



# CALIFORNIA STATE SCIENCE FAIR 2012 PROJECT SUMMARY

<b>Name(s)</b> Noah M. Fields	<b>Project Number</b> <b>S0411</b>
<b>Project Title</b> <b>The Effects of the Growth Mindset on Academic Success and Happiness</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My objective was to see if there is a correlation between the growth mindset (defined here as perceiving intelligence as a changeable attribute, especially by effort--contrasted with the fixed mindset, which sees intelligence as determined and set in stone) with academic performance and happiness among high school students.</p> <p><b>Methods/Materials</b> I distributed a short, voluntary, confidential survey among 108 sophomore students, all taking Chemistry Honors at my school, Thousand Oaks High School. The sample selected had 56 boys and 52 girls. The first part of the survey identified the student's mindset by having them circle the statement they agreed with most: "You can learn new things, but you cannot truly change how smart you are" (representing the Fixed Mindset) or "You can always change how smart you are" (representing the Growth Mindset) or "Don't Know." The second part assessed students' academic performance by requesting their semester 1 grades in the Chemistry class. The third part was a 16 question survey, loosely inspired by positive psychologist Martin Seligman's "Authentic Happiness Inventory Questionnaire," used to evaluate students' overall happiness level.</p> <p><b>Results</b> I found that the mean happiness composite score of the growth mindset group was significantly higher than that of the fixed mindset group (<math>t=2.652</math>, <math>df=99</math>, <math>p=.009</math>). In fact, the growth mindset group outscored the fixed mindset group on virtually every single question on the Happiness survey. Beyond happiness, the growth mindset was also found to significantly impact academic performance. Within the Honors Chemistry class, students with a growth mindset were over 12% more likely to have an A: 73.3% of students in the growth mindset group had an A in the first semester, while only 61.0% of students in the fixed mindset group earned an A. Overall, my data was very consistent internally, with a Cronbach's Alpha of .892, a near-perfect reliability coefficient. Furthermore, the results were repeated when each gender was examined separately.</p> <p><b>Conclusions/Discussion</b> To conclude, I found a significant positive correlation between growth mindset, student academic performance, and overall happiness. The next step is to explore how easily the growth mindset can be taught to high school students, and whether adapting a growth mindset would improve a student's academic performance and happiness level.</p>	
<b>Summary Statement</b> In this experiment, I found that the growth mindset was significantly positively correlated with both academic performance and happiness among high school students.	
<b>Help Received</b> Dr. Nikki Malhotra provided feedback and guidance from conception to presentation; Dr. Gary Katz of CSUN helped me interpret my data using SPSS. However, all of my research and report was ultimately done solely by me.	