

# The Relationship Between Introversion/ Extroversion, Growth Mindset, and Teacher Bias

Nia Balan

*Received March 19, 2024*

*Accepted July 03, 2024*

*Electronic access July 15, 2024*

This study aims to investigate the relationship between introversion/extroversion and teacher bias in high school, as reflected in students' grades. Additionally, it explores the extent to which the adoption of a growth mindset by students influences their GPA and acts as a protective factor against teacher bias. By examining various studies and scholarly articles, this paper provides insights into how these factors contribute to the academic performance of high school students. This paper hypothesizes that introverted students will score higher for fixed mindset and experience more teacher bias, resulting in a lower GPA. Using Google surveys, a quantitative questionnaire was created with an open-ended portion for students to report their experiences with teacher bias. Students were asked to take two scales, one to determine introversion and extroversion and another to determine growth or fixed mindset. Due to the small n-size, this paper compares descriptive means instead of a t-test. A t-test requires at least 3 data points for each variable being tested, and considering only two participants fit the introverted students with a fixed mindset variable, there was no way to perform the test. However, the descriptive mean results show that the mean GPA for introverted tenth graders was 3.81 but, for extroverted students, the mean GPA was 3.88 which shows this paper concludes that the results of the study do support the hypothesis that introverted students will have lower grades than extroverted students and that having a growth mindset can also affect how well a student performs in school. Any future studies could use the same or similar scales on a larger sample size, run the study for a longer time, and/or provide compensation for participants.

## Introduction

The impact of teacher bias on students' academic outcomes has been recognized as an important issue within the psychological and educational landscape<sup>1-3</sup>. However, research suggests that different personality traits should be taken into account when studying academics. More specifically, the presence of introversion and/or extroversion among students may play a significant role in influencing teacher bias and subsequently affecting students' grades in high school<sup>4</sup>. Current studies<sup>4-8</sup> have recognized a relationship between personality traits and how they affect students' interactions with others and responses in educational settings, both which could influence teacher biases and, consequently, students' academic performance. However, they have not explored the intersection of how personality, growth mindset, and teacher bias all affect a student's grades and academic success. This paper seeks to investigate this connection to fill the gap by studying how introversion/extroversion and growth mindset together influence academic outcomes in the presence of teacher bias.

Introversion and extroversion are two fundamental personality traits that significantly shape an individual's behavior, social interactions, and feelings<sup>9</sup>. These characteristics have different effects on a student's ability to interact with others, form relationships, and respond to situations, all of which could have

significant outcomes on a student's academic performance and how they act in a learning environment. It is essential to understand that introversion and extroversion exist on a scale and people have a combination of both qualities. A growth mindset is one part of a person's attitude, which can contribute to how a teacher treats, evaluates, and cares for a student. It is a psychological concept that was created by Researcher Carol Dweck (1999, 2006)<sup>10</sup>. A person with a growth mindset believes they have agency over their intelligence and success. Conversely, individuals with a fixed mindset believe their abilities are unchangeable and they will spend their entire lives with the same amount of intelligence<sup>10</sup>. These students view mistakes negatively and feel as though they reflect their inherent flaws. The connection between a growth mindset and academic performance is profound and students who adopt a growth mindset are usually met with positive outcomes. Teacher bias, also known as education bias, is when a teacher subconsciously treats a student differently or unfairly which happens due to many different factors<sup>11</sup>. It's important to study teacher bias and any factors that could affect it because it is unfair for a student to be impacted negatively by something they can't control, like personality. The type of mindset a student adopts can also help determine how a teacher perceives them and also how different students think about academics. Due to a growth mindset being the desired mindset, those who have a fixed mindset are more at

---

risk of being evaluated worse by their teachers. This paper will conduct a study on high school students using both quantitative and qualitative questionnaires to look at what kinds of students have different experiences in school and how students interact with teacher bias. Different personalities have a different affect on how teachers view their students, increasing bias, conscious or not, towards a type of student. This can change the mindset of a student whether they feel under or overvalued. Due to these three variables being connected and affecting each other, understanding how these traits interact with teacher bias is key for determining fair and neutral educational environments.

