

Uncovering the less-heard histories and barriers of Asian and Asian American Students

Mr. Siqing Wei, Purdue University at West Lafayette (COE)

Dr. Siqing Wei received a B.S. and M.S. in Electrical Engineering and a Ph.D. in Engineering Education program at Purdue University as a triple boiler. He is a postdoc fellow at the University of Cincinnati under the supervision of Dr. David Reeping. His research interests span three major research topics, which are teamwork, cultural diversity, and international and Asian/ Asian American student experiences. He utilizes innovative and cutting-edge methods, such as person-centered approaches, NLP, ML, and Social Relation Models. He studies and promotes multicultural teaming experiences to promote an inclusive and welcoming learning space for all to thrive in engineering. Particularly, he aims to help students improve intercultural competency and teamwork competency through interventions, counseling, pedagogy, and mentoring. Siqing received the Outstanding Graduate Student Research Award in 2024 from Purdue College of Engineering, the Bilsland Dissertation fellow in the 2023-24 academic year, and the 2024 FIE New Faculty Fellow Award.

Dr. Marissa A Tsugawa, Utah State University - Engineering Education

Marissa Tsugawa is an assistant professor at Utah State University who leverages mixed-methods research to explore neurodiversity and identity and motivation in engineering. They completed their Ph.D. in Engineering Education where they focused on motivation and identity for engineering graduate students.

Li Tan, Arizona State University, Polytechnic Campus

Li Tan is an Assistant Professor of Engineering Education Systems & Design in the Polytechnic School at Arizona State University.

Uncovering the less-heard histories and barriers of Asian American and Asian Students

Siqing Wei, University of Cincinnati
Marissa Tsugawa, Utah State University
Li Tan, Arizona State University
February 2025

Background: Demographics

- Asian Americans make up ~5.6% of households in the U.S., the second smallest racial group after First Nation groups [1]
- Yet, (non-/immigrant) Asian/Asian Americans (A/AAs) are usually considered non-minoritized groups in postsecondary science and engineering (S&E) education as A/AA takes up 6%, 10%, 12%, and 11% of degree receipts of associates', bachelor's, master's, and doctoral respectively [2]

2

Asian Americans make up approximately 5.6% of households in the U.S. according to the 2020 Census making them the second smallest racial group after First Nation groups [1]. Yet, the racial group Asian makes up about 15.7% (Fig. 1.1.8, [Engineering By the Numbers](#)) and 20% ([Zippia, 2023](#)) of engineering students and the technology field, respectively. In 2023, the National Center for Science and Engineering Statistics revealed that Asian/Asian American (A/AA) students are sometimes considered and treated as the predominant group along with White students. Moreover, Asian students were granted 6%, 10%, 12%, and 11% of associates', bachelor's, master's, and doctoral degrees in science and engineering [2].

Background: Influx trend of A/AA

- In 1960, AA comprised < 1% of U.S. population
- In 2020, AA comprised 5.6% of U.S. population
 - Becoming the fastest growing racial group [2]
- Immigration is driving much of this demographic change (led by Chinese and Indian) [3-4]
 - AA immigrants typically migrated to U.S. with more than average levels of education, job skills, and incomes [5]

3

The rapid growth of the Asian American population has generated both scholarly and media interest (Zhou & Lee; 2017), including from the Pew Research Center, a nonpartisan American think tank. In 2012, Pew released a report, titled, “The Rise of Asian Americans” (Pew Research Center, 2012) based on the 2010 U.S. census (U.S. Census Bureau, 2012). The title referred, in part, to the changing demographic and socioeconomic trends. In 1960, Asian Americans comprised less than one percent of the U.S. population, but account for 5.6% today—becoming the fastest growing group in the country. Immigration is driving much of this demographic change (Alba & Nee, 2003; Lee & Bean, 2010). China and India have now surpassed Mexico as the leading sources of new immigrants to the United States. Demographers project that, by 2065, immigrants from Asia will comprise 38% of all immigrants to the country. As a result, Asian Americans will nearly triple in size, and constitute 14% of the U.S. population. Asian Americans also show the highest median household income and highest level of education of all racial groups, even surpassing native-born White Americans. For example, half of Asian American adults ages 25 and older have a bachelor’s degree or more, compared with 31% of White Americans, 18% of African Americans, and 13% of Latino/a Americans. Their socioeconomic rise is largely due to immigration: Asian immigrants arrive in the United States with more than average levels of education, job skills, and incomes. Furthermore, the Pew report emphasized that Asian Americans place more value on hard work, career success, marriage, and parenthood than other Americans, and that they are also more satisfied with their lives, their finances, and the direction of the country.

