Shaping Personality in Schools

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Summary

A broad set of non-cognitive skills, including self-control, grit, and perseverance, are increasingly recognized as critical determinants of long-term life outcomes. These "personality skills" have been shown to be as important as cognitive abilities in influencing educational attainment, labour market success, and overall well-being. Importantly, they are not immutable traits but can be shaped through well-designed interventions, particularly during the childhood period. Therefore, schools offer an ideal setting for fostering their development.

This review examines the impact of three key school features on the development of personality. The first feature is the classroom environment, which functions as the primary social space in which children interact with both peers and teachers. Educational policies that target classroom size and peer composition contribute to

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the positive development of socio-emotional skills. Second, teachers play an important role in shaping personality, not only through their pedagogical approaches, but also through their beliefs about- and attitudes towards students, as well as through their own socio-emotional wellbeing. Third, the review analyses targeted school-based interventions that explicitly aim to support personality development. These interventions often focus on specific skill sets, including self-regulation, resilience, empowerment, and social and emotional competencies.

Research on the development of personality faces key challenges, including data limitations, measurement difficulties, and a lack of standardized tools that hinders comparability across studies. Identifying the mechanisms through which school-based policies affect personality development also requires complex, costly research designs. Additionally, there is a need for more long-term studies to evaluate the impact of such policies on personality skills and broader life outcomes. Finally, effectively communicating evidence on personality skills to policymakers and the public is imperative not only to prevent misperceptions about the goals of these policies, but also to foster public trust and political support needed for their long-term sustainability.

Keywords: personality, education, non-cognitive skills, classroom, life outcomes, field experiments

1 Introduction

Cognitive skills have long been in the spotlight of economists, resulting in extensive literature dedicated to developing measurement tools that accurately capture these skills and exploring strategies to enhance their improvement. Yet, over the past century, research in psychology and sociology revealed that "personality" is equally crucial for success in a range of life domains such as education, health, and the labour

market (Heckman and Rubinstein, 2001; Roberts et al., 2007; Duckworth et al., 2012; Vergunst et al., 2019). These insights have motivated economists to study the role of personality in shaping important life outcomes. Bowles et al. (2001) is among the first to highlight the significance of "non-cognitive" skills in an economic context. Specifically, the authors focus on the puzzle that the observed differences in earnings across individuals cannot be fully explained by age, schooling, parents' backgrounds, or cognitive functioning. Their review of labour market surveys reveals that employers, when making hiring decisions, prioritize "communication skills, attitudes, motivation, and personality" over industry-based/technical skills, academic performance, or test scores. Bowles et al. (2001) propose a behavioural framework and show that skills beyond cognitive functioning, also known as personality skills, can shed light on "the unexplained variance" in earnings. Other studies in the economics literature find similar results: personality skills are increasingly valued in the job market, with the economic benefits of these skills more than doubling since the mid-1990s (Heckman et al., 2006; Lindqvist and Vestman, 2011; Deming, 2017; Edin et al., 2022). The growing body of evidence on the significance of personality for future life outcomes underscores the need for understanding how these skills can be shaped. This need led researchers to evaluate various educational policies and programmes that would not only enhance cognitive development but also foster personality to improve both short- and long-term life outcomes.

There is no simple single definition of personality. Due to its complex and multidimensional nature, the psychology literature offers multiple frameworks to conceptualize and measure it (Roberts and Yoon, 2022). In this review, the focus is on a broad set of skills commonly associated with personality and considered to be "easily distinguishable from cognitive ability." These are often referred to as socio-emotional skills, soft skills, non-cognitive skills, or life skills. This broad category includes constructs such as locus of control, perseverance, grit, and self-esteem. Moreover, in the

context of education, behavioural outcomes like school engagement, attendance or classroom conduct (e.g. not being disruptive) are frequently treated as non-cognitive outcomes. Standard measures of cognitive ability do not capture these aspects of personality (Heckman et al., 2006; Almlund et al., 2011; Heckman and Kautz, 2012; Deming, 2017). An OECD report describes these skills as "more than simply enablers of cognitive and academic growth" but as "important development outcomes in their own right" (OECD, 2021). The present review adopts that broader perspective, covering studies that examine various aspects of personality.

It is widely accepted that personality skills are relatively stable across contexts and situations (Cobb-Clark and Schurer, 2012). However, this situational stability does not imply immutability. It has been shown in the literature that these skills are malleable over time, particularly through targeted interventions (Borghans et al., 2008). In other words, skills that define one's personality are not set in stone but can be developed. Research on human capital investment suggests that childhood is a critical period for the development of both cognitive and socio-emotional skills (Heckman and Carneiro, 2003; Cunha et al., 2006). Accordingly, family environment plays an essential role in shaping personality (Almlund et al., 2011). In fact, a substantial literature documents the inter-generational transmission of personality skills such as risk taking, trust, and altruism (Dohmen et al., 2012; Doepke and Zilibotti, 2017). For instance, Deckers et al. (2015) find that socio-economic status of the family, as measured by parents' education and household income, is positively correlated with children's patience and altruism. Initial findings from an OECD survey also identify disparities in these skills, with socio-economically disadvantaged students faring worse (OECD, 2021). Consequently, policies that neglect the importance of early childhood in the development of socio-emotional skills may have unintended consequences. One illustrative case is the highly subsidised universal childcare programme introduced in Quebec, Canada, in the late 1990s . While the programme successfully