### **Study Rationale & Hypothesis**

This paper seeks to understand how the presence of introversion and/or extroversion impacts teacher bias as reflected in students' grades in high school, and to what extent the adoption of a growth mindset by students influences their GPA and serves as a protective factor against teacher bias.

I hypothesize that introverted students will score higher on fixed mindset and will experience more teacher bias, resulting in a lower GPA because there have been more studies with results that found that extroverted traits correlate to better academic performance.

### **Literature Review**

This literature review aims to explore the existing body of research on the relationship between introversion/extroversion and growth mindset with teacher bias, highlighting the potential mechanisms through which these factors influence students' grades in high school. This helps identify gaps, challenges, and potential avenues for future research. The goal of this section is to look at how these factors are studied and how they affect a student.

#### **Academic Achievement and Personality**

In a recent study, a researcher<sup>4</sup> initially found that extroverted students displayed lower results compared to their introverted classmates by using two questionnaires on a group of students ranging from ages 18 to 25. Ultimately, they found students with positive attitudes toward academics exhibited perseverance and responsibility, resulting in higher academic performance<sup>4</sup>. Contrarily, low self-control, low self-esteem, and disinterest in social requirements were linked to poorer academic outcomes. In a contrasting study, researchers<sup>5</sup> studied how introversion and extroversion affect academic performance using the Myers-Briggs Type Indicator (MBTI) on students to evaluate personality type and students' assignment scores to measure academic performance. These results contradict my hypothesis with their findings supported their hypothesis and found that the introverted

participants performed better than extroverted participants in their courses and were more successful. Lastly, a study by researchers<sup>6</sup> looked at if motivation and personality could affect academic achievement. They used personality and academic motivation questionnaires including GPA and demographic questions to conduct their study on college students. From the data they gathered, they found that extroverted individuals have more motivation, resulting in higher academic achievement. All of these studies used questionnaires to evaluate personality and academic achievement and two of the three papers align with this paper's hypothesis that extroverted students will have higher scores than introverted students. These studies only examine how different traits can affect academic success without accounting for teacher bias, which ultimately determines a student's grade, and growth mindset, which is influenced by how a student is treated by their teacher and their learning environment. However, this paper addresses all three factors.

#### **How a Growth Mindset Affects Academic Performance**

In a comprehensive study by the Journal of Educational Psychology<sup>7</sup>, the dynamics of student engagement, goal setting, and academic performance were thoroughly explored. Mainly, positive teacher-student connections in the educational setting were found to predict students' personal growth goal-setting significantly. Growth goals were identified as practical tools, providing clarity and focus to students on target-relevant tasks. Overall, the research emphasized the intricate connection between positive teacher-student relationships, personalized goal setting, and student engagement, highlighting the multifaceted factors influencing academic success and motivation. Another more recent study<sup>8</sup>, looked at adolescents and if factors like self-affirmation and growth mindset affect academic achievement. The participants had to fill out growth mindset, academic achievement, reasoning ability, and self-affirmation questionnaires. From the data, they found that a growth mindset could predict academic achievement in students with high self-affirmation and that those students were getting higher grades than students with low self-affirmation. Finally, another study examines how a growth mindset can reduce poverty with academic achievement<sup>12</sup>. They found that students who came from lower socioeconomic backgrounds typically had a fixed mindset, but those who had growth mindsets were more likely to have higher academic performance and if students in poverty changed their mindset, they could be more successful. These three studies are important to understanding a student's mindset in an academic setting because a couple of studies from Martin et al. (2021)<sup>7</sup> and Wang; Yuan; & Wang (2020)<sup>8</sup> state that positive teacher-student connections and high self-affirmation are connected to a growth mindset, which increases a student's academic success. The third paper Claro; Paunesku; & Dweck, (2016)<sup>12</sup>, confirms that growth mindsets make students more successful. These

---

ideas are helpful to know because if anything were to harm a student's growth mindset, like teacher bias affected by different personality types, a student could adopt a fixed mindset and no longer be able to achieve academic success.

