MILLENNIAL STUDENTS

INSIGHTS FROM GENERATIONAL THEORY AND LEARNING SCIENCE

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Recent theory and research suggest that the current generation of students, labeled millennials, is unique in formative experiences, beliefs, attitudes, and goals. This chapter goes beyond the “Gameboy-in-the-crib” characterization of today’s students by examining societal trends that have shaped them and connects these findings to insights from the learning sciences. This analysis uncovers how these students’ experiences affect their readiness for college and attitudes about learning. The chapter argues that the current sociocultural context leaves students ill equipped for certain cognitive functions, particularly metacognitive awareness and progress toward mature stages of intellectual development, and it suggests strategies to support the development of those functions.

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Do students on campus seem different from those ten to fifteen years ago, or did you just grow old? Every generation is, of course, different from the previous one, but many in higher education, those who write for the popular press, and even corporate America agree that something is unique about this cohort of students, a change so profound to be a “discontinuity” or even a “singularity” (Prensky, 2001). Some decry this

change, some celebrate it, and others try to offer tips to deal with it. In fact, the millennial generation has spawned an industry of consultants who help institutions understand, teach, and manage these young adults. A simple Google search on “understanding millennials” yields almost 2 million Web pages. Many of these pieces highlight the ubiquitous presence of technology in millennials’ lives and their multitasking habits, concluding with how higher education needs to be more responsive to this reality.

Among the most influential perspectives, we find the somewhat pessimistic one of Twenge (2007), who describes a generation victim of the self-esteem movement and, as a result, narcissistic, self-centered, entitled, disrespectful, and depressed when it realizes not all its wishes are attainable. Similarly, Bauerlein (2008) argues that the ubiquity and immediacy of technology have made this generation dumb and underachieving. In his view, social networking sites have made teenagers self-centered and uninterested in anything that does not immediately concern them. These sites invite expressive writing, which promotes transmission of information but not necessarily learning or critical thinking. Finally, he adds that text messaging, with its blasé attitude about spelling and punctuation, has promoted poor writing by normalizing illiteracy. Prensky (2001), who coined the terms *digital immigrants* and *digital natives* to refer to those born, respectively, before and after the computer and Internet revolution, goes on to state, “It is very likely that *our students’ brains have physically changed*—and are different from ours [emphasis in the original]” (p. 1) and that therefore teaching must change, specifically incorporating more technology.

Although neuroscience has refuted Prensky’s claim (brains do not evolve in such short time spans), this meme has spread in the popular press (a Google search for “millennial brains have evolved” yields 4 million pages discussing this idea). Others have highlighted the generational shift as a cultural one, often taking a humorous approach to sensitize faculty to this change. Since 1998, Beloit College has been issuing its “Beloit College Mindset List” (Beloit College, 2011). Started as a reminder for faculty not to use outdated references, it has chronicled the evolving generational gap between students and faculty. For instance, for traditional students in the class of 2015, born in 1993, the Communist Party has never been the official political party in Russia, altar girls have never been a big deal, and no state has ever failed to observe Martin Luther King Jr. Day. These and other items are stark reminders that compared to professors in their fifties, the racial, gender, and political landscape is radically different for this generation.

Finally, writers like Howe and Strauss (1992), who coined the term *millennial*, have celebrated this generation as the next great generation and the cultural heir to the GI generation (born 1901 to 1924). The strategies they suggest involve capitalizing on the social and hyperconnected nature of millennials, for instance, by rebranding college as a bonding experience.

While technology, multitasking, and social connectedness are certainly facets of the millennial experience, two crucial pieces are often absent from such conversations. The first is an in-depth look at the cultural, societal, parental, and educational trends that have helped shape millennial students into the beings we see on our campuses. While Howe and Strauss's "Seven Core Traits of Millennials" (2000) are often cited, they are not mentioned in the context of their broader generational theory that explains those traits.

The second is a serious connection of these considerations to the insights from learning science. For instance, what impact have these trends had on the development of students' metacognitive skills? How does this translate into readiness for learning? What does learning science tell us about crafting pedagogical strategies that are both proven to be effective and likely to be well received by millennials? Other than the false claims about the evolution of the millennial brain, learning research is seldom invoked in these conversations.

