## The role of race in the stereotyping of a speaker's accent as native or non-native

Deepa Bhuvanagiri<sup>1</sup>, Anna Grahlherr<sup>1</sup>, Pamela Beardsell<sup>1</sup>, Jaishree Chittoor<sup>2</sup> and Donald Rubin<sup>3</sup> <sup>1</sup>Eureka High School, Eureka, MO 63025, <sup>2</sup>Wildwood, MO 63021, <sup>3</sup>University of Georgia, Athens, GA 30602

#### Summary

An accent is a distinctive way a language is pronounced in a nation, community, or social class. Everyone has an accent, and we acquire our accents from listening to the people around us. Non-Caucasian children born in the United States most often speak English with a standard American accent, but they are often perceived to speak with a non-native accent. Three studies were done over three years to understand this behavior. In the first study, we hypothesized that the speaker's race would play a role in the perception of the speaker's accent. We found that the race of the speaker alone influenced the perception of the speaker's accent as native or non-native, with native representing the standard American accent. In the second study, we hypothesized that listeners' exposure to a linguistically diverse environment would help prevent the formation of stereotypes. The results from the second study showed that exposure to a multicultural environment reduced listeners' stereotyping of a speaker's accent based on the attributed race of the speaker, and this was independent of the race of the listener. Lastly, the third study explored the effectiveness of a brief intervention program that directly educated participants about speech stereotyping. We hypothesized that children would be more receptive to the educational program on stereotypes than adults. Our study showed that adults were receptive to education on stereotypes; however, the study on children's receptiveness to education on stereotypes was inconclusive.

**Received:** December 31, 2017; **Accepted:** September 05, 2018; **Published:** January 07, 2019

**Copyright:** (C) 2018 Buhvanagiri *et al.* All JEI articles are distributed under the attriution non-comercial, no derivative license (<u>http://creativecommons.org/licenses/by-nc-nd/3.0/</u>). This means that anyone is free to share, copy and distribute an unaltered article for non-commercial purposes provided the original author and source is credited.

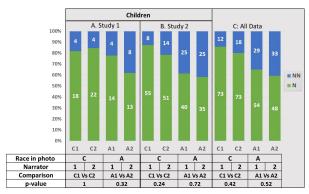
#### Introduction

Humans often form opinions about a person or a group based on certain characteristics or traits they possess. This ability to infer information about a person or group is an evolutionary response that is thought to have helped members from different tribes recognize friends from foes during encounters (1). As society has become more heterogeneous, this once adaptive advantage is now a social problem that affects people who are deemed different.

Several factors such as race, gender, age, physical appearance, and non-physical characteristics such as religion, profession, and accent of the person determine membership into a group. Stereotypes emerge when a particular group becomes associated with preconceived ideas. An example of stereotyping is the idea that Asians are smart and socially awkward or that women are not good at math. Since demographic groups are not homogenous with respect to abilities and behaviors, making assumptions of individuals based on stereotypes can result in incorrect conclusions and has become a big problem in the modern world, especially because it can limit the advancement and opportunities of groups of people: women may be less likely to be hired for a job that requires training in math or engineering, or Asians may be perceived as too socially awkward for leadership positions.

Social identity threat and stereotype threat are consequences of stereotyping that are experienced by members within and between groups. Social identity threat happens when a group faces a threat to their positive perception. Under such conditions, they reinforce the behaviors that align them to the group and justify their superiority over rival groups (2). Stereotype threat happens to individuals within a group that are associated with negative stereotypes. Members of the group, when made aware of their negative stereotypes, perform poorly. This was demonstrated by Steele and Aronson, 1995 (3) where they showed that African American students, when told about the achievement gap associated with their group, under preformed on standardized tests. Overall, the stereotyping of a group or community has been shown to result in burnouts (4), learning impediments (5), lower performance (6-8), and increase in discrimination between in groups and out groups (9).

The perception of an accent is affected by stereotyping. In general, Caucasian Americans report less bias on the perception of their accents as nonnative than native born Asian Americans. The Caucasian Americans also report less bias on the perception of their nationality. That is, Caucasian Americans are less likely to be perceived as foreign compared with Asian Americans (10). So, an Asian-American is under constant pressure to prove themselves as Americans. This kind of stereotyping tested in this study is known as "Perpetual Foreigner" (11, 12). In America, the term Perpetual Foreigner refers to the concept of an Asian American being perceived by the majority group as the "other" and not a "true" American. Such stereotyping can lead Asian Americans to question their identity and their sense of belonging in American culture.



