



Eton Partners with Researchers to Support Students' Mindsets and Social Relationships



Introduction

Students' Mindsets Impact Outcomes in School and Beyond

From A*s to Oxbridge acceptance letters, it is clear that Eton students have stellar academic outcomes. However, Eton's aspirations for students extend far beyond this short-term academic success; Eton aims to develop students who, after leaving Eton, go on to be lifelong learners who seek out challenging work, persist despite setbacks, enjoy intellectual pursuits, and encourage others' learning. Through decades of research, Dr. Carol Dweck and colleagues have discovered that we can predict these outcomes based on students' beliefs – or **mindsets** – about intelligence.¹ Students with a **growth mindset** understand that abilities can be continually developed over time with dedicated effort. By contrast, students with a **fixed mindset** believe that abilities are innate and unchangeable.

Students' mindsets have important implications for their learning and academic achievement. Students with a growth mindset are more likely to pursue challenging work and persevere despite setbacks than their fixed-minded peers.² Growth-minded students tend to approach challenges as “bumps in the road” that are part of the learning process, while fixed-minded students tend to view challenges as “roadblocks” that stop them in their tracks. Having a growth mindset can also help students persist despite threats to learning such as negative stereotypes.³ Moreover, students with a growth mindset are more likely to enjoy learning for its intrinsic value than those with a fixed mindset.⁴ In addition to all of this, growth-minded students tend to earn better marks than their fixed-minded counterparts.⁵

Beyond these academic benefits, does having a growth mindset benefit students' social relationships as well? Research has shown that having a growth-oriented approach towards personality traits leads to better outcomes in social contexts.⁶ Individuals who believe personality traits are malleable tend to be more constructive during conflict with others, and are less likely to negatively stereotype others.⁷ If having a growth-oriented approach towards personality traits leads to better social outcomes, does having a growth-minded view of intelligence lead to better social outcomes as well? While more research is needed in this area, previous research has shown that students with a growth-minded view of intelligence are more likely to respond with prosocial attitudes such as respect or admiration when peers succeed, while fixed-minded students are more likely to respond with resentment when others succeed.⁸ More research is needed to further explore the relationship between growth mindset and **prosocial attitudes**, which include a broad range of attitudes that support others, such as kindness, helpfulness, empathy, cooperativeness, or generosity.⁹

Happily, research shows that educators can help students develop a growth mindset.¹⁰ There are many ways that educators can encourage students to develop a growth mindset, ranging from introducing them to the concept of mindsets to teaching them about **brain plasticity**, which is the brain's ability to continually change as we learn.¹¹

Research Study at Eton College

Building on the research reviewed above, **The Tony Little Centre for Innovation and Research in Learning at Eton College** partnered with **Research Schools International (RSI)** to conduct a pioneering study on growth mindset and social relationships. This study, led by a team of researchers at RSI and Harvard Graduate School of Education, measured the

impact of a growth mindset course on students' mindsets. Further, it explored how students' mindsets about intelligence relate to social outcomes, including prosocial attitudes.

First, the research team created a course to teach growth mindset, which is informed by previous research on how to effectively support growth mindset.¹² Researchers collaborated with Eton teachers and students to tailor the course to the specific context of Eton. The course consists of three 40-minute sessions, which are given once a week over the course of three weeks. Each session involves brief readings and/or instructional videos related to growth mindset as well as collaborative learning activities. The first session provides an overview of Dweck's mindset theory and engages students in reflecting on their own mindset under various circumstances. The second session introduces neuroscience concepts underpinning mindset theory, including brain plasticity. The third session considers research on how to cultivate a growth-oriented learning community with supportive social relationships, and invites students to reflect on ways in which their school might currently encourage or hinder growth mindset.

To begin the study, 187 twelfth-year Eton students took a baseline survey about mindsets and social relationships. The baseline survey included two previously validated scales that measure mindset, as well as previously validated scales that measure social support and prosocial attitudes.¹³ In addition, the baseline survey included complementary short answer and multiple-choice questions related to these topics.

We then assigned half of the students to an **experimental group**, who took the growth mindset course, and the rest to a **control group**, who did not take the course until after all data collection for the research was complete¹⁴. Eton teachers delivered the course to students in the experimental group once a week over the course of three weeks.

Following this, students in the experimental group and the control group took a follow up survey on mindset and social relationships. The follow up survey included the same scales measuring mindset, social support, and prosocial attitudes as the baseline survey, as well as additional short answer and multiple-choice questions related to those constructs.