This chapter aims to bridge these two gaps and is divided into three sections. The first section reviews Howe and Strauss's (1992) generational theory. The second section examines their seven core traits of millennials, with particular attention to the social trends that generated them (Howe & Strauss, 2000; Strauss & Howe, 2003). The third section reviews seven principles of learning (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010); ties them to generational traits, especially in relation to intellectual development, metacognitive awareness, and epistemological beliefs; and draws implications for learning and pedagogical strategies.

Generational Theory

Beyond classifying the traits of a given cohort, generational theory tries to build a framework to predict how current generations emerge from previous ones. If the parents had certain generational traits, what can we expect of their children?

Generational theories usually rely on the "pendulum" idea, postulating that generations alternate by swinging back and forth along a character axis as they challenge and react to the previous generation's values

(Marías, 1976). Howe and Strauss (1992) theorize a reoccurring cycle of four states: the swing to one side, the coming down to the middle from that side, the upswing to the opposite side, and again the coming back to the middle, but from the opposite side. In their theory, a generational cycle encompasses four generations and two social moments. They define a generation as "a special cohort-group whose length approximately matches that of a basic phase of a life, or about 22 years" (p. 34). What distinguishes a generation from the next is its peer personality, which they define as "a generational persona recognized and determined by common age location, beliefs and behaviors, and perceived membership in a common generation" (p. 64). From this definition, we see that a generation lasts about twenty years, and it gives rise to the next one when the people born after that no longer share the same broad cultural traits or peer personality. For instance, we can immediately evoke certain traits associated with people raised during the Great Depression (such as thriftiness) or with baby boomers (such as their emphasis on self-exploration, often drug mediated). The trait does not have to be shared by all members of a generation to define its personality. Not everybody in the 1960s used drugs, but people were aware that was the cultural trend.

Some generations (the upswings of the pendulum) herald social moments, "era[s], typically lasting about a decade, when people perceive that historical events are radically altering their social environment" (Howe & Strauss, 1992, p. 71). The 1960s were one such moment, an era of inner-oriented spiritual awakening that changed the social landscape by focusing on finding oneself, importing and spreading Eastern spirituality, and eventually launching the self-esteem movement. In Howe and Strauss's (1992) theory, we are living through the latter stages of another social moment, this time an outer-oriented secular crisis brought about by 9/11 and the Iraq war.

The decade following 9/11 has redefined what it means to be an American, a citizen, a patriot, across the political spectrum. Compare this with the Gulf War in the 1990s, which did not have such a pervasive effect because the social conditions were not there yet. Rather remarkably, Howe and Strauss predicted in 1992 that we would reenter a social moment in the next decade based on their historical analysis of the previous generational cycles. Not all generations herald social moments. Those that do are said to be dominant, and they alternate with recessive generations. Recessive generations can behave in two alternating ways. Adaptive generations follow a secular crisis and simply adopt, expand, and consolidate the previous generation's values. The stereotypical image of the housewife in the 1950s, with her ever-growing menagerie of household appliances, exemplifies one

such generation (aptly named the silent generation). Reactive generations follow a spiritual awakening, and they rebel against the previous generation's values, but without offering a viable substitute. The jaded Generation X is a typical example of a reactive generation.

Millennial Theory

The last generational cycle started with the GI generation (born 1901 to 1924), followed by the silent generation (born 1925 to 1942), the boomers (born 1943 to 1960), and Generation X (1960 to 1981). Millennials (born 1982 to 2004) start a new cycle, heralded by the secular crisis. Therefore, the first key to understand this generation is that it plays a role in history analogous to the GI generation—the civic-oriented generation who built modern America.

Usually each generation begets the next: for example, GIs begat silents, and silents begat boomers. Boomers delayed having children in favor of self-exploration. As a result, Generation X is one of the smallest generations. When Xers began getting married and having children—millennial children—boomers were now ready to settle down and have children. As a result, millennials are parented by both preceding generations. This is significant because boomers, being older, are more socially established than Xers, in the sense that they controlled institutions such as school boards while millennials were growing up, and therefore have been the dominant generation in terms of setting standards for how millennials have been raised.

