

Stereotype Threat and its Impact on Academic Performance

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Abstract:

This experiment observed the impact of identifying one's cultural background prior to participating in an academic exam. The hypothesis of this experiment was "*if Asian youths are expected to identify their cultural backgrounds prior to writing the BC numeracy exam, then their exam scores will be half a point lower than those who are not expected to identify their cultural backgrounds*". Researchers used a surveying method for data collection. Participants were asked to complete a survey prior to writing the BC Numeracy Assessment. Survey responses and assessment scores were analyzed and compared to find a possible correlation.

Introduction:

The topic of this experiment is how stereotype threat impacts the academic performance of individuals. The researcher of this report is named Chloe Tran. She is a grad student from the University of British Columbia, completing her master's degree in psychology. Her personal experience as a second generation Canadian who is held to societal standards motivated her to focus on Asian adolescents. If Asian youths are asked to identify their cultural backgrounds prior to writing the BC numeracy exam, then their exam scores will be half a point lower than those who are not expected to identify their cultural backgrounds.

Method:

As previously stated, the topic of this experiment is the impacts of stereotype threat on the academic performance of high school students. If Asian youths are expected to identify their cultural backgrounds prior to writing the BC numeracy exam, then their exam scores will be half a point lower than those who are not expected to identify their cultural backgrounds. The operational definition of this experiment is the exam scores the students receive. Participants will be current grade 12 students enrolled at Walnut Grove Secondary. All participating students will be asked to fill out the questionnaire and are expected to answer truthfully. The independent variable will be whether the students identify their cultural backgrounds, while the dependent variable will be their numeracy exam scores. The control group will be the non-Asian students, and the experimental will be the Asian students.

Permission needed:

1. **Students** must consent to the research team seeing their test scores
2. **Parents** must consent to their children participating in this experiment

Timeline:

1. Consent forms will be handed out on September 16, 2021.
2. Signed consent forms will be asked to be handed in no later than September 23, 2021 to their teachers. Researchers will collect forms on this day too.
3. This experiment will take place on September 30, 2021.

Procedure:

1. This experiment will take place at Walnut Grove Secondary School in the library. The numeracy exam will commence at 10:45 am.
2. All students will arrive at the school at 10:30 am. All participants will receive a copy of the questionnaire to complete. Students must hand in completed surveys before beginning their exams. Questionnaires should take approximately 5-7 minutes to fill out.
3. Completed questionnaires will be pushed face down to the corner of their tables and researchers will collect them.
4. Numeracy exams will be handed out, face down, on the tables at around 10:40 am.
5. At 10:45 am, students will be asked to turn their papers over and begin writing. They will have 3 hours to complete the assessment.
6. Completed exams will be turned face down and pushed to the corner of their desks. Researchers will collect them after.
7. If students complete their exams prior to 1:45 pm, they will be free to leave.
8. Parents and participants will be provided with results approximately 3 weeks after.

Raw Data Charts:

Figure 1.1 - Question: what pronouns do you prefer?

Answer Options:	Number of Responses:
she/her	
he/him	
they/them	
other	

Figure 1.2 - Question: what sex do you identify as?

Answer Options:	Number of Responses:
female	
male	
other	
rather not say	

Figure 1.3 - Question: what grade bracket do you fall under?

Answer Options:	Number of Responses:
A student – 86-100%	
B student – 73-85%	
C+ student – 67-72%	
C student – 60-66%	
Other	

Figure 1.4 - Question: are you of Asian descent?

