

The impact of non-cognitive skills on outcomes for young people

Literature review: executive summary

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Institute of Education
University of London

Leslie Morrison Gutman

Ingrid Schoon

Introduction

'Non-cognitive skills', such as motivation, perseverance and self-control, are the attitudes, behaviours and strategies that are thought to underpin success in school and at work. They are usually contrasted with the 'hard skills' of cognitive ability in areas such as literacy and numeracy, which are measured by academic tests.

Non-cognitive skills are increasingly considered to be at least as important as cognitive skills or IQ in determining academic achievements and job prospects. Indeed, there is growing debate about how such 'character' or 'soft' skills can be developed in children and young people.

This rapid literature review summarises the research that attempts to define and measure non-cognitive skills; assesses the evidence that such skills influence people's success in school and at work; and considers the role of interventions that aim to improve non-cognitive skills in children and young people. This research has been jointly funded by the Education Endowment Foundation and Cabinet Office to inform future work in this area.

Key findings

There are signs of promise that non-cognitive skills have an impact on positive outcomes for young people, but causal evidence of impact is so far limited:

- Non-cognitive skills are associated with positive outcomes for young people, according to a large body of research. Factors such as self-control and school engagement are correlated with academic outcomes, financial stability in adulthood, and reduced crime.
- However, there is limited robust evidence of a causal relationship. Less is known about whether young people's non-cognitive skills can be developed through interventions, and whether this leads to improved outcomes, especially in the long term.
- There is no single non-cognitive skill that predicts long-term outcomes. Rather key skills are inter-related and need to be developed in combination with each other.

Evidence is strongest in relation to skills underpinning academic outcomes:

- Children's perception of their ability, their expectations of success, and the extent to which they value an activity influence their motivation and persistence. Improving these factors leads to better academic outcomes, especially for low-attaining pupils.
- Within school, effective teaching, the school environment, and social and emotional learning (SEL) programmes can play an important role in developing key non-cognitive skills.
- Outside school, evidence from intervention studies suggests that programmes such as 'service learning' and outdoor challenging activities have low to medium effects on a variety of cognitive and non-cognitive outcomes. However, most of this evidence is from the US.

There are areas where further research is needed:

- Certain activities can promote young people's leadership skills, coping skills, and engagement in school, but there is no experimental evidence yet that their improvement has a substantial causal effect on other outcomes.
- Some non-cognitive skills, including 'grit' and self-control, appear to correlate strongly with outcomes, but they may be more akin to stable personality traits than to malleable skills.
- There are gaps in the evidence because many studies define and measure non-cognitive skills in disparate ways, assess them in isolation, and focus on short-term outcomes. Priorities for future research should be to explore how skills can be transferred between different areas of a young person's life, and how changes can be sustained in the long term.

Evidence for the impact of non-cognitive skills

Table 1 summarises the available evidence regarding eight non-cognitive skills, looking at the quality of measurement, the malleability (ie, the extent to which a characteristic can be changed), the causal links between non-cognitive skills and other outcomes, and the strength of evidence. Definitions for the table headings can be found in the main report.

Table 1: Summary of findings on non-cognitive skills

	Quality of measurement	Malleability	Effect on other outcomes	Strength of evidence
1. Self-perceptions				
Self-concept of ability	High	Medium	Not available	Medium
Self-efficacy	High	High	High	Medium
2. Motivation				
Achievement goal theory	High	Medium	Low to medium	Medium
Intrinsic motivation	High	Medium	Low to medium	High
Expectancy-value theory	Medium	Not available	Medium to high	Medium
3. Perseverance				
Engagement	Medium	Not available	Not available	Low
Grit	Medium	No evidence	No evidence	Low
4. Self-control	Medium	Low to medium	Low	Medium
5. Meta-cognition	Medium	Medium to high	Medium to high	High
6. Social competencies				
Leadership skills	Low	Not available	No evidence	Low
Social skills	Medium	Medium to high	Low to medium	High
7. Resilience and coping	Medium	High	Low	Medium
8. Creativity	Medium	Not available	No evidence	Low

Summary of key non-cognitive skills

Self-perceptions include self-concept of ability (which indicates how an individual feels about his or her past performance) and self-efficacy (which measures expectations about his or her future performance). Both constructs show a medium to high degree of malleability in response to interventions. Studies suggest that self-concept of ability has a reciprocal relationship with achievement, but not a causal one. Interventions that enhance self-concepts without improving performance are therefore likely to show short-lived gains. However, experimental evidence suggests that self-efficacy can influence future effort and achievement. Given this, self-efficacy beliefs appear to be an essential precursor to enhancing other non-cognitive skills.

