The Role of Non-Cognitive Factors on Student Outcomes

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Introduction:
The majority of literature which studies success in college and the workforce focuses on the importance of cognitive skills. The higher one’s IQ, SAT scores, and high school GPA, the higher the likelihood of success in college and the higher one’s earning potential following college. Given that assumption, if schools commit to improving student outcomes in these cognitive measures, one can vastly improve the quality of life for students as they become young adults. A growing number of psychologists and educators, however, have challenged this notion, and have instead focused on non-cognitive attributes and their impact on success in college and the workforce.

Negative Non-Cognitive Factors:
Some psychologists have conducted studies that measure Adverse Childhood Experiences (ACE) and their impact on health and achievement. Within the fields of Neuroendocrinology and Stress Psychology specifically, researchers have found there is an inverse relationship between ACE index scores and learning in school. Moreover, high levels of poverty have a positive correlation with ACE index scores, helping explain why children from poor backgrounds don’t perform well in school and experience health issues at a rate far above the American population at large.

Other psychologists have studied the effect of parental care on childhood outcomes and have found a positive relationship between the quality of parent/child relationship and student achievement. Children from homes with good parenting are more likely to graduate high school, tend to have a higher IQ, and score higher on achievement tests. Children who lack good parenting and develop suboptimal attachments with their parents lack the secure base from which they can explore the world with confidence and take emotional and intellectual chances that ultimately lead to success.

Previous attempts at overcoming the achievement gap between students living in poverty and those students who come from more favorable backgrounds may have failed because they focused on improving cognitive skills while failing to address non-cognitive factors that impede learning. A growing movement in education hinges on the theory that if one can treat these non-cognitive barriers to learning, one can greatly improve student outcomes before even taking into account other ways to improve learning.

Positive Non-Cognitive Factors
A number of psychologists, economists, and educators have begun to study the effects of so-called character strengths on student and adult outcomes over the last 30 years. Among the earliest of these studies is the famous “Marshmallow Test” conducted by Walter Mischel at Stanford University. When Mischel followed up with his test subjects later on in life, he found that those children who exhibited self-control in his tests tended to perform much better by most academic measures later when they attended high school and college. While test scores matter, there are endogenous variables in the test scores, such as self control and motivation, which may matter more. A number of authors have started referring to these variables, and others like them, as character. If one can teach character and get students to internalize character traits, one can greatly improve student outcomes.

The most common of these character strengths in current literature is grit – perseverance and commitment to goals in spite of obstacles and setbacks. While measuring grit can be tricky, detecting its presence may be less so. Consider that among young adults with similar achievement test scores, high school graduates tend to enroll in college programs and complete college degrees at a much higher rate than those young adults with only a General Education Development (GED) certificate. If IQ and achievement scores were the primary predictor of success, one would expect that roughly an equal number of high school graduates and GED students would enroll in and complete college. Even after controlling for income and other variables, however, researchers have found that high school graduates earn more over their lifetimes and complete college degrees with far more regularity than those adults who possess only a GED certificate. Many attribute the difference in such outcomes to character, or in this example specifically, grit.

**Implications for Education**

The task for educators who believe non-cognitive factors play just as important of a role in student and adult outcomes as do cognitive factors then is to develop an education system capable of treating negative non-cognitive factors and teaching positive non-cognitive factors such as character. By having programs – run by trained staff – that target emotional, psychological, and neurological problems in students, educators can undo much of the damage caused by poor parenting and traumatic childhoods. While removing these obstacles to learning, educators can simultaneously focus on teaching character to students, in addition to math, science, and the humanities. Schools that have done well at building character in its students have staff and faculty who take advantage of teachable moments that arise naturally in the everyday struggles students encounter in the classroom and in extracurricular activities. The key going forward will be to conduct longitudinal studies that measure the impact of non-cognitive emphasis in education as well as refining educational strategies to keep pace with the findings of such studies.