In summary, the studies by researcher Martin et al. (2021)<sup>7</sup>, Wang; Yuan; & Wang (2020)<sup>8</sup>, and Claro; Paunesku; & Dweck (2016)<sup>13</sup> examine how either personality or mindset affects a student's academic success and outcome in highschool. This study seeks to build on this research by understanding how extroversion and introversion affects teacher bias shown in grades and what different mindsets have in connection to this.

## Methodology

### Research Design & Procedure

The present study used a mixed-method approach. Using Google surveys, a quantitative and qualitative questionnaire was created with an open-ended portion for students to report their experiences with teacher bias and GPA. The quantitative questionnaire included self-reported grades and demographic information such as race, gender, age, and ethnicity. Students were asked to take two scales, one to determine introversion and extroversion and another to determine growth or fixed mindset. The target group for this study was high school students ranging from ages 14-17. All participants were recruited by social media using Instagram stories through a link to the survey which was left up for two weeks. Google Surveys was utilized due to its cost efficiency, accessibility, and simplicity. The survey was designed in such a way that let participants keep their anonymity, ensuring honest responses, free of any social biases as well.

### Participants

Participants included 28 high school students from 9th -12th grade (age 15-17 years). All demographic information came from the student's responses to the questionnaire. Race and ethnicity were also asked of each participant; White (11), Black (0), Asian (13), American Indian or Alaska Native (0), Pacific Islander (0), Middle Eastern or Arab (2), and Hispanic or Latino (2). In a separate question, they were asked to answer their ethnicity. Increasing the sample size was a goal for this paper and despite efforts to recruit more participants from outside high schools, time constraints and the availability of students who met the study's criteria posed significant challenges to achieve this. Access to a larger group was constrained due to this study being reliant solely on peers and classmates from my high school. Additionally, because I did not receive any funding to run this study I was not able to pay my participants for their time in completing the survey, thus many of them were not as motivated to complete it.

Moreover, after the data was collected it was carefully analyzed and any data with inconsistencies, including incomplete surveys and answers that failed to answer the prompt, were taken out. The data analyzed in this paper is not generalizable to the whole world, but there are certain patterns and trends that could be reflected in the data which leads to an overall conclusion of the study.

### Measures

#### Introversion and Extroversion:

The personality test used was The Introversion-Extroversion Scale by Greg A. Grove. This scale measures whether an individual is introverted or extroverted based on a set of questions<sup>14</sup>. The 12 questions are divided into groups of 4 which reflect a different part of either introversion or extroversion. The four categories are "Thinking Introversion", "Thinking Extroversion", "Emotional Introversion", and "Emotional Extroversion". The two categories that one scores higher in determine whether they are introverted or extroverted.

#### Growth Mindset:

To assess students' growth mindset, Dweck (1999,2006)<sup>10</sup> scale was used, a 3-item Likert scale with anchors at 1= strongly agree and 5 = strongly disagree. Answering 1 for a question indicates a fixed mindset and a 5 reflects a growth mindset.

#### Teacher Bias:

To assess teacher bias participants were asked to report any personal experiences encountering teachers with bias and in what ways it impacted their grades or them mentally.

The questionnaire concluded with a section with qualitative questions referring to the participants' personal experiences with teacher bias and stating their GPA from grades 9 and 10. It was important to ask about these three parts in the questionnaire because it helps understand how growth mindset and personality affect teacher bias which ultimately shows in a student's grades.

### Analytic Strategy

Data analysis began with data cleaning to ensure that only completed surveys were included. Data discrepancies were identified and the participant's information was removed to improve the quality of the overall data. Of the original 39 participants, 11 were deleted due to the participant being too young to answer the GPA questions for 9th and 10th grade, or because they skipped the questions. For example, a participant recorded their GPA for grade 9 but answered "don't remember" for grade 10 which had to be cut out because the person technically did not fully complete the questionnaire.

As for the qualitative section of the questionnaire, each participant's personal experience was sorted through and categorized based on the type of experience they had. This could have been a teacher bias experience where they were discriminated

against based on personality, gender, race, etc. Any experiences included in this paper were chosen based on how much information that participant included in their answer and what category it fits into. Any of the responses which had names of people were de-identified in the quote. As for GPA, the University of California (UC)<sup>15</sup> schools say that a 3.4 GPA is needed to meet their requirements (University of California Admissions)<sup>16</sup> implying that this GPA is successful. Considering there are many forms of success, this paper uses the UC school system requirements for success because they are an established and reliable source to evaluate success in a student's grades. This system is used as a benchmark because this study measures a student's success in school based on GPA.