Motivation concerns the reasons why individuals engage in a task. It shows a medium degree of malleability in intervention studies, and it influences outcomes such as effort and achievement. We consider three aspects of motivation:

- *Achievement goal theory* focuses on whether individuals have a learning orientation (a growth mindset), which is the belief that they can increase their own ability; or a performance orientation (a fixed mindset), which is the belief that their ability is fixed. Experimental studies have found that young people can develop a growth mindset, which leads to increased academic achievement.
- *Intrinsic motivation* refers to doing an activity because it is enjoyable or interesting, while extrinsic motivation refers to doing an activity for an external reward. Classroom studies that use engaging, hands-on tasks have been shown to stimulate intrinsic motivation.
- *Expectancy-goal theory* consists of students' expectations of success and their perception of the overall value of the activity. Interventions that encourage young people to consider how academic subjects apply to their own lives have led to significant improvements in grades, especially for students with low expectations and low attainment.

Perseverance involves steadfast behaviour to accomplish a goal. We consider two types of perseverance:

- *Engagement* is related to how students behave, feel, and think regarding their commitment to academic tasks, activities, or school. While there is little experimental evidence here, an abundance of correlational evidence suggests that the school environment plays an important role in students' emotional, behavioural, and cognitive engagement. This is a significant area to consider in terms of school interventions and a promising field for future studies.
- *Grit* refers to passion for long-term goals. Research indicates that grit is correlated with achievement, although studies have mostly focused on higher-achieving older children and university students. There is not yet available experimental evidence to show that grit can be fostered through intervention.

Self-control is the ability to resist short-term impulses in order to prioritise longer-term goals. Evidence indicates that self-control may be improved for younger children, but after age ten, it appears to become fixed. Nevertheless, individuals can strengthen their ability to control their feelings, desires, and motivations through practice or exercise. Although self-control may be considered a personality trait, it could be influenced by the meta-cognitive strategies used to delay gratification.

Metacognitive strategies ('learning to learn') allow people to understand and control their own thinking. There is clear evidence that meta-cognitive strategies can be taught or otherwise developed in students from primary school to university and across a wide range of academic subjects. They have medium to large effects on a number of academic outcomes. However, it is not clear whether the positive effects of training persist over the long term, or whether students are able to transfer learning strategies from one context to another, particularly in non-academic domains.

Social competencies are the skills that enable people to interact and build relationships with others:

- *Leadership* is the ability to influence the thoughts, behaviours, and feelings of other people. While there is little experimental evidence here, there are several correlational studies suggesting that leadership skills can be improved. However, there is little or no evidence that such improvements predict other positive outcomes.
- *Social skills* are socially acceptable behaviours that allow people to interact effectively. There is a wealth of evidence suggesting that social skills can be improved, showing small to medium effects on a range of positive outcomes including attitudes, positive social behaviour, emotional well-being, and academic achievement.

Resilience is the ability to succeed in the face of challenges. It can be promoted through interventions that reduce risk factors and increase protective factors that buffer against risk. **Coping** involves strategies such as problem-solving and optimistic thinking to manage stressful situations. Such coping strategies can be taught, and they appear to be an effective way of helping young people to deal with

the stresses of their everyday lives, although there is limited experimental evidence regarding their effect on other outcomes.

Creativity is the creation of original and novel ideas. Creativity may be enhanced in certain conditions, but there is no evidence that such interventions are long lasting or have an impact on other outcomes.

The role of interventions that aim to improve non-cognitive skills in children and young people

There is some experimental evidence of the impact of interventions on non-cognitive skills and wider outcomes. This review focuses on mentoring, service learning, outdoor adventure, and Social and emotional learning (SEL) programmes.

Mentoring programmes have some small effects on school-related outcomes such as grades, attendance, and exam scores, as well as on academic self-efficacy and school misconduct. There is little or no evidence suggesting that mentoring programmes improve other outcomes. They appear to work best for school-age children who are considered 'at risk'. Mentoring can take place in school or in the community, but community-based programmes show larger effects, perhaps because supportive relationships are more effective if they extend beyond the classroom.