We then analysed the data using both quantitative and qualitative methods. We used statistical analyses to measure the impact of the growth mindset course, as well as relationships among mindset, social support, and prosocial attitudes. In addition, we used qualitative methods to delve more deeply into how students' beliefs about abilities and social relationships changed after the growth mindset course. For further details about the study's methodology, please see the Methods box below.

The study's **results indicated that the growth mindset course effectively boosted students' growth mindset. Moreover, results revealed that students' mindsets were related to social outcomes – not only did we find correlations among students' mindsets, social support, and prosocial attitudes, but the growth mindset course actually improved students' prosocial attitudes.** These results are discussed in detail in the Results and Discussion section below.

Methods

In this study, we explored relationships among mindsets, prosocial attitudes, and social support, and measured the impact of a growth mindset course on those individual constructs.

Participants

Eton school leaders selected the twelfth-year class to participate in the study. Students were divided into experimental and control groups in a two-step process using partial randomization of subgroups based on scheduling availability. Researchers received baseline survey data from 187 students (93 experimental, 94 control) and follow-up survey data from 131 students (66 experimental, 65 control). Participants' average age was 16.7 years, 81% of participants reported their race as white, and 8% of participants reported receiving learning support. T-tests of these characteristics did not find significant differences ($p < 0.05$) between experimental and control groups, though students in the experimental group were significantly more likely to report being native English speakers (97%) than their classmates in the control group (87%; $t = -2.33$, $p = 0.02$; see Table 1).

Instruments

The RSI growth mindset course was informed by research on how to effectively support growth mindset. The course consisted of three 40-minute sessions, and each session involved brief readings and/or instructional videos related to growth mindset as well as collaborative learning activities. The Tony Little Centre assembled and trained a team of teachers to administer the growth mindset course.

We developed baseline and follow-up surveys that combined previously validated scales for mindset and various social constructs (see Table 2), as well as additional multiple-choice and short-answer questions related to these topics. Our surveys included six scales, which each consist of a number of multiple-choice items to measure each construct. Dweck's Theories of Intelligence Scale¹⁵ is an eight-item measure of mindset relating to intelligence. The Global Mindset Scale¹⁶ is a seven-item measure that evaluates mindset on various dimensions related to academic learning such as intelligence, talents, social interactions, and perseverance. These two scales provide complementary approaches to measuring growth mindset and using them both gives us a more detailed and nuanced measure of students' mindsets. The Social Support Number and Social Support Satisfaction subscales¹⁷ are both six-item scales measuring students' reported size of social networks and students' satisfaction with the support from those networks, respectively. Students' prosocial attitudes were measured using a modified, 16-item version of the Adult Prosocial Scale.¹⁸ The baseline survey also included a 15-item Social Desirability Scale¹⁹ to evaluate the extent to which students' responses were influenced by a desire to give socially correct answers. Researchers developed short answer questions and additional multiple-choice questions to collect further data on students' mindsets and social relationships.

Data Collection

All surveys were administered using the Qualtrics online survey platform under the direction of Eton school leaders and teachers. Researchers retrieved the data from Qualtrics.

Data Analysis

We used Stata 14 statistical software to estimate the reliability of scale scores, the relationship between these scores, and the causal impact of the growth mindset course. We calculated scale scores following the original authors' instructions for previously validated scales; in all cases an additive scale was calculated. All six scales in the survey were analysed for reliability, and all scales were found to have a moderate to high level of internal consistency reliability. As no scale scores were positively and significantly correlated with the Social Desirability Scale scores, researchers determined that student scale scores were not positively biased by a desire to give socially correct answers. We used scale scores of mindsets and social measures as both outcome and predictor variables in various models throughout the analysis.

To evaluate the relationships between measures of mindsets, social networks, and prosocial attitudes, we used simple ordinary least squares regression with robust standard errors, as well as Pearson's correlation. Only baseline scores were considered, and our findings appeared robust to the inclusion of various demographic controls.

To estimate the impact of the growth mindset course on students' mindsets and prosocial attitudes, and to accommodate the nonrandom group assignment and imbalance of groups, we used a quasi-experimental design that estimated the difference in outcome for the experimental group uniquely attributable to the course:

$$y_{it} = \beta_0 + \beta_1 D_i * P_t + \beta_2 P_t + \beta_3 D_i + u_{it}$$

Where y is the given outcome of interest for student i in time period t , β_1 is the coefficient of interest, estimating the additional difference in outcome in the follow-up period due to taking the course, β_2 is the difference in outcome between baseline and follow-up surveys, β_3 is the effect for an individual student of being assigned to take the growth mindset course, and u is the error term. This model estimates the unique growth in the given outcome for an individual in the experimental group following the growth mindset course, taking into account any change also identified in the control group over that period of time. We used Hausman tests to determine that a random effects specification was appropriate for all but one model, for which a fixed effects specification was used.²⁰

Additionally, we analysed short-answer responses using qualitative methods adapted from Grounded Theory. This evaluation and categorization of students' written responses to the short-answer questions allowed us to codify systematic patterns of responses, further deepening our understanding of substantive and significant patterns captured in the statistical analysis.