As a caveat, this generational theory has been criticized as unwarranted overgeneralization. Many of the traits easily map onto children from comfortable and privileged backgrounds. Howe and Strauss's research (1992) has maintained that the traits are confirmed across different social and racial/ethnic groups, keeping in mind that the outer manifestations might vary according to wealth. However, Howe and Strauss posit that the only group for which those traits do not characterize the generational culture is very rural families.

With these ideas in mind, Howe and Strauss have identified the following seven core traits of millennials.

Millennials Are Special

Prevalent societal attitudes from the 1970s often considered children a hindrance. For instance, only 55 percent of college freshmen in 1974 declared that "raising a family" was an "essential or very important life

goal.” Through the 1980s and 1990s, this trend reversed itself, with that same percentage rising to 78 percent in 1998 (Higher Education Research Institute, 1998). Family income increased and family size decreased, so that more resources were concentrated on fewer children. As Howe and Strauss pointed out, fertility programs skyrocketed through the same period, with the result that those babies were literally special because of the investment of time, financial resources, and emotional energy in them. Children became fashionable, as evidenced by celebrities who have publicly appeared pregnant on the covers of magazines or taking their children to the Oscars. Las Vegas rebranded itself as a family place rather than a sexcapade paradise. A new market segment dedicated to kids exploded, with blockbuster teen movies and teen pop stars.

Hillary Clinton’s *It Takes a Village* (1996) ensconced child rearing as the foundation of society. Meanwhile, President Clinton coined the term *kinderpolitics*, referring to the strategic practice of tying legislation to the benefit of children in order to get it passed. The first cohort of millennials was born in 1982, which means they were the high school graduating class of 2000, the very beginning of the new millennium. They grew up in the school system to cries of, “You are the future!” in ways that other cohorts before them had not.

Millennials Are Protected

A consequence of having special offspring is that parents must act to protect them. In fact, this is a recurring trait in this generational theory. The first generation in the cycle (or the hero generation, as the theory calls it) is raised in an uncertain and insecure world by pessimistic parents. As Gen Xers came of age and entered the adult world, divorce, crime, sexually transmitted infections (including HIV/AIDS), drug and alcohol use, and teen suicides all increased (National Center for Health Statistics, 1999; Bureau of Justice Statistics, 1999).

It is no wonder that, with this backdrop, parents took on an unprecedented protective role characterized by “Baby on Board” stickers, padded playgrounds, flame-retardant pajamas, child car seats, childproofed dwellings, Amber Alerts, Megan’s law, stranger danger campaigns—the list goes on and on. Things once deemed healthy, like playing outside in the sun and riding bikes, are now regarded dangerous without essentials such as sunblock and bike helmets. The genesis of helicopter parents, hovering over their child, must be traced to the early years, or even pregnancy.

Millennials Are Team Oriented

This is the linchpin of the whole theory. The first generation in the cycle is civic and outer oriented. It looks at the failures and hypocrisies of previous generations and decides to join together, roll up its sleeves, and get to work. The way this gets instantiated with millennials is that they are team oriented. As examples of this orientation, consider that they have been brought up with organized play dates. They grew up watching *Barney* on television and internalizing his upbeat message of unconditional love and solving problems together. They are used to school uniforms, which promote group spirit over individualistic self-expression. The rules of the Massachusetts Youth Soccer Association specify that less skilled players will get more playing time than in the past and that parents will cheer for all the players at a game (Jacobi, 1998). Millennials also prefer group outings to one-on-one dates, often arranged through sites like www.datingin-groups.com, and they have identified selfishness as the major cause of the country's problems (Roper Starch Worldwide, 1998). This trait is often translated into a pedagogical strategy of using group work whenever possible in hopes that it will increase student motivation through familiarity, but the linkage does not necessarily follow by itself.