**Figure 1. Study 1 using same photo but different speakers indicates that the two narrators have similar accents.** The bar chart shows the proportion of accents identified as native or non-native in each experiment. In all comparisons, the voices of the na'rrators were compared when the race in the photo was kept constant. P-values were calculated using Fisher's exact tests. All responses are from children (<= 18 years). N: Native, NN: Non-native, C: Caucasian, A: Asian, 1 & 2: narrator 1 & 2. Experiments in panel **A** and **B** are replicates done at two different years and sampling locations. Panel **C**: represents combined data from studies 1 and 2.

Several studies have been done to understand the development of stereotypes (13). The ability to form a prejudice or bias towards people tends to develop at a young age (14,15,16) and has been found to occur during implicit cognition when the individual is unaware that they are making these assumptions about a person (13). In a study done by Kinzler and DeJesus, it was observed that younger children (5-6-year-olds) showed no signs of stereotyping people with characteristics associated with Southern and Northern American accents; however, older kids (9-10-year-olds) applied the typical stereotypes linked with Southern and Northern American accents (14).

The prevention of stereotype development has also been studied. These studies highlight the importance of education and policies to mitigate or correct such behaviors. One study found that implementing changes through educational, social, and legal policies can help change environmental factors that impact the formation of stereotypes (17). Another study showed that when following the implementation of a diversity program, college students were more accepting and eager to learn about other cultures (18, 19).

To study the role of race in accent stereotyping, we evaluated school age children using a study protocol outlined in a paper that showed that college age students were more likely to rate a speaker's accent as non-native based on the artificially ascribed race of the speaker (ascribed via photograph), even if the individual spoke with a standard American accent (20). Based on the concept of "reverse linguistic stereotyping", we hypothesized that children were more likely to perceive speakers as having a non-native accent when they were led to believe the speaker was an Asian. If the speaker's race played a role in accent perception, then a statistically significant association

#### Journal of Emerging Investigators

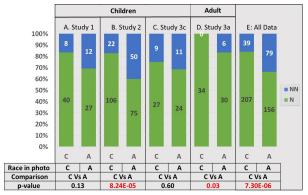


Figure 2. Perceived race of the speaker influences listeners' perception of the speaker's accent. The bar chart shows the proportion of accents identified as native or non-native in each experiment. *P*-values were calculated using *Fisher's exact* tests. Significant p-values are shown in red. Responses in panel **A**, **B** and **C** are from children (<= 18 years) and responses in panel **D** are from adults. Panel **E** summarizes all data. N: Native, NN: Non-native, C: Caucasian, A: Asian. Experiments in panel **A**, **B**, **C** are replicates taken over three years and sampling locations.

between the speakers' attributed visual appearance (Caucasian or Asian) and the listener's perception of accent (native or non-native) would be found. In the second study, the influence of linguistic environmental factors in the development of accent stereotypes was studied. Our second hypothesis was that exposure to non-native accents would reduce listeners race-based stereotypes about accents. This means that children who are exposed to people who speak English with a non-native accent would be less likely to stereotype a person's accent based on racial or group identity. Lastly, a third study was designed to evaluate whether an educational intervention would be more effective for children than adults. Since stereotyping is learned, we hypothesized that children would be more receptive to education than adults because we thought it would be easier to teach children the correct behavior rather than to correct an established behavior already existing in the adult population. If a brief educational intervention was effective, then there would be no statistically significant association between accent and attributed race of the speaker. We expected that the ability of the intervention to reduce language stereotyping would be stronger in the children's group.

#### Results

### Study 1: The racial identity of a speaker influences the perception of native versus non-native accents.

The experiments used two different speakers. One was of Asian background and the other was of Caucasian background. However, results showed no differences between speakers in listeners' perceptions of accent (**Figure 1A-C**). Therefore, data from the two speakers were pooled in subsequent analyses. To test the first hypothesis, listener responses (perceived accents: native, non-native) from experiments with different photos (Caucasian, Asian) were compared (**Figure 2**).