## Results

Due to the small number of individuals who participated, this pilot study will use descriptive statistics to compare the results of introverted and extroverted individuals within the sample. Below are descriptive tables that summarize the findings for each category in this study.

Variable	Mean	Median	S.D	Min	Max	Total
Introversion	17.6	17	1.428	16	21	10
Extroversion	20.75	20.5	2.106	17	25	14
Growth Mindset	3.55	3.6	0.820	2	5	28
Student GPA (grade 9)	3.81	4	0.435	2.4	4.2	28
Student GPA (grade 10)	3.885	3.98	0.318	2.9	4.38	28

**Table 1** Descriptive Statistics for All Study Variables

Each question for the personality questionnaire was categorized into introversion and extroversion, so based on how high a participant scored for that question determined whether they were introverted or extroverted. Out of the 28 participants, there were a total of 10 introverted students. The mean score was 17.6. Each question on the personality scale is worth points which means most introverted students' answers to the questions added up to about 17. The minimum score was 16 and the maximum score was 21. There were 14 extroverted students. The mean score for extroversion was 20.75 which means these students' answers to the questions were worth more points, making them score more extroverted. The minimum score was 17 and the maximum score was 25. Everyone was tested for a growth mindset. The mean score for growth mindset was 3.55 and the median score was 3.6. The minimum score was a 2 and the maximum score was a 5. Again, everyone was asked to report their GPA. The mean GPA for grade 9 was 3.81 and the median was 4. The minimum GPA for grade 9 was 2.4 and the maximum was 4.2. The mean GPA for grade 10 was 3.88 and the median was 3.98. The minimum GPA for grade 10 was 2.9 and the maximum was

4.3.

Introversion	GPA - Grade 10 (Mean)	Experienced Teacher Bias
Introverted (n=10)	3.81	3 / 10
Extroverted (n=15)	3.88	5 / 15

**Table 2** Comparison of GPA and Experienced Teacher Bias between Introverted and Extroverted Students

The mean GPA for introverted tenth graders was 3.81. Out of the 10 students, 3 reported a negative experience with teacher bias but some chose not to respond. As for extroverted students, the mean GPA was 3.88 and 5 reported negative teacher bias experiences.

**Table 3** Comparison Table for Growth Mindset and GPA

Growth Mindset	GPA (Mean)
Low (n=3)	2.1
High (n=25)	3.7

The "low" category is for those who had a score that correlated to a fixed mindset. The mean GPA for the fixed mindset participants was 2.1. The "high" represents the students with a growth mindset and the mean GPA for them was 3.7. Based on the results from this, having an open and positive mindset towards academics contributes heavily to a student's grades.

In this sample 60% were female, and the average age of introverted students was 16 years old. Of the extroverted participants, 87% were female and the average age was 15.8 years old. Three participants scored neither introverted or extroverted and of the three, 1 was male and the average age was 15.6 years old.

On average, of the people who have a fixed mindset, 66% are female and 33% are male. The mean for GPA for ninth grade was 3.79 and the range is 1.75. The mean for GPA for tenth grade is 3.88 and the range is 1.48.

For the open-ended response section, the total number of responses was 17. Some people choose not to answer, and of the 17, six will be highlighted below, all names and any personal information have been de-identified to protect the participants. One participant said:

"My teacher likes ppl who suck up to her and I think that makes people feel unheard or unseen"

which is an example of bias based on likability or closeness to teachers.

Another said:

"I have experienced teachers who were biased towards other students. although it didn't exactly affect my grade, it affected my experience and enjoyment in the class".

---

This is an extremely important effect to consider when looking at teacher bias and mindset because this implies that this student lost motivation to try in that class because of how the teacher treated them. An introverted participant reported that she felt gender bias from a teacher. She reported that:

“She very much preferred teaching the boys over the girls. This meant that she put a lot more effort into helping them over me and the other girls in my class. Also if the girls were misbehaving she would get very angry but if the boys were to misbehave she laughed it off”.

