

# Promoting Non-Cognitive Skills Through a Science and Technology Program in Chile

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**Sector(s):** Education**J-PAL office:** J-PAL Latin America and the Caribbean**Location:** Chile**Sample:** 1098 Students**Target group:** Students Youth**Outcome of interest:** Dropout and graduation Earnings and income Enrollment and attendance Empowerment Student learning Aspirations Cognitive development Socio-emotional development Soft skills**Intervention type:** Information Soft skills Student motivation**AEA RCT registration number:** AEARCTR-0000237**Partner organization(s):** Explora, Consejo Nacional de Innovación para la Competitividad (CNIC)

Non-cognitive skills and personality traits are important in determining educational and later life outcomes. However, little research exists about whether these skills and traits can be improved among older youth. Researchers partnered with the National Commission of Science and Technology Research (CONICYT) to evaluate the impact of a week-long science camp on students' personality traits, non-cognitive skills, academic expectations, self-perceptions, and attitudes toward science. The camp had no impact on students' personality traits and non-cognitive skills, but changed students' attitudes toward science.

## Policy issue

Existing research suggests that non-cognitive skills and personality traits can have important long-term impacts on young people's engagement in risky behaviors, their educational outcomes, and their success in the labor market. Some argue that non-cognitive skills and personality traits are difficult to change during adolescence. Current literature shows mixed results of the impact of programs to motivate youth, and there is little rigorous evidence of the impact of these programs on personality and non-cognitive skills. Researchers evaluated whether a youth program could impact personality traits and non-cognitive abilities, and whether this influenced educational attainment and earnings.

## Context of the evaluation

In 2014, Chile had the highest level of inequality of all OECD countries.<sup>1</sup> This inequality persists in the higher education system, where low-income students typically attend low-quality secondary schools and cannot afford to attend high quality universities.<sup>2</sup> The study takes place among secondary school students from the Santiago Metropolitan Region and Valparaíso in Chile.

Participating schools were higher performing than the average Chilean school. Among the sample group of students, 90 percent hoped to study at the university level at the start of the evaluation, and over 35 percent hoped to study at the post-graduate level. In general, students' parents had only completed secondary school or less, although over 40 percent of parents had also completed a tertiary degree.



Students working on a science project.

## **Details of the intervention**

Researchers partnered with the National Commission of Science and Technology Research (CONICYT) to evaluate the impact of a week-long youth camp on personality traits, non-cognitive abilities, academic expectations, self-perception, and social networks. Of 1,098 eligible applicants, 538 were randomly selected to receive an invitation to the camp.

Chile Va is a 6-day science camp that aimed to increase students' academic expectations, self-perceptions, and excitement around studying science. Each camp counselor oversaw a group of ten students for the duration of the program. Students attending the camp participated in discussions with leading Chilean research scientists, visited science- and technology-related workplaces, completed team-building exercises, listened to entrepreneurs with science-related innovations, and reflected on their experiences alone and with their group.

To measure the impact of Chile Va, researchers conducted student surveys both before the camp, in March or April of 2013, and four months after the camp. They measured students' self-reported non-cognitive skills, academic and career expectations for themselves, and social networks, e.g., their role models and people to whom they could go for academic or career support, among other metrics.

## **Results and policy lessons**

The science camp had no overall impact on students' personality traits or non-cognitive skills, but changed students' attitudes toward science. Results suggest that the camp benefited female students and socioeconomically disadvantaged students more.

*Academic and Career Expectations:* The camp had no overall impact on students' academic expectations for themselves, or their expectations of securing a well-paid job or a job they liked in the future. However, female participants were 12 percentage points more likely to express an ambition to get a post-graduate degree after the camp, from a baseline of 39.4 percent in the comparison group (a 30 percent increase).

*Self-Perceptions:* While the camp had no overall impact on students' perceptions of their own academic level compared to their peers, it improved the self-perceptions of students whose mothers had lower education levels. For these students, the camp led to a 3.3 percentage point higher relative evaluation of themselves. This increase may have been caused by increased interactions among students of lower and higher socioeconomic statuses through the camp. Researchers hypothesized that students who had previously had less exposure to others of higher socioeconomic status may have gained more confidence through the opportunity to compare themselves to their peers.

*Personality Traits:* The camp had no impact on student personality traits including energy, perseverance, and emotional stability.

*Non-Cognitive Abilities:* The camp had no overall impact on students' self-esteem or resilience, evaluated using an index that measured each student's ability to develop in accordance with typical development stages and move forward in life in spite of adversity. However, the camp did increase resilience among students whose mothers had low education levels by 0.17 standard deviations relative to the comparison group. The camp had no impact on students' self-sufficiency or leadership.

*Attitudes toward Science:* While the camp had no overall impact on students' perceptions of science as fun, it increased the share of female students who thought science was fun. While the program did not increase students' desire to learn science or be a scientist, it increased students' interest in working in a science-related field.

*Social Networks:* On average, the camp had no impact on the number of entrepreneurs or active members of an organization or movement that students knew. However, the camp increased the number of leaders that students said they knew, and increased the number of people, excluding family and friends, that students said they would go to for academic or career advice, perhaps implying that the camp increased students' social networks.

The stronger impact of the camp on less advantaged students implies that exposing low-income students to high-income peers can shift their attitudes and aspirations. Researchers hope to measure long-run impacts such as academic performance, university enrollment and completion, and earnings.

Bedregal, Paula, Dante Contreras, and Francisco Gallego. 2013. "Informe Final: Evaluación de Impacto de Chile Va! Encuentro de Jóvenes con la Ciencia y la Tecnología."

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1. OECD. 2016. "Income Inequality Update." Accessed March 9, 2017. <http://www.oecd.org/social/OECD2016-Income-Inequality-Update.pdf>.

2. The Economist. 2012. "Progress and its discontents." The Economist, April 14. Accessed March 9, 2017. <https://www.economist.com/node/21552566>.