#### Journal of Emerging Investigators

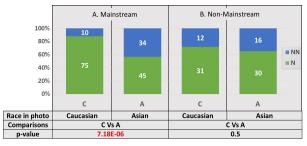


Figure 3. Exposure to non-native English accents reduces the perception of non-native accents based on the perceived race of the speaker. The bar chart shows the proportion of accents identified as native or non-native in each experiment. *P*-values were calculated using *Fisher's exact* tests. Significant *p*-values are shown in red. N: Native, NN: Non-native, C: Caucasian, A: Asian.

Overall, in these studies, children and adults reported more non-native accents when they perceived the speaker to be Asian (**Figure 2E**; n = 481, p = 0.000007). However, within any individual study, the results varied. In studies 1 (n = 87) and 3 children control group (n =71), where less students from high school participated (6% and 7% respectively), a statistically significant association between race (photo: Caucasian, Asian) and response (accents: native, non-native) was not found (Figure 2A,C). In these studies, the results suggest that the race of the narrator did not influence the perception of the narrator's accent as native or non-native. This observation did not support the conclusion found in a 1992 study demonstrating that race plays a role in the perception of an accent (20). In studies involving older participants the results were different. In study 2, where 29% of participants were from high school (n = 71/253, Figure 2B), and in study 3 adult control group (n = 70, control data, Figure 2D), a significant association (p = 0.00008 and p = 0.02511, respectively) was found between the perception of an accent and the speaker's race, supporting the hypothesis that the race of the speaker influences the perception of a speaker's accent in children and adults.

# Study 2: Exposure of the listener to non-native accents reduces the stereotyping of an accent based on the race of the speaker.

In study 2, the same analysis was repeated on data collected from listeners that were separated into two groups, the mainstream group who were not exposed to other accents and the non-mainstream group who were exposed to other accents. The analysis showed that the differences in the response to the perceived race of the speaker was highly significant only in the mainstream group (**Figure 3A**, n = 164, p = 0.000007) but not in the non-mainstream group (**Figure 3B**, n = 89, p = 0.50) group supporting the hypothesis that exposure to a diverse linguistic environment reduces the development of stereotypes.

To confirm that the exposure to other accents rather than the race of the listener played a role in the perception of accents, the responses from children

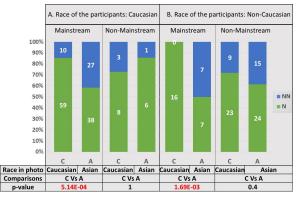
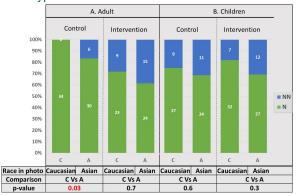


Figure 4. Exposure to non-native English accents reduces the perception of non-native accents based on the perceived race of the speaker and is independent of the race of the participant. The bar chart shows the proportion of accents identified as native or non-native in each experiment. *P*-values were calculated using *Fisher's exact* tests. Significant *p*-values are shown in red. N: Native, NN: Nonnative, C: Caucasian, A: Asian.

were first separated into a Caucasian (n = 152) and Non-Caucasian (n = 101) group based on the race each respondent self-identified with (**Figure 4A,B**). The responses were then compared within the mainstream and non-mainstream group. The analysis showed that children in both the Caucasian and non-Caucasian groups had a racially biased perception of accent (Race in photo: Caucasian versus Asian) only if they were not regularly exposed to other accents (**Figure 4A,B**. Mainstream, n = 134, p = 0.0005, n = 30, p = 0.002). The racial identity of the respondent did not influence the perception of speaker outcome. This suggests that the lack of exposure to other accents influences accent stereotyping and this is independent of the race of the listener.

Study 3: Adults are responsive to education on stereotypes.



**Figure 5.** A brief intervention to determine the receptiveness of adults and children to education about stereotyping. The bar chart shows the proportion of accents identified as native or non-native in each experiment. Data suggests the receptiveness of adults to education on stereotypes. *P*values were calculated using *Fisher's exact* tests. Significant *p*-values are shown in red. N: Native, NN: Non-native, C: Caucasian, A: Asian.

In the third study, the responsiveness of adults and children to a brief educational intervention to reduce stereotyping was evaluated (Figure 5A). When adult listeners received a brief educational intervention about stereotyping, they suppressed the tendency to perceive a nonstandard accent based solely on the race of the speaker (n = 71, p = 0.7). However, those adults who did not receive that educational intervention did exhibit the tendency to perceive a nonstandard accent among speakers identified as persons of color (n = 70, p =0.03). Results from the children subjected to the same test did not show significant association between race and the accent of the narrator even when the prompt was generic (Figure 5B). Thus, the effectiveness of the educational prompt in children and differences, if any, between adults and children could not be evaluated.