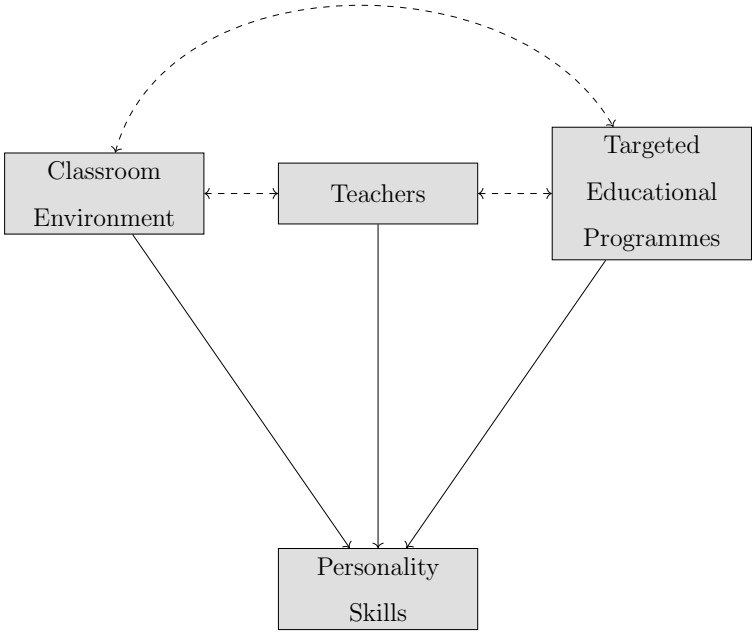
increased female labour force participation, it also had unintended effects on children. Specifically, Baker et al. (2008) report increases in behavioural problems such as hyperactivity, inattention, and aggressiveness among participating children. An important policy question is, then, how personality skills can be effectively fostered. Given the critical role of the family environment, parental education emerges as a potential lever for skill development. However, relying solely on families may reinforce existing inequalities. Public education offers a powerful and cost-effective means of shaping these skills, with the capacity to reach children from diverse socio-economic backgrounds (Gradstein and Justman, 2002). Schools are, in fact, among the earliest social settings that children experience outside the home. Given the substantial time spent in schools, well-designed educational policies hold significant potential to promote the development of these essential life skills.

This review synthesizes evidence from experimental and quasi-experimental studies on personality development within the school environment. While the primary focus is the economics literature, relevant studies from education, psychology and sociology are also included. Much of this literature consists of impact evaluations assessing a range of interventions, from input-based school policies to targeted socio-emotional learning programs. Some of these policies have been re-evaluated over time, as initial assessments focused solely on academic outcomes, with later studies expanding the scope to include effects on personality skills. These earlier evaluations are also discussed to provide a more comprehensive picture. The aim of this review is not to conduct a meta-analysis, but rather to offer an overview of influential studies that have shaped our understanding of personality development in school settings.

One may think about education as a technology that develops personality (Todd and Wolpin, 2003). This review focuses on arguably three of the most important inputs that enter this technology (see, Figure 1). First, *classroom environment* plays a critical role as students spend a substantial amount of time interacting with teachers and peers. Two

key physical aspects of classrooms are discussed in detail: class size and peer composition. Second, *teachers* influence students' personality skills through their pedagogical approaches, beliefs, and their own socio-emotional wellbeing. Third, adequately designed *school-based educational programmes* may foster certain socio-emotional skills. These programs typically target one or more personality skills that can be grouped into four categories based on their shared focus. These are (i) *self-regulation*, i.e. patience, planning, and self-control; (ii) *resilience building*, i.e. grit, perseverance, and a growth mindset; (iii) *empowerment*, i.e. agency, gender attitudes, and self-efficacy; and (iv) *social and emotional skills*, i.e. prosocial behaviour, perspective-taking, and emotional regulation.

Figure 1: Key Inputs for Shaping Personality in Schools



Importantly, these inputs do not operate in isolation. For example, a reduced classroom size will enable a teacher to spend more time with their students. Moreover, smaller classrooms are generally easier to manage, which can improve the quality

of teacher-student interactions. Reducing class size also affects peer dynamics, as it reduces the size of the peer network within the classroom. While these interdependencies are important for understanding the overall learning environment, disentangling the individual effects of each input can yield valuable insights into the distinct pathways through which they influence personality development. Therefore, the following reviews the evidence emanating from interventions that targeted any one of these inputs in isolation. Given the relatively larger body of evidence on school-based educational programs, that section is discussed in greater detail. Finally, ongoing challenges related to the research on personality development are discussed, including issues related to data and measurement, mechanisms, long-term effects, and the gap between research and policy.

The remainder of this review is structured as follows. Section 2 discusses the effects of classroom features on personality skills. Section 3 reviews the literature on the role of teachers in shaping students' personality development. Section 4 examines school-based educational programmes targeting the development of various personality skills. Section 5 outlines remaining challenges in the research on personality development and Section 6 concludes.

2 Classroom Environment

Classrooms are critical environments, where children spend substantial time interacting with their peers and teachers, facilitating not only academic learning but also the development of one's personality. Researchers have explored how various features of a classroom influence both traditional cognitive outcomes — measured through standardised test scores and grades — and other non-cognitive and behavioural outcomes. Among the most studied in the literature are the effects of class size and peer composition. The following subsections review the evidence on these two classroom

features separately.

2.1 Class Size

Perhaps, one of the most influential studies on class size is the "Student-Teacher Achievement Ratio" (STAR) experiment conducted in the US in the late 1980s. The main objective of this large-scale randomised experiment was to understand whether smaller classrooms significantly improve student achievement. Specifically, students and teachers from 79 public schools in Tennessee were randomly assigned to either small classrooms (13-17 students) or regular-size (22-25 students) classrooms. The regular-size group was further divided into two treatment arms: one with a teacher's aide and one without. The intervention started in the 1985-86 school year and lasted for 4 years. In the short-term, students in smaller classrooms performed approximately 0.2 standard deviations better on math and reading tests in their first year (Krueger, 1999). Moreover, in a long-term follow-up of the STAR experiment, Krueger and Whitmore (2001) show that students who attended small classrooms in their early years are more likely to take a college-entrance exam, with even higher effect sizes for minority students. Overall, from a policy perspective, the evidence from these studies strengthen the argument for smaller classes.