Results and Discussion

The RSI growth mindset course had a statistically significant effect on students' mindset scores.²¹ Students who took the course, on average, became more growth-minded. Furthermore, our results demonstrate that students' mindsets were related to their social outcomes. We found statistically significant correlations between students' mindsets and social support, as well as between students'

mindsets and prosocial attitudes. Moreover, the growth mindset course statistically significantly increased students' prosocial attitudes (see Table 3).

Impact of the Growth Mindset Course on Students' Mindsets

The Growth Mindset Course Boosts Students' Growth Mindset

Results demonstrated that the RSI growth mindset course effectively supports students to develop a growth mindset (see Figure 1). We compared students' mindset scores from before and after the course to measure how the course impacted their attitudes and beliefs. Before the course, growth mindset scores at Eton were already quite high, with most (67%) students scoring as growth minded²². To be sure any effect on growth mindset that we found was in fact due to the course, we compared the scores of the experimental group of students, who took the course, to the scores of the control group of students, who did not yet take the course. Before the course, the experimental and control groups had similar mindset scores.²³

After the course, students who took the course, on average, had a statistically significant increase in their mindset score on both scales measuring mindset, including the Theories of Intelligence Scale²⁴ and the Global Mindset Scale²⁵ (see Table 3). By contrast, students who did not take the course during this study, on average, had no change in their mindset scores.

What underlying shifts in thinking might contribute to students becoming more growth-minded after the course? To investigate this, we qualitatively analysed students' responses to short-answer survey questions about learning, abilities, the brain, work ethic, and success. Results revealed notable changes from the baseline to the follow-up surveys in the ways students in the experimental group tended to discuss brain plasticity, the reasons students have different abilities, and the value of effort and determination. As expected, analysis of the data from students in the control group did not uncover notable changes from the baseline to the follow-up surveys.



Figure 1. The RSI growth mindset course effectively helps students develop a growth mindset. Students in the experimental group had significant gains on both the Global Mindset and Theories of Intelligence scales in the follow up survey. Note: Baseline scores between groups were not significantly different.

The Growth Mindset Course Teaches Students about Brain Plasticity

Many students developed an understanding of brain plasticity after taking the growth mindset course (see Figure 2). To assess students' understanding of brain plasticity, we asked open-ended questions about the brain and learning on the surveys. Before taking the course, most students described fixed limits on the brain's ability to change. For example, one student claimed, "If your parents are clever genetically, you're going to be clever, otherwise, you're not." However, following the course, nearly all students described the brain as changeable. For example, one student shared, "I believe that my brain's abilities are not fixed as I can adapt to the situation and learn from my mistakes in order to improve." Another student declared, "Everything is changeable, it's just how you change something, not whether you can change your brain's abilities." Further, several students demonstrated a clear understanding of neuroscience principles underlying the brain's adaptability. For example, students commented that, "the brain is plastic," and, "the brain's abilities are very able to change, doing something habitually enables the brain to slowly rewire over time, which is why practice in something is important."

Further analyses suggest that understanding of brain plasticity is directly linked with having a growth mindset. We measured students' scores on a series of multiple-choice questions about the brain's ability to change. Students who participated in the course, on average, increased their scores on these questions, while those who did not take the course did not (see Table 4). Moreover, students with the most improved scores on the brain plasticity questions were also, on average, the students with the largest improvements in their growth mindset scores following the course.²⁶ These findings are consistent with previous research indicating that teaching students about brain plasticity promotes growth mindset.²⁷

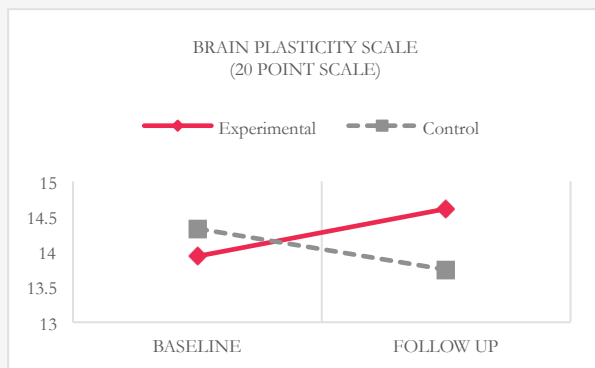


Figure 2. Many students developed an understanding of brain plasticity after taking the growth mindset course. Students in the experimental group had significant gains on the follow up survey compared to the control group. Note: Baseline scores between groups were not significantly different.