#### Discussion

These studies, which were conducted over three years, demonstrate that listeners' perceptions of a speakers' accent are influenced by the race of the speaker. Consequently, Asian American speakers are more often perceived to have a non-native accent than Caucasian Americans. In all 3 studies, a higher proportion of respondents perceived the speaker as having a non-native accent when they watched a video with a picture of an Asian rather than a picture of a Caucasian girl (Figure 2). However, in study 1 and study 3 within the children's group, a significant association between the perceived race and the accent of the speaker was not found. It is possible that the lack of a significant association could be due to the age of the children taking the survey. Most children sampled in study 1 and 3 were from elementary school and only 6 to 9% of the children were from high school. In contrast, in study 2, where the results were significant, nearly 3 to 5 times more children from high school were included. Although the development of prejudiced attitudes toward different ethnic groups has been observed in children ages 7-12 (14) and the awareness of stereotypes has also been seen to increase with age (15), it is likely that there is variation in the responses when children are at a younger age. Another possible explanation for the discrepancy in results between study 1 and 2 is that the survey only had one question to assess the dependent variable, the accent scores. The survey could have been made more sensitive by including additional questions to evaluate the perception of the speakers' accent. Overall, the results from three years of studies strongly support our first hypothesis that the perception of a person's accent is dependent on the ethnic appearance of the speaker and agree with the results from a 1992 study by Rubin, D (20).

Study 2 provides strong evidence in support of our hypothesis that exposure to other accents will reduce accent stereotype (**Figure 3**). It is possible that children will become desensitized to the accents of non-native English-speaking people when they are constantly exposed to them. In fact, this study clearly shows that regular exposure to a non-native accent, rather than the

#### Journal of Emerging Investigators

race of the survey respondent, is a determining factor in whether an individual will exhibit accent stereotyping (**Figure 4**). There were a sufficient number of participants in the non-Caucasian group to make this claim; however, within the Caucasian group, the number of participants who were exposed to other accents were small (n = 18) and so these experiments need to be re-evaluated with a larger sample size. This study also did not consider the duration of exposure to non-native accents and what effect, if any, this would have on the perception of accents by race of the speaker.

These findings agree with the idea that implementing changes through educational, social, and legal policies can help influence environmental factors that aid in the formation of stereotypes (17). The implementation of a diversity program taken by college-aged students provides evidence that students are more accepting and eager to learn about other cultures after taking the program (19). However, in our study, we were not able to determine if a brief education on stereotypes helps to change the perspective of children because our control group did not show any stereotyping even before they received the educational intervention (Figure 5B). This could be because of the participants' age. Most children who took the survey in study 3 were in middle school or younger, and perhaps not yet subject to stereotyping as readily as teens and adults.

In the adults, the control group responded as expected and the association between the race and accent of the speaker was significant, indicating that adults are likely to stereotype a speakers' accent as non-native based on the race of the speaker. Upon educational intervention, their responses changed and the association between the race and the accent of the speaker was no longer significant suggesting that the intervention was effective (**Figure 5A**). In the adult group, we could demonstrate the effectiveness of intervention programs. Further testing is required to determine if adults or children would be more receptive. It is possible that, with a different educational intervention that appeals more to younger children, both these group could be equally receptive to being educated on stereotypes.

#### Methods

#### Permissions

A research proposal, informed consent forms, a copy of the survey, and risk assessment forms were submitted to the local St. Louis Science Fair Office each year for approval of the experimental plan. In the first year of the study, the forms were also submitted to the Rockwood School board for approval. The experiment was performed following the approval.

#### Survey Design and Testing

Four surveys designed using Google forms were adapted from previous publications (20). Each survey has an embedded video that showed a picture of a 13-14 year old Caucasian or an Asian girl while narrator 1 or narrator 2 read a minute-long script on a topic that was generic and easy to follow. The girls in the video were similar in size, sported the same hairstyle and shirt, and were photographed in similar settings to avoid having attractiveness as an influencing factor. In each study, the participants looked at the picture shown in the video while they listened to a generic script read by a narrator before taking the survey. In all studies, the participants rated the accent of the narrator using a Likert scale and provided information on their race, gender and grade/ age range. In studies 2 and 3, additional questions were added to the surveys to determine if the participants were exposed to people speaking English with a nonnative accent. In study 3, a control or an experimental prompt (see below) was added to the survey.

