

Mindfulness provides a promising tool to reduce distress and promote resilience by helping adolescents navigate their psychological and environmental challenges.

7

Mindfulness for adolescents: A promising approach to supporting emotion regulation and preventing risky behavior

Patricia C. Broderick, Patricia A. Jennings

DEMANDS TO MEET the increasing pace of change are creating unprecedented challenges for educators and parents to equip students with the knowledge and skills they need to succeed in school and in life. There is growing recognition that social and emotional skills and dispositions are essential for flexible decision making, stress hardiness, lifelong learning, and innovation required to maintain prosperity and civility in a rapidly changing world.¹

Competence in social and emotional skills provides the foundation for learning to manage one's life effectively. It encompasses knowing how to channel attention and sustain motivation, working cooperatively with others, coping with frustration, responding to challenges with appropriate behavior, and avoiding risky behaviors. Decades of research have reliably demonstrated that well-designed and well-implemented classroom-based prevention programs can reduce conduct problems while building skills for mental health,

interpersonal relationships, and academic achievement. Although there are many evidenced-based programs for younger children, few well-established evidence-based programs exist for adolescents, a significant educational gap.² Adolescence is a time of major cognitive advances and gains in physical strength and vitality, but this period of development is also distinguished by the onset of many physical, behavioral, and mental health problems that are preventable and may persist into adulthood, interfering with educational achievement and work productivity in long-lasting ways.

Evidence from large-scale epidemiological studies suggests the global importance of adolescent health.³ According to the U.S. Surgeon General's report, one out of five children and adolescents in the United States suffers from significant social, emotional, and behavioral problems that place them at risk for school failure.⁴ A 1993 report by the American Academy of Pediatrics on threats to adolescent well-being was updated in 2001 to include 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/AIDS, and the effects of media on violence, obesity, and sexual activity. Most of these social and emotional risks, referred to as "new morbidities," are amplified by emotional and behavioral dysregulation.⁵

Contemporary adolescents face a host of developmental challenges that can threaten their physical and emotional well-being, including disengagement from school, alienation from parents, body image self-consciousness, susceptibility to peer influence, pressure to engage in sexual activity and romantic relationships, participation in antisocial or risky behaviors, and heavy exposure to media that may mold behavioral expectations at odds with the values of their families and communities.⁶ Adolescents report high levels of school-related stress associated with homework, tests, expectations for achievement, and interactions with teachers.⁷ The time pressures that challenge so many adults also affect the younger generation.⁸ To meet these challenges successfully requires a high level of social and emotional competence.

Neurobiological changes of adolescence

In addition to these challenges, evidence is growing that adolescence is a sensitive period for stress as a result of puberty-related changes in hormones and dramatic plasticity in the structure and function of the brain.⁹ Conditions for optimal brain development during adolescence are still uncertain, but new research on emotion and behavior regulation, emotional information processing, and stress reactivity has demonstrated that adolescence is a period of particular vulnerability to the social and emotional environment.

Adolescents process emotional information differently from the way prepubertal children and adults do. For example, recent research suggests increased limbic reactivity (sensitivity to threat), exaggerated startle reflex (a measure of fear processing), and stronger interference effects from emotional stimuli on task completion during adolescence.¹⁰ These findings lend support to the proposition that the adolescent brain is particularly reactive to emotional information.¹¹

Brain development that occurs during adolescence primarily involves changes in the frontal and parietal cortices, the site of executive functions—higher-order cognitive and socioemotional processes. A peak in gray matter volume at puberty is followed by a gradual decline as the cortex is fine-tuned through synaptic pruning in areas that play a role in judgment, impulse control, planning, and emotion regulation.¹² As in childhood, experience-dependent learning also plays a part in the sculpting of the brain at adolescence.

