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Unlocking Potential: How Social Protection Can Improve Disadvantaged Children's Foundational Cognitive Skills

Ground-breaking New Evidence from Young Lives in Ethiopia and Peru

Overview

Social protection provides a critical safety net to help the world's most disadvantaged children fulfil their potential. This includes a wide variety of programmes implemented around the world to reduce and prevent poverty, including through cash transfers, food aid, welfare programmes and social insurance schemes. While there is a wealth of research demonstrating the potential of social protection to improve children's health, nutrition, and access to education (ILO and UNICEF 2023), there is limited evidence of its impact on improving children's basic skills, particularly in low- and middle-income countries.

New analysis of Young Lives longitudinal data from Ethiopia and Peru provides ground-breaking evidence showing how social protection can have a positive impact on children's foundational cognitive skills,

which are a strong predictor of educational outcomes. Foundational cognitive skills are the basic cognitive processes – building blocks – critical for complex thought and effective learning, including long-term memory and the ability to concentrate on a specific task ('inhibitory control').

The evidence shows that children's foundational cognitive skills are malleable throughout childhood and adolescence, and can be improved by social protection programmes through:

- **improved nutrition** (enabling sufficient and healthy diets);
- **better access to early education** (enabling children to start school at the right age);
- **changing how children and other family members spend their time** (reducing pressure on children to work, and enabling more time for learning); and
- **remediating the impact of early shocks** (including climate-related shocks such as droughts and floods).

The children who benefit most are those who were most disadvantaged by early poverty and shocks. This includes children exposed to early climate shocks, those who were significantly undernourished or whose mothers were undernourished during pregnancy, those who were excluded from preschool and early education, or those spending excessive time on household responsibilities.

Social protection programmes therefore offer huge potential to help address inequalities in foundational cognitive skills when they provide support to mitigate the negative effects of early poverty and climate shocks for the most disadvantaged children, with opportunities

for remediating early disadvantages occurring throughout childhood and adolescence.

These findings are important for policymakers because they shed new light on both *how* social protection can help to improve children's cognitive abilities, and *which* children are likely to gain the most, with potential long-term benefits for improving learning outcomes and educational success. Understanding the context-specific impacts of social protection programmes is crucial for ensuring that programme designs maximise the benefits for children, including improving their ability to think and learn.

In Ethiopia, our analysis of children benefitting from the Productive Safety Net Programme (PSNP) suggests that:

- **Social protection can help to improve children's long-term memory** – by remediating the negative effects of early nutritional deficits, including those caused by climate shocks.
- **Children most disadvantaged by early undernutrition (leading to physical stunting) benefit the most;** this includes those who experienced rainfall shocks during their first year of life, or even during the gestation period while their mother was pregnant.
- **Social protection can help to improve children's implicit learning** (or their 'muscle memory') – most likely due to increased household resources changing how children and other family members spend their time. This result was only significant for children who had previously spent no time studying, and those who spent time working on the family farm or business, *before* their household received support.

In Peru, our analysis of children benefitting from the JUNTOS conditional cash transfer programme suggests that:

- **Social protection programmes that promote school enrolment can improve children's ability to concentrate on a specific task** (inhibitory control) – by supporting children to start primary school at the correct age (a condition of the JUNTOS programme).
- **Children who received support after early exposure to rainfall shocks also showed significant improvement in inhibitory control** – most likely due to bolstering depleted household incomes following shocks and, consequently, increasing (or restoring) the ability of families to invest in their children's educational activities.
- **Children who received support around 6 years old showed the best results in inhibitory control,** including when compared to their older siblings. This suggests that getting support to children at the right time matters for better cognitive development.

Social Protection Programmes: Ethiopia's PSNP and Peru's JUNTOS programme

Ethiopia introduced the Productive Safety Net Programme (PSNP) in 2005, as its flagship social protection programme to reduce food insecurity among poor and vulnerable households and help build resilience to economic shocks. PSNP provides support to households through cash and/or food transfers, either in exchange for engagement in public works ('cash-for-work' schemes) or as direct support when there are no adults in the household able to participate in public works programmes.