All surveys were administered after obtaining permission from the sites. Four surveys were done at three schools in the Rockwood School districts, and a total of 1,200 consent forms were given to the classroom teachers who distributed them to the students. When the students returned the signed consent forms, the teachers handed the student a link to one of the four randomly selected surveys. Students took the survey in the classroom or at home. Each student participated in only one test. At public sites, children, parents, and guardians were randomly approached to take the survey. The purpose of the experiment was explained to each potential participant. If the participant consented to the study by signing the consent form, one of the surveys were randomly assigned to the participant. Signatures from the parent or quardian as well the child were collected if the participant was below 18 years of age. As much as possible, care was taken to allow only one sibling from each family to take the test. Only children between grades 3-12 and adults who live in St. Louis or who are from the Midwest were given the test. Children in grades K through 2 were not included because, based on a preliminary testing, they do not understand the meaning of the questions. Three studies were done over a period of 3 years. The photographs were not rated for attractiveness in studies 1 & 2. No differences in attractiveness were found when attractiveness was evaluated in the third study.

#### Participants

In the first year of the study, most of the participants were from an elementary (n = 57/87, 3rd & 4th grades) and a middle (n = 25/87, 7th and 8th grade) school. Only five high school students participated in the experiment. All students in the survey were enrolled in the Rockwood School District and a similar proportion of children from all races and genders took each of the 4 surveys. In the second year of the study, two hundred and fiftythree children were surveyed from seven different St. Louis locations. Most surveys were collected at the St. Louis Science Center and the Modern Chinese School. Sample statistics showed that the respondents were representative of the St. Louis County population. Demographic analyses did not appear to affect the results, with one exception (data available upon request). Asian children were surveyed at a slightly larger rate than what is represented in the County. This is not surprising

#### Journal of Emerging Investigators

given that sampling was done at the Modern Chinese School where children were predominantly Asian. Similar proportions of children from all races, genders and grade levels (elementary, middle, and high) took each of the 4 surveys. In the third year of the study, both children (n = 149) and adults (n = 129) were surveyed and all the surveys (n = 278) were collected at the St. Louis Science Center. Like study 1, the majority of children (n = 135) were from elementary and middle school.

#### **Data Analysis**

Data collected from the Google forms platform were compiled, reviewed, and cleaned up before analysis. Data was analyzed in R and Excel. Descriptive data analysis was done to determine the best statistical approach. This analysis showed that the distribution of the response variable, the accent score, was highly skewed. In most surveys, only the accent scores of 5 and 4 were selected, with 5 receiving most of the counts and 4 receiving a much lower count. In some years or in some comparisons, the observed sample sizes were small and at other times all the counts in the test were in one category. Because of these reasons, Fisher's Exact Test was used to evaluate the statistical significance of the comparisons. To enable this, the dependent variable, the accent score, was categorized into native (score of 5) and non-native (scores 1-4) responses. To test if factors such as gender, grade, and race of the participant influenced the response, a generalized linear model (GLM) function in R statistical package was used. Demographic factors did not appear to affect the results (data available upon request). Alpha level of 0.05 was used as a significance cutoff.

## Method for Study 1: To test whether a speaker's race influences the perception of accent.

In this study four experiments were performed. These experiments represented a 2 (Race shown in the picture: Levels: Caucasian or Asian) x 2 (narrators: Levels: 1 or 2) x 2 (Accents: native or non-native) design. First, to eliminate the confounding voice of the narrator with the speaker's race, association between the native and non-native accents, and the voice of the narrator 1 & 2 when the race of the narrator was not a factor (Figure 1) was tested. Once, it was established that the voice of the narrator did not influence the perception of speaker's accent, the data from the experiments with different narrators were pooled. The influence of the race of a speaker on the perception of a speaker's accent as native or non-native was then tested for significance by comparing the response variable from experiments where the observed race of the speaker was either a Caucasian or Asian (Figure 2). The same experiments were repeated in study 2 and 3. Only data from the study 3 control experiments were used in this analysis.