Effects of stress in adolescence

These rapid neurobiological changes may predispose adolescents to be uniquely sensitive to the effects of stress.¹³ While the human stress response is adaptive in short bursts and helps mobilize energy reserves for goal-directed purposes, prolonged stress or

dysregulated responsiveness can have a negative effect on health, learning, and productivity.¹⁴ Executive functions such as the ability to direct attention and solve problems efficiently show clear stress-induced disruptions, particularly when there is a perceived lack of control over stressors.¹⁵ Whereas mild stress can enhance memory, chronic or excessive stress can result in damage to parts of the brain critical for new learning and memory consolidation.¹⁶

Given the potentially harmful lifetime consequences of a chronically overactivated stress system, it is critically important to consider the effects of stress on adolescents' developing brains. Hormones play a role in laying down new neural pathways during adolescence, so overexpression of and increased sensitivity to cortisol, the major stress hormone, during this period of rapid brain reorganization may signal a window of vulnerability for the development of psychopathology.¹⁷

Normally developing adolescents, compared to younger and older groups, display heightened stress reactivity on cortisol and other autonomic nervous system measures during challenging situations.¹⁸ Perceived stress, mental anticipation of a stressor, and memories about past stressors and peer rejection have particularly strong associations with cardiac and cortisol reactivity among adolescents.¹⁹ Considering this evidence, the "intersection of stress and the developing adolescent brain may represent a 'perfect storm' in the context of dysfunctional emotional development."²⁰

The importance of emotion regulation

Emotion regulation involves strategies to manage distress in order to meet the demands of different situations or achieve certain goals, such as those involved in learning, and is increasingly viewed by contemporary researchers as a foundation for well-being, academic achievement, and positive adjustment throughout the life span.²¹ Emotion regulation processes include identification and acceptance of emotional experiences, management of distress and modulation of excitement, sustaining motivation, prioritizing

among competing goals, and adaptive adjustment of behavioral responses. Difficulties in emotion regulation are a core feature of many adolescent-onset emotional and behavioral problems, including depression, anxiety, conduct problems, deliberate self-injury, disordered eating, and substance use and abuse.²²

Heightened emotional distress predicts behavior problems and academic failure.²³ Adolescents with low distress tolerance are significantly more likely to engage in harmful risk-taking behavior than those with greater capacity for distress tolerance despite similar risk taking propensity.²⁴ Roeser and his colleagues suggest that emotional distress disrupts the learning process through several mechanisms, including the reduction of self-regulatory efficacy and academic motivation and the amplification of experiential avoidance.²⁵

If adolescence is a stress-sensitive period of development, then emotional distress may be a risk factor for emotional and behavioral problems for all adolescents. Therefore, we need to prioritize effective universal prevention programs that teach emotion regulation (distress tolerance) skills to all adolescents, not just to those at increased risk of problems, as part of comprehensive social and emotional language programming. We propose that a mindfulness-based approach may be uniquely suited to this task.

The contribution of mindfulness for training attention and emotion regulation

Mindfulness is a term used to describe a particular kind of attention that is characterized by intentionality, present moment focus, and nonevaluative observation of experience.²⁶ It can also refer to the act of paying attention in this way (that is, being mindful). All of these attributes can be developed by the practice of intentionally directing and maintaining attention on targets such as the breath or sensory input as in meditation or mindful awareness practice. During practice, attention is purposefully directed to phenomena as they occur in the present moment. Mindful attention is marked

by curiosity and openness to the nature of the experience and the quality of the attention itself. In this context, *nonjudgment* refers to the dual capacity to notice that one's attention can be captured by thoughts and emotions about experience and that this automatic tendency can be countered by intentionally exploring the experience without preconceptions.

Maladaptive behaviors such as aggression and procrastination may become impulsive automatic responses to emotional distress (for example, anger or anxiety) or perceptions of unpleasantness (for example, boredom). Mindfulness is particularly suited to addressing these tendencies to respond in automatic, nonconscious ways to triggers, sometimes referred to as *automatic pilot*. The practice of an attentive and nonreactive attitude toward one's impulses may "increase the gap between impulse and action."²⁷ Regularly practicing mindfulness may allow elements of conscious and less conscious experience to be perceived from a decentered, decontextualized, and more accepting stance. This approach may disrupt reactivity, strengthen attention, and bring problem solving and behavior under more conscious and reflective regulation.²⁸