Millennials Are Trusting Optimists

According to this position, millennials are trusting in two ways. First, they are trusting of societal institutions. Even when they do not agree with specific rules, they trust that such institutions are necessary and value them. This theory was formulated before the wave of scandals that rocked many institutions, from the Catholic church to government and corporate America, so this aspect can be criticized. Second, and more important, millennials are trusting of themselves and confident about the power of their generation. This is a direct product of the self-esteem movement. Whereas the previous generation looked to the established power elite to find answers to many of the difficult questions facing the nation, millennials see their role as instrumental in solving social and political problems. Involvement in programs like the Peace Corps, Teach for America, and Habitat for Humanity rose dramatically in the millennial years, according to those associations' Web sites. Similarly, involvement in politics increased from previous generations with the 2008 presidential election, with many parents reporting they were influenced in their voting decisions by their millennial children, most notably Caroline

Kennedy, daughter of President Kennedy, who was convinced to endorse President Obama by her millennial daughter (Newsweek, 2008).

Millennials Are Conventional

Compared to previous generations that rebelled to the tune of sex, drugs, and rock 'n' roll, millennials are comfortable with their parents' values. Even when they disagree with them, they understand that the general parental framework is in their best interests. Most relevant to this discussion, millennials have been brought up with zero-tolerance policies in schools (first instituted in Cincinnati in 1991), with behavioral standards about touching, language, and dress that are clearly articulated and strictly enforced. School behavior that would not have been noticed in the early 1980s may now result in suspensions, and what was punishable behavior then may now result in expulsion. Because one of the defining moments of the generation was the Columbine massacre, students appreciate the safety and order brought on by these rules even at the expense of fun, spontaneity, and imagination.

Millennials Are Achieving

This trait is a direct result of educational experiences focused on standardized achievement, especially following federal programs like No Child Left Behind and Race to the Top. Given the emphasis these programs place on standardized test scores, this generation has internalized the value of achievement and results over the learning process itself. This generation has also achieved remarkable feats in its teenage years compared to previous generations. For instance, millennial teenagers have bested adults in prestigious science talent searches (Business Wire, 1999). This obsessive fixation on performance is its own anxiety-producing curse. Rather than being treated as a learning opportunity, failure—or even mere mediocrity—is met with tutoring, coaching, and special instruction, with the result that many students arrive at college without having experienced serious failure.

Millennials Are Pressured

Millennials are achieving, but they are also pressured to achieve. Perfectionist helicopter parents place high expectations on their children. Each level of schooling is a high-stakes gateway to the next one. Good

grades are paramount to get into good schools and then good colleges. SAT scores, and even extracurricular activities, are crucial. This translates into highly scheduled and planned lives, with little free time. Tellingly, although this generation is generally healthier than previous ones, stress and anxiety are major health challenges for millennials (National Center for Health Statistics, 1999).

Learning Theory

The question for educators who want to be culturally responsive in their teaching is: how do these generational traits influence learning, readiness for the mental demands of college, and attitudes toward knowledge and performance? In order to answer that question, it is helpful to review the major findings from learning research. In their review of the past fifty years of research into learning, Ambrose et al. (2010) synthesize and organize the major findings in the field into seven interrelated principles. Considered in relation to the seven generational traits of millennials, these seven principles highlight learning issues and suggest educational strategies for both teachers and faculty developers.

Students' Prior Knowledge Can Help or Hinder Learning

Students possess a wealth of prior knowledge and experiences that they bring to bear on new learning experiences, consciously or not, for better or for worse. This repertoire shapes the assessments students make of their learning activities: which ones are boring, interesting, relevant, fun, busywork, memorable, and so on. Of course, millennials' mindscape is different from that of previous generations, as the Beloit list demonstrates, and this gap can cause some activities to fizzle.

STRATEGIES

- Educate yourself about the millennial mind-set and frame of reference.
- Activate students' prior knowledge as it becomes relevant to the educational task.
- Engage the material through multiple modalities whenever appropriate (such as text, videos, and personal narratives).
- Judiciously use technology to increase familiarity and relevance.

How Students Organize Knowledge Influences How They Learn and Apply What They Know

This principle highlights the limitations of our information processing system. In order to retain new knowledge, students need to connect to knowledge already stored in the brain. Unfortunately, the deep processing necessary for deep learning does not occur naturally for students: attention wanes in lectures after fifteen minutes; working memory capacity is limited; students tend to make much fewer connections than experts do, and the ones they make tend to be based on superficial features that do not facilitate problem solving and other applications of knowledge (Bligh, 2000; Chi, Feltovich, & Glaser, 1981). While these limitations have been observed with Xers and boomers first, they sometimes are pinned onto millennials, as if attention spans have somehow shrunk in the past twenty to forty years (Oblinger & Oblinger, 2006).