The Growth Mindset Course Teaches Students to Identify Varied Sources of Abilities

After taking the growth mindset course, many students developed a more sophisticated understanding of the many factors that contribute to abilities. Before the course, students tended to offer simplistic explanations of what contributes to differences in abilities among their classmates. In addition, some students discussed abilities as if they are fixed. For example, one student noted, “Some people are not very able, and these people will have to put in a lot more effort than those who have natural ability.” After the course, however, students overwhelmingly attributed differences in abilities to more varied sources. For example, one student identified determination, background, interests, and genetic predispositions as factors that all contribute to differences in abilities: “Different levels of desire to be good in particular areas. Different upbringings and lifestyles. Different levels of enjoyment that people get out of different areas. Different genetics and varying natural talent in different areas.” This pattern in the data suggests that the course helped students develop a more complex and thoughtful understanding of abilities. This may be one of the shifts in thinking that ushered students toward a more growth-minded understanding of intelligence.

The Growth Mindset Course Increases the Value Students Place on Effort

Students were more likely to emphasize the role of determination and effort in success after taking the growth mindset course. We looked at students’ descriptions of what they believe leads to their success in an area where they feel successful at school. Students provided a wide variety of explanations on the baseline survey, and many students made no mention of effort or determination. Following the growth mindset course, however, nearly every student who had participated referred to effort, determination, or both, as factors that contribute to their success. Students commonly identified “effort,” “determination,” “hard work,” and “diligence” as factors that contribute to their success at school following the course. For example, one student asserted, “The main thing that contributes to my success is hard work, effort, and perseverance.” Since the notion that determination and effort play a key role in success is central to growth mindset, this pattern in the data may represent a shift in thinking that supports growth mindset.²⁸

In addition to recognizing the role of determination and effort in success, **students who took the growth mindset course were more likely to express respect for determination and effort.** One survey question asked students whether they would prefer to be told that they are clever or that they must have worked hard after receiving a good mark. Before taking the course, most students stated they would prefer to be told that they are clever. For example, one student explained that he would prefer to be told he is clever “because anyone can put a lot of effort into studying but not everyone can be clever.” However, after taking the course, more students said they would prefer to be told that their success was due to hard work. This student quote exemplifies several responses we received following the course, “A lot of effort. It reinforces my knowledge that it is [through] my effort... that I succeed.” These findings demonstrate an essential shift in thinking among students who participated in the course. These students began to place more value on the role of effort in success, a perspective that is fundamental to growth mindset.²⁹

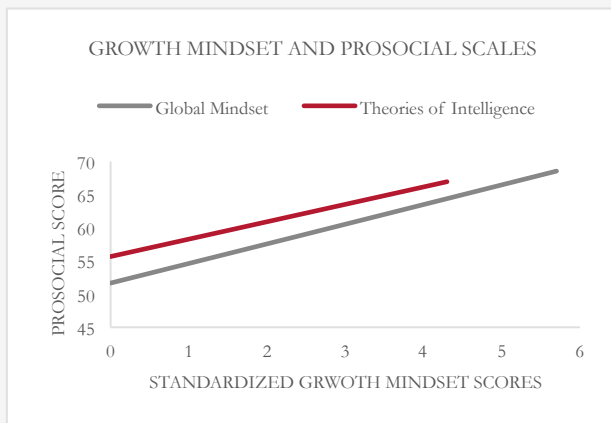


Figure 3. Students who are growth-minded tend to have better prosocial attitudes. On average, as students' scores on both mindset scales increase, their scores on the prosocial scale also increase.

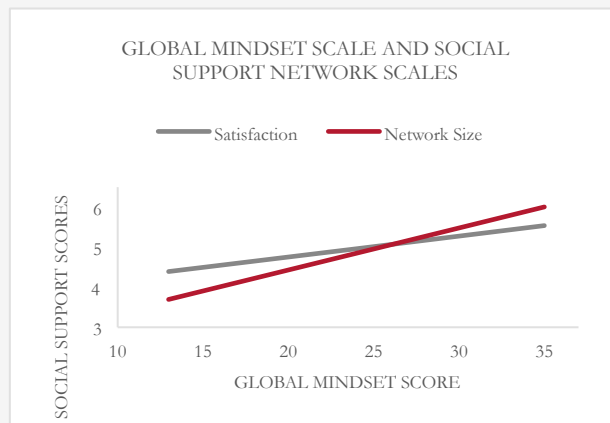


Figure 4. Students who are growth-minded tend to have better social support. On average, as students' Global Mindset scores increase, their scores on both social support measures also increase.

