Interpretive Summary

Performance: A Critical Literature Review
Teaching Adolescents to Become Learners: The Role of Noncognitive Factors in Shaping School Success

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Leveraging Noncognitive Factors

The role of noncognitive factors in shaping school success has been a critical area of research. This summary highlights the importance of noncognitive factors in education, emphasizing the need for teachers and educators to develop strategies that foster the development of these factors in adolescents.

The concept of noncognitive factors refers to a range of attributes and behaviors that contribute to academic success, such as motivation, self-esteem, and perseverance. These factors are often overlooked in traditional educational settings, but they play a crucial role in students' ability to learn and succeed in school.

Research suggests that noncognitive factors can be developed in the classroom through various interventions. Effective teaching practices, such as fostering a positive classroom environment, providing clear expectations, and offering support and encouragement, can help students develop these noncognitive factors.

In conclusion, the importance of noncognitive factors in shaping school success cannot be overstated. Teachers and educators must recognize the role these factors play and implement strategies to support their development in their students.
Students Earn High Grades When They Show Perseverance and Strong Academic Behaviors

The best ways to improve students' perseverance and strengthen their academic behaviors is through academic mindsets and learning strategies. This is the central point emerging from our review. Academic behaviors and perseverance reflect the level of students' engagement in their work—the degree to which they are coming to class, completing assignments on time, participating, studying, trying to master material, taking time to do challenging work, and sticking with a task until it is done well. Students who do these things get higher grades, and students who do not struggle academically. This becomes increasingly true as students transition from the middle grades to high school and on to college. Strong academic behaviors and perseverance are the noncognitive outcomes that teachers want to achieve in developing their students as learners. These are the noncognitive factors most directly associated with good grades.

Strong Academic Behaviors

Developing appropriate learning strategies is not the best lever for improving student grades. The critical levers for improving academic performance are the cultural and social environments in which students are located that influence the degree to which students believe they can succeed academically. This becomes the issue when students transition from the middle grades to high school and on to college. Developing students' mindsets and effective learning strategies are the critical factors associated with high grades. Unfortunately, these are often areas in which teachers have little training. In the absence of a strong framework that clarifies the role of schools and classrooms in the development of noncognitive factors and a toolbox of strategies to effectively support the development of strong academic mindsets and learning strategies, teachers often misdiagnose poor academic performance and perseverance not as a lack of strategies or a problem with mindsets but as indications that students are not motivated or do not care. Students who are not working hard in school are often diagnosed as being lazy or lacking motivation, with teachers seeing these as personal characteristics that students bring with them to the classroom. The conclusion that follows is this: if students would just work harder and not give up, they would do better in school; in short, if students would just adopt better mindsets and work ethic, they would perform better academically. This is not necessarily true. Teachers can adopt new mindsets and perspectives about what they are trying to achieve in their work, and students can develop new mindsets and perspectives about what they are trying to achieve in school. No single set of attitudes, beliefs, or strategies will improve academic performance and perseverance. Teachers need to be able to determine and address the obstacles that deter their students from learning. We hope that the framework presented in this report can serve as a starting point to developing a coherent and evidence-based framework for considering the role of noncognitive factors in academic performance. We conclude by presenting our research framework of noncognitive factors and a set of recommendations for future research and practice.
The Role of Noncognitive Factors in Academic Performance:

Implications for Research

The role of noncognitive factors in students’ academic performance has gained increasing attention from both researchers and practitioners in recent years. While some very interesting and promising work has emerged, researchers and practitioners in recent years have placed performance gaps in academic achievement from both school and classroom contexts. Teachers and school leaders need to be thoughtful about their classroom practices for students to reach their academic potential. The essential question is not how to change students to improve their behavior but rather how to create contexts that better support students in developing critical attitudes and learning strategies necessary for academic success. This, in turn, requires teachers to learn better strategies to support academic performance. The essential question is not how to change students to improve their behavior but rather how to create contexts that better support students in developing critical attitudes and learning strategies necessary for academic success. This, in turn, requires teachers to learn better strategies to support academic performance. The essential question is not how to change students to improve their behavior but rather how to create contexts that better support students in developing critical attitudes and learning strategies necessary for academic success.

