inner and outer experiences related to emotions and social relationships (Blakemore, 2008). In the case of learning, mild stress can enhance memory, but chronic or excessive stress can result in damage to parts of the brain that are critical for new learning and memory consolidation (Sapolsky, 2004).

Concurrently, adolescents' risk-taking behavior is at an all-time high. However, the propensity toward risky behavior is not sufficiently kept in check by a well-functioning internal monitor (prefrontal cortex), a situation described by Dahl (2004) as "turbo-charging the engines of a fully mature car belonging to an unskilled driver." Thus, the pattern of neurobiological changes that occurs in adolescence may make adolescents especially sensitive to distress during this period (Walker, 2002), and many researchers now consider adolescence to be

a *stress-sensitive period* of development (Steinberg, 2008). Compared to other stages of the life span, the changes in hormone levels that occur during adolescence are the most rapid (Fataldi et al., 1999). In addition to increases in pubertal sex hormones, greater activation of the HPA axis has also been demonstrated. Recent longitudinal studies have found that levels of cortisol rise gradually through middle childhood and increase rapidly around age thirteen (Walker & Bollini, 2002). Studies of adults have consistently linked increases in HPA reactivity, as measured by cortisol increases, with unipolar and bipolar disorders, schizophrenia, and post-traumatic stress disorder (Müller, Holsboer, & Keck, 2002; Post, 2007; Walker & Diforio, 1997). Some evidence suggests a similar pattern for adolescent disorders, notably depression (Birmaher & Heydl, 2001; Goodyer, Park, Netherton, & Herbert, 2001). Although all of the mechanisms are not completely understood, both hormonal changes and maturation of the HPA axis appear to influence how the brain gets reorganized (Romer & Walker, 2007; Walker, Sabuwalla, & Huot, 2004).

What is happening in the environment during adolescence? Contemporary adolescents also face a host of environmental challenges that can threaten their social and emotional well-being, including the poor fit between developmental needs and the structure and curricula of schools (Eccles, 2004), a decline in academic orientation and motivation starting in the early adolescent years (Gutman, Sameroff, & Cole, 2003), increasing psychological separation from parents (Darling, Cumsille, & Martinez, 2008), increasing susceptibility to peer influence (Sim & Koh, 2003), pressures of romantic relationships (Collins, 2003), participation in antisocial or risky behaviors (Reyna & Farley, 2006), and heavy exposure to media. Media messages serve as standards for social comparison that may undermine self-esteem, mold expectations for normative behavior, and amplify values that may be at odds with those of families and communities (Comstock & Scharrer, 2006). Increases in feelings of distress in early adolescence are largely attributable to increases in depressed mood (Garber, Keiley, & Martin, 2002; Hammen & Rudolph, 2003) and conflicts with parents (Larson & Richards, 1994; Laursen & Collins, 1994). Declines in positive emotionality have also been reported in adolescence (Collins & Steinberg, 2006), and the onset of depression is occurring at younger and younger ages (Cross-National Collaborative Group, 1992). A 1993 report by the American Academy of Pediatrics Committee on Psychosocial Aspects of Child and Family Health (2001) that provides a list of threats to adolescent well-being was recently updated to include the following items: school problems (including learning disabilities and attention difficulties), mood and anxiety disorders, adolescent suicide and homicide, firearms in the home, school violence, drug and alcohol abuse, HIV, and AIDS; and the effects of media on violence, obesity, and sexual activity were called the “new morbidities.”

Why should we pay attention to adolescents’ health and stress? The sheer number of challenges that adolescents face in navigating this developmental stage may overwhelm their available cognitive and emotional resources, especially for those who have experienced

less-than-optimal conditions in infancy and childhood. One implication is that adolescence is a sensitive period for emotional development (Casey et al., 2008; Walker et al., 2004). "This developmentally normative mismatch between strong affective and behavioral impulses, and the adolescents' still-limited capacity to regulate them, and reduced adult monitoring, means that early-to-middle adolescence is a period of heightened vulnerability to problems associated with poor regulation of affect and behavior" (Yap, Allen, & Sheeber, 2007). The onset of many mental health problems, such as depression, anxiety, eating disorders, substance abuse, and schizophrenia, during adolescence highlights the need to take the well-being of youth very seriously (Paus, Keshavan, & Giedd, 2008). Although research suggests that the adolescent brain is vulnerable to permanent stress-related alterations in the context of pubertal neuroplasticity, this period also can be a time for "interventions and opportunities to reduce or reverse the adverse effects accumulated from earlier insults" (Romeo & McEwen, 2006).