Mindsets are Related to Social Outcomes

Results indicated that Eton students' mindsets were related to social outcomes. Previous research shows a cyclical relationship between prosocial skills and the size and effect of social support networks. As prosocial attitudes and skills increase, it leads to improved social networks, and as social support increases, it leads to better prosocial skills.³⁰ Building on this established finding, we explored relationships among mindset, prosocial attitudes, and social networks. We calculated correlations between students' scores on the Theories of Intelligence Scale,³¹ the Global Mindset Scale,³² Social Support Questionnaire,³³ and Adult Prosocial Scale.³⁴ Our results showed statistically significant relationships between students' mindsets and both social support and prosocial attitudes.³⁵

Mindsets Predict Prosocial Attitudes

To begin to explore the relationship between students' mindsets and social dynamics, we compared students' scores on the mindset scales to their scores on the prosocial attitudes scale. We found significant correlations between students' scores on both mindset scales, the Theories of Intelligence Scale³⁶ and the Global Mindset Scale,³⁷ and their prosocial scores (see Table 6). **Students who are growth-minded tend to have more prosocial attitudes** (see Figure 3).

Mindsets Predict Social Support

For the next step of our analysis, we compared students' mindset scores to their social support scores. Our results showed a statistically significant relationship between a student's score on the Global Mindset Scale and the size of his social support network (see Table 6); that is, on average, the more growth-minded a student is, the more people he feels supported by. Furthermore, we found a statistically significant relationship between a student's mindset score and his level of satisfaction with the support he receives from people in his life. On average, students with a higher growth

mindset score tend to be more satisfied with the social support they receive (see Table 6). With this, **students who are growth-minded tend to have better social support** (see Figure 4).

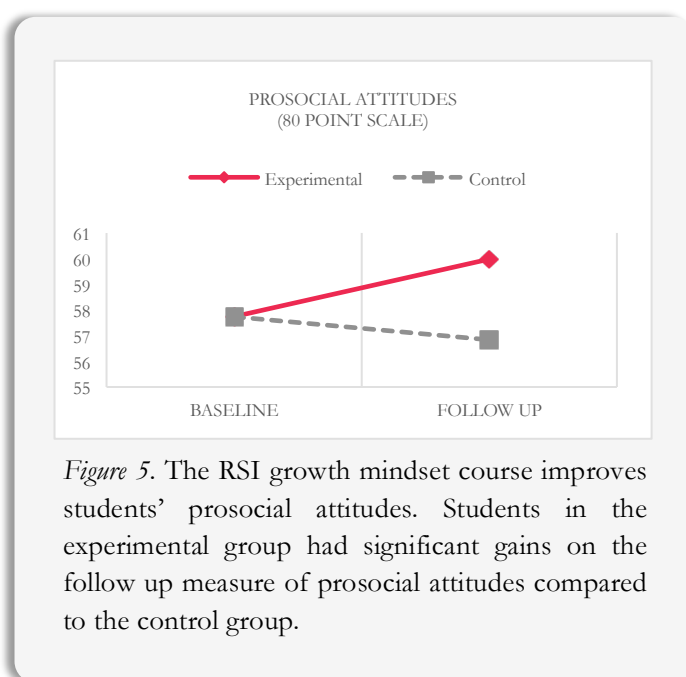
More research is needed to understand the relationships among mindsets, prosocial attitudes, and social support. Are there cyclical relationships among these constructs? For example, does having a growth mindset promote prosocial attitudes, which over time leads to improved social networks,³⁸ which in turn supports growth mindset? Further research could explore possibilities such as this.

Impact of the Growth Mindset Course on Prosocial Attitudes

The Growth Mindset Course Improves Students' Prosocial Attitudes

Results indicate that the RSI growth mindset course improves students' prosocial attitudes (see Figure 5). We compared students' prosocial attitudes and social support from before and after the course to measure how the growth mindset course impacted their attitudes and beliefs about social relationships. To be sure the measured effect was in fact due to the course, we compared the scores of the experimental group of students, who took the course, to the scores of the control group of students, who did not yet take the course. The growth mindset course led to a statistically significant increase in students' prosocial scores (see Table 3).³⁹ While there was a slight difference in prosocial scores between the experimental and control groups before the course began, the prosocial scores for the experimental group increased after taking the course whereas the prosocial scores for the control group did not show any change.⁴⁰

What underlying shifts in thinking might contribute to students adopting more prosocial attitudes after taking the growth mindset course? To explore this, we examined our qualitative data. As expected, analysis of this data from students in the control group did not uncover notable changes. Analysis of this data from students in the experimental group indicated that, after taking the growth mindset course, many students became more aware of how prosocial attitudes and behaviours benefit learning. Specifically, we noticed that many students become more conscious of how kindness and helpfulness support learning after taking the growth mindset course.