Prevalent Issue

- In STEM education, we argue that treating A/AA similarly to White students might seem legitimate for the group-aggregated overrepresentation and academic performance, but unfairly overlook the hardship and barriers embedded in this population, especially in the form of model minority stereotypes
 - Could also potentially reinforce the existing systemic racism and racial hierarchy

4

In engineering education, Asian/Asian American students are sometimes considered and treated as predominant group along with White students. The pseudo predominant group is then used to compare with systematically minoritized students who are Black, Latino/a/x, or Indigenous. While the academic achievements of A/AA engineering students are comparable to White students, this group practice could further reinforce Model Minority stereotype towards A/AA students and cultivates the competitive culture for A/AA to work hard to meet such expectation as normalcy (Trytten et al., 2012). The prevalence of Model Minority stereotype (in academia, linking Asian students with inconceivably smart and hardworking) forms the racialization of Asian in the United States (Mejia et al., 2020). Prior work manifested people with Asian heritage carries traditional values, such as hard-working, emphasis on education, and respect for elders and authorities, which coincided with the culture norms in engineering education that regulates students to achieve success (Godfrey & Parker, 2013). Yet following the meritocracy actually is one of the coping strategies for Asians to counter their racialized experiences.

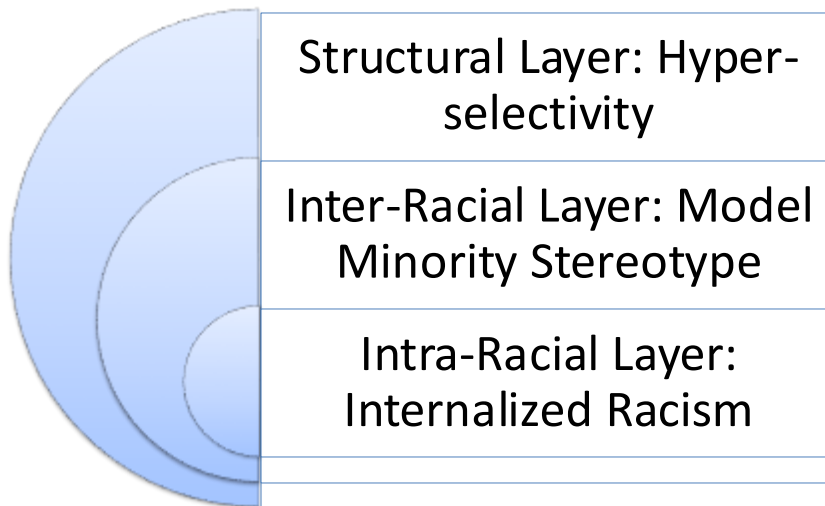
Research Aim

- To queer the common treatment and view of “successful” A/AA engineering and computing students, we hereby present a theoretical framework that
 - Postulates the overrepresentation of A/AA
 - Challenges the stereotypes of “problem-free” A/AA

5

To queer the common practice and view of “successful” A/AA engineering students, we hereby present a theoretical framework that connects theories drawing from Asian American and Immigrant literature. We hope to lay out this framework to help postulate the status quo of overrepresentation of A/AA and challenge the stereotypes of “problem-free” A/AA.