Service learning is an approach that connects community volunteering to classroom learning. It has low to medium effects on a variety of outcomes for people of all ages, including attitudes toward oneself, attitudes toward school and learning, civic engagement, social skills, and academic performance. Curricular approaches that emphasise reflection, implemented either in the school or community, have higher effects than non-curricular approaches.

Outdoor adventure programmes have low to medium effects on a wide range of outcomes, including interpersonal skills, locus of control, self-esteem, psychological adjustment, and school performance. They are appropriate for older children, adolescents and adults, and provide a promising tool to promote the health and well-being of troubled young people, especially when they are coupled with therapeutic interventions.

Social and emotional learning programmes have medium effects on SEL skills and low effects on attitudes, positive social behaviour, conduct problems, emotional distress, and academic performance for a universal school-aged population. They can be effectively administered by school staff.

Conditions for success

Several factors influence the likelihood of interventions successfully building non-cognitive skills in children and young people:

- **A holistic approach is crucial when aiming to build up relevant skills.** There is interplay among different non-cognitive skills, particularly self-efficacy, motivation, persistence and meta-cognitive strategies. Young people who believe they can accomplish a task and who are motivated, are more likely to invest the time and effort needed to learn and complete the task successfully. Focusing on one skill in isolation is less likely to be effective.
- **Context needs to support the development and maintenance of non-cognitive skills.** Young people need opportunities to use their newly learned skills in real-world settings.
- **Many of the non-cognitive skills are 'domain-specific'.** In other words, improvement in one area may not translate to other areas. For example, increasing academic self-efficacy may not lead to greater self-efficacy when it comes to playing sports.
- **The age of the child is another important consideration.** Self-control interventions, for instance, show small but significant effects. However, evidence suggests that self-control may only be malleable up to age ten.

Conclusions

Current debates on non-cognitive skills sometimes imply that there is one key factor—whether grit, self-control or resilience—that is the key to success for young people, and that it is this crucial ingredient that enables them to overcome disadvantage and flourish even in the face of serious adversity. Whilst it is right to emphasise the importance of non-cognitive factors in determining outcomes for young people, there does not seem to be one non-cognitive skill that stands above the rest. Rather, there are many skills that are connected, and improving just one is unlikely to lead to lasting changes.

There is evidence of strong associations between non-cognitive skills and positive outcomes for young people. Measurable factors, such as self-control and school engagement, are correlated with positive outcomes in the future, such as good exam results, stable finances and reduced crime. But as this review shows, robust evidence of their causal impact on long-term outcomes is much more limited. Most experimental studies look at single non-cognitive skills in isolation over relatively short time frames. So far, the evidence is relatively weak on whether improvements to non-cognitive skills are transferable across domains, and whether they are sustained.

That said, there are some positive signs. When developed in combination, skills such as self-efficacy, motivation, and meta-cognitive strategies appear to be influential in improving academic learning and success in children and young people. Future studies should provide more empirical evidence of their impact on other outcomes, especially those that are longer-term. Social skills have also been found to be important. Programmes that foster social development have low to moderate effects on associated skills, including positive self-perceptions, social and emotional adjustment, and academic achievement. Service learning programmes in particular have the potential to foster this group of non-cognitive skills for young people of all ages.

Discussion of non-cognitive skills is complicated and contested. There is little agreement even on whether ‘non cognitive skills’ is the right way to describe the set of issues under discussion, and terms such as ‘character skills’, ‘competencies’, ‘personality traits’, ‘soft skills’ and ‘life skills’ are also widely used. Within any given concept, such as resilience or motivation, there is a long history of theory and measurement, and competing definitions of what is being discussed and measured. Given this complexity, it is not surprising that debate sometimes becomes focused on a simple, single measure of potential.

It is essential to keep a broad view and consider non-cognitive skills in combination. Despite significant gaps in the evidence, there are areas of promise, and further, long-term studies will help to build the case for investing in the development of non-cognitive skills and improving outcomes for young people.



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The Education Endowment Foundation
9th Floor, Millbank Tower
21–24 Millbank
London
SW1P 4QP
www.educationendowmentfoundation.org.uk