The Growth Mindset Course Helps Students See How Kindness Supports Learning

After taking the growth mindset course, students were more likely to recognise that kindness creates an atmosphere conducive to learning. In their own words, students reflected on survey questions about the role that kindness has on their success at school. Analysis of this data showed that before taking the course, students often did not see a connection between kindness and success at school. For example, one student succinctly explained, "I don't think that being kind makes you a more successful student." Following the course, however, students were more likely to realize that kindness creates an atmosphere

that promotes learning. One student shared, “I think if [you’re] kind to others it creates a more positive atmosphere, whether you are trying to work, or [do] something else. With a more positive atmosphere it is easier to get stuff done.” Another student expressed, “I believe if you are kind to others, friends and teachers, then they will be kind back to you. From kindness comes respect and from respect comes success.” One student connected kindness with the growth-minded attitude of accepting mistakes during the learning process: “I think that [kindness] generally creates a good atmosphere, one in which you are OK with making mistakes and don’t feel any less for it.” Students’ better understanding of how kindness supports learning may be one of the shifts in thinking that encouraged them to adopt more prosocial attitudes after taking the growth mindset course.

The Growth Mindset Course Shows Students How Helpfulness Supports Learning

After taking the growth mindset course, students were more likely to understand how being helpful supports learning. Before taking the course, some student responses highlighted a tension between helpfulness and competition. For example, one student commented, “Since your success is measured compared to others, helping others may make you less successful.” After taking the course, students were more likely to focus on the benefits of being helpful, and were more likely to see helping others and helping oneself as possible coexisting outcomes. For example, one student explained, “[Being helpful] means that people are more inclined to support my views, they are also more inclined to help me when [I] am struggling.” Another student echoed this sentiment, “By helping others you are... putting yourself in the best possible position to get help in the future should you need it.” Another student pointed out that the process of helping others directly benefits his own learning, “Helping your friends to understand a concept will help you to know the topic inside out.” Students’ improved understanding of how helpfulness can support learning may be one of the shifts in thinking that encouraged them to develop more prosocial attitudes after taking the growth mindset course.

How Can Growth Mindset Instruction Impact Social Outcomes?

Previous research indicates that teaching students to have a growth-oriented approach towards personality traits can lead to better social outcomes.⁴¹ Our research suggests that encouraging students to adopt a growth-minded view of intelligence may lead to better social outcomes as well. Specifically, growth mindset instruction can improve prosocial attitudes. It is possible that teaching students about growth mindset makes them inclined to consider how many factors, including social relationships, can influence learning, and therefore makes them more inclined to adopt prosocial attitudes that will benefit their learning. For example, after learning about growth mindset, one student emphasized the role social relationships play in shaping the brain’s abilities: “I believe that the brain’s abilities are changeable as it is more decided by the experiences we have and the relationships we hold with other people.” This awareness of how social relationships influence abilities could motivate students to adopt prosocial attitudes that benefit their learning. Further research should continue to explore how growth mindset instruction encourages prosocial behaviours.

In addition, more research is needed to explore if growth mindset instruction affects other social outcomes in addition to prosocial behaviors. In this study, we did not find a significant change in students’ support networks after taking our growth mindset course. Previous research indicates that as prosocial attitudes and skills increase, it leads to improved social support over time.⁴² Given this, it is possible that our growth mindset course would eventually affect social support networks over time. Further research is needed to investigate this possibility.

Recommendations for Practice

Eton is deeply committed to continuing to cultivate a growth-minded community at the school. This study provides insights into concrete ways they can continue to support students to adopt a growth mindset and prosocial attitudes. Based on our findings, we recommend that teachers consider teaching students about brain plasticity, emphasizing the role of determination and effort in success, and helping students reflect on the many factors, including social factors, which influence learning. These practices are supported by this research study as well as by previous research on growth mindset. Moreover, when we asked Eton students how Eton can further support a growth mindset, many of them called for these practices themselves as well.