There is a counterargument around how "input-based" school policies are doomed to fail if incentive structures in schools are ignored (Hanushek, 2003). However, neither proponents nor opponents of class size reduction policies focused on effects beyond cognitive outcomes at the time. Inspired by this gap, Dee and West (2011) investigate how class size affects non-cognitive skills of grade 8 students using a nationally representative survey. Specifically, the authors identify several channels through which the class size could affect non-cognitive skills. For example, in a

smaller class, teachers can devote more time to emotionally engage with their students, promoting their behavioural development. Their findings show positive and significant effects on various indicators of school engagement for students in small classrooms. Moreover, these effects, while declining over time, persist for another 2 years. In another study, Fredriksson et al. (2013) exploit exogenous variation in class size resulting from a maximum class size rule implemented in primary schools in Sweden. Their findings indicate that students who were in small classes between the ages of 10 and 13 exhibit significantly improved cognitive and non-cognitive outcomes by age 13. Notably, these non-cognitive outcomes include effort, motivation, aspirations, self-confidence, sociability, absenteeism and anxiety measured by self-reported survey questions. Furthermore, the study provides evidence that these students are more likely to complete their education and achieve higher wages and earnings in the long-run. Connolly and Haeck (2022) employ the same identification strategy using a sample of kindergarten children in the Canadian province of Quebec and find non-linear effects of class size on both cognitive and non-cognitive outcomes. Specifically, they observe significant effects on social well-being, which encompasses social skills, self-confidence, sense of responsibility, autonomy, work habits, and respect for others. Their results give support to a targeted class reduction policy rather than a universal one.

2.2 Classroom Peer Composition

Another important factor influencing student outcomes is peer composition in the classroom.[1] Before examining studies that evaluate the effects of peer composition, it is worth discussing several mechanisms through which it operates. One key

[1] See Epple and Romano (2011) for a detailed review of the literature on peer effects.

mechanism works through "traditional peer effects." While extensive research has established that peer characteristics have a causal impact on academic performance (Sacerdote, 2001; Zimmerman, 2003; Jackson, 2008; Calvó-Armengol et al., 2009), the effects on personality remain unexplored. One exception is Shan and Zölitz (2025), who conduct a field experiment with university students being randomly assigned to study groups. Their findings indicate that students become significantly more competitive, open-minded and conscientious when exposed to peers, who exhibit these traits. Another mechanism linking peer composition to student outcomes is "rank effects." That is, classroom composition determines a student's relative ranking, such as their position in the ability hierarchy, which can influence their academic motivation, self-perception, and long-term outcomes. For example, Pagani et al. (2021) show that students who rank higher in academic achievement within their classroom become significantly more conscientious. Kiessling and Norris (2023) find that a student's relative rank within their cohort leads to both short- and long-term improvements in mental health. Finally, peer composition can indirectly affect outcomes by "shaping teaching practices." Lavy et al. (2012), for instance, show that an increase in the share of low-ability students negatively affects the adoption of good pedagogical practices by teachers. Moreover, the authors find evidence on other mediating factors of peer composition such as classroom climate and the quality of student-teacher interactions.

Overall, the literature highlights the significant role of peers, making the optimal design of classroom peer composition a crucial policy question. In this respect, one relevant and frequently studied aspect is the optional mix of ability in classrooms. Specifically, researchers have tested two key approaches: (i) tracking, where students are grouped by achievement level, and (ii) mixed classrooms, where high- and low-achieving students learn together. In mixed classrooms, lower-achieving students may benefit from higher-achieving peers. This suggests that tracking could disadvantage

lower-ability students, not only due to negative peer effects but also due to stereotyping, and reduced self-esteem. On the other hand, tracking may also provide benefits by enabling teachers to tailor instruction more effectively to students' ability levels. Duflo et al. (2011) test this hypothesis using a large-scale field experiment in Kenya. In particular, first-grade students from 121 schools were assigned either to classes based on their prior achievement level or based on the outcome of a lottery (i.e., random assignment). They find that tracking improved test scores of children between 0.16 and 0.19 standard deviation with effects persisting one year after the intervention. Another influential programme altering the peer composition based on ability in classrooms is "Teaching at the Right Level," developed by Pratham, an NGO in India. The programme aims to build foundational reading and math skills by grouping students based on their current learning levels instead of their age or grade. Based on this approach, Banerjee et al. (2016) develop and test two scale-up models and find significant improvements in language learning outcomes. However, neither Duflo et al. (2011) nor Banerjee et al. (2016) consider non-cognitive outcomes in their evaluation. The literature examining the effects of tracking on non-cognitive outcomes remains relatively scarce. Korthals et al. (2022) examine the ability tracking policy implemented in middle schools in the Netherlands focusing on marginal students, who are close to the ability cut-off. They find that, while tracking enhances marginal students' cognitive outcomes, it negatively impacts non-cognitive skills such as agreeableness, extraversion, and academic self-concept. There are also a number of studies investigating the effects of peer ability on non-cognitive outcomes by exploiting the random assignment of students to classrooms. One such study is Xu et al. (2022), which uses data from China to analyse the impact of having high school classmates who repeated a grade during primary school. The authors identify negative effects on both cognitive (academic performance and cognitive assessment) and non-cognitive (mental health, school engagement and academic expectations) outcomes of

non-repeaters. Finally, Chetty et al. (2011) find that students, who were randomly assigned to classrooms with more successful peers in kindergarten are more likely to attend college and experience a higher quality of life in the long-term, measured by savings, marital status, neighbourhood quality, home ownership and mobility. An important take away of this study is that while gains in test scores disappear over time, improvements in non-cognitive scores persist.

There are also educational policies that sort students into classrooms based on characteristics other than ability. For example, a large body of research investigates the effects of classroom gender composition (see, for example, Hoxby (2000); Lavy and Schlosser (2011); Black et al. (2013)). The findings of this literature are highly relevant for the policy debates surrounding single-sex versus coeducational schools. Among the few studies that examine non-cognitive outcomes, Gong et al. (2021) leverages exogenous variation in peer gender resulting from random classroom assignments in a nationally representative survey in China. The findings indicate that a higher proportion of female classmates leads to improved test scores, better social acclimation, and greater satisfaction with school. Other dimensions of peer composition include socio-economic background, race and ethnicity. An influential study by Rao (2019) investigates the effects of socio-economic diversity in the classroom. Exploiting a natural experiment in which private schools were required to admit low socio-economic status (SES) students through reserved quotas, the study goes beyond academic outcomes to examine shifts in social preferences. The findings show that exposure to low-SES peers fosters greater altruism, prosocial behaviour, and reduced discrimination toward economically disadvantaged students. Together, these studies highlight that classroom composition can influence not only academic outcomes but also the development of key personality skills.