Research on the effects of mindfulness training with adults has shown numerous benefits, including enhanced awareness of bodily sensation and improved emotion regulation and attention, especially in advanced meditators but also after a brief period of meditation training.²⁹ Benefits also include increases in positive mood and immune system functioning, reductions in depressive relapse, greater empathy, reductions in substance abuse, and reduced stress.³⁰

Although research with adolescents is more limited, some studies have documented improvements in attention skills; social skills for students with learning disabilities; sleep quality; well-being in adolescent boys; and reductions in anxiety, depression, somatic, and externalizing symptoms in clinic-referred adolescents.³¹ More research using rigorous experimental designs is needed to assess the effects of mindfulness-based approaches among youth, particularly approaches that can be integrated into ongoing high school

curricula as universal prevention.³² One example of such a program is the Learning to BREATHE classroom-based program.

Learning to BREATHE: A universal prevention program

Learning to BREATHE (L2B) is a developmentally appropriate universal prevention program designed to be integrated into secondary educational settings. The program aims to increase emotion regulation, improve stress management, and promote executive functions in order to promote well-being and support learning. Adapting themes from mindfulness-based stress reduction developed by Kabat-Zinn, the L2B is shorter, more accessible to students, and compatible with school curricula.³³ The program includes instruction in the practice of mindful awareness and provides opportunities for group and individual practice. Since L2B objectives are explicitly linked to standards for health, counseling, and other professional areas, the program may be incorporated into existing curricula.

The core curriculum may be adapted for various configurations of students in six, twelve, or eighteen sessions within a health, school counseling, or other curriculum area. Each lesson includes a short introduction of the topic, several group activities and discussion, and an opportunity for in-class mindfulness practice. *Mindfulness practice*, as used here, refers to the practice of training the mind to pay attention in a particular way: on purpose, in the present moment, and with nonjudgmental openness.³⁴ Several short practices are taught, including body scan, awareness of thoughts, awareness of feelings, and loving-kindness practices. Loving-kindness practice supports self-compassion and compassion for others.³⁵ Workbooks and CDs for home mindfulness practice accompany this program.

The six major themes of the L2B curriculum are built around the BREATHE acronym:

B (Body): body awareness.

R (Reflections): understanding and working with thoughts.

E (Emotions): understanding and working with feelings.

A (Attention): integrating awareness of thoughts, feelings, and bodily sensations.

T (“Take it as it is”): reducing harmful self-judgments and increasing acceptance.

H (Healthy habits of mind): cultivating positive emotions and integrating mindfulness into daily life.

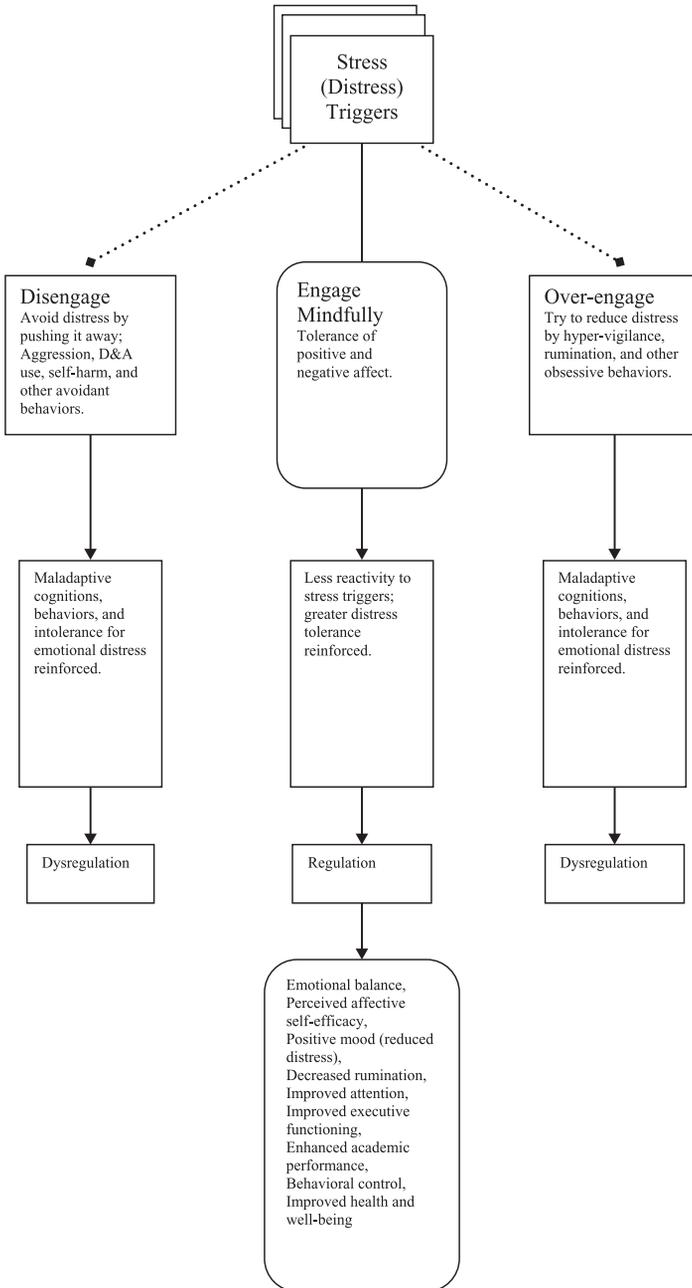
E: The overall goal of the program, to cultivate emotional balance and inner empowerment through the practice of mindfulness, an advantage referred to as gaining the “inner edge.”