STRATEGIES

- Alternate lecture, discussion, video clips, and other instruction every fifteen minutes or so to hold attention.
- Use compare-and-contrast exercises, analogies, and student-generated examples to enable more mental connections.
- Use clickers to check quickly if students are building a good knowledge organization.
- Explicitly teach students how to process material with the underlying principles in mind, using key words, heuristics, and guiding questions, for example.

Students' Motivation Determines, Directs, and Sustains What They Do to Learn

Motivation determines behavior, so it is important to unpack the motivations that trigger behaviors conducive to learning. Generally people expend more effort in learning situations where they can clearly see the connection between the task and something they value and expect to be successful at the task (Wigfield & Eccles, 2000).

Because of the focus on and the pressure to achieve, reinforced by current educational practices focused on standardized tests, the cultural value for this generation is shifting to performance and credentialing rather than learning, with the consequence that educators face reduced intrinsic motivation and increased instrumental (extrinsic) motivation. Furthermore, the pressure to achieve fosters a much narrower definition

of success. Far from learning opportunities, mistakes are instead viewed as personal failures and something to avoid at all costs, with obvious implications for cheating as well as risk taking, innovating, and experimenting with new ideas or approaches.

STRATEGIES

- Model how you deal with problems, difficulties, or challenges.
- If risk taking and creativity are desired, make them explicit learning objectives, and construct a grading scale that allows for them.
- Discuss the formative value of failure explicitly.

To Develop Mastery, Students Must Acquire Component Skills, Practice Integrating Them, and Know When to Apply What They Have Learned

Learning complex skills such as writing, coding, and painting requires practice at various levels. Each individual subskill must be mastered, put together with the others, and applied appropriately. None of this is surprising, but research findings highlight a potential problem for millennials. Studies have shown that, other than experts who have automated skills to the point that they require minimal cognitive processing, people's performance tends to degrade when they are asked to do more than one task at a time because the integration of different skills and activities is particularly taxing of our cognitive capacities (Wickens, 1991). This runs counter to the millennial cultural ideal of multitasking. Students are used to it and value it, but it does not necessarily mean that they are good at it.

STRATEGIES

- Share with students the research on multitasking.
- Discuss the value of working in distraction-free environments (for example, without Facebook).
- When students complain about grades, include study habits in the conversation.

Goal-Directed Practice Coupled with Targeted Feedback Enhances the Quality of Students' Learning

The best practice opportunities are designed with specific, measurable goals in mind that enable learners to receive frequent, timely, and

constructive feedback highlighting points of strengths, areas to improve, and concrete steps to incorporate in future practice in an iterative fashion (Ericsson, Krampe, & Tescher-Romer, 2003).

Conventional wisdom claims that millennial students crave constant feedback, and indeed those special, achieving millennials are used to frequent feedback. Unfortunately, the kind of constructive feedback necessary for learning is often different from the positive reinforcement to which some of them are culturally habituated. Constructive feedback must highlight areas for improvement in addition to offering praise. Furthermore, developmental and motivational psychologists point out that what is praised matters, and compare praising the student's ability to praising the productive effort a student put in that leads to the desired final result. The latter builds productive habits, while the former promotes a self-image that must be continually sustained, with the result that students culturally pressured to do well always may disengage from tasks they consider too challenging (Kamins & Dweck, 1999).

STRATEGIES

- Praise the solid effort behind a student's good performance. In cases of poor performance, bring the conversation back to the kind of effort put into the task.
- Sandwich negative feedback between positive, and give concrete steps students can take next.
- Double-check that the student understands your feedback and does not overlook the negative parts of it.