3 Teachers

The effect of teachers on shaping student outcomes is extensively documented in the economics literature. The quality of teaching is undoubtedly central to this impact. A widely used measure of teacher quality is teachers' value-added, which is typically estimated based on the contributions of teachers to students' test score improvements. Chetty et al. (2014) examine the effect of teachers' value-added using a large sample of approximately one million children. They find that higher teacher value-added significantly and positively influences long-term outcomes such as college attainment, earnings, and savings. These effects also extend to non-economic outcomes. For example, girls who are exposed to teachers with high value-added are less likely to experience teenage pregnancy.

As discussed earlier, personality skills, though being strong predictors of long-term outcomes, are not captured by standardised test scores. Jackson (2018) addresses this limitation by proposing a "behavioural value-added" measure, which accounts for the effect of teachers on students' "non-test-score" outcomes such as absences, suspensions, course grades and on-time grade progression. Using administrative data consisting of 9th grade students from all public schools in North Carolina between 2005 and 2012, he finds that test score value-added and behavioural value-added are only weakly correlated. Furthermore, accounting for behavioural value-added significantly increases the predictive power of teachers' quality on long-term outcomes such as high school graduation, SAT-taking and college attendance. In particular, high school completion rates and college attendance are significantly higher for students whose "non-test-score" outcomes are improved. Other studies constructing teachers' value-added using non-test-scores such as student attendance (Gershenson, 2016; Liu and Loeb, 2021), students' growth mindset, grit and effort (Kraft, 2019), as well as their self-reported behaviour, happiness in class and self-efficacy in math

(Blazar and Kraft, 2017; Blazar, 2018) find similar results to Jackson (2018).

While the literature on teachers' value-added establishes that teachers play a significant role in shaping various student outcomes, only a few studies offer insights into the underlying mechanisms. However, it is crucial to understand the channels through which these effects are mediated. Algan et al. (2022) suggest that one such channel is teaching pedagogy. They show that instructional approaches significantly influence the formation of students' beliefs about social capital. The authors focus on two types of teaching methods: vertical teaching and horizontal teaching. The former is more traditional and emphasises the authority of teachers, whereas the latter actively involves students in the learning process by encouraging interaction. Within their cross-country analysis, Algan et al. (2022) find that vertical teaching methods are associated with students placing less value to cooperation and perceiving their teachers as less fair. In contrast, teachers who employ more progressive teaching practices foster prosocial beliefs in students and thereby promote the formation of social capital. In another study, Villaseñor (2017) highlights the role of teachers as "reference points," influencing students' personality development via classroom management practices, the relationships they cultivate within the classroom and the ways, in which they model socio-emotional skills. Moreover, when teachers build more nurturing relationships with certain students, those students are more likely to be accepted by their peers - an important factor in healthy character development (Birch and Ladd, 1998; Hughes et al., 2001; Skinner and Belmont, 1993).

There is also substantial evidence on the effect of teachers' beliefs on student outcomes. For example, Sabarwal et al. (2022) investigate teachers' beliefs using survey data from 20,000 teachers. Their findings suggest that these beliefs may reinforce existing inequalities in student learning. In particular, on average, about 40% of teachers have fixed mindsets regarding the learning potential of students from disadvantaged backgrounds and prioritize allocating resources to students who are already perform-

ing well. Relatedly, Alan et al. (2018) and Carlana (2019) document that teachers' gender bias negatively affects girls' academic outcomes. The impact of teachers' beliefs is not limited to learning outcomes. Alan et al. (2023) show that teachers who have high implicit bias against refugee children cause poor inter-ethnic relations and even increase the likelihood of peer violence targeting refugee students. Suggestive evidence indicates that these effects are mediated through seating arrangements in the classroom: teachers with high ethnic bias create both spatially and socially segregated classrooms.

Finally, teachers' own socio-emotional well-being influences students' personality development through classroom management and relationship building (Schonert-Reichl, 2017). While there is scarce evidence in the economics literature on the effects of socio-emotional learning programmes targeting teachers, studies in the education and sociology literature offer valuable insights. For instance, Jennings and Greenberg (2009) investigate how teachers' socio-emotional competence is associated with classroom practices. Their findings suggest that deficits in teachers' socio-emotional competence and well-being can lead to a "burnout cascade," which has detrimental consequences on the classroom climate.

4 Targeted Educational Programmes

Emerging evidence on the role of personality development suggests that school curricula may benefit from going beyond a sole focus on cognitive development and academic achievement. Thereby, researchers and practitioners have been developing and evaluating programmes designed to foster non-cognitive skills such as patience, grit and perseverance. These programmes are often motivated by the social psychology and the education literature. They vary considerably in terms of the period of implementation (ranging from preschool to high school), as well as in their duration,

intensity, and delivery methods (e.g. through teachers, mentors, non-governmental organisations). Durlak et al. (2011) conduct a meta-analysis of studies evaluating the effects of socio-emotional learning (SEL) programmes involving about 270,000 students from 213 schools. They document that school-based programmes are successful in developing important aspects of personality and these improvements translate into better achievement outcomes.