Theory of change, developmental assumptions, and empirical support

The L2B program assumes that the practice of mindful awareness will affect student academic and behavioral outcomes by reducing stress and increasing distress tolerance, strengthening executive functions, promoting emotion and behavioral regulation, and ultimately supporting academic goals.³⁶ For the purposes of this model, stress is defined as the experience of conscious or nonconscious emotions and patterns of reactivity, such as anxiety, boredom, irritation, and impulsivity, that cause regulatory processes to deteriorate and impede goal-directed behavior. Figure 7.1 illustrates a model in which typical reactions to stress (distress) trigger pathways to emotional regulation or chronic dysregulation.

First, internal or external conditions trigger the perception of distress. Ineffective management of internal distress that dysregulates behavior can disrupt accomplishments in important areas of adolescent functioning. Second, maladaptive response patterns develop, taking the form of avoidance of or overengagement with the distressing situation in an effort to reduce distress. For example, adolescents may seek to numb feelings of social rejection by engaging in risky behavior. Distress is temporarily blunted, and the

Figure 7.1. Conceptual model of L2B



maladaptive behavior is reinforced, strengthening dysfunctional patterns.

Maladaptive behaviors provide transient relief (positive reinforcement) and serve to permit escape from emotional pain (negative reinforcement). Alternatively, adolescents might become preoccupied with their distress in ways that reinforce the associations between automatic thoughts and negative affect—for example, obsessive worry or rumination, which is constant reexamination or reexperiencing of a distressing situation in a misguided effort to resolve problems and regulate emotions. Rumination heightens attention to distress cues, amplifies rather than attenuates distress, and reduces the capacity of working memory to engage in learning effectively.³⁷

The practice of mindfulness may restore balance when strong emotions arise by increasing metacognitive awareness of mental processes that contribute to emotion dysregulation. Since emotions are transitory, it is useful to practice noticing emotions on the spot. Mindfulness practice offers the opportunity to develop hardiness in the face of uncomfortable feelings that otherwise might provoke a behavioral response that may be harmful to self and others. Furthermore, mindfulness practice strengthens attention by repeatedly orienting attention to a specific object of focus while consciously letting go of distractions. Mindfulness practice involves intentionally sustaining focused attention, and in this way it strengthens the executive skill of inhibition. Through mindfulness practice, automatic processes may come under more conscious control, fostering reflective decision making and reducing impulsive reactions. The practice of orienting to experience with curiosity, patience, and nonjudgment strengthens tolerance for distress and may reduce the adolescent tendency to overappraise threat, providing a potential protective factor against stressors. Over time, the practice of tolerating experience as it arises without engaging in automatic reactions can strengthen resilience and support affective regulatory self-efficacy and control.