1. The need for conceptual clarity.

One of the primary challenges to making research accessible to practitioners and relevant to policy is the lack of conceptual clarity among the many noncognitive factors that affect student performance. Much of the research conflates constructs that are conceptually very distinct. For example, social-emotional learning has been defined in various ways, with some programs emphasizing the development of emotional regulation, while others focus on the development of social skills. Likewise, academic tenacity has been described not only as showing persistence in tasks despite obstacles (the usual connotation of the word tenacity) but also as the mindsets that encourage tenacity—such as self-efficacy, sense of belonging, and a growth mindset. However, perseverance, mindsets, and behaviors are each distinct from one another, and the relationship between these factors is complex. For example, a student can have a strong sense of self-efficacy but still not participate in a given class, for example. To really understand the mechanisms by which noncognitive factors affect academic performance requires conceptual clarity and a delineation of each step in complex interactive processes.

2. The need for actionable pathways.

While there is evidence to support the effectiveness of noncognitive factors in improving academic performance, the challenge is to translate this research into actionable strategies. Teachers and school leaders need to be thoughtful about their classroom practices for students to reach their academic potential. The essential question is not how to change students to improve their behavior but rather how to create contexts that better support students in developing critical attitudes and learning strategies necessary for academic success. This, in turn, requires teachers to learn better strategies to support academic performance.

3. The need for conceptual clarity.

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2. The need for direct evidence.

A related shortcoming of some of the existing research is that researchers sometimes use noncognitive factors as a "catch-all" explanation for differences in student achievement without directly identifying or measuring specific factors. Some very influential research merely infers the existence of noncognitive factors when researchers are unable to find a measured cognitive explanation for differences in educational or workforce outcomes across different groups. In Heckman and Rubinstein's (2001) seminal study of the economic returns to a GED, for example, they attribute wage differences between GED recipients and high school graduates to differences in noncognitive skills without directly measuring any noncognitive skill differences or demonstrating their direct relationship to wages. Heckman and Rubinstein acknowledge this, explaining that there are too many different traits subsumed under the name "noncognitive skills" and no one way to measure them all. What they then attribute to differences in "noncognitive skills" is simply the difference in wages between high school graduates and GED recipients that could not be explained by tested achievement. Their evidence that noncognitive skills matter rests on their interpretation of the error term in statistical analysis, rather than the empirical identification of specific skills, traits, or behaviors that contribute to wage differences.

Clearly identifying and measuring specific noncognitive factors becomes particularly important when we try to understand why there are differences in educational attainment by race/ethnicity, gender, or income. Knowing what to do to reduce these gaps requires knowing the extent to which they reflect underlying differences between groups in specific noncognitive skills, beliefs, behaviors, or strategies, or whether attainment differences are better explained by other factors. Identifying and measuring differences in noncognitive factors is necessary for developing strategies to address these gaps.

The need for more research on the role of school environment and classroom context in students' development of noncognitive factors.

Throughout this review, we have noted the role of classroom context in shaping noncognitive factors. Ultimately the practical goal of research on noncognitive factors is to help individual students become stronger learners who earn higher grades. This might suggest that a primary strategy to improve students' grades would be to focus on developing noncognitive factors as characteristics of individuals—implying that the "fix" is at the individual level. However, the research evidence to date suggests that there is an important role for the classroom and school environment in shaping noncognitive factors.

For example, research has shown that students who perceive their teachers to be supportive and encouraging are more likely to engage in classroom activities. Teachers who provide clear, consistent expectations and consequences for behavior are more effective in promoting student achievement. Students who receive regular, constructive feedback on their progress are more likely to improve their academic performance. School environments that provide a safe, supportive atmosphere for learning can also enhance students' noncognitive development. For example, research has shown that students who feel safe and supported in school are more likely to participate in class, ask questions, and seek help when they do not understand material. These factors, in turn, can influence students' academic achievement and future success.

It is important to recognize that the relationship between noncognitive factors and academic success is complex and multidimensional. While noncognitive factors such as self-esteem, motivation, and time management skills are important predictors of academic achievement, they are not the only factors that influence academic success. Other factors, such as socioeconomic status, family background, and access to resources, can also play a significant role in students' academic outcomes.