One participant reporting bias against race said:

“Yes, he asked if anyone was American, I put up my hand and then for the next 2 years I consistently got lower predicted grades than the rest of the class despite coming near the top academically in work and tests”

Lastly, seeing both sides is also important and there is a chance where teacher bias helps out a student. An introverted participant said that:

“I think I had biased teachers but it positively affected me. By getting on my teachers good side, volunteering in class more often than others, and consistently attending class, I was able to turn in tardy work with no penalties compared to other students.”

Even though a small part of the participants said they had a positive experience with bias, the majority reported negative encounters.

## Discussion

This study explores how personality affects teacher bias and how that affects a growth mindset, as shown in a student’s grades. Through the questionnaire, the factors were tested and evaluated. The findings of the study, highlighted in Table 2, show that the mean GPA of extroverted students is higher than introverted students. This means that more extroverted students reported higher GPAs than introverted students. While teacher bias is usually negative, 2 out of the 3 students who reported positive experiences from teacher bias were extroverted. The results of the study do support the hypothesis that introverted students will have lower grades than extroverted students and that having a growth mindset can also affect how well a student performs in school. A pattern in the data was that most people who had a fixed mindset were introverted.

Other studies done in the past have found that extroverted students actually displayed lower grades compared to their introverted classmates which is the opposite of this study’s results<sup>5</sup>.

Even though the average GPA difference between introverted and extroverted students is small, the difference is still significant to conclude that extroverted students are more successful. Others have found that students with a positive attitude towards academics and who exhibit perseverance and responsibility have a higher academic performance<sup>4</sup>. Those who show a disinterest in academics or a negative mindset tend to have a lower GPA. In terms of teacher bias, a study talked about earlier said that positive student-teacher relationships correlated with more academic focus and motivation from the student<sup>7</sup>. This paper’s findings echo a lot of the other studies discussed and support the hypothesis that extroverted students will have more academic success in school.

Additionally, the findings indicate that introverted students tend to have lower fixed mindset scores and experience more teacher bias, resulting in lower GPAs compared to their extroverted classmates. These results align with several studies mentioned in this paper from researchers Hazrati-Viaria, et al. (2011)<sup>6</sup> and Tulbure (2014)<sup>4</sup> who suggest extroverted traits correlate with better academic performance (Hazrati-Viaria, et al. 2011; Tulbure, 2014)<sup>4,6</sup>. Other examples from a study done by Chamorro-Premuzic, T., & Furnham, A. (2003)<sup>17</sup> explore how personality affects academic performance and explains that extroverted students are often given more academic support and participation which enhances their success in the classroom. Similarly, researcher Komarraju, et al. (2011)<sup>18</sup> describe the five personality traits and their connection with academic achievement concluding there was a positive association between extroversion, leading to greater social integration and overall academic success.

It’s important to be aware of teacher/educational bias because teachers play a significant role in a student’s life and in shaping their educational experiences. When teachers are biased, they might unconsciously treat a student differently or negatively based on personality, race, or gender which can lead to unfair outcomes. Also, teacher bias influences the way students are assessed. Biased grades give an unfair disadvantage to a student and could incorrectly reflect their intelligence and overall academic abilities. As for teachers, it’s vital for them to acknowledge their bias and learn to be aware of it so they can give every student a fair opportunity to earn the highest grade they can get. As for mindset, the data shows if a student adopts a growth mindset, they will most likely have a significantly higher GPA than a student with a fixed mindset. This is important to know because it shows that the way we think and react to certain things heavily affect the outcomes. The results of this study contribute to our understanding of personality, success, and the field of education bias because it shows the power of certain personalities over others which can make biased teachers favor specific types of students, affecting their success in school.

---

## Strengths, Limitations, and Future Implications

### Real World Application For Educators & Policy Makers

The results of this study offer several practical implications for education. Teachers can use these insights to create more inclusive and supportive classroom environments. The introduction of professional development programs can include training on recognizing and reducing biases to understand different personality traits that students might have. By becoming aware of their own potential biases, teachers can strive to provide balanced support, feedback, and opportunities that encourage all students, regardless of personality type, to prosper in their academics.