Theoretical Framework



6

Specifically, this framework highlights three layers of roots of anti-Asian racism in the United States: systemically hyper-selected immigration system, interracial model minority stereotype, and intra-racial internalized racism, which interactively functions on maintain and reinforce such stigmatized images on A/AA. We unpack each of the layers in the following slides. Meanwhile, it is important to note that the contribution of this work is not inventing any new theories but rather synthesizing them together and mapping them towards the scholarship of engineering education.

Structural Layer: Hyper-Selectivity

- Exclusionary regulations and laws against A/AA [6]
 - E.g. Japanese Internment, recent anti-China initiative
- Hyper-selected immigration system
 - Prioritizing accepting Asian newcomers with desired skills, typically associated with advanced degrees and relatively higher economic status [5, 7]
 - Limited upward social mobility [8, 9]

7

Systematic racism is rooted in the U.S. history via exclusionary regulations and laws to restrict A/AA's economic, social, education, and civil rights (S. J. Lee et al., 2009), such as the Japanese American Internment during World War II, anti-China initiative recently, and especially the hyper-selected immigration system.

The U.S. contemporary socio-politics adopt an immigration system that prioritizes accepting Asian newcomers with desired skills and socio-economic status relative to both their domestic counterparts and the general population (Zhou & Lee, 2017). There is a considerable rise of Asian (Americans) population in the recent decades while some Asian immigrants possess relatively great employable skill sets and/or socioeconomic status to supplement the highly skilled talent pool (Zhou & Lee, 2017). This impressive socioeconomic progress can be attributed primarily to immigration, as Asian immigrants tend to arrive in the United States with above-average levels of education, job skills, and incomes (Pew Research Center, 2012; Zhou & Lee, 2017).

A/AAs then are argued to adopt relative functionalism, as they “experience and receive limited mobility in noneducational areas of success. The greater the limitations in noneducational areas, the more salient education becomes as a means for mobility” (Sue & Okazaki, 2009, p. 49). Thus, they internalize their hardship through an emphasis on education and hard working as the main means of upward social mobility and countering the negative influence of perceived racism as Asians and those noneducational areas, such as leadership, sports, entertainment, and politics, in which education does not directly lead to the success in those domains (S. Sue & Okazaki, 2009; Tewari & Alvarez, 2009). Those hyper-selected Asian immigrants pressured their children to race ahead from more favorable starting points, have greater access to ethnic-social capital, but constrain with a limited success frame; the racialized achievement also reproduces stereotype promise and threat of upward social mobility at the same time (Zhou & Lee, 2017).

Inter-Racial Layer: Model Minority Stereotype (MMS)

- MMS refers to A/AA as minorities who overcame systemic barriers and limitations through meritocracy to achieve enormous economic and academic success perceived by non-Asian people [6]
 - Promise: prescribed image of being smart, hardworking, and deserving [10]
 - Threats:
 - no longer face challenges for success [9];
 - bear the burden of facing a “bamboo ceiling” effect while facing a higher standard than other groups [5,6];
 - Mask the diversity within [11, 12] and disproportionately negatively impact subgroups of A/AA [5]
 - Accelerate interracial tension by promoting A/AA as the minority group’s version of the “American Dream” and urge other racial minority groups to emulate disciplined and persistent A/AA to earn achievement [5, 13, 14]

8

Interracial racism is rooted in the model minority which stereotypes Asian Americans and Immigrants as minorities who overcame systemic barriers and limitations through meritocracy to achieve enormous economic and academic success perceived by non-Asian people. Model minority is a “stereotype of Asian Americans that promotes the image of Asian Americans as uniformly successful in terms of economic, education, and social capital” (p. 82), who work hard, stay out of problems, and achieve success (S. J. Lee et al., 2009). The model minority stereotype leads to both promise and threats to A/AA. On the one hand, the teachers, academic counselors, and peers perceive them with confidence of achieving or the potential to achieving good academic performance because of the prescribed image of being smart, hardworking, deserving (J. Lee, 2014). In addition, the stereotype suggests that A/AAs have been well-achieved and thus no longer face challenges to economic, social, educational, or political success (Tewari & Alvarez, 2009). On the other hand, the model minority stereotypes make A/AA students seen as smart and high achieving by others and bear the burden of facing a “bamboo ceiling” effect and holding higher standards than other groups, including native-born Whites (S. J. Lee et al., 2009; Zhou & Lee, 2017). Thus, we contend that model minority stereotype is misleading and even harmful as “it serves as a legitimizing ideology that dismisses and maintains inequalities faced by Asian Americans” (Yi & Todd, 2021, p. 570).