## Method for study 2: To determine whether exposure to non-native accents reduced the stereotyping of accents.

In the study 2 surveys were modified to include questions about the exposure of the participants to

other accents. Exposure to other accents included: (a) themselves or their parents spoke English with nonnative accents, (b) regular exposure to others with nonnative accents, or (c) enrollment in English for Speakers of Other Language (ESOL). The data from the study was divided into 2 groups, mainstream and non-mainstream, based on the responses to questions about exposure to other accents. Children were grouped into the nonmainstream cultural group if their parents spoke English with a non-native accent or if the children participated in activities where they were exposed to people speaking English with non-native accents. Within each group, an association between accents (native Vs non-native) and the observed race of the speaker (race in photo: Caucasian Vs Asian) was evaluated (Figure 3). To determine if reduction in stereotyping following exposure to other accents was independent of the race of the listener, the data was first grouped into Caucasian and non-Caucasian groups based on how the participant self-identified themselves by race in the survey. Within each group, the data was then classified into mainstream and non-mainstream groups before evaluating it for the presence of an association between the accents and the observed race of speaker (Figure 4).

#### Method for study 3.

In study 3, only surveys voiced by a Caucasian American speaker were used as the voices of the Caucasian and Asian American speakers were found to be similar in the past studies. To demonstrate the differences in the learning abilities between adults and children, the treatments were modified to include two prompts (see below). One of the prompts educated the participant on stereotyping and the other prompt served as a control. Children and adult participants were randomly assigned to one of the two treatments (Caucasian or Asian picture) and each treatment had either an educational or control prompt. Under this model, essentially 4 treatments were administered to the adults and children's groups. The presence of an association between accents (native, non-native) and the observed race of the speaker (Caucasian Vs Asian) was then tested within each group (Figure 5).

#### Prompts used in study 3

*Prompt 1 (Control):* I was walking down my school hallway when I bumped into a boy, knocking his books out of his hands. "Oh my gosh! I'm so sorry, let me help you with that." I bent down on the ground and started picking up his books. "Oh that's okay, thanks for the help," he said. After picking up his books, I introduced myself and I found out the boy's name was Alex. I walked Alex to his class and I found out that we had a lot in common. We both liked to play video games and watch movies. After that day in the hallway, Alex and I became close friends. We now hang out every day after school. It just goes to show that sometimes you can get to be friends with someone in the strangest ways.

*Prompt 2 (Experimental):* There are times in Alex's life where she surprises herself. Today was one of those

#### Journal of Emerging Investigators

days. Alex had been working on recording actors' voices for a commercial her company was making. She had arrived late to work on Monday so she had to sneak in while one of the actors was in the middle of recording their voice. When the actor finished, Alex was shocked when she saw an Asian man step out of the sound booth. She had met this man earlier at a coffee shop and swore he spoke with a slight accent; however, within the booth he sounded like an American. She didn't realize she assumed he had an accent, and once again Alex had to recheck how she perceived the world. It just goes to show, sometimes we make wrong guesses about what people will be like, just because they look like they come from a different country or ethnic group

#### Acknowledgments

We would like to thank Elisa Israel and her team at the St. Louis Science Center for encouraging education in science through hands-on experience. We would also like to thank Drs. Agata Gluszek and Shiri Lev-Ari for help with the initial experimental design and Drs. Lulu Chen, James Morrell, and Mine Cetinkaya-Rundel for the suggestions on statistical analysis. Finally, we would like to thank our friend Paige Wolk, teachers, especially Mrs. Jessica Williams, friends, local organizations, Center for Creative Learning and the Rockwood School District for their support and encouragement.

#### References

- Tobena, A., *et al.* "Advantages of bias and prejudice: An exploration of their neurocognitive templates." *Neuroscience & Biobehavioral Reviews*, vol. 23, no. 7, 1999, pp. 1047-58.
- (2) Branscombe, Nyla R., & Wann, Daniel L. "Collective self-esteem consequences of outgroup derogation when a valued social identity is on trial." *European Journal of Social Psychology*. Volume 24, Issue 6, November/December 1994, Pages 641–657.
- (3) Steele, Claude M., and Joshua M. Aronson. "Stereotype Threat and the Intellectual Test-Performance of African-Americans." *Journal of Personality and Social Psychology*, vol. 69, no. 5, Dec. 1995, pp. 797-811.
- (4) Hall, William M., *et al.* "Engineering Exchanges: Daily Social Identity Threat Predicts Burnout Among Female Engineers." *Social Psychological and Personality Science*, vol. 6, no. 5, July 2015, pp. 528–534, doi:10.1177/1948550615572637.
- (5) Rydell, Robert J., Rydell, Michael T., & Boucher, "The Effect of Negative Performance Stereotypes on Learning." *Journal of Personality and Social Psychology*, vol. 99, no. 6, 2010, pp. 883-96.
- (6) Krendl, Anne C., et al. "The Negative Consequences of Threat: A Functional Magnetic Resonance Imaging Investigation of the Neural Mechanisms Underlying Women's Underperformance in Math." *Psychological Science*, vol. 19, no. 2, Feb. 2008, pp. 168–175, doi:10.1111/j.1467-9280.2008.02063.x.
- (7) Ford, Thomas E., et al. "Coping Sense of Humor Reduces Effects of Stereotype Threat on Women's