Teach Students about Brain Plasticity

Previous research indicates that **teaching students about brain plasticity promotes a growth mindset**.⁴³ Indeed, in this study, we found that students who learned the most about brain plasticity also had the largest improvements in their growth mindset. Teachers could incorporate knowledge about how the brain changes as we learn into classroom instruction. In addition, they could discuss this concept in everyday conversations with students. For example, when a student is struggling with a challenging problem, the teacher could explain that as they work on the problem, their brain gradually changes as it learns,⁴⁴ or in the words of Eton students, “slowly rewires over time,” or “is like a muscle.”

Emphasize the Role of Determination and Effort in Success

Our research shows that **students with a growth mindset understand the importance of effort and determination** in developing their abilities. Teachers can support this outlook in their students in several ways. Dweck emphasizes that **it is important for teachers to model a growth mindset themselves** as they guide their students to develop a growth-oriented approach to learning that recognises that dedicated effort is fundamental to success.⁴⁵

Additionally, research by Dweck and others suggests that **setting learning goals, which focus on increasing understanding and enhancing skills, rather than setting performance goals, which focus on achieving external milestones, encourages a growth mindset**.⁴⁶ Eton gave several suggestions along these lines, such as, “praise effort more, reward improvement,” or more concretely, “effort grades could be provided alongside work marks in EWs.”

In conjunction with emphasizing learning goals, **providing formative assessment throughout the learning process supports a growth mindset**. Eton has put a great deal of effort into using formative feedback in recent years, and students reported appreciating this approach. For example, one student expressed that there are a number of practices that support growth mindset at the school, but encouraged even greater use of formative feedback: “[I] think [Eton] already has a number of good growth mindset aspects, but there could be more focus on performance during the half⁴⁷ rather than simply judging progress on trials at the end of the half.” Another student succinctly stated, “focus on the means, not the ends.” Related to this, another student suggested that he would like more praise that is focused on effort instead of performance, “With regards to Extra Work and Block Tests, I find... work is praised on the level of intelligence, more than on the actual effort put into the work itself.” In fact, the practice of providing support or praise for students’ effort rather than performance is supported by Dweck’s research; Dweck recommends using statements such as,

“I like how you tried a lot of strategies to answer that question,” or “That was a real challenge, but you stuck with it, well done.”⁴⁸

Teach Students That Nurturing Social Relationships Supports Learning

Our study found that students with a growth mindset were more likely to recognise that many factors, including social relationships, influenced abilities and academic achievement. As part of this, they were more likely to recognise that prosocial skills that nurture relationships, such as kindness and helpfulness, support learning. Teachers can **provide students with metacognitive activities that invite them to reflect on their learning process** and encourage them to consider the role of social relationships in learning. Along with this, teachers can **engage students in conversations about learning as well as how prosocial attitudes support learning**. In fact, one student requested, “one on one time with teachers to discuss learning.” In addition, teachers can **give students opportunities to do collaborative work** so they can experience first-hand how prosocial attitudes support learning. Several students called for more opportunities to engage in collaborative work. For example, one student commented, “Encourage collaboration in class as it encourages friendships.”

Eton Teachers Study Growth Mindset

After Eton students completed the growth mindset course, teachers at Eton participated in a Continuing Professional Development (CPD) program that focused on mindset theory. We carried out research to explore the impact of this CPD. Participating teachers answered a pre-survey to measure their mindsets. They then received resources on the topic of growth mindset, attended an introductory lecture, and participated in one or two group discussions on growth mindset. Following this, they answered a follow up survey to measure their mindset. We then analyzed the data from these surveys. Results did not reveal a change in average teacher Theories of Intelligence scores or Global Mindset scores following their participation in the CPD training. One reason we did not find a change could be that many teachers were already familiar with the topic prior to the start of the CPD, either from our growth mindset research at the school, which was already in progress prior to the CPD, or from an outside source. For example, one teacher noted, “I had read lots on the subject and it was something I was already implementing.”

Although the program did not impact teachers’ mindset scores, the teachers found the program valuable in extending their knowledge about growth mindset and offering concrete strategies for supporting growth mindset in their classrooms. Some teachers commented that the CPD deepened their understanding of the scientific research underpinning growth mindset. For example, one teacher explained, “It reinforces what I have already concluded, but it was interesting to see the scientific explanation. It has made me feel more confident in my teaching approach.” Other teachers shared that it reminded them how important it is to support a growth mindset in their students. For example, this teacher shared, “It reinforced my perception that intelligence and ability are not fixed and how important it is to communicate this effectively to students.”