Answer Options:	Number of Responses:
Yes	
No	

Figure 1.5 - If answered “yes” to the above question, the common identifications were:

Answer Question:	Number of Responses:
Vietnamese	
Japanese	
Chinese	
Korean	
Filipino	
Other	

Figure 1.6 - Question: identify what country you were born in (response options will be based off common answers from participants):

Answer Options:	Number of Responses:
Canada	
Korea	
Vietnam	
China	
United States	
Other	

Figure 1.7 - Question: identify what country your parents were born in (these response options will be based off common answers from participants):

Answer Options:	Number of Responses:
Canada	
Korea	
Vietnam	
China	
United States	
Other	

Figure1.8 - Exam Scores:

Score Possibilities:	Number of Students:
1	
2	
3	
4	
5	

Questionnaire for all Participants

All questions are adapted from the “*Asian American Journal of Psychology*”

- 1. Which pronouns do you prefer?**
 - a. She/her
 - b. He/him
 - c. They/them
 - d. Other

- 2. What sex do you identify as?**
 - a. Female
 - b. Male
 - c. Non-binary
 - d. Rather not say

- 3. What grade bracket do you fall under?**
 - a. A student – 86-100%
 - b. B student – 73-85%
 - c. C+ student – 67-72%
 - d. C student – 60-66%
 - e. Other

- 4. Are you of Asian descent?**
 - a. Yes
 - i. If yes, please identify which one(s):**
 1. Vietnamese
 2. Japanese
 3. Korean
 4. Chinese
 5. Filipino
 6. Other – please specify:
 - b. No

- 5. Please identify what country you were born in:**

- 6. Please identify what country your parents were born in:**

Experiment Consent Form - Parents

Informed Consent Form

Psychology at the University of British Columbia supports the practice of protection of human participants in research. The following will provide you with information about the experiment that will help you in deciding whether or not you wish to participate. If you agree to participate, please be aware that you are free to withdraw at any point throughout the duration of the experiment.

In this study, we will ask your child to disclose personal information regarding their ethnic/racial background prior to writing the grade 12 BC numeracy exam. All information they provide will remain confidential and will not be associated with their name. If you do not feel comfortable with your child performing any of these tasks for any reason during this study, you may not give consent for your child to participate. Their participation in this study will require approximately 3 hours. When this study is complete, you and your child will be provided with the results of the experiment if you request them, and you will be free to ask any questions. If you have any further questions concerning this study, please feel free to contact us through phone or email: Chloe Tran at chloetran@ubc.ca (604-xxx-xxxx) or Julia Bryant-Taneda at jbryant-taneda@sd35.bc.ca (604-882-0220). Please indicate with your signature on the space below that you understand your child's rights and consent to them participating in the experiment.

Your participation is solicited, yet strictly voluntary. All information will be kept confidential, and your name will not be associated with any research findings.

Signature of Parent

Chloe Tran, Investigator

Print Name

Experiment Consent Form – Participants

Informed Consent Form

Psychology at the University of British Columbia supports the practice of protection of human participants in research. The following will provide you with information about the experiment that will help you in deciding whether or not you wish to participate. If you agree to participate, please be aware that you are free to withdraw at any point throughout the duration of the experiment.

In this study, we will ask you to disclose personal information regarding your ethnic/racial background prior to writing the grade 12 BC numeracy exam. All information you provide will remain confidential and will not be associated with your name. If you do not feel comfortable for any reason during this study, you may leave the laboratory and your information will be discarded. Your participation in this study will require approximately 3 hours. When this study is complete you will be provided with the results of the experiment if you request them, and you will be free to ask any questions. If you have any further questions concerning this study, please feel free to contact us through phone or email: Chloe Tran at chloetran@ubc.ca (604-xxx-xxxx) or Julia Bryant-Taneda at jbryant-taneda@sd35.bc.ca (604-882-0220). Please indicate with your signature on the space below that you understand your rights and agree to participate in the experiment.

Your participation is solicited, yet strictly voluntary. All information will be kept confidential, and your name will not be associated with any research findings.