Chapter 2

Making a Case and a Place for Mindfulness in Education

What do children and adolescents need to be successful in life? When this question arises, a common answer is “a good education.” Academic success is the goal that is emphasized in standards-based movements about education reform, and it is currently in the forefront of public consciousness. The most typical benchmarks of academic success include outcomes such as test performance, progress through the educational system, and mastery of content knowledge. However, teachers and therapists who work with youth on a day-to-day basis, and who witness their progress and their struggles, know that there is more to this story. There is little doubt that in addition to academic success, we also want our youth to be happy and well.

These goals are far from being disconnected: we now realize the fundamental role that social and emotional well-being play in the attainment of academic outcomes (Elias, Wang, Weissberg, Zins, & Walberg, 2002; Goleman, 2006). Learning to channel attention to productive tasks, to sustain motivation when work becomes demanding, and to handle the frustrations of sharing, learning, and communicating with peers are skills that depend on the ability to understand and manage emotions. These are competencies that children and adolescents learn alongside more traditionally academic ones. Demands for these types of interpersonal, intrapersonal, and problem-solving skills increase as students progress through the school years.

Although the emphasis on academic achievement often captures most of the attention in debates on school reform, important inroads are being made by those who take a more holistic approach to education. Wang, Haertel, and Walberg (1993) reported that among eleven factors most important for classroom learning, social and emotional factors accounted for eight. Decades of research on empirically based social and emotional learning programs have consistently shown that well-designed and well-implemented prevention programs offer a means of reducing problem incidence while building skills for mental health, improving classroom

behavior, and enhancing achievement (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Greenberg et al., 2003; Zins, Weissberg, Wang, & Walberg, 2004).

Many prominent voices have joined together to call for inclusion of social and emotional learning within K–12 school curricula. The mission of the Collaborative for Academic, Social, and Emotional Learning (CASEL, 2003) is to promote social and emotional skill development in schools through comprehensive programming. Personal, social, and emotional learning goals are included within the framework for nationally recognized school counseling and violence-prevention programs (American School Counselor Association, 2005; Mihalic, Irwin, Fagan, Ballard, & Elliott, 2004).

Neuroscience, too, has offered evidence to support a holistic message about cognitive, social, and emotional development. Recent scientific advances have led to rejection of a cognitive versus affective framework to describe human cognition (Damasio, 1994; Siegel, 1999). Evidence shows that the prefrontal cortex, considered the center of higher-level cognition in the brain, also plays a dramatically important role in emotion processing and regulation. Thus, the operation of the brain is more like an orchestra than a number of soloists. This paradigm-shifting evidence has forced us to rethink the relationship between reason and emotion (see Davidson, 2012). Not only does academic learning depend on social and emotional skills, but also it is virtually impossible to disentangle the two. A report from the National Scientific Council on the Developing Child (2004, p. 3) put it this way:

When feelings are not well managed, thinking can be impaired. Recent scientific advances have shown how the interrelated development of emotion and cognition relies on the emergence, maturation, and interconnection of complex neural circuits in multiple areas of the brain, including the prefrontal cortex, limbic cortex, basal forebrain, amygdala, hypothalamus, and brain stem. The circuits that are involved in the regulation of emotion are highly interactive with those that are associated with “executive functions” (such as planning, judgment, and decision making), which are intimately involved in the development of problem-solving skills during the preschool years. In terms of basic brain functioning, emotions support executive functions when they are well regulated, but interfere with attention and decision making when they are poorly controlled.

Reports of student academic performance often find their way into local newspapers in features that compare schools within and across districts. What garners less attention is the fact that schools are also charged with oversight and management of students’ emotional and behavioral problems. Counselors and therapists, both inside and outside of schools, know all too well the toll that such difficulties take on young people’s development. Recent large-scale epidemiological studies paint a dramatic and disturbing picture of the state of youth mental health. The landmark report in 2000 by the US Surgeon General (US Department of Health and Human Services, US Department of Education, & US Department of Justice) revealed

that one in ten of our young people suffers from a mental health condition that meets diagnostic criteria, and one in five suffers from problems that significantly impair day-to-day functioning, including academic achievement and social relationships. Ten years later, the first national representative sample of over ten thousand US adolescents, the NCS-A (Merikangas, Avenevoli, Costello, Koretz, & Kessler, 2009), reveals an even starker view. Approximately half of adolescents sampled (49.5 percent) met lifetime criteria for at least one diagnosed (DSM-IV) mental disorder, and 40 percent of these individuals met criteria for at least one additional mental disorder. Of this affected group, about one in four or five experienced symptoms so severe as to significantly impair their functioning across the life span (Kessler et al., 2012).