Teachers also reported that the course offered them strategies for how to encourage growth mindset with students. Many teachers reported a change in the way that they give students feedback. Specifically, several teachers reported making a conscious effort to focus feedback on effort rather than performance. For example, one teacher explained, “I am much more aware of the importance of the language that we use when talking to students about their learning and about their attainment, and of the language we use in reports and assessment, in order to foster a growth mindset.” Another teacher noted, “Feedback on work which praises the process and not the outcome seems to be important.” While we did not see a change in teachers’ mindset scores, our qualitative data from teachers suggests that the CPD effectively helped reinforce an understanding of growth-minded principles and offered strategies for how to support growth-mindset in students.

Conclusion

With the founding of The Tony Little Centre, Eton has established a clear commitment to conducting school-based research and supporting research-informed practice at the school. This study on growth mindset and social relationships serves as an exemplar of the Tony Little Centre’s capacity to support rigorous research that has practical implications for the whole school community. The effect of this research has permeated across the school – among both students and teachers – in cultivating a growth-minded community. As the study’s findings indicated, students who took the growth mindset course became more growth-minded and improved their prosocial attitudes. Moreover, some students have already applied this learning to their schoolwork and seen concrete results. For example, one student shared, “I am pushing myself a bit further than I used to, trying to work harder, admit to my failures and mistakes rather than just ignoring them. This has actually been fruitful as my marks have gone up, and... teachers are regarding me as one of their hardest working students in the division⁴⁹.” Teachers also reported making tangible changes in their thinking and practice after learning about growth mindset. For example, one teacher eloquently expressed, “It has helped me to focus less on where a student is and to keep dreaming about where they might be. With the high-achieving ones, I’m less inclined to think they are OK, and more concerned to foster their resilience and grit: I’m looking out for the moment they stumble with optimistic eyes, and praising their attitude in facing challenges. With the lower-achieving students, I am learning to praise their effort and keep on sending the message that they can change.”

By carrying out this type of cutting-edge research, The Tony Little Centre serves as a thought leader for the global education community. We very much look forward to continuing to collaborate with Eton on research that sheds light on how to support students’ learning and well-being at Eton and beyond.

Acknowledgments

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Table 1

Summary of baseline measures of sample, and comparison of sample and school on available demographic measures.

	Experimental Group	Control Group	Full Sample (Yr 12)	All Year 12	All School
Demographic Measures					
% Native English speakers	0.97	0.87	0.92	0.94	0.94
% Receives learning support	0.07	0.10	0.08	0.15	0.12
% Caucasian	0.86	0.75	0.81	0.75	0.74
Av. Age	16.68	16.71	16.70	16	15
% Receiving A* on IGCSE					
English	0.80	0.77	78.33	0.76	n/a
Maths	0.85	0.94	89.44	0.87	n/a
N	91	94	131	274	1320

Table 2

Summary statistics of baseline measures for all participants. Cronbach's alpha is a coefficient that estimates the extent to which all scale items relate to one another. Levels are reported between 0-1; any alpha coefficient above 0.6 is considered acceptably reliable.⁵⁰

	min	max	mean	sd	Cronbach's α
Mindset Scales					
Theories of Intelligence Mindset Scale	8	48	28.56	9.09	0.95
Global Mindset Scale	13	35	25.91	3.85	0.62
Social Relationship Scales					
Social Support Satisfaction Scale	1	6	5.06	0.92	0.92
Social Support Number Scale	0	9	5.05	2.71	0.95
Prosocial Scale (std.)	-1.71	2.31	0.00	1.00	0.88
Social Desirability Scale	0.20	1	0.59	0.19	0.66
N			131		

See Table 3 on page 17.

Table 4

Regression model of effects of the RSI growth mindset course on student scores of Brain Plasticity. The coefficient of interest, Experimental Assignment X Post Intervention estimates the effect of participating in the intervention compared to the control group, and compared to the baseline measures.

	Brain Plasticity	
	Estimate (SE)	P value
Intercept	3.58 (0.08)	<0.001
Experimental Assignment X Post Intervention	0.31 (0.13)	0.02
Post Intervention	-0.15 (0.09)	0.11
Experimental Assignment	-0.10 (0.11)	0.38

Table 5

Correlations between mindset scores, and brain plasticity

	1	2
1. Theories of Intelligence Mindset Scale		
2. Global Mindset Scale	0.47***	
3. Brain Plasticity Scale	0.67***	0.31***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6

Correlations between mindset scores, prosocial attitude scores and social support network scores

	1	2	3	4
Mindset Scales				
1. Theories of Intelligence Mindset Scale				
2. Global Mindset Scale	0.47***			
Social Relationship Scales				
3. Social Support Satisfaction Scale	- 0.03	0.23***		
4. Social Support Number Scale	0.07	0.15**	0.18**	
5. Prosocial Scale	0.28***	0.31***	0.27***	0.21***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$