Signature of Participant

Chloe Tran, Investigator

Print Name

Results:

Overall, the experiment went quite smoothly. The experiment began five minutes later than planned due to a copying error of the questionnaires, which impacted the timing by a few minutes. Three students were absent on the day of writing this test, which altered the sample size slightly. The researcher believed that these changes in the original method did not drastically impact the results. In both the control and experimental groups, there were outliers. When looking at **figure 2.9** and **figure 2.11**, the odd individual who received a score of 1 on the assessment was ultimately omitted from the data calculations. After examination of the results of both the surveys and the examination scores, it is evident that asking students to identify their cultural identities does in fact impact their academic performance. The survey was targeted specifically at Asian adolescents who attend Walnut Grove Secondary, only asking if the participants are of Asian descent. This allowed researchers to keep control of the other participants and only focus on the Asian adolescents. **Figures 3.4** and **figure 3.5** display responses to the questions on the questionnaire that ask participants to identify their Asian ethnicity. Approximately 39% of the sample is of Asian descent; this data can be viewed in **figure 2.4**. Relating that to the BC Numeracy Exam, the participants who were of Asian descent did in fact have an average score lower than the non-Asian participants by half a point. This data can be viewed in **figure 3.8**.

Total number of participants: 200

Figure 2.1 - Question: which pronouns do you prefer?

Answer Options:	Number of Responses:
she/her	73
he/him	97
they/them	22
other	8

Figure 2.2 - Question: what sex do you identify as?

Answer Options:	Number of Responses:
female	70
male	95
other	23
rather not say	12

Figure 2.3 - Question: what grade bracket do you fall under?

Answer Options:	Number of Responses:
A student – 86-100%	60
B student – 73-85%	75
C+ student – 67-72%	32
C student – 60-66%	22
Other	11

Figure 2.4 - Question: are you of Asian descent?

Answer Options:	Number of Responses:
Yes	77
No	123

Figure 2.5 - If answered “yes” to the above question, common identifications were:

Answer Question:	Number of Responses:
Vietnamese	4
Japanese	4
Chinese	13
Korean	21
Filipino	12
Other	23

Figure 2.6 - Question: identify what country you were born in (response options are based off common answers from participants):

Answer Options:	Number of Responses:
Canada	133
Korea	23
Vietnam	3
China	9
United States	2
Other	30

Figure 2.7 - Question: identify what country your parents were born in (these response options are based off common answers from participants):

Answer Options:	Number of Responses:
Canada	115
Korea	30
Vietnam	4
China	13
United States	2
Other	36

BC Numeracy Exam Results:

This exam was calibrated to easily filter through the students of Walnut Grove Secondary; the questions are designed to easily separate each grade bracket of students.

The BC Numeracy Assessment is marked on a 5-point scale

Figure 2.8 – Total scores of the whole sample

Score Possibilities:	Number of Students (TOTAL):
1	3
2	8
3	64
4	102
5	23

Figure 2.9 – Scores from Non-Asian students:

Average score of students who *were not* of Asian descent: 4/5

- 18% of these students placed themselves in the “A- student” category
- 53% of these students placed themselves in the “B-student” category
- 29% of these students placed themselves in the other grade brackets

Score Possibilities:	Number of Students (NON-ASIAN):
1	2
2	6
3	31
4	74
5	7

Figure 2.11 - Scores from Asian students:

Average score of students who *were* of Asian descent: 3.5/5

- 91% of these students placed themselves in the “A-student” category
- 8.0% of these students placed themselves in the “B-student” category
- 1.0% of these students placed themselves in the other grade brackets