Additionally, policymakers can build educational policies that promote equitable learning experiences. This could include more funding for programs that specifically support the social and emotional learning of introverted students, helping them to build resilience and a growth mindset. Lastly, educational counselors can use this study's insights to develop academic advice and plans to meet the unique needs of introverted students. This might include creating environments that reduce anxiety and increase engagement for introverted students, thereby helping them achieve their full academic potential.

By incorporating these findings into these three sectors of education we can work towards creating a more balanced and fair educational system that acknowledges and supports the diverse needs of all students.

### Strengths

The scales administered within this study were well known and reliable as seen from previous research that has validated them for use with adolescents in schools. This also ensures that future studies with a larger sample size can use the scales from this paper to run a similar study.

### Limitations

Due to a small sample size, my study was confined to basic statistical analysis such as descriptives. Additionally, none of the participants were compensated for taking the questionnaire which adds to why it was more difficult to get people to participate. Furthermore, due to missing information, I was forced to make decisions to eliminate anyone that had less than 20% of the survey completed. In the future, a study using a larger sample size, more time for the study to run, and compensation for participants, might provide less room for invalid data and would make the study more successful by enhancing paid participation. Other methodologies to be utilized in future studies could use more established personality tests to carry out an investigation on the same or similar topic. Also, more robust methodologies, such as longitudinal designs to collect data could be utilized.

## Conclusion

This study explains the connections between personality, growth mindset, and teacher bias and to what extent it can affect a high school student's grade. This topic is important because everyone has bias which can affect our thoughts about someone or something. Understanding if a teacher's bias can have an impact on how well a student does in school, basing their grade on how much they like them and dismissing how much time and effort the student actually puts into their school work is worth studying. My original research question was to understand how the presence of introversion and/or extroversion impacts teacher bias as reflected in students' grades in high school and to what extent the adoption of a growth mindset by students influences their GPA and serves as a protective factor against teacher bias. I originally thought that introverted students were going to be more affected by teacher bias because usually people with personalities that have extroverted characteristics get noticed more and are more liked by teachers, giving that student an advantage. Through the data from the questionnaires and participants' personal experiences, this study concludes that extroverted students generally get less affected by teacher bias resulting in higher GPA and grades.

### Future Research Recommendations

By recognizing that educators could have an implicit bias towards a type of student, they can use these results to instruct themselves and others on how to change their mindsets when teaching students to disregard their personal opinions to promote equality in the learning environment. Additionally, future studies could investigate other variables such as educator's personalities and what effect that has on their students, other personality types, or different age groups to see if the same results apply in those cases. Outside factors such as the role of family support, peer influence, and socio-economic status of a student could be studied to determine how a student's personal life plays into their personality type and how teachers might perceive them because of that.

## References

- 1 C. Cooper, *Camille Wilson Cooper 101 Teacher Education Quarterly*, 2003.
- 2 C. Terrier, *Boys Lag Behind: How Teachers' Gender Biases Affect Student Achievement*, 2016.
- 3 R. Megalokonomou, *Teacher gender bias is real and has lasting effects on students' marks and study choices*, 2021, <https://theconversation.com/teacher-gender-bias-is-real-and-has-lasting-effects-on-students-marks-and-study-choices-171827>.
- 4 C. Tulbure, *Research Journal of Agricultural Science*, 2014, **46**, year.
- 5 X. Li, R. Sardinias, P.-C. Shih and K. Camp, *International Journal of Information and Education Technology*, 2018, **8**, 644-648.