It is worth highlighting at the outset two influential educational programmes aimed at fostering personality development: the Perry Preschool Programme and the Promoting Alternative Thinking Strategies (PATHS) curriculum. The Perry Preschool Programme is one of the earliest and most frequently cited early childhood programmes to emphasise the role of social skills in shaping student outcomes. This programme was implemented by the High/Scope Educational Research Foundation in the 1960s at Perry Preschool in Michigan and was evaluated using a randomised experiment. It targeted socio-economically, ethnically, and cognitively disadvantaged children aged 3 and 4. The objective was to teach children cognitive and social skills by implementing a "plan-do-review" technique. This involved planning a task, carrying it out, and reviewing it with peers and teachers. The intervention took place weekly for 2.5 hours during school days and lasted for two years. Additionally, teachers made home visits to improve the quality of parent-children interactions. The evaluation sample involved 123 students, who were randomly assigned to either the treatment or control group. The findings show significant improvements in achievement outcomes via developing personality skills such as conscientiousness and agreeableness (Weikart, 1967). Follow-up surveys with study participants at the ages of 15, 19, 27 and 40 shed light on the long-term effects of the Perry Preschool Programme. While the main effect of the programme is the significant reduction in the probability of committing a crime, it has also improved education, employment, earnings, health and marital outcomes (Schweinhart et al., 2005; Belfield et al., 2006;

Heckman et al., 2010). Importantly, the long-term effects of the programme were not mediated through increases in IQ scores. Instead, Heckman et al. (2013) show that the lasting impacts of the Perry Preschool Programme are largely explained by the improvements in personality skills.

The PATHS curriculum, implemented in the 1980s had a similar objective as the Perry Preschool Programme: leveraging both cognitive and non-cognitive skills to improve student outcomes. The target population included children, who could be either in regular classes or in special needs classes, from grades 2 and 3. This school-based programme was delivered by trained teachers who taught children self-control, emotional awareness, and social problem-solving skills (Bierman et al., 2010). One of the early evaluations of the PATHS curriculum shows that treated students were significantly more emotionally competent than students in the control group. In particular, the treatment improved emotional recognition and social-problem solving skills, impulse control and working memory. Following its initial success, the PATHS curriculum was adapted in other grade levels, including preschool, and implemented in different countries. For example, Sorrenti et al. (2024) evaluate the PATHS programme that has been replicated in Switzerland in 2005. Their findings indicate that treated children are more likely to complete academic high school and enrol in university. Similar to the findings of Heckman et al. (2013) on the Perry Preschool Programme, the results are not driven by higher scores on standardised tests but by improvements in socio-emotional skills, particularly reductions in impulsive and disruptive behaviour.

Both the Perry Preschool Programme and the PATHS curriculum introduced fresh perspectives into educational policies. Initial studies evaluating these two programmes, despite using small samples, demonstrated the essential role of social skills in setting children on a better life trajectory. The wider use of randomised controlled trials in economics has led to studies with larger evaluation samples and more sophis-

ticated measurement tools. There are many other programmes aimed at enhancing cognitive and non-cognitive skills of children outside the school setting. This section focuses specifically on programs that leverage the classroom and broader school environment to support personality development. These programmes are grouped into four categories based on the core personality skill they target: (i) patience, planning and self-control; (ii) grit, perseverance and growth mindset; (iii) empowerment, agency and gender attitudes; and (iv) prosocial behaviour, perspective taking and emotional regulation.

4.1 Patience, Planning and Self-control

Patience is a widely studied skill in the economics literature due to its connection to intertemporal decision making. Studies show that more patient and self-controlled individuals obtain higher grades in school, and have better health and labour market outcomes, with effects persisting into adulthood (Sutter et al., 2013; Golsteyn et al., 2014; Figlio et al., 2019; Cobb-Clark et al., 2022). Moreover, the evidence in the literature implies that time preferences can shift when subject to exogenous factors, indicating their malleability (Cassar et al., 2017). An extensive literature investigates strategies to enhance future-orientation in children. Teaching self-control has been part of many educational interventions. For example, financial literacy training in schools, which gained popularity in the last 10 years, may involve components related to gratification delay and self-control (see, Kaiser et al. (2022) for a meta-analysis). Bruhn et al. (2016) examine the impact of a large-scale financial education programme implemented across 892 high schools in Brazil. The programme leads to significant improvements in financial literacy and savings, along with an increase in the proportion of students who pass their grade-level examinations. Similarly, Lührmann et al. (2018) assess how financial education influences intertemporal

decision-making among high school students. Specifically, they evaluate a programme offered by a German NGO that consists of three modules: shopping, planning and saving. The study finds that treated students make less time inconsistent choices. The content of the curricula used in these studies does not explicitly focus on fostering patience and building self-control. In a more targeted class-based intervention, Alan and Ertac (2018) aim to foster patience in elementary school children. In particular, children were taught to become forward-looking individuals by imagining their future selves and planning for the goals they would like to achieve. The authors evaluate this programme using a large-scale randomised controlled trial with a "phase-in" design. Specifically, the evaluation sample includes approximately 2000 third and fourth grade students from 37 public schools in Istanbul, Turkey. Treated students make significantly more patient choices in these tasks and obtain better behavioural grades with effects persisting 3 years after the study.

4.2 Grit, Perseverance and Growth Mindset

Grit is a non-cognitive skill related to working hard, being persistent and not giving up in case of drawbacks. It is strongly associated with conscientiousness (Credé et al., 2017) and it significantly predicts educational achievement, higher earnings and career success (Eskreis-Winkler et al., 2014; Cunningham et al., 2016; Mooradian et al., 2016). One way to develop grit is by shaping individuals' beliefs about their abilities. In particular, Dweck (2008) introduces the concept of a "growth mindset," which is the belief that innate abilities do not limit one's potential and that skills can be developed over time through hard work. Individuals with a growth mindset, as opposed to a fixed mindset, are shown to exert more effort, demonstrate greater perseverance, and achieve more success in life (Claro et al., 2016). This evidence has led to mindset interventions in schools, aiming to teach children about growth mindset to increase