Score Possibilities:	Number of Students (ASIAN):
1	1
2	2
3	33
4	28
5	16

Figure 3.1: Pronouns

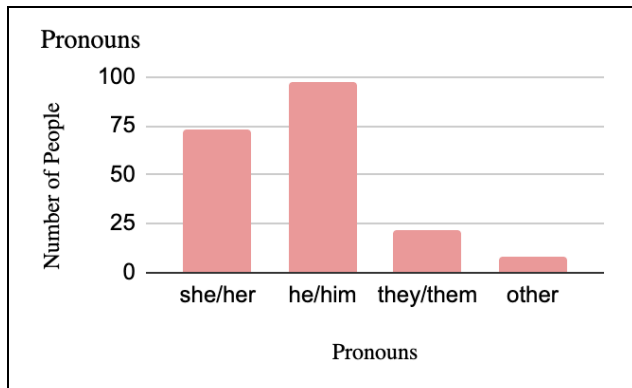


Figure 3.2: Gender

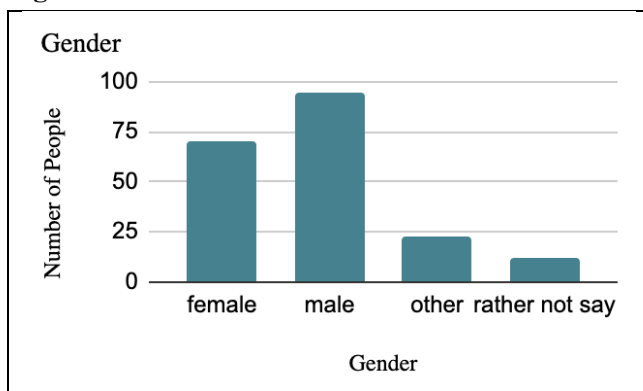


Figure 3.3: Grade Bracket

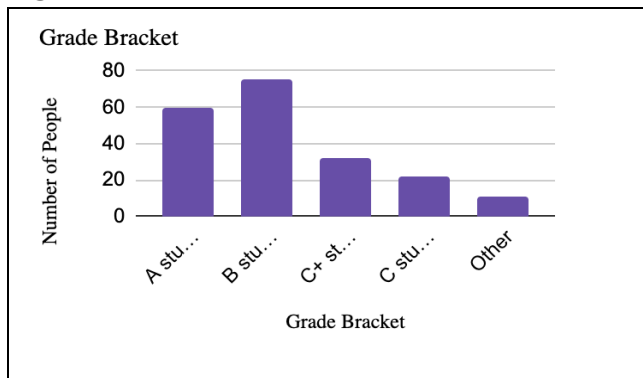


Figure 3.4: Asian Descent

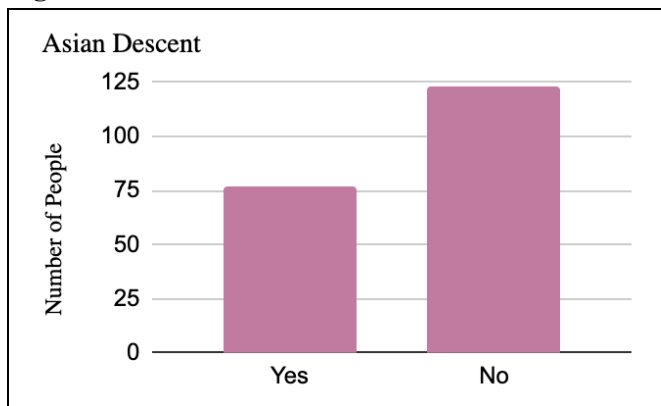


Figure 3.5: Identifying Asian Descent

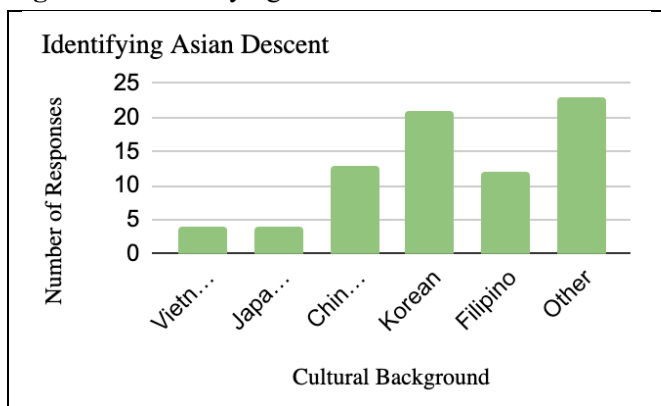


Figure 3.6: Birth Country

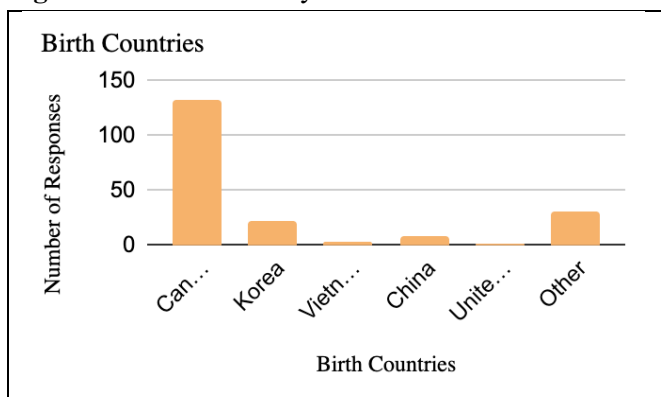


Figure 3.7: Parental Birth Countries

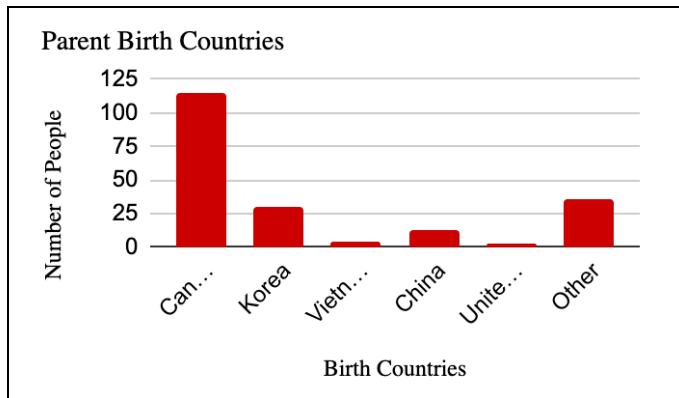
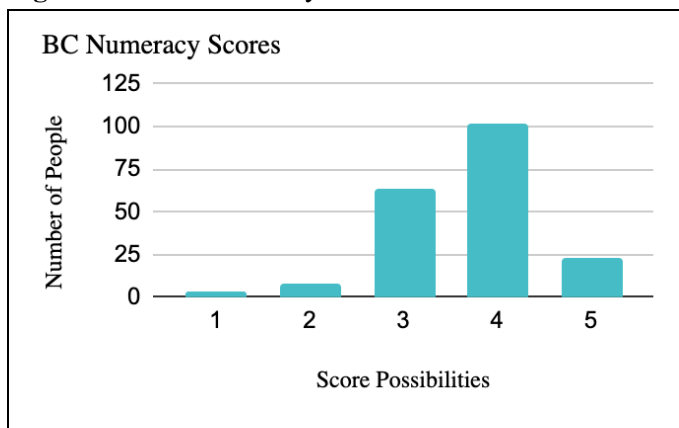


Figure 3.8: BC Numeracy Scores



Conclusion:

The hypothesis of this experiment was proven correct, seeing that the experimental group of Asian individuals scored half a point lower (**an average score of 3.5/5**) than the control group of non-Asian individuals (**average score of 4/5**). Comparing the two mean scores, the control group scored **10% higher** than the experimental group. It is believed that when students are asked to disclose information about their cultural backgrounds, which in turn puts a label on themselves, they will perform worse on a written academic test. It is suggested that this experiment is replicated by focusing on a different cultural group to further explore the impacts of various stereotypes on different groups. Some possible confounding variables are participants not being completely truthful on their questionnaires and individuals preparing for the numeracy assessment in the past, even though preparation is not recommended.

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