- 
- 6 A. Hazrati-Viari, A. T. Rad and S. S. Torabi, *Procedia - Social and Behavioral Sciences*, 2012, **32**, 367–371.
  - 7 Martin, Burns, Collie, Bostwick, Flesken and McCarthy, *Growth Goal Setting in High School: A Large-Scale Study of Perceived Instructional Support, Personal Background Attributes, and Engagement Outcomes*, 2021, <https://psycnet.apa.org/fulltext/2021-57515-001.html>.
  - 8 D. Wang, F. Yuan and Y. Wang, *Current Psychology*, 2020.
  - 9 E. Diener, R. E. Lucas and J. A. Cummings, *Personality Traits*, 2019, <https://openpress.usask.ca/introductiontopsychology/chapter/personality-traits/>.
  - 10 C. Dweck, *Growth Mindset Scale — SPARQtools*, 1999, <https://sparqtools.org/mobility-measure/growth-mindset-scale/>, Retrieved October 30, 2023, from SPARQtools website.
  - 11 C. Watts, *What is Educational Bias? Examples & How to Avoid it*, 2023, <https://www.highspeedtraining.co.uk/hub/educational-bias/>, Retrieved November 1, 2023, from The Hub — High Speed Training website.
  - 12 S. Claro, D. Paunesku and C. S. Dweck, *Proceedings of the National Academy of Sciences*, 2016, **113**, 8664–8668.
  - 13 J. Suttie, *Four Ways Teachers Can Reduce Implicit Bias*, 2016, [https://greatergood.berkeley.edu/article/item/four\\_ways\\_teachers\\_can\\_reduce\\_implicit\\_bias](https://greatergood.berkeley.edu/article/item/four_ways_teachers_can_reduce_implicit_bias).
  - 14 G. A. Grove, *The Introversion-Extroversion Scale*, 2016.
  - 15 S. University, Stanford and C. 94305, *Growth Mindset Scale — SPARQtools*, n.d., <https://sparqtools.org/mobility-measure/growth-mindset-scale/#all-survey-questions>.
  - 16 *GPA requirement — UC Admissions*, n.d., <https://admission.universityofcalifornia.edu/admission-requirements/freshman-requirements/gpa-requirement.html#:~:text=UC%20has%20a%20specific%20way>.
  - 17 T. Chamorro-Premuzic and A. Furnham, *Journal of Research in Personality*, 2003, **37**, 319–338.
  - 18 M. Komaraju, S. J. Karau, R. R. Schmeck and A. Avdic, *Personality and Individual Differences*, 2011, **51**, 472–477.

---

## Appendix

### Survey Questions

#### Section 1: Demographic Information (Multiple Choice Questions)

1. What race are you?
  - White or Caucasian
  - Black or African American
  - American Indian or Alaska Native
  - Asian (Far East, Southeast Asia, or the Indian subcontinent)
  - Middle Eastern or Arab
  - Hispanic or Latino
  - Pacific Islander
  - Other
2. What is your ethnicity? (optional free response) \_\_\_\_\_
3. What is your age?
  - 14
  - 15
  - 16
  - 17
  - 18
4. What gender do you identify with?
  - Female
  - Male
  - Other

#### Section 2: Growth Mindset (Likert Scale Multiple Choice Questions: scale from 1 (strongly agree) - 5 (strongly disagree))

- 1: "You have a certain amount of intelligence, and you can't really do much to change it"
- 2: "Your intelligence is something about you that you can't change very much."
- 3: "You can learn new things, but you can't really change your basic intelligence"

#### Section 3: Personality (Likert Scale Multiple Choice Questions: scale from 1 (strongly agree) - 5 (strongly disagree))

- 1: I show individuality and originality in written reports
- 2: I dislike test questions in which the information tested is in a different form from that in which it was learned.
- 3: I avoid exaggeration when sharing personal experiences
- 4: I lose control when I get angry
- 5: I engage in reflective, philosophical thought
- 6: I prefer to have a theory or principle explained rather than studying it out for myself.
- 7: I conceal disappointments
- 8: I tear up or cry when I hear a sad story
- 9: I spend leisure time reading poetry, stories, or plays
- 10: I am uninterested in discussions of The Ideal Society.
- 11: When people displease me, I refrain from saying anything.
- 12: I get excited when I argue.

#### Section 4: Experience (Free Response Survey Questions)

1. Do you have any experiences with a biased teacher in the past? If so, please describe what happened and if you think your personality affected your grade in that class. \_\_\_\_\_
2. Please record your GPA from grade 9: \_\_\_\_\_
3. Please record your GPA from grade 10: \_\_\_\_\_