Most major mental illnesses have their start in childhood and adolescence. The NCS-A study (Merikangas et al., 2009) revealed that the earliest onset occurred for anxiety disorders (age six), followed by behavior disorders (age eleven), mood disorders (age thirteen), and substance-abuse disorders (age fifteen). Anxiety disorders, highly influenced by the experience of stress, are the most common mental health issues of adolescents and adults. Regrettably, severe emotional and behavior problems are even more prevalent than the most common chronic illnesses of adolescence, asthma (approximately 5.4 percent) (Akinbami & Schoendorf, 2002) and diabetes (0.26 percent) (American Diabetes Association, 2011). The annual economic cost of mental health problems to adolescents and their families is estimated to reach a quarter of a trillion dollars, making adolescent mental health a major public health issue, and strengthening the argument for effective prevention and treatment (Merikangas et al., 2009).

But even those adolescents without major risk factors who look, from the outside, as if they are doing well may also benefit from a little help. We now know that the physiological changes of puberty usher in a host of hormonal changes that render this period of life extraordinarily sensitive to stress (see Blakemore, 2008; Casey, Getz, & Galvan, 2008). During the adolescent period, the brain is engaged in a widespread remodeling project, one that will ultimately shape its adult contours in areas related to cognition and emotion (see chapter 17, “The Adolescent Period: Challenges and Opportunities”). The fact that so many major mental illnesses that cause suffering throughout life begin in adolescence begs for greater attention to the conditions of modern adolescence, especially those conditions that pose risks to well-being. The good news is that the developing brain is malleable and responsive to experience, a phenomenon called *neuroplasticity*. Thus, the potential for reducing risk and providing beneficial experience that can positively alter the developmental trajectory is encouraging. This period might even be a time for “interventions and opportunities to reduce or reverse the adverse effects accumulated from earlier insults” (Romeo & McEwen, 2006, p. 210).

Mindfulness has the potential to be a very useful component in prevention and treatment efforts because of its effectiveness in reducing emotional distress and promoting emotional balance, improving attention, and contributing to motivated learning. Virtually all social-emotional learning (SEL) programs and many therapeutic modalities recognize that adaptive development rests on the child’s maturing capacity for emotion regulation. Emotion regulation

is increasingly viewed by contemporary researchers as a foundation for well-being and positive adjustment throughout the life span (Gross & Muñoz, 1995). *Emotion regulation processes* may be defined as those strategies used to moderate affective experiences in order to meet the demands of different situations or to achieve certain goals (Campos, Frankel & Camras, 2004). Such processes can include identification, differentiation, and acceptance of emotional experiences; ability to manage distress and modulate excitement; capacity to sustain motivation; prioritization among competing goals; and adaptive adjustment of behavioral responses (Cole, Michel, & Teti, 1994). Difficulties in emotion regulation are at the root of many adolescent disorders, including depression (Garber, 2006), eating disorders (Czaja, Rief, & Hilbert, 2009), deliberate self-injury (Sim, Adrian, Zeman, Cassano, & Friedrich, 2009), substance-abuse disorders (Sher & Grekin, 2007), and greater reactivity to stress (Degnan, Henderson, Fox, & Rubin, 2008).

Emotion regulation skills have their foundation within the context of a secure emotional relationship with loving caretakers (Sroufe, Egeland, Carlson, & Collins, 2005). In such relationships, both positive and negative emotions are tolerated and managed. With continued experience of predictably responsive care, children learn to tolerate longer and longer periods of discomfort, because they have had the experience of what it is like to be cared for with sensitivity. They gradually come to understand, based on this experience, that feelings will not overwhelm them and that they can care for themselves. This is the foundation of distress tolerance. As previously noted, these capacities continue to develop in the adolescent brain as greater self-regulatory skills emerge.