Peru introduced the JUNTOS ('National Program of Direct Support to the Poorest') conditional cash transfer programme in 2005. JUNTOS targets pregnant women, children and adolescents living in poor and marginalised households, typically in rural areas, to promote better access to health and education services, improving early child development and reducing school dropout. During our study period, participating households received bi/monthly cash payments if they fulfilled key responsibilities in health and education: the education conditions were that all children between ages 6 to 14 were enrolled in school; and that children maintained an attendance rate of at least 85 per cent.

The findings also provide important evidence on the synergies (and potential trade-offs) between achieving different Sustainable Development Goals (SDGs). Addressing the learning crisis and inequalities in foundational cognitive skills to achieve quality education for all (SDG4 Quality Education) and deliver on the UN's 'leave no one behind' principle is not just about improving schools and education systems. It also requires providing children with a supportive and enabling environment, including action to reduce household poverty (SDG1 No Poverty), and ensuring adequate and sufficient nutrition (SDG2 End Hunger) and healthy growth (SDG3 Health and Well-being), alongside action to reduce climate shocks (SDG13 Climate Action).

Young Lives evidence on the long-term importance of foundational cognitive skills

Young Lives has been following the lives of 12,000 young people in Ethiopia, India (in the states of Andhra Pradesh and Telangana), Peru and Vietnam since 2001.

The study has built a unique body of longitudinal data over the last two decades to investigate the impact of poverty, climate shocks and food insecurity on early childhood development and later life outcomes, and is one of the few studies in low- and middle-income countries (LMICs) that collects detailed data on foundational cognitive skills.

The evidence in this policy brief is drawn from a range of Young Lives publications over the last two decades, including **four new research papers**:

'Social Protection and Foundational Cognitive Skills During Adolescence: Evidence from a Large Public Works Programme' (Freund et al. 2022).

'The Impact of the JUNTOS Conditional Cash Transfer Programme on Foundational Cognitive Skills: Does Age of Enrolment Matter?' (Scott et al. 2022).

'Long-term Effects of Rainfall Shocks on Foundational Cognitive Skills: Evidence from Peru' (Pazos et al. 2023).

'Late-Childhood Foundational Cognitive Skills Predict Educational Outcomes Through Adolescence and Into Young Adulthood: Evidence from Ethiopia and Peru' (Lopez et al. 2022).

Background

What are foundational cognitive skills and why are they important?

Researchers typically measure children's cognitive skills using tests that focus on one specific type of academic skill, such as mathematics tests to measure numeracy, and vocabulary or reading comprehension tests to measure literacy. However, performance in these tests can be influenced by a range of context-specific factors such as language or prior academic knowledge, and narrowly defined test scores may not always be the best indicator of future life success.

By contrast, **foundational cognitive skills** are not specific to any single area of knowledge and do not rely on prior learning. They refer to basic cognitive processes – the building blocks – critical for complex thought and effective learning. This includes basic skills such as:

- **long-term memory** (ability to transfer information from short-term memories into long-term storage; supports the capacity to acquire new knowledge and learn from experience);
- **working memory** (ability to hold new information temporarily for processing; like a 'temporary sticky note' in the brain – important for reasoning and comprehension);
- **inhibitory control** (ability to concentrate on a specific task and suppress counter-productive behaviours and impulses – important for concentrating in the classroom); and
- **implicit learning** (ability to learn complex tasks without having to think about the steps involved, also referred to as muscle memory – like learning to ride a bike).

Young Lives research in Ethiopia and Peru shows that foundational cognitive skills are a strong predictor of educational outcomes. Our new analysis shows that children's working memory and long-term memory skills, measured at age 12, are consistently and positively associated with performance in mathematics and literacy tests at age 15 in both countries, as well as with secondary school completion in Ethiopia (long-term memory) and higher education enrolment in Peru (working memory). Inhibitory control also predicts maths test scores in both countries, and grade attainment in Ethiopia (Lopez et al. 2022).

Research in high-income countries has also linked strong foundational cognitive skills in childhood to better educational achievement and labour outcomes, demonstrating their critical importance in later life (e.g. Blair and Razza 2007).

Young Lives data on children's foundational cognitive skills is unique

Young Lives first measured children's foundational cognitive skills in Ethiopia and Peru in 2013, when our Younger Cohort was aged 12, using innovative tablet-based games based on the RACER (Rapid Assessment of Cognitive and Emotional Regulation) application (Behrman et al. 2022).