This approach is based on certain assumptions about adolescent development.³⁸ At a deep psychological level, adolescents are

involved with constructing an identity and developing autonomy from adults, a task that can be overwhelming and confusing. Although adolescents have the ability to understand and manage their emotions, education in this area has been neglected in school settings. The discussion and practice included in L2B support adolescents' increased capacity for introspection while maintaining sensitivity to their internal pressure for social conformity and tendency for social comparison.

Learning to BREATHE has been implemented in a variety of settings, including private (residential and nonresidential) and public middle and secondary schools, clinical settings, and after-school programs. Overall, improvements in emotion regulation skills and reductions in psychosomatic symptoms and reported stress were consistently observed. Adolescents who participated in the program were better able to recognize and label feelings, were less anxious and reactive to difficult thoughts and feelings, and showed a greater array of coping abilities.³⁹ Although results are encouraging, clearly more research is needed.

Conclusion

The adolescent period is marked by changes, particularly brain changes, that are “among the most dramatic and important to occur during the human lifespan.”⁴⁰ Recent research has affirmed the importance of supporting adolescents through this transition period as they build the physical and mental competencies that will contribute to the course of their adulthood. Mindfulness practice has tremendous power to support healthy development during adolescence and beyond by reducing stress, fostering wellness, and providing tools for emotional balance. Particularly for youth, cultivation of these faculties of mind has direct relevance to burgeoning self-awareness, self-regulation, and the emotional balance that supports fully engaged learning and well-being. It is of great importance that educators and professionals help adolescents find the inner reserves of mindful awareness that are available to them.

Notes

1. Collaborative for Academic, Social, and Emotional Learning. (2008). *Social and emotional learning and student benefits: Implications for the Safe School/Healthy Students core elements*. Washington, DC: National Center for Mental Health Promotion and Youth Violence Prevention, Education Development Center.

2. Greenberg, M. T., Kusche, C. A., Cook, E. T., & Quamma, J. P. (1995). Promoting emotional competence in school-aged children: The effects of the PATHS curriculum. *Development and Psychopathology*, *7*, 117–136.

3. Patel, V., Flisher, A. J., Heetrick, S., & McGorry, P. (2007). Mental health of young people: A global public health challenge. *Lancet*, *369*, 1302–1313.

4. U.S. Public Health Service. (2000). *Report of the Surgeon General's Conference on Children's Mental Health: A national action agenda*. Washington, DC: Department of Health and Human Services.

5. Dahl, R. E. (2004). Adolescent brain development: A period of vulnerabilities and opportunities. *Annals of the New York Academy of Sciences*, *1021*, 1–22.

6. Gutman, L. M., Sameroff, A. J., & Cole, R. (2003). Academic trajectories from first to twelfth grades: Growth curves according to multiple risk and early child factors. *Developmental Psychology*, *39*, 777–790; Darling, N., Cumsille, P., & Martinez, M. L. (2008). Individual differences in adolescents' beliefs about the legitimacy of parental authority and their own obligation to obey: A longitudinal investigation. *Child Development*, *79*, 1103–1118; Rodriguez-Tome, H., Bariaud, F., Zardi, M. F., & Cohen Delmas, C. (1993). The effects of pubertal changes on body image and relations with peers of the opposite sex in adolescence. *Journal of Adolescence*, *16*, 421–438; Sim, T. N., & Koh, S. F. (2003). A domain conceptualization of adolescent susceptibility to peer pressure. *Journal of Research on Adolescence*, *13*, 57–80; Collins, W. A. (2003). More than myth: The developmental significance of romantic relationships during adolescence. *Journal of Research on Adolescence*, *13*, 1–24; Reyna, V. F., & Farley, F. (2006). Risk and rationality in adolescent decision making: Implications for theory, practice, and public policy. *Psychological Science in the Public Interest*, *7*, 1–44; Comstock, G., & Scharrer, E. (2006). Media and popular culture. In W. Damon & R. M. Lerner (Series Eds.), K. A. Renninger, & I. E. Sigel (Vol. Eds.), *Handbook of child psychology: Vol. 4. Child psychology in practice* (6th ed., pp. 817–863). Hoboken, NJ: Wiley.