Students' Current Level of Development Interacts with the Social, Emotional, and Intellectual Climate of the Course to Influence Learning

Learners are always developing and facing specific developmental challenges in each stage of life. In particular, traditional college-age students are developing intellectually. They usually enter college with conceptions of knowledge that are black and white, with teachers having right answers that must be memorized and regurgitated on the test. These students have to move toward conceptions of knowledge where they can compare competing theories on the basis of evidence supporting them and on the consequences of committing to a certain approach (Perry, 1968). These developmental challenges play out in the social environment of the classroom.

Developmental considerations apply to all generations. Every generation of students faces the developmental challenge to adopt a more sophisticated epistemology. Unfortunately, standardized testing procedures that have become routine with millennials foster discomfort with uncertainty and ambiguity rather than movement toward embracing complexity.

One of the cornerstones of further developmental achievements, according to Chickering and Reisser (1993), is the development of confidence, or the sense that an individual can successfully deal with challenges that come her way. On the surface, millennials' cultural optimism looks like this confidence, but the close relationship that protected, sheltered millennial students have with their helicopter parents might mean that for some, this confidence is not grounded in an ability to handle challenges. Helicopter parents may actually delay development of student ability to deal with challenges or difficulties, solve problems, manage time, and make decisions, all of which have negative effects on learning and performance.

STRATEGIES

- Resist a single right answer when multiple answers are appropriate, but make uncertainty safe.
- Demonstrate that personal opinion alone is insufficient, and probe for evidence.
- Identify and challenge inaccurate beliefs about knowledge.
- Set expectations about the instructor's role in the learning process, not as the dispenser of truth but as a facilitator of learning.
- Use the Family Educational Rights and Privacy Act to manage parental interference if it arises. Leverage parental concern into a collaborative partnership to develop independent adults.
- Direct students to institutional resources on broader life skills such as time management and conflict resolution.

To Become Self-Directed Learners, Students Must Learn to Monitor and Adjust Their Approaches to Learning

A strategic awareness of oneself as a learner is just as important as the notions and skills to be learned. In fact, learners have not really taken responsibility for their own learning until they have internalized these strategic habits: making sense of the task ahead of them, examining their

own strengths and weaknesses in relation to it, coming up with a good plan, monitoring their own strategies, and reflecting and adjusting as needed when those strategies do not work as planned, possibly starting the cycle over. Moving along the cycle is facilitated by certain beliefs about learning, such as learning is gradual rather than quick or that the mind is like a muscle: it develops with exercise rather than a fixed intellectual ability (Zimmerman, 2001).

Unfortunately, fact-driven educational experiences in high school provide millennials little opportunity to practice higher-level cognitive functions such as planning, monitoring, reflecting, and adjusting as needed. In addition, an honest strategic assessment of one's own strength and weaknesses, necessary for self-directed in learning but hard to do accurately (Dunning, 2005), might be impeded by millennials' cultural optimism and their multitasking history. Millennials are used to working on homework while texting and doing other activities, and this strategy has often been effective in high school, leading them to think they are successful multitaskers. But when the intellectual demands of homework increase in college, their optimistic assumption is likely to prove inadequate.

STRATEGIES

- Give assignments that focus on strategies, planning, or methods of preparation rather than implementation.
- Provide checklists, rubrics, or other heuristics to monitor progress.
- Provide opportunities for guided self-assessment.
- Provide opportunities for guided reflection.

Conclusion

The seven principles of learning apply to all generations: they characterize the constant, common elements of learning rather than the individual differences. However, the cultural traits of each generation influence areas of strength and weakness. For instance, because of the social moment they heralded, boomers emphasized questioning assumptions and finding personal meaning rather than adherence to a specified truth and memorization and regurgitation pedagogies, a facet of the seventh principle of intellectual development. Because this was not part of the traditional values of teaching, it led to conflict with teachers who espoused traditional ways of thinking about teaching.

In this sense, the challenges of teaching millennials are simply the most recent instantiation of this generational dialectic. When millennials become

faculty and teach the next generation, that transition will bring its own unique issues. The good news is that viewed through the lens of learning science, the task of teaching millennials becomes more manageable. The sample strategies set out in this chapter are the kind of learning-centered strategies that faculty development has long been advocating. Faculty developers are well equipped to support educators to make teaching more generationally responsive without falling into overgeneralizations and sensationalistic perspectives about current students.