This data is unique, rarely collected in low- and middle-income countries (LMICs), and not previously available in large sample sizes: Young Lives is the *only* longitudinal cohort study in LMICs with data on foundational cognitive skills.

Young Lives findings

Early exposure to poverty and inequalities have an impact on children's learning

Young Lives longitudinal evidence shows that sustained investment in children's development throughout the first two decades of life is crucial. Poverty and inequalities expose disadvantaged children to high levels of undernutrition which can have severe long-term consequences, affecting physical growth and cognitive skills, and exacerbating inequalities in children's learning (Benny, Boyden and Penny 2018).

Intersecting inequalities have an impact on cognitive skills development and learning outcomes from very early in life, with children from the poorest households and those in rural areas consistently underperforming (Helmers and Patnam 2011).

Exposure to climate shocks affects cognitive skills development

Young Lives research has shown that being exposed to climate shocks during the gestation period affects children's cognitive learning (and non-cognitive skills development), possibly through a negative impact on nutrition (Chang, Favara and Novella 2022).

In Ethiopia, our evidence shows that children exposed to drought and food price inflation perform significantly worse in vocabulary tests, compared to those who had not been exposed (Berhane, Abay and Woldehanna 2015); similarly, those who experienced early childhood stunting due to malnutrition perform significantly worse in basic mathematics and vocabulary tests, compared to children who experienced normal physical growth (Woldehanna, Behrman and Arayaasse 2017).

In Peru, new analysis using Young Lives data shows that rainfall shocks (droughts and floods) during the first 1,000 days of life – particularly during the gestation period – have long-lasting negative effects on children's working memory and their ability to concentrate on a specific task (inhibitory control), and, to a lesser extent, on their long-term memory skills, again most likely due to related nutritional deficiencies (Pazos et al. 2023).

Importantly, our evidence also shows that early growth stunting *can be reversed* over a much longer period than previously thought – even up to age 15 – with physical recovery associated with at least a partial catch up in cognitive tests and progression through school (Georgiadis et al. 2017; Benny, Boyden and Penny 2018).

However, less is known about how specific policy interventions can mitigate the negative effects of early deprivation, malnutrition and climate shocks to support better cognitive skills development.



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Social protection can deliver wide-ranging benefits for disadvantaged children, from the very early years through to adolescence

Over the last two decades, Young Lives evidence has shown that social protection can deliver wide-ranging benefits for disadvantaged children, with positive impacts often extending well beyond the childhood years into adolescence and early adulthood.

In Ethiopia, while the PSNP does not target children directly, there is strong evidence that it has a positive impact on children's growth and nutrition. Young Lives analysis shows that PSNP support has significant nutritional benefits at least up to age 15, associated with both improved food security and reduced child working hours (Porter and Goyal 2016).

In Peru, our evidence shows that children from households that receive support from JUNTOS are significantly less likely to experience severe chronic malnutrition. Our analysis suggests that nutritional benefits are greater for children receiving JUNTOS support from an early age, with severe stunting in children under 5 years reduced by 8.4 percentage points (Sánchez and Jaramillo 2012).

The link between social protection and improving cognitive skills is less well understood

Given what we know about the positive effect of better nutrition for cognitive skills, we would expect to see significant improvements in maths and literacy test scores for children living in households benefiting from PSNP and JUNTOS support. However, our evidence so far has not been clear-cut.

In Ethiopia, while Young Lives research showed a positive impact of PSNP on children's performance in maths tests (at age 12), no improvement was detected in vocabulary test scores (Favara, Porter and Woldehanna 2017).

Similarly, in Peru, evidence of the impact of JUNTOS on improving children's maths and literacy test scores has been varied; notably, children receiving support after the

age of 5 show limited improvements (if any) in vocabulary tests, while those receiving support in the first four years of life did show significant improvements (Sánchez, Melendez and Behrman 2020).

The benefits of social protection for improving children's skills development are not automatic

Explaining these mixed results requires understanding the specific ways in which social protection has an impact on a range of important factors for children's skills development, including their **nutrition** (enabling sufficient and healthy diets), **access to early education** (enabling children to start school at the right age), and **how children and other family members spend their time** (reducing the pressure on children to work, and enable more time for studying).