7. Jacobshagen, N., Rigotti, T., Semmer, N. K., & Mohr, G. (2009). Irritation at school: Reasons to initiate strain management earlier. *International Journal of Stress Management*, *16*, 195–214.

8. Melman, S., Little, S. G., & Akin-Little, A. (2007). Adolescent overscheduling: The relationship between levels of participation in scheduled activities and self-reported clinical symptomatology. *High School Journal*, *90*, 18–30.

9. Romeo, R. D. (2010). Adolescence: A central event in shaping stress reactivity. *Developmental Psychobiology*, *52*, 244–253.

10. Silk, J. S., Siegel, G. J., Whalen, D. J., Ostapenko, L. J., Ladoucer, C. D., & Dahl, R. E. (2009). Pubertal changes in emotional information processing:

Pupillary, behavioral, and subjective evidence during emotional work identification. *Development and Psychopathology*, 21, 7–26; Thomas, K. M., Drevets, W. C., Whalen, P. J., Eccard, C. H., Dahl, R. E., & Ryan, N. D. (2001). Amygdala response to facial expressions in children and adults. *Biological Psychiatry*, 49, 309–316. Quevedo, K., Benning, S. D., Gunnar, M. R., & Dahl, R. E. (2009). The onset of puberty: Effects on the psychophysiology of defensive and appetitive motivation. *Development and Psychopathology*, 21, 27–45; Hare, T. A., Tottenham, N., Galvan, A., Voss, H. U., Glover, G. H., & Casey, B. J. (2008). Biological substrates of emotional reactivity and regulation in adolescence during an emotional go-nogo task. *Biological Psychiatry*, 63, 927–934.

11. Blakemore, S. J. (2008). Development of the social brain during adolescence. *Quarterly Journal of Experimental Psychology*, 61, 40–49; Casey, B. J., Jones, R. M., & Hare, T. A. (2008). The adolescent brain. *Annals of the New York Academy of Sciences*, 1124, 111–126.

12. Giedd, J. N., Blumenthal, J., Jeffrie, N. O., Castellanos, F. X., Liu, H., Zijdenbos, A., ... Rapoport, J. L. (1999). Brain development during childhood and adolescence: A longitudinal MRI study. *Nature Neuroscience*, 2, 861–863; Casey, B. J., Giedd, J. N., & Thomas, K. M. (2000). Structural and functional brain development and its relation to cognitive development. *Biological Psychology*, 54, 241–257.

13. Romeo. (2010).

14. McEwen, B. S. (2003). Mood disorders and allostatic load. *Biological Psychiatry*, 54, 200–207.

15. Arnsten, A. F. T., & Shansky, R. M. (2004). Adolescent vulnerable period for stress-induced prefrontal cortical function? Introduction to part IV. *Annals of the New York Academy of Sciences*, 1021, 143–147.

16. Andersen, S. L., & Teicher, M. H. (2008). Stress, sensitive periods and maturational events in adolescent depression. *Trends in Neuroscience*, 31, 183–191.

17. Spear. (2009).

18. Stroud, L., Foster, E., Handwerker, K., Papandonatos, G. D., Granger, D., Kivlighan, K. T., & Niaura, R. (2009). Stress response and the adolescent transition: Performance versus peer rejection stress. *Development and Psychopathology*, 21, 47–68.

19. Sumter, S. R., Bokhorsta, C. L., Miersa, A. C., Van Pelt, J., & Westenberg, P. M. (2010). Age and puberty differences in stress responses during a public speaking task: Do adolescents grow more sensitive to social evaluation? *Psychoneuroendocrinology*, 35, 1510–1516; Sebastian, C., Viding, E., Williams, K. D., & Blakemore, S. J. (2010). Social brain development and the affective consequences of ostracism in adolescence. *Brain and Cognition*, 72, 134–145.

20. Romeo. (2010).

21. Campos, J. J., Frankel, C. B., & Camras, L. (2004). On the nature of emotion regulation. *Child Development*, 75, 377–394; Eisenberg, N., Spinrad, T. L., & Eggum, N. D. (2010). Emotion-related self-regulation and its relationship to children's maladjustment. *Annual Review of Clinical Psychology*, 6, 495–525.