The ideal outcome for the individual is an affective structure that can handle both positive and negative (uncomfortable) feeling states without resorting to chronic repression or tuning out on the one hand, or chronic acting out in aggressive or self-destructive ways on the other. Emotional resilience is poised in the middle of this continuum. A central feature of emotional resilience is the ability to find a way to rebalance after the experience of discomfort or what is commonly called “stress.” The ability to manage distress, from the normal day-to-day unpleasantness of not getting your own way or being bored with schoolwork to more difficult life circumstances, is built on the practice of tolerating distress without necessarily acting on it. As mentioned before, many SEL programs and therapeutic interventions are very effective in increasing adolescents’ awareness of feelings and in helping them identify ways of coping. Often the information about emotions is delivered using didactic, top-down methods. Even interactive exercises might require, for example, that adolescents reflect on past experiences and plan ways of coping with future challenges.

It is suggested here that there is a difference between knowing *about* emotions and knowing your own emotions *as they are experienced*. In addition to learning about emotions, there is a distinct advantage in learning how to notice what’s happening in the present moment. Attending to and identifying emotions can mitigate the emotional reaction and increase emotional balance and clarity (Silvia, 2002). This practice offers the opportunity to develop

hardiness in the face of uncomfortable feelings that otherwise might provoke a response that could be harmful (for example, “acting out” by taking drugs or displaying violent behavior, or “acting in” by becoming more depressed). Learning to attend to your present-moment experience, called “mindfulness,” offers adolescents a tool to manage emotions as they are perceived and potentially increase in magnitude. Mindfulness training can complement and strengthen other approaches and therapies that promote emotion regulation, reduce stress, and develop attention.

Mindfulness has been defined as a certain way of paying attention: “on purpose, in the present moment, and nonjudgmentally” (Kabat-Zinn, 1994, p. 4). Mindfulness provides a means of handling distress with intention and nonjudgment via several proposed mechanisms. First, bringing attention to the present-moment experience of thoughts, emotions, and physical sensations shifts cognitive focus away from the past (such as a memory of a troubling incident) and the future (such as apprehension of impending trouble), thereby disrupting the connections between automatic cognitive interpretations and patterns of reacting. Second, focus on present-moment internal and external experience broadens attention and allows for suspension of previously practiced patterns of reacting (avoidance or overengagement), sometimes called *decentering*. Third, the quality of nonjudgment that is essential to mindfulness permits the observation of your experience without judgment or evaluation. The practice of orienting to experience with curiosity and acceptance strengthens tolerance for distress by altering automatic response patterns described previously. When practiced regularly, mindfulness can provide a powerful tool for restoring emotional balance and preventing engagement in harmful behavior.

To understand mindfulness and its role in child and adolescent development, it is also important to consider the nature of attention and the ways in which we typically construe it. We often think of attention as a traitlike characteristic that is relatively immutable or inborn. For example, students might be described as having “short attention spans” or as “highly attentive.” Or attention is viewed as so fragile and subject to distraction that it has to be “caught” by creative teachers or engaging clinicians. As noted earlier, attention is often seen as something separate from emotion, despite evidence from research and personal experience that shows how emotional states significantly affect the quality and the objects of our attention. In addressing emotion regulation through the teaching of mindfulness, attention is viewed as a skill that can be trained to observe the whole range of cognitive and emotional experiences that present themselves. It is a capacity that can be refined with practice so that it can be directed and maintained, intentionally and with greater stability, on objects of your choosing.

Mindfulness is attentiveness to the present as it is happening. This is quite a different way of using the mind from what we typically experience. Most of the time, children and adolescents use their minds to manipulate ideas or concepts, to recall information from the past or from their storehouse of knowledge, to imagine future circumstances, to plan, to calculate, or to schedule. These are just some of the important functions of mind that improve as children

age and that are enhanced through schooling. But there is also a present-moment mind that is aware of unfolding thoughts, feelings, and sensations. This quality of mind allows for meta-awareness of those circumstances, plans, and calculations as they unfold. Mindfulness allows the individual to gain entrance to the workings of the mind such that, as some adolescents put it, it's possible to have "space in my mind," allowing them to see that "changing thoughts and feelings are nothing but travelers stopping by for a quick stay." This realization can be deeply empowering as students come to recognize their potential for riding the waves of experience with greater equanimity. The inner reserve of mindful awareness is available to everyone, and these faculties of mind, developed with practice, have direct relevance to burgeoning self-awareness, to self-regulation, and to the emotional balance that supports fully engaged learning and well-being.