effort and build resilience to setbacks. For example, Bettinger et al. (2018) conduct a field experiment in Norway to evaluate the effects of the web-based mindset intervention developed by Yeager et al. (2016). This light-touch intervention is implemented during normal instruction time in high schools in two sessions of 45 minutes each. Students in the treatment group went through online reading and writing exercises conveying the concept of growth mindset. The authors then administered a test consisting of challenging algebra questions. The study finds that treated students, who initially had a fixed mindset, solved significantly more correct answers in comparison to the students in the control group. In another study, Alan et al. (2019) develop a more intense curriculum aiming to foster grit in children and evaluate it using a large-scale randomised controlled trial. The intervention is delivered by students' own teachers over 12 weeks and consisted of interactive games and videos teaching them about "growth mindset, perseverance through failures and goal-setting." The programme was implemented in two separate samples consisting of 3200 students, aged between 9 and 10, from 52 public primary schools in Istanbul, Turkey. The authors elicit grit using the "grit scale" developed by Duckworth and Quinn (2009) and a novel incentivised real-effort task. The findings show that students in the treatment group are more likely to exert effort and succeed in this incentivized game. Moreover, treated students score 0.2 standard deviations higher than control students on a standardised math test administered 2.5 years after the study, showing that the intervention has a lasting effect. Outes-Leon et al. (2020) evaluate another growth mindset intervention in Peru, called *¡Expande tu Mente!*, which adapts materials from the educational psychology literature (see, for example, Yeager et al. (2016)) for use in an offline setting. The programme was implemented in 800 public schools among grade 8 students and delivered by tutor teachers during a 90 minute in-class session. Short-term results indicate a 0.05 standard deviation increase in mathematics tests scores obtained from a census evaluation, a result driven by students from non

metropolitan areas. Moreover, the intervention has significant long-term effects on mathematics and reading comprehension.

Although these growth mindset interventions and many others proved to be cost-effective, several studies report null or non-significant effects, raising concerns about internal and external validity (Sisk et al., 2018; Macnamara and Burgoyne, 2022). In this context, Huillery et al. (2021) makes an important contribution by evaluating an intervention using a design with both high internal and external validity. Specifically, the study implements an intervention aimed at enhancing academic achievement by fostering a growth mindset and strengthening internal locus of control among disadvantaged adolescents from 97 middle schools in France. The programme, titled *Energie Jeunes*, was implemented every year from grades 6 to 9. The authors find a 0.07 standard deviation increase in GPA and positive effects on students' performance in national end-of-middle school exams. The intervention also led to improvements in behavioural outcomes: treated students exhibited greater self-discipline, reduced impulsivity, and higher aspirations. This study represents one of the few robust examples of a mindset intervention producing significant and sustained positive effects within a developed country context.

4.3 Empowerment, Agency and Gender Attitudes

Another line of research concerns educational programmes designed to empower and provide agency to children living in disadvantaged areas. These programmes help children by teaching them how to take control of their life decisions. The methods to build empowerment vary depending both on the problem and the context. For example, in environments with strong traditional gender norms, parents often play a decisive role in determining the educational investments made for underprivileged girls. Ashraf et al. (2020) suggest that in these environments, teaching girls negotia-

tion techniques could make them more influential in the household. Building on this premise, they designed a targeted negotiation skills training and evaluated its effects on schooling outcomes of adolescent girls in Zambia. The study targets grade 8 students, who are at a pivotal stage in their lives regarding pursuing further education. This two-week training, delivered in schools by female coaches, taught girls how to identify interests of their own as well as those of others in the household and how to create common value for all involved parties. The programme produced positive treatment effects on empowerment indicators and significantly decreased drop-outs. Dhar et al. (2022) study a similar setting in India, where there is high gender inequality in schooling and the labour market outcomes. Their aim is to mitigate gender disparities in the long-run by changing gender attitudes of adolescents. The paper reports the evaluation results of a gender-equality programme designed and implemented by an NGO, called "Breakthrough," during regular school hours. This large scale impact evaluation, consisting of 314 state-run secondary schools, covered about 14,000 students in grades 7 and 8. The duration of the programme was considerably substantial with 27 interactive sessions, once every three weeks, over a two and a half year period. In addition to these sessions, the programme also included homework assignments, a one-time training for one teacher per school, youth clubs and other school-wide activities. The evaluation results show that the programme led to more progressive gender attitudes as well as more gender-equal self-reported behaviour both in the short and the medium run (2 years after the intervention). However, the authors do not detect any significant treatment effects on girls' educational and career aspirations, likely because these outcomes were already high at baseline. While Ashraf et al. (2020) and Dhar et al. (2022) specifically target gender-specific attributes to empower girls, there are also programmes focusing on a broader set of skills. For example, Edmonds et al. (2023) evaluate a life skills curriculum and a mentoring programme, which was implemented in 2016, to empower adolescent girls

(grades 6 and 7). The intervention was delivered twice every month by "social mobilisers" in 119 schools located in Rajahastan, India. The curriculum focuses on ten life skills: self-confidence, expressing and managing emotions, empathy, self-control, critical thinking, decision-making, perseverance, communication, relationship building, and creative problem solving. Treated girls significantly improved their planning for the future by setting specific goals. Moreover, the treatment led to higher socio-emotional support indicated by an increase in both the number of friends and time spent with friends. Most importantly, the programme decreased the likelihood of dropping out of school by 4 percentage points.

Adolescent empowerment programmes, such as the ones discussed above, often involve "direct lecturing," which refers to an instructor-centred approach. While this form of delivery has been successful in changing children's behaviour, the evidence is mixed for adolescents (Heckman and Kautz, 2014). Yeager et al. (2018) argue that directly targeting adolescents in behavioural interventions could lead to backlash, as there is high demand for respect and autonomy at this age. Alan and Kubilay (2024) find a consistent picture in their in-depth qualitative work with adolescents in Turkey. Based on these insights, they employ an alternative approach and develop an indirect behavioural intervention in middle schools. In particular, selected senior students (grades 7 and 8), called student-teachers, are given the responsibility of implementing an empowerment curriculum to junior students (grades 5 and 6) during school hours. The intervention is based on two principles: (i) taking the responsibility of delivering a curriculum will make senior students feel trusted, respected and empowered, (ii) the indirect nature of the programme will foster self-persuasion in seniors leading to behavioural changes. Various indicators of empowerment and socio-emotional well-being significantly improved, including internal locus of control, perspective taking, sense of responsibility as well as mental wellbeing. Moreover, juniors report to receive more emotional support from their senior peers. Finally, student-teachers are

6.5 percentage points more likely to be admitted to selective high-schools. The study also finds large spillover effects both to seniors who are in and out of student-teacher networks.