#### Journal of Emerging Investigators

Math Performance." *Personality and Social Psychology Bulletin*, vol. 30, no. 5, May 2004, pp. 643–653, doi:10.1177/0146167203262851.

- (8) Seibt, Beate, and Jens Forster. "Stereotype Threat and Performance: How Self-Stereotypes Influence Processing by Inducing Regulatory Foci." *Journal* of *Personality and Social Psychology*, vol. 87, no. 1, Aug. 2004, pp. 38-56.
- (9) Fiske, Susan T., and Tiane L. Lee. "Stereotypes and Prejudice Create Workplace Discrimination." Diversity at Work, edited by Arthur P. Brief, New York, *Cambridge UP*, 2008, pp. 13-22.
- (10) Cheryan, Sapna, and Benoit Monin. "Where Are You Really From?': Asian Americans and Identity Denial." *Journal of Personality and Social Psychology*, vol. 89, no. 5, 2005, pp. 717-30.
- (11) Devos, Thierry, and Mahzarin R. Banaji. "American
  = White?" *Journal of Personality and Social Psychology*, vol. 88, no. 3, 2005, pp. 447-66. APA
   PsycNET, doi:10.1037/0022-3514.88.3.447.
- (12) Huynh, Que-lam, et al. "Perpetual Foreigner in One's Own Land: Potential Implications for Identity and Psychological Adjustment." Journal of Social and Clinical Psychology, vol. 30, no. 2, 2011, pp. 133-62.
- (13) Banaji, Mahzarin R., and Anthony G. Greenwald. "Implicit Social Cognition: attudes, Self-esteem, and stereotypes." *The American Psychology Association*, vol. 102, no. 1, 1995.
- (14) Kinzler, Katherine D., and Jasmine M. DeJesus. "Northern = Smart and Southern = Nice: The Development of Accent Attitudes in the United States." *Quarterly Journal of Experimental Psychology*, vol. 66, no. 6, June 2013, pp. 1146–1158, doi:10.1080/174 70218.2012.731695.
- (15) Hughes, Farrah M., and Catherine E. Seta. "Gender Stereotypes: Children's Perceptions of Future Compensatory Behavior following Violations of Gender Roles." Sex Roles: A Journal of Research, vol. 49, nos. 11-12, 2003, pp. 685-91.
- (16) McKnown, Clark, and Rhoma S. Wienstein. "The Development and Consequences of Stereotype Consciousness in Middle Childhood." *Child Development*, 2003.
- (17) Bigler, Rebecca S., and Lynn S. Liben. "Developmental Intergroup Theory: Explaining and Reducing Children's Social Stereotyping and Prejudice." *Current Directions in Psychological Science*, vol. 16, no. 3, 1 June, 2007.
- (18) Nagda, Biren A. "Breaking Barriers, Crossing Borders, Building Bridges: Communication Processes in Intergroup Dialogues." *Journal of Social Issues*, vol. 62, no. 3, 2006.
- (19) Gurin, Patricia, et al. "The Benefits of Diversity in Education for Democratic Citizenship." *Journal of Soical Issues*, vol. 60, no. 1, 11 Feb. 2004, pp. 17-34.
- (20) Donald, Rubin. "Nonlanguage Factors Affecting Undergraduates' Judgments of Nonnative English-Speaking Teaching Assistants." *Research in Higher Education*, vol. 33, 1992, pp. 511-31.
- (21) Rubin, Donald, and Kim A. Smith. "Effects of Accent,

Ethnicity, and Lecture Topic on Undergraduates' Perceptions of Nonnative English-Speaking Teaching Assistants." *International Journal of Intercultural Relations*. 1990, pp. 337-53. DOI:10.1016/0147-1767(90)90019-S.