

Can a Growth Mindset Be Successfully Cultivated in Adolescents? A Three-Year Longitudinal Study of an Intervention Program in a Rural School in China

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Abstract: In response to the debates on the effectiveness of growth mindset interventions and their applicability in various cultural contexts, the study applied a localized intervention program in a rural school in China's Yangtze River Delta region through a randomized controlled experiment and evaluates its effects longitudinally using the difference-in-differences method. Its research findings revealed that the localized growth mindset intervention program significantly strengthened the growth mindset of the subjects, that the intervention had long-term effects, that it had a greater positive effect on growth mindset development in younger students and those with lower initial levels of this mindset, and that the enhancement of the students' growth mindset via the intervention program successfully improved their learning behavior.

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Introduction

GROWTH mindset cultivation has been deemed an effective strategy for assisting with adolescents' mental development and unlocking their potential. Nevertheless, recent years saw growing debates on the effectiveness of growth mindset interventions and their applicability in various cultural contexts, which has prompted consideration of cultural background, specific educational practices, and developmental characteristics of the individual in the development of growth mindset cultivation programs. This study is a longitudinal evaluation of a localized growth mindset intervention program with a sample of 340 upper-grade students at a rural primary school in China's Yangtze River Delta region. Using panel data, the difference-in-differences (DiD) method, and a mediation model, the study addresses three questions: (i) Can the growth mindset be successfully fostered in adolescents? (ii) Which adolescents benefit more from a growth mindset intervention? (iii) Is fostering adolescents' growth mindset beneficial for the improvement of their learning behavior?

Research Design

Implementation of the Experiment

Experimental Subjects

The subjects were fourth and sixth grade students from a rural primary school in Jiangsu Province. Randomly selected were one fourth-grade class and one sixth-grade class as the control group, and another two classes of the same pattern as the experimental group. There were 171 students in the experimental group and 169 students in the control group.

Enactment of the Experiment

The experiment spanned three academic years: September 2021– June 2022, September 2022– June 2023, and September 2023– June 2024. Prior to the intervention's implementation, every student completed a background information questionnaire and the main questionnaire in September 2021 (T1). The research team implemented the intervention during the two semesters of the first academic year. Follow-up investigations based on the main questionnaire were administered in the classroom at the following time points: December 2021 (T2), March 2022 (T3), June 2022 (T4), June 2023 (T5), and June 2024 (T6).

The Intervention Program

To better align the intervention with the needs of Chinese students, a classic growth mindset intervention program was adapted, incorporating dimensions of effort-valued culture, metacognitive strategies, and multifaceted evaluation, based on the characteristics of Chinese students' mindsets.

The Questionnaire

The main questionnaire consists of four scales: Implicit Theory of Intelligence (ITI), Peer Praise (PP), Self-Confidence Attitude Attribute Scale (SaaS), and Academic Motivation (AM).

Estimation Methods

First off, a two-period DiD model was used to analyze the effectiveness of the intervention program in enhancing the students' growth mindset. Furthermore, multi-period DiD was employed to evaluate the long-term effects of the intervention, which is made possible by the study's panel data. Also, the quantile regression method was adopted to examine the intervention's effects on students with varying initial levels of growth mindset. In addition, the study created a mediation model to determine the intervention's effects in improving the students' learning behavior.

Research Findings

First, the intervention program had significantly positive effects in enhancing the growth mindset levels of all subjects in the experimental group. The regression results remained consistent when variables, such as environmental factors (grade, class), personal factors (gender, urban or rural residence), and parental factors (parental occupation, parental highest education level), were incorporated respectively.

Second, students with younger ages and lower initial levels of growth mindset benefited more from the intervention. The program exhibited grade differences in its effects, affecting the fourth-grade subjects more greatly than the six-grade ones. Also, there was an inverse correlation between the initial level of the subject and the intervention's effects. The lower the subject's initial level of growth mindset, the more effective the intervention was in enhancing it. This implies that growth mindset intervention can contribute to the mitigation of academic gaps in students.

Third, the intervention program showcased long-term effects in elevating the growth mindset levels in the subjects, particularly in the fourth graders, whose changes were evidenced by six-period data, which showed

the intervention's effects remained basically stable within the two years after its implementation, albeit with slight, but insignificant declines.

Lastly, heightening the subjects' growth mindset via the intervention program significantly improved their learning behavior, including reducing negative motivations for learning, diluting the ability-based attribution, increasing process-focused inter-peer feedback, and reinforcing the effort-based attribution.

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