22. Beato-Fernández, L., Rodríguez-Cano, T., Pelayo-Delgado, E., & Calaf, M. (2007). Are there gender-specific pathways from early adolescence psychological distress symptoms toward the development of substance use and abnormal eating behavior? *Child Psychiatry and Human Development, 37*, 193–203; Cisler, J. M., Olatunji, B. O., Felder, M. T., & Forsyth, J. P. (2010). Emotion regulation and the anxiety disorders. *Journal of Psychopathology and Behavioral Assessment, 32*, 68–82; Laye-Gindhul, A., & Schonert-Reichl, K. A. (2005). Nonsuicidal self-harm among community adolescents: Understanding the “whats” and “whys” of self-harm. *Journal of Youth and Adolescence, 34*, 447–457.
23. Needham, B. L., Crosnoe, R., & Muller, C. (2004). Academic failure in secondary school: The inter-related role of health problems and educational context. *Social Problems, 51*, 569–586.
24. MacPherson, L., Reynolds, E. K., Daughters, S. B., Wang, F., Cassidy, J., Mayes, L. C., & Lejuez, C.W. (2010). Positive and negative reinforcement underlying risk behavior in early adolescents. *Prevention Science, 11*, 331–342.
25. Roeser, R. W., Vanderwolf, K., & Strobel, K. R. (2001). On the relation between social-emotional and school functioning during early adolescence: Preliminary findings from Dutch and American samples. *Journal of School Psychology, 39*, 111–139.
26. Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. New York, NY: Hyperion.
27. Boyce, B. (2005). Two sciences of the mind. *Shambhala Sun, 13*, 34–43, 93–96, P. 40.
28. Zelazo, P. D., & Cunningham, W. (2007). Executive function: Mechanisms underlying emotion regulation. In J. Gross (Ed.), *Handbook of emotion regulation* (pp. 135–158). New York, NY: Guilford Press.
29. Lazar, S., Kerr, C., Wasserman, R., Gray, J., Greve, D., Treadway, M., McGarvey, M., ... Fischl, B. (2005). Meditation experience is associated with increased cortical thickness. *NeuroReport, 16*, 1893–1897; Desbordes, G., Negi, L. T, Pace, T.W.W., Wallace, B. A., Raison, C. L., & Schwartz, E. L. (2012). Effects of mindful-attention and compassion meditation training on amygdala response to emotional stimuli in an ordinary, non-meditative state. *Frontiers in Human Neuroscience*. doi: 10.3389/fnhum.2012.00292; Jha, A. P., Stanley, E. A., Kiyonaga, A., Wong, L., & Gelfand, L. (2010). Examining the protective effects of mindfulness training on working memory and affective experience. *Emotion, 10*, 54–64; van den Hurk, P.A.M., Gionmi, F., Gielen, S. C., Speckens, A. E. M., & Barendregt, H. P. (2010). Greater efficiency in attentional processing related to mindfulness meditation. *Quarterly Journal of Experimental Psychology, 63*, 1168–1180; Tang, Y., Ma, Y., Fan, Y., Fend, H., Wang, J., Feng, S., ... & Fan, M. (2009). Central and autonomic nervous system interaction is altered by short-term meditation. *Proceedings of the National Academy of Sciences, 106*, 8865–8870; Zeidan, F., Johnson, S. K., Diamond, B. J., David, Z., & Goolkasian, P. (2010) Mindfulness meditation improves cognition: Evidence of brief mental training. *Consciousness and Cognition, 19*, 597–605.

30. Davidson, R. J., Kabat-Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S. F., ... & Sheridan, J. F. (2003). Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Medicine*, *4*, 564–570; Ma, S. H., & Teasdale, J. D. (2004). Mindfulness-based cognitive therapy for depression: Replication and exploration of differential relapse prevention effects. *Journal of Clinical and Consulting Psychology*, *72*, 31–40; Shapiro, S. L., & Brown, K. W. (2007). *The relation of mindfulness enhancement to increases in empathy in a mindfulness-based stress reduction program*. Unpublished data, Santa Clara University; Ostafin, B. D., & Marlatt, G. A. (2008). Surfing the urge: Experiential acceptance moderates the relation between automatic alcohol motivation and hazardous drinking. *Journal of Social and Clinical Psychology*, *27*, 404–418; Chiesa, A., & Serreti, A. (2009). Mindfulness-based stress reduction for stress management in healthy people: A review and meta-analysis. *Journal of Alternative and Complementary Medicine*, *15*, 593–600.