REFERENCES

- Ambrose, S., Bridges, M., DiPietro, M., Lovett, M., & Norman, M. (2010). *How learning works: Seven research-based principles for smart teaching*. San Francisco, CA: Jossey-Bass.
- Bauerlein, M. (2008). *The dumbest generation: How the digital age stupefies young Americans and jeopardizes our future (or, don't trust anyone under 30)*. New York, NY: Tarcher/Penguin.
- Beloit College (2011). *The mindset list*. Retrieved from <http://www.beloit.edu/mindset/>
- Bligh, D. (2000). *What's the use of lectures?* San Francisco, CA: Jossey-Bass.
- Bureau of Justice Statistics. (1999). *National Crime Victimization Survey*. Washington, DC: Federal Bureau of Investigation.
- Business Wire. (1999, March 8). *Fourteen-year-old high school senior from Colorado wins top honors in the Intel science talent search*. Retrieved from http://findarticles.co/p/articles/mi_m0EIN/is_1999_March_9/ai_54047811
- Chi, M.T.H., Feltovich, P. J., & Glaser, R. (1981). Categorization and representation of physics problems by experts and novices. *Cognitive Science*, 5, 121–152.
- Chickering, A., & Reisser, L. (1993). *Education and identity* (2nd ed.). San Francisco, CA: Jossey-Bass.
- Clinton, H. R. (1996). *It takes a village*. New York, NY: Simon & Schuster.
- Dunning, D. (2005). *Self-insight: Roadblocks and detours on the path to knowing thyself*. New York, NY: Taylor & Francis.
- Ericsson, K. A., Krampe, R. T., & Tescher-Romer, C. (2003). *The role of deliberate practice in the acquisition of expert performance*. *Psychological Review*, 100, 363–406.
- Higher Education Research Institute. (1998). *CIRP Freshman Survey*. Los Angeles: UCLA.
- Howe, N., and Strauss, W. (1992). *Generations: The history of America's future, 1584 to 2069*. New York, NY: HarperCollins.

- Howe, N., & Strauss, W. (2000). *Millennials rising: The next Great Generation*. New York, NY: Vintage Books.
- Jacobi, J. (1998, June 2). PC police are spoiling it for kids who play soccer. *Boston Globe*, p. A19.
- Kamins, M., & Dweck, C. (1999). Person versus process praise and criticism: Implications for contingent self-worth and coping. *Developmental Psychology*, 35(3), 835–847.
- Marías, J. (1976). *Generations: A historical method*. Auburn: University of Alabama Press.
- National Center for Health Statistics. (1999). *National Vital Statistics Report*. Atlanta, GA: Centers for Disease Control.
- Newsweek. (2008, January 30). *Why Caroline backed Obama*. Retrieved from <http://www.newsweek.com/2008/01/29/why-caroline-backed-obama.html>
- Oblinger, D., & Oblinger, J. (Eds.). (2006). *Educating the Net generation*. Washington, DC: EDUCAUSE. Retrieved from www.educause.edu/educatingthenetgen/
- Perry, W. (1968). *Forms of intellectual and ethical development in the college years: A scheme*. New York, NY: Holt.
- Prensky, M. (2001). *Digital natives, digital immigrants*. *On the Horizon*, 9(5), 1–6.
- Roper Starch Worldwide. (1998). *The PRIMEDIA/Roper national youth opinion survey*. Harrison, NY: Author.
- Strauss, W., & Howe, N. (2003). *Millennials go to college: Strategies for a new generation on campus*. Washington, DC: American Association of Collegiate Registrars.
- Twenge, J. (2007). *Generation me: Why today's young Americans are more confident, assertive, entitled—and more miserable than ever before*. New York, NY: Free Press.
- Wickens, C. D. (1991). Processing resources and attention. In D. L. Damos (Ed.), *Multiple task performance* (pp. 3–34). London: Taylor & Francis.
- Wigfield, A., & Eccles, J. (2000) Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology*, 25, 68–81.
- Zimmerman, B. J. (2001) Theories of self-regulated learning and academic achievement: An overview and analysis. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement* (2nd ed., pp. 1–38). Mahwah, NJ: Erlbaum.