4.4 Prosocial Behaviour, Perspective Taking and Emotional Regulation

A poor relational environment in schools characterised by, for example, teacher-student conflicts, peer bullying and a lack of belonging, negatively impacts students' academic performance and the development of personality skills. Several school-based interventions specifically target social skills to address these issues, helping students, for instance, to control their impulses, regulate their negative feelings, and engage in prosocial behaviour. A notable example is the early childhood programme studied by Algan et al. (2022), which focuses on at-risk kindergarten boys in Montreal, Canada. Rolled out in the 1980s, this school-based programme aimed to foster social behaviour and self-control. The training sessions were conducted in small groups of four to seven children, comprising both treatment participants and highly prosocial students, who were not part of the evaluation sample. This approach supplemented the non-cognitive skills training with positive peer effects and also avoided stigmatisation. The study follows these children over their lifetime and analyses the effects of the intervention on outcomes during adolescence and adulthood. The authors find immediate significant effects on self-control and prosocial behaviour. In late adolescence, the treated participants show improved grades, a reduction in grade repetition and a lower likelihood of being assigned to remedial classes. Using long-term tax data, the authors identify positive and significant effects during adulthood on labour market outcomes, and on various non-economic outcomes, including reduced criminal behaviour, higher educational attainment and increased likelihood of marriage.

Cognitive-behavioural therapy (CBT), developed by psychologists and shown to be effective in reducing behavioural problems, has also been used to address issues related to poor school climate. CBT-based programmes have two main objectives: (i) creating awareness of instant, automatic and harmful reactions or thoughts and, (ii) shaping thoughts through sustained behaviour change (Blattman et al., 2023). For example, Heller et al. (2017) investigate the effects of "Becoming a Man (BAM)" curriculum, which was delivered by a counselor in groups and consisted of activities such as role playing, breath exercises, and muscle relaxation. The authors evaluate the BAM curriculum using two separate randomised controlled trials conducted in schools located in socially disadvantaged neighbourhoods of Chicago. Both studies targeted male students, with Study 1 including 2,740 participants in grades 7 through 10 and Study 2 comprising 2,064 participants in grades 9 and 10. In each study, students were randomly assigned either to the treatment group, which received the BAM curriculum, or to the control group.[2] In both studies, the BAM curriculum produced positive and significant treatment effects on GPA, attendance and enrolment status, one year after implementation. Moreover, the authors document a striking drop in total arrests for treated students in both studies. Study 1 tracks students through to graduation and finds that those who participated in the programme were more likely to graduate from high school compared to those in the control group.

An important contributing factor to a poor school climate is the absence of cohesion policies in schools with diverse student populations in terms of learning abilities, ethnicity and race. This challenge becomes particularly critical when such diversity arises from conflict-related or environmentally driven population movements. For example, in 2016, Turkey received approximately one million refugee children as a

[2]Study 1 also includes an additional treatment arm with an after-school sports activity programme with BAM elements, however, due to insufficient power, the authors pool this arm with the in-school BAM arm when evaluating the results.

result of the Syrian civil war. The integration of refugee students into the public education system placed considerable strain on teachers and school administrators and contributed to incidents of violence and discrimination on school grounds. To address this challenge, Alan et al. (2021) designed an educational programme on perspective taking to build social cohesion in ethnically mixed schools in Turkey. Through class-based activities, both native and refugee students learned how to put themselves in others' shoes. Treated students developed stronger perspective taking skills, which led to an increase in the formation of interethnic friendships, as well as in the levels of trust, reciprocity, and altruism. In addition, refugee students scored 0.13 standard deviations higher on standardised verbal ability tests.

5 Existing Challenges

This section reviews existing challenges regarding research on personality skills in the school environment. These include data and measurement, identification of mechanisms, long-term assessments, as well as the communication of the evidence to the public.

5.1 Data and Measurement

Educational policies designed to foster skills should be grounded in rigorous scientific evidence, which relies on the availability of relevant data. However, data on personality skills, particularly from administrative sources, remain far less comprehensive than data on cognitive skills. This gap in data availability poses a significant challenge for understanding the full range of skills that matter for life outcomes and for designing effective educational interventions. In response to the growing recognition of the importance of personality skills, notable progress has been made in improv-

ing data collection in this area. For example, the OECD's Directorate of Education and Skills has incorporated measures of social and emotional skills into international assessments. In 2012, the Programme for International Student Assessment (PISA) introduced, for the first time, survey items designed to assess aspects of personality such as locus of control. Since then, PISA has continued to expand its scope including measures of additional traits related to personality. Moreover, the OECD's Survey on Social and Emotional Skills (SSES) represents one of the first efforts to systematically collect international data on these competencies. While these initiatives represent important progress, further efforts are needed to ensure that data on personality skills are as robust, consistent, and accessible as those on cognitive outcomes.

Beyond data availability, a major challenge lies in the development and implementation of valid and reliable measurement tools, which are essential for policy evaluation. Measuring personality presents a particular challenge in this respect due its multi-faceted nature. As discussed earlier, standardised tests that are used to measure cognitive skills fail to capture many important facets of personality. A common method to address this gap involves the use of self-report surveys. These include inventories that capture, for example, grit (Duckworth and Quinn, 2009), growth mindset (Dweck, 2008), empathy (Davis, 1980), and locus of control (Rotter, 1966). However, self-reported measures are subject to several limitations, including sensitivity to survey conditions and experimenter demand effects (Chen et al., 2020). To address some of these concerns, researchers have increasingly turned to experimental tasks and behavioural games to elicit both cognitive and non-cognitive skills. These methods often offer greater reliability and are less prone to self-reporting biases. However, they are also more resource-intensive to implement, especially when incentives are involved, which can limit their scalability, particularly in large field studies or policy evaluations.

An additional and persistent challenge is the lack of standardisation in measure-

ment tools across studies. The diversity of instruments used, while sometimes necessary to suit different research questions and populations, makes it difficult to compare findings across contexts. Greater harmonisation in measurement approaches would enhance the comparability and cumulative value of research in this area. In this regard, the "Learning for All" initiative by the Abdul Latif Jameel Poverty Action Lab (J-PAL) offers a notable contribution. Their review of 237 studies on the measurement of holistic skills highlights both the diversity of existing approaches and the limitations in terms of context-specific validity and reliability (Macours et al., 2023). The review draws attention to the need for common standards and provides practical guidelines for researchers and practitioners aiming to measure holistic skills more effectively and consistently.