31. Napoli, M., Krech, P. R., & Holley, L. C. (2005). Mindfulness training for elementary school students: The Attention Academy. *Journal of Applied School Psychology*, *21*, 99–125; Zylowska, L., Ackerman, D. L., Yang, M. H., Futrell, J. L., Horton, N. L., Hale, T. S., Pataki, C., & Smalley, S. L. (2008). Mindfulness meditation training in adults and adolescents with ADHD: A feasibility study. *Journal of Attention Disorders*, *11*, 737–746; Beauchemin, J., Hutchins, T. L., & Patterson, F. (2008). Mindfulness meditation may lessen anxiety, promote social skills and improve academic performance among adolescents with learning disabilities. *Complementary Health Practice Review*, *13*, 34–45; Britton, W. B., Haynes, P. L., Fridel, K. W., & Bootzin, R. R. (2010). Polysomnographic and subjective profiles of sleep continuity before and after mindfulness-based cognitive therapy in partially remitted depression. *Psychosomatic Medicine*, *72*, 539–548; Huppert, F. A., & Johnson, D. M. (2010). A controlled trial of mindfulness training in schools: The importance of practice for an impact on well-being. *Journal of Positive Psychology*, *5*, 264–274; Biegel, G. M., Brown, K. W., Shapiro, S. L., & Schubert, C. M. (2009). Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized clinical trial. *Journal of Consulting and Clinical Psychology*, *77*, 855–866; Bogels, S., Hoogstad, B., vanDun, L., deSchutter, S., & Restifo, K. (2008). Mindfulness training for adolescents with externalizing disorders and their parents. *Behavioural and Cognitive Psychotherapy*, *36*, 193–209; Semple, R. J., Lee, J., Rosa, D., & Miller, L. F. (2010). A randomized trial of mindfulness-based cognitive therapy for children: Promoting mindful attention to enhance social-emotional resiliency in children. *Journal of Child and Family Studies*, *19*, 218–229.

32. Burke, C. A. (2010). Mindfulness-based approaches with children and adolescents: A preliminary review of current research in an emerging field. *Journal of Child and Family Studies*, *19*, 133–144.

33. Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. New York, NY: Delacorte.

34. Kabat-Zinn. (1990).

35. Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts build lives: Positive emotions, induced through loving-

kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology*, 95, 1045–1062.

36. Blair, C., & Diamond, A. (2008). Biological processes in prevention and intervention: The promotion of self-regulation as a means of preventing school failure. *Development and Psychopathology*, 20, 899–911.

37. Lyubomirsky, S., & Tkach, C. (2004). The consequences of dysphoric rumination. In C. Papageorgiou & A. Wells (Eds.), *Depressive rumination: Nature, theory and treatment* (pp. 21–42). Hoboken, NJ: Wiley.

38. Broderick, P. C., & Blewitt, P. (in press). *The life span: Human development for helping professionals* (4th ed.). Upper Saddle River, NJ: Pearson Education.

39. Broderick, P. C., & Metz, S. (2009). Learning to BREATHE: A pilot trial of a mindfulness curriculum for adolescents. *Advances in School Mental Health Promotion*, 2, 35–46; Metz, S., Frank, J., Reibel, D., Cantrell, T., Sanders, R., & Broderick, P. C. (2012). *The effectiveness of the Learning to BREATHE program on adolescent emotion regulation*. Manuscript submitted for publication.

40. Steinberg, L. (2010). A behavioral scientist looks at the science of adolescent brain development. *Brain and Cognition*, 72, 160–164.

PATRICIA C. BRODERICK is professor emerita, West Chester University of Pennsylvania, and research associate with the Prevention Research Center at Pennsylvania State University.

PATRICIA A. JENNINGS is a research assistant professor in human development and family studies and the Prevention Research Center at Pennsylvania State University.