**ANNOTATED BIBLIOGRAPHY**

Concerned with low college grades among African-American students, even after controlling for equivalent test scores, the authors conducted a study to learn how perceptions about the nature of intelligence can influence student outcomes. Those students who received counseling that described intelligence as malleable continued to improve their test scores over time, whereas those who received counseling describing intelligence as fixed saw markedly less improvement or no improvement at all. Especially in schools with large groups of minority or impoverished students, many educators have begun referring to intelligence as something you work for rather than something with which you are born.

Using successive groups of 8th graders in a longitudinal study, the authors find that self discipline accounts for variance in grades and competitive high school selection at nearly twice the rate as that of IQ. Progressive educators have started emphasizing self discipline as character trait teachers should incorporate into everyday practices whenever teachable moments of self discipline present themselves.

The authors test two hypotheses in this study: (1) Childhood poverty will interfere with working memory in young adults and (2) Childhood poverty and adult working memory will be mediated by chronic stress exposure. That is poverty exposes children to elevated and prolonged periods of stress, and this affects working memory. The authors believe their study confirms their hypotheses, and many clinicians and educators have used this information as a working assumption about where to begin diagnosing education and workplace performance problems.

Felitti studies the correlation between Adverse Childhood Experiences (ACE) and adult physical and behavioral health problems decades after those experiences transpired. One of his primary insights is that doctors often treat secondary or tertiary health problems stemming from experiences much earlier in life. Instead, he advocates finding the source of health problems, for many people rooted in an Adverse Childhood Experience, and treating those problems before attempting to treat downstream problems. Some educators have adopted Felitti’s recommendations to treat behavioral health issues in students linked to ACE events and have found it helps improve educational outcomes.

When controlling for equivalent achievement test scores, Heckman finds that students with high school diplomas enroll in and complete college degree programs at a much higher rate than students with only a General Educational Development (GED) certificates. Heckman questions the “equivalency” of GED certificates, in addition to questioning the wisdom of standardized tests in general. He does so by examining the correlation between test scores and variables such as income, educational attainment, and social mobility.

This study examined the impact of executive functioning and objective career success on mortality risk of approximately 700 participants over a 65-year time period. Those who possess high degrees of conscientiousness and professional success tend to live longer than those who do not. The study also found that there is a significant positive correlation between conscientiousness and professional success, leading some educators to emphasize the development of this character trait in school.


This work continues to draw insight from and build upon the author’s legendary studies on impulse control at Stanford in the 1960s. Mischel seeks to understand what can be learned from moments of success and failure with regard to impulse control. He finds that those who closely identify with their future selves (mentally shorten the gap between the present and the future) are better able to resist temptation or avoid distraction. Educators have applied his findings to help develop better student habits both inside and outside the classroom, and many believe developing these habits as a student will lead to improved adult outcomes as well.


In this longitudinal study, the authors find that high levels of self control in children correspond with high levels of adult success regardless of cognitive ability or economic background. Some educators have started focusing on teaching self control to children, especially in kindergarten and elementary school as a way to improve the likelihood of student success in later years of school and in the workforce.


In this study, Segal identifies ways to measure personality traits, such as motivation, that employers would find desirable. He does this by administering mind numbing, speed coding standardized tests to different test groups, without incentives to perform well and later with incentives to perform well. Those who do well without incentives possess the intrinsic motivation necessary to be a good employee, according to Segal. Segal also finds a high correlation between this later group and high economic outcomes later in life.


The authors wrote this massive work to push the study of character and virtue back into the realm of psychological topics acceptable for serious inquiry. In writing the book from a perspective of positive psychology, they focused on identifying and defining which traits help individuals lead a good life rather than indentifying problems that prevent people from living well. Educators have latched on to some, or in some cases all, of the 24 character strengths, and
they have incorporated the study of character into their curricula as a way of helping prepare less privileged children for college and the workforce.


A New York Times bestseller, this book has helped bring the subject of teaching character in schools into the mainstream. Tough uses anecdotes from schools and after school programs across the U.S. to illustrate the profoundly positive impact the teaching and inculcation of character can have on children who, according to their demographics, typically underperform in school and in life beyond school.

**ADDITIONAL READING**