By increasing household incomes or access to sufficient food, social protection programmes can have a positive impact on children's cognitive skills development, reducing both undernutrition and the pressure on children to work. However, in the context of cash-for-work schemes, children might have to substitute for adult labour on family farms or businesses (Woldehanna 2010), while parents have less time available for interacting with their children, both of which may (paradoxically) have a counter-balancing negative effect on cognitive skills development.

Young Lives evidence in Ethiopia supports this: children in households where PSNP support is received in exchange for adult participation in public works (cash-for-work) can – in some cases – end up spending *more* time on both paid and unpaid work to substitute for adults in the household, leaving them less time to study (Tafere and Woldehanna 2012). This substitution effect could reduce the positive effect of PSNP on cognitive skills brought about by improvements in children's nutrition and growth.

To improve our understanding of these complex effects, our new research on foundational cognitive skills provides a deeper understanding of how social protection can improve children's ability to think and learn.

In Ethiopia, PSNP support can improve children's long-term memory by remediating the negative effects of early nutritional deficits

Our new research compared the foundational cognitive skills of children (at age 12) from households that benefit from PSNP support with those from similar households that do not receive the same support; we found that those who had benefited from PSNP had *significantly better* long-term memory skills than those who had not (Freund et al. 2022).

The beneficial effect of PSNP on long-term memory skills was most significant for children who were physically stunted *before* their household received support, with little or no effect among those who were previously well nourished; this suggests that the children who were most disadvantaged by early undernutrition (leading to physical stunting) have benefitted the most.

PSNP support can also mitigate the negative impact of climate shocks (droughts and floods) on children's long-term memory, even when experienced by their mother during pregnancy

We also looked at whether children who had been exposed to early climate shocks were more likely to benefit from PSNP support, by matching Young Lives longitudinal data with historical rainfall data.

Our results show that the positive effect of PSNP support on long-term memory skills was *significantly greater* for children who experienced rainfall shocks during their first year of life or even during the gestation period, while their mother was pregnant.

These unique findings suggest that while early life rainfall shocks can have a negative impact on foundational cognitive skills (likely due to crop failures impairing healthy diets), this can be mitigated by improved food consumption and nutrition enabled through PSNP support.

PSNP support can improve implicit learning (muscle memory) when it enables children to spend more time on studying

We found that the positive effect of PSNP support on children's implicit learning was *only* significant for children who had previously spent no time studying, and those who spent time working on the family farm or business, before their household received support.

This result also suggests that it is the most disadvantaged children who are most likely to benefit; PSNP support can improve children's implicit learning by changing how they spend their time, enabling them to spend more time on their studies and less time on unpaid work.



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In Peru, receiving JUNTOS support from an early age can improve children's ability to concentrate on a specific task (inhibitory control)

Our new research in Peru analysed the foundational cognitive skills of children (at age 12), comparing those who had benefited from JUNTOS support at an early age with those who had benefited in later childhood, including comparing siblings from the same households (Scott et al. 2022).

We found that children who received JUNTOS support from an early age (around 6 years old) performed significantly better in inhibitory control tests – measuring their ability to control an impulsive response – than those who had only received support in later childhood (between 6–12 years old).

Moreover, this effect was also found when comparing siblings from the same household. While we would naturally expect older siblings to have stronger inhibitory control than their younger brothers or sisters, the difference in skills level was significantly less in households where the younger siblings had received JUNTOS support from an earlier age.

Enabling children to start primary school at the correct age can support better cognitive development

One of the conditions of receiving JUNTOS support is for children to enrol at primary school at 6 years old. While our research does not provide a comprehensive evaluation of the effectiveness of JUNTOS conditionalities, school attendance from the age of 6 appears to be an important factor in explaining improved inhibitory control.

Our findings suggest that some foundational cognitive skills may be improved simply by attending primary school at an age where cognitive development is most likely to benefit from a more structured environment. Specific cognitive traits, such as inhibitory control, are believed to be much more sensitive to environmental conditions while the associated regions of the brain are still developing (Nelson and Sheridan 2011). This suggests that there may be a specific window of opportunity, where programme conditions such as timely school enrolment will benefit children's cognitive development the most.

