



## Mindsets on a National Scale: Exploring the Relationships Between Growth Mindset, Academic Achievement, and Family Income in Chile

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RESEARCH SUMMARY | JULY 2016

There are a multitude of factors that predict academic achievement. One of the strongest and most reliable is income.<sup>1,2</sup>

Countless studies from sociology and economics have shown that students from high-income backgrounds tend to perform better than students from low-income backgrounds. Limited access to educational resources at home and in school, higher stress, poorer nutrition and reduced access to healthcare can all contribute to depressed levels of achievement for students from low-income backgrounds.<sup>3,4,5</sup>

Research in psychology has shown that individuals' beliefs about the nature of ability also affect achievement. The belief that intellectual abilities can be improved (a growth mindset) has been shown to positively affect academic performance.<sup>6,7,8</sup> Individuals holding a growth mindset are more likely to seek out challenges and persist through difficult work than those who believe that intelligence is innate and cannot be changed (a fixed mindset). Importantly, previous research has found that mindsets about ability are malleable—in other words, people can come to develop a growth mindset if the messages they pick up on suggest that they have the potential to get smarter.<sup>3,4,6,7</sup>

This research summary highlights findings from the following article:  
Claro, S., Paunesku, D., & Dweck, C. (2016). [A growth mindset tempers the effects of poverty on academic achievement](#). *Proceedings of the National Academy of Sciences*.

### KEY FINDINGS:

- Data from more than 168,000 10<sup>th</sup> graders in Chile confirms earlier, smaller-scale research findings that growth mindset is positively associated with academic achievement
- Within all income levels, students who reported a growth mindset performed better academically than their peers who reported a fixed mindset
- Low-income students experienced the greatest boost academically from holding a growth mindset; the performance gap between students who held a growth mindset and those who held a fixed mindset was twice as large among students in the lowest income decile compared to those in the highest income decile
- Chilean students from lower-income backgrounds were considerably less likely to report a growth mindset than students from higher-income backgrounds, though this dataset cannot explain why

In this first of its kind study, a cross-disciplinary team of researchers from psychology and education collaborated to explore the interplay between mindsets about ability and structural factors that shape academic outcomes, such as family income.

## EXPLORING MINDSETS ON A NATIONAL SCALE

To date, all published growth mindset studies have been conducted in samples of fewer than 10,000 students.<sup>3,4,6,9,10</sup> In this study, Susana Claro and Mindset Scholars [Dave Paunesku](#) and [Carol Dweck](#) conducted a groundbreaking analysis that explored patterns of growth mindset at a national level, using data collected by the Chilean government in 2012 from all 10<sup>th</sup> grade students in 98% of Chile's 2,392 public schools—a total of more than 168,000 students.

This unusual dataset allowed the team to examine large-scale trends to further understand how mindsets and structural factors like family income influence how students perform in school, and to determine whether findings from smaller studies held true when looking at a larger, more comprehensive sample. Surveys were administered to students that measured the extent to which they endorsed a fixed or growth mindset alongside standardized tests in language and mathematics.

## STUDY RESULTS

***Students who endorsed a growth mindset outperformed their peers who held a fixed mindset at every income level.*** Students' reported mindset about ability was a strong predictor of their achievement on both math and language tests. This relationship was found across all schools and across all income levels.

***Students' mindsets about ability were strongly correlated with income.*** Students from families in the lowest income levels were twice as likely to endorse a fixed mindset as students from the top income families and schools. This effect was independent of students' self-assessment of their academic ability in math and language, their personal interest in the subjects, and both parents' and students' expectations of the student's academic attainment.

***Low-income students benefited more than high-income students from holding a growth mindset in terms of academic achievement.*** At the same time, the researchers found that endorsing a fixed mindset magnified the negative impact of a low-income background, further reducing academic achievement.

***Growth mindset reduced but did not eliminate income-based achievement gaps.*** Although students from low-income backgrounds who held a growth mindset performed better

than their peers with a fixed mindset, they performed worse on average than students from high-income backgrounds who also possessed a growth mindset.

## IMPLICATIONS OF THIS RESEARCH

This study presented a rare opportunity to study a national population of students, providing robust empirical insights on relationships between family income, growth mindset, and academic performance.

The findings demonstrate the benefit of a growth mindset for all students, as those reporting a growth mindset outperformed their peers who held a fixed mindset across all income levels. This positive relationship between growth mindset and academic achievement was especially strong for low-income students. However, the present study cannot shed light on why low-income students were less likely to report a growth mindset, or why they experienced a greater benefit academically from holding a growth mindset.

Together with past research, this study suggests that students at all income levels would benefit academically—and students from low-income backgrounds would likely benefit most—if schools created cultures of teaching and learning that supported a growth mindset. Students constantly receive messages about the nature of their potential from educators' practices and policies. Prior studies have shown that students can come to hold a growth mindset when they receive messages that convey the possibility for academic growth. This can be in the form of certain pedagogical approaches, classroom practices, and programs that teach students directly that their brains can get smarter.<sup>6,9,11</sup>

Given the disproportionately large number of low-income students who reported a fixed mindset in the Chilean population, future research should explore whether schools disproportionately send fixed-mindset messages to poor students and, if so, how those messages can be changed.

The results also indicate that efforts to convey messages to low-income students emphasizing their growth and potential must be accompanied by systemic changes to alleviate poverty and its negative effects on students' opportunities to learn. A growth mindset may moderate the negative effect of poverty on achievement, but alone will not overcome the panoply of challenges faced by low-income students.

Continued study of how psychological factors influence student performance and how structural factors shape students' beliefs about ability can help us understand the processes through which poverty contributes to academic underachievement. This understanding can inform efforts to change the ways we teach and support students who face additional barriers to academic excellence as a result of their economic circumstances.

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- <sup>3</sup> Aronson, J., Fried, C. B., & Good, C. (2002). Reducing the effects of stereotype threat on African American college students by shaping theories of intelligence. *Journal of Experimental Social Psychology*, 38, 113-125.
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- <sup>6</sup> Paunesku, D., Walton, G. M., Romero, C., Smith, E. N., Yeager, D. S., & Dweck, C. S. (2015). Mind-set interventions are a scalable treatment for academic underachievement. *Psychological Science*, 26, 784-793.
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- <sup>11</sup> Liu Sun, K. (2015). *There's no limit: Mathematics teaching for a growth mindset* (unpublished doctoral dissertation). Stanford University, Stanford, CA.