5.2 Mechanisms

If a policy, whether centred around the classroom environment, teacher quality, or targeted educational programmes, proves effective in shaping personality, the next crucial question becomes: what is the underlying mechanism? Identifying the mechanism at play is not only of scientific interest but also essential for policy-making. Mechanism identification enables policymakers to design more efficient and scalable interventions by isolating the active ingredients of a policy. For example, at the design stage of the STAR experiment, the inclusion of the treatment arm, in which the regular size classes supplemented with a teachers' aide, was advocated by the legislators. The rationale was that this approach could replicate the benefits of smaller class sizes, i.e. a lower student-teacher ratio, at a lower cost. However, as the findings of the STAR experiment later revealed, students in regular sized classes with a teacher's

aide did not perform significantly better than those in regular size classes.[3]

A well-designed impact evaluation should, therefore, be grounded on a clear "theory of change," a framework that outlines the hypothesised channels through which an intervention affects the outcomes of interest. Specifying the theory of change in advance can guide the experimental design, allowing researchers to explicitly test the role of different mechanisms. One way to do this is by incorporating additional treatment arms that isolate specific channels. For example, as discussed earlier, Alan and Kubilay (2024) investigate the effects of an empowerment programme, in which selected senior students from grades 7 and 8 delivered a curriculum to their juniors. The design also included a placebo arm, in which the student-teachers conducted extra-curricular activities with junior students. The main reason behind this arm was to rule out a potential interaction mechanism between seniors and juniors. By comparing outcomes across these groups, they showed that empowerment outcomes were significantly better in the treatment group than in the placebo group, indicating that the content of the curriculum, rather than the interaction alone, was the key mechanism. This design allowed the authors to rule out a simple peer interaction effect as the driver of change.

While including multiple treatment arms is powerful for identifying mechanisms, it also increases the complexity and cost of implementation, requiring larger sample sizes and more intensive logistics. A more cost-effective and widely used alternative is mediation analysis, which is a statistical method that estimates the extent to which a proposed mediator accounts for the observed treatment effect. However, mediation analysis has its own limitations and cannot fully substitute for experimental identification of mechanisms (see, for example, Schuler et al. (2024)).

[3]This was largely attributed to the inadequate training provided to aides in Tennessee at the time.

5.3 Long-term effects

The challenges of assessing the long-term effects of interventions are not unique to the personality development research. However, as the importance of non-cognitive skills has only been widely acknowledged over the past decades, there remains a substantial gap in the literature regarding (i) which personality development interventions produce lasting effects, and (ii) what long-term outcomes, both economic and non-economic, are influenced as a result. Studies such as Chetty et al. (2011) and Algan et al. (2022), which examine the long-term impacts of childhood interventions, offer valuable insights into the potential of such programmes. Nonetheless, undertaking this type of research ideally requires comprehensive administrative data systems that allow for longitudinal tracking of individuals. This poses a significant challenge, particularly in developing countries, where limited state capacity often constrains data availability and quality.

5.4 Bridging the Gap between Evidence and Policy

A growing body of evidence demonstrates that personality development is crucial for improving life outcomes. Children benefit significantly from learning traits such as patience, perseverance and grit. This research has increasingly informed education policy. In 2014, for example, the UK government announced a £3.5 million investment in programmes promoting "character development" in schools, followed by the release of guidance on character education by the Department for Education in 2019. Similarly, socio-emotional skills have been central to the United States Government Strategy on International Basic Education and to the USAID Education Policy launched in 2018. These policies emphasise traits such as perseverance, confidence, and civic-mindedness as equally important as academic achievement. USAID, for instance, highlights the role of empathy and social awareness in fostering social

cohesion and argues that skills like goal-setting and problem-solving are critical for improved governance. At the European level, the European Commission includes critical thinking, creativity, and teamwork, alongside literacy and numeracy, among the key competencies for quality education.

These developments illustrate the successful translation of research into educational policies aimed at fostering personality development. However, such efforts have also faced backlash. In the United States, for example, bills have been introduced in at least eight states to limit or eliminate Social and Emotional Learning (SEL) programmes in schools. Critics argue that these initiatives function as tools of ideological indoctrination and detract from core academic subjects (Abrams, 2023). In light of this resistance, it is vital to clearly communicate the scientific evidence, both to policymakers and the broader public.

6 Concluding Remarks

There is robust evidence across multiple disciplines demonstrating the vital role of personality in shaping future life outcomes. The literature on personality development reveals a critical insight: inequality in socio-emotional skills emerges early in life and tends to persist over the life span. For instance, Attanasio et al. (2020) compare two British cohorts, individuals born in 1970 and 2000, and find that inequality in socio-emotional skills has widened over time. Specifically, they document a growing gap between children from high and low socio-economic backgrounds, measured by mothers' education and employment status. Similarly, in an IFS report, Cattan et al. (2023) examine children's socio-emotional development during the COVID-19 pandemic in the UK. Their findings indicate that children from families with relatively stable labour market experiences during the pandemic fared better than those from more adversely affected households, suggesting a further widening of the socio-emotional

skills gap.

These findings highlight the significance of implementing effective policies to reduce disparities in personality development. Public education systems offer a cost-effective and scalable platform to achieve this goal. Research from the economics, psychology, sociology, and education underscores the role of key educational inputs, such as classrooms, teachers, and targeted school-based programmes, in shaping socio-emotional and personality skills. Specifically, evidence shows that classroom environment teachers, as well as curricula targeted on personality development, all contribute to shaping students' non-cognitive outcomes.

Nonetheless, many open questions remain regarding how to best foster soft skills effectively and equitably (Deming, 2022). Crucially, researchers must communicate evidence on personality development clearly and responsibly to the public. This is essential not only for avoiding misconceptions about the purpose of these policies but also for building the public trust and political will necessary to sustain them.

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