This may be particularly important for foundational cognitive skills such as working memory and inhibitory control (also known as 'executive functions') which are known to be malleable throughout childhood and adolescence.

Children who receive JUNTOS support after early exposure to rainfall shocks also show significant improvement in inhibitory control

Young Lives findings also show that the negative impacts of rainfall shocks on inhibitory control were fully remediated among JUNTOS beneficiaries (compared to non-JUNTOS beneficiaries) after early childhood (Pazos et al. 2023). This is likely to have occurred because conditional cash transfer programmes such as JUNTOS alleviate the impact of shocks on permanent household income, which in turn increases family resources available for learning activities.

Policy implications

The launch of the UN's Global Accelerator on Jobs and Social Protection for Just Transitions¹ in 2021 signalled the importance of expanding social protection, as the global community looks to build new momentum for delivering the SDGs by 2030.

Our key new evidence demonstrates how different social protection programmes, in two very different country contexts – the PSNP in Ethiopia and JUNTOS programme in Peru – can mitigate the negative effects of early poverty and climate shocks to improve disadvantaged children's foundational cognitive skills.

While most social protection programmes are not directly designed to improve children's skills, they offer huge potential to help address inequalities in educational outcomes when they are targeted to support those most disadvantaged by poverty and climate shocks.

Our evidence shows that ensuring children get the right start in life, including a sufficient and healthy diet and sufficient resources and time to study, is crucial for strong foundational cognitive skills, and that opportunities for remediating early disadvantages occur throughout childhood and adolescence.

¹ For more information see <https://unglobalaccelerator.org>

Policy implications continued

These findings have important policy implications:

- **A broad approach is required to improve children's basic skills and address inequalities in educational outcomes, including a better understanding of how poverty and climate shocks have an impact on foundational cognitive skills** – the building blocks of complex thought and effective learning.
- **Foundational cognitive skills are malleable throughout childhood and adolescence and can be improved by social protection programmes mitigating the negative effects of early poverty and climate**, including through:
 - **improved nutrition** (enabling sufficient and healthy diets);
 - **better access to early education** (enabling children to start school at the right age);
 - **changing how children and other family members spend their time** (reducing pressure on children to work, and enabling more time for learning); and
 - **remediating the impact of early shocks** (including climate-related shocks such as droughts and floods).
- **Adapting and expanding social protection programmes to be more 'shock-responsive' and support the most disadvantaged households – including in response to acute nutritional deficits caused by climate shocks** – is likely to yield the greatest benefit for improving children's foundational cognitive skills. This includes targeting children who are undernourished or physically stunted, those who are excluded from preschool and early education, and those who spend excessive time on household responsibilities.
- **Social protection programmes should target vulnerable adolescent girls and young women during pregnancy.** Ensuring that pregnant women and young mothers are protected from shocks and nutritional deficits is crucial to safeguard both their own health and well-being and their children's development, including foundational cognitive skills development. This can provide an important contribution to help break the cycle of intergenerational poverty.
- **Ensuring that children start school at the right age – including preschool – and measures to protect children's time to study** and ensure they are not engaged in excessive work are important for developing strong foundational cognitive skills.
- **The design of social protection programmes should consider both the direct and indirect benefits for children.** By doing so, these programmes can have a more comprehensive and sustainable impact on children's development and well-being, including in relation to improving foundational cognitive skills and addressing inequalities in learning and educational outcomes.
- **Improved data collection and targeted research to periodically review children's skills development is vital to addressing educational inequalities, particularly in LMICs where data are scarce.** This should include specific tests to measure a range of cognitive, social and emotional skills – including foundational cognitive skills – throughout childhood and adolescence.

Continuing to follow Young Lives

Young Lives is conducting the next comprehensive in-person quantitative survey (Round 7) of our study countries in 2023. Our survey will include new data on the foundational cognitive skills of our Younger Cohort (now aged 22), focusing on working memory and inhibitory control. This will enable us to generate important new insights into the long-term impact of early-life poverty and increasing climate shocks on cognitive development from infancy into early adulthood, including the potential for social protection and other public policies to remediate negative impacts and improve foundational cognitive skills.

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