To develop effective strategies for enhancing students' noncognitive development, it is essential to understand the interplay between noncognitive factors and other factors that influence academic success. Research in this area is critical to developing effective interventions that can help students succeed in school and in life.
level in isolation from context may not be effective in the long term. Our case studies of school transitions highlight the importance of context for the enactment of noncognitive factors. For example, the large rise in absences and decline in studying behaviors when students move into high school show that students who exhibit strong academic behaviors in one context might not do so in another. To what extent are noncognitive factors located within individuals in ways that are transferable across context, and to what extent are they dependent on context?

Intervention studies of academic mindsets suggest some long-term effects on student achievement. However, it is not clear if they are helping students perform better in a particular context or whether they have changed something fundamental about each student's academic identity that will transfer across contexts. For example, seventh-graders who benefit from a growth mindset intervention have been shown to improve their performance during seventh grade with lasting effects to eighth grade, but we do not know what will happen as these students move from middle grades to high school. Likewise, interventions that normalize difficulty in the first year of college or increase the sense of belonging of African American students on elite college campuses improves their college performance, but we do not know if these benefits transfer from college to the workplace.

Teaching students learning strategies seems promising, but again there is little research on its effectiveness across school contexts. At this point, we do not know to what extent interventions that focus on individuals can have lasting impacts on their engagement in learning across contexts.

We also want to recognize the role of the larger school context in shaping student performance. Throughout this review, we have looked at evidence on the role of classroom context and the availability of classroom strategies, but we know that teachers do not work in isolation. School-wide initiatives and structures, as well as school culture and environment, play a role in shaping students' experiences and performance in the classroom (Bryk, Sebring, Allensworth, Luppescu, & Easton, 2009). Research is also needed on the role of school contexts in promoting positive academic mindsets and learning strategies that can develop through implementing supports and professional development for teachers. As they learn to implement these strategies, teachers need coherent, actionable strategies for developing students as learners in the context of regular classroom instruction. If researchers strive for conceptual clarity and precise identification and measurement of individual noncognitive factors, this will help illuminate the mechanisms whereby each individual factor interacts with the others to affect student performance. However, where researchers need to pull everything apart and understand how it works, teachers need a coherent, integrated approach to building academic mindsets, learning strategies, social skills, academic behaviors, and academic perseverance as part of their everyday classroom practice. We cannot expect teachers to approach student learning with the same attention and energy that they do their academic practice, and we cannot expect our research to be translated into practical guidance for teachers.

Designing future studies to address longitudinal questions will be very important for research going forward.
so that they build mindsets, skills, behaviors, and strategies in pursuit of handling challenging knowledge and developing core academic skills. Studies that seek to illuminate how this is all best pulled together in actual classrooms will provide an important step in bridging research and practice.

To the extent that we already have some knowledge base about how to develop positive mindsets and which learning strategies produce high learning gains, this knowledge needs to be much more accessible to teachers. Currently the vast majority of research on noncognitive factors is not written for a practitioner audience, and the literature is not available in places teachers are likely to go for professional learning. Bridging the gap between existing researcher knowledge and teacher and student needs is an important step.

Researchers should also consider synthesizing studies of relationships between noncognitive factors and academic achievement into places where teachers and students are more familiar with core content. As research and practice become more evidence-based, teachers and schools need to be supported in how to leverage noncognitive factors in the context of existing evidence and standards. Studies that illuminate how noncognitive factors affect student performance in different contexts could provide important insights. Strategies and models for transforming classrooms into places where noncognitive factors are more integrated into everyday practice should be developed.

In short, both empirical evidence and practice wisdom need to be gathered and synthesized. A focus on how these factors are relevant to the everyday work of schools and classrooms is needed. We need to expand our understanding of noncognitive factors and how they interact with academic performance, and to identify evidence-based strategies that can be applied in real-world settings. The promise of noncognitive factors in teaching adolescents to become learners lies in the potential to transform educational practice from its current focus on content knowledge and testable academic skills to a broader development of adolescents as learners. This requires not only improving test scores but also transforming classrooms into places that engage students' natural curiosity and desire to learn in preparation for college, career, and meaningful life experiences. The work of developing such environments requires a focus on how these factors can best be leveraged to improve student outcomes.