Lifelong learning is more than a goal for today's physicians; it's a necessity. One framework for lifelong learning—the master adaptive learner (MAL) process—has identified four personal attributes beyond academic aptitude that determine professional success. Fortunately for medical students, physicians and medical educators, there are steps they can take to cultivate them.

Following are highlights from "What are the four critical personal characteristics that support the master adaptive learner process?", Chapter 4 of The Master Adaptive Learner, an instructor-directed textbook designed to help faculty engender the habits of mind for lifelong learning in medicine in their students. It is the first book in the AMA MedEd Innovation Series, which provides practical guidance for local implementation of the education innovations tested and refined by the AMA Accelerating Change in Medical Education Consortium.

The flexible side of "smart"

Learning is a function of much more than academic aptitude. It's also dependent on one's so-called noncognitive abilities.

"The term noncognitive, however, is inaccurate because it implies that attributes such as attention, will and character are devoid of cognition, yet they often are modifiable by cognitive strategies," wrote the authors, Holly G. Atkinson, MD, clinical professor and medical student adviser, and Erica Friedman, MD, interim dean, at CUNY School of Medicine. "Nevertheless, the term is widely used to describe all characteristics other than academic ability/intelligence."

Find out why the physician of the future is a master adaptive learner.
Four sources of learning energy

The master adaptive learner process—in which an individual uses a metacognitive approach to self-regulated learning that leads to adaptive expertise development—is thought to be heavily influenced by four critical noncognitive characteristics: curiosity, motivation, growth mindset and resilience.

These characteristics should be thought of as "batteries" for the master adaptive learner, the authors noted, because "they provide the power to promote and sustain the learner's ability to engage in the MAL [master adaptive learner] process."

**Curiosity.** One of the intrinsic drivers of learning, curiosity "is basic to our nature and central to human development and adaptation," they wrote. "It confers survival benefit to individuals and species."

It is made up of two types: trait curiosity, which is an inborn trait, and state curiosity, which is variable and context dependent. Both are positively predictive of learning and performance in the classroom and the workplace.

**Motivation.** This multidimensional concept is responsible for the "what, why and where of goal-directed actions," the authors wrote. "Motivation can be driven by the desire to solve a problem, rectify a knowledge or skill deficit or gain a valued incentive."

It too has two types: intrinsic and extrinsic. The former is a function of one's interests and values, while the latter relies on rewards, punishments or other expectations.

**Growth mindset.** In contrast to individuals with fixed mindsets, who believe that talent alone creates success, those with growth mindsets "believe they can develop their most basic abilities, including their intelligence, through dedication and hard work—brains and talent are just the starting point," the authors wrote.

Research has shown that these two mindsets operate like feedback loops, as the growth mindset promotes resilience during challenges and setbacks but the fixed mindset does not.

**Resilience.** Generally thought of as the ability to bounce back, resilience was once thought of as a fixed trait but has come to be regarded as a process with three phases: an adverse event followed by a learning process and concluding with either a return to a previous state or progression to an altered one.

Given the prevalence of burnout among medical students, residents and practicing physicians, the medical profession "is now grappling with how to develop a culture that promotes and nurtures resilience starting in medical school and continuing throughout the education continuum," the authors
wrote.

The chapter also points out that the learning environment has a powerful influence over the development and expression of these attributes and explores ways in which institutions can promote each of these personal characteristics. Discover more about envisioning the adaptive learner.