Model Minority stereotype masks the diversity within subgroups of Asian Americans, such as skin tone, religion, educational attainment, income, country of origin, and immigration status (Yi & Todd, 2020, 2021). Lots of the scholarship, including engineering education, that positions Asian American as high-achieving groups is based on the aggregate data that considers all various Asian ethnic groups together despite of the high disparity among Asian ethnic groups with respect to their distinct immigration histories in the United States, economic, social, and educational capital (S. J. Lee et al., 2009). In fact, the stereotype promises disproportionately negative impact of A/AAs sub-groups. Sub-Asian groups whose family had refugee experiences due to war and political upheaval (such as the Hmong) might depress their performance through stereotype threat with the fear of confirming with the perceived high expectation. Maybe this paragraph should move above into introduction or somewhere else but just focus on interracial tension.

Moreover, model minority stereotype also accelerates interracial tension, because it promotes the minority group’s version of American dream for AAs and urge other racial minority groups to emulate the industrious, dutiful, self-disciplined and persistent AAs to earn achievement and success rather than just blaming (Chou & Feagin, 2015; S. J. Lee et al., 2009; Yoo et al., 2010). A/AAs are targeted and discriminated by their peers for their perceived success and favored treatment from teachers and administrators (Rosenbloom & Way, 2004). Model minority reinforces the misconception that AAs are immune to racism and discrimination and thus they do not need social services designed to benefit disadvantaged minorities, like Affirmative Action, health care, welfare, etc. (Ho & Jackson, 2001). This line of ideology promotes antagonism between AAs and other minoritized groups despite of the unmatching equality between AA and White American; model minority induced interracial tension also functions against union of AAs and other people color to withstand racial inequality through upholding the ideology of meritocracy (S. J. Lee et al., 2009; Yi & Todd, 2021).

Intra-Racial Layer: Internalized Racism

- A/AA internalizes the perceived stereotypes of model minority and perpetual foreigner to uphold the expectations to be good citizens/students, follow the rules, and major in prestigious disciplines (e.g. engineering) with a narrowly defined frame of success [5]
 - Expect to ace math or computational tasks or to bear with negative attitudes by classmates [15, 16]
 - Link to negative psychological attributes for A/AA [14, 17, 18]
 - Emulate Whiteness and its dominant culture as a survival mechanism in the U.S. [12, 13]

9

Intra-racial racism is rooted in internalized racism, and the combined perceived stereotypes of model minority and perpetual foreigner where traditional Asian cultures influence Asian Americans and immigrants to uphold the expectations to be a good citizen, follow the rules, get good grades, and major in prestigious disciplines with a narrowly defined frame of success. It is such a pressure and burden for A/AAs to work and study hard, with possible depression and embarrassment when failing the expected standards (S. J. Lee et al., 2009). A/AAs, especially those majoring in engineering, are expected to ace math or computational tasks; but when they are not, other classmates and teammates might show negative attitudes towards them (Trytten et al., 2012; Wong, 2005). In turn, A/AA might further internalize the model minority stereotype and damage their self-image and self-concept (Alvarez, 2009; Greene et al., 2006; S. J. Lee et al., 2009). A wealth of literature has linked the internalization of model minority through the adoption of attitudes and expectation of dominant American society (Choi et al., 2017; Yoo et al., 2010) to negative psychological attributes for Asian Americans (Atkin et al., 2018; P. Y. Kim & Lee, 2014; Yoo et al., 2015). Meanwhile, it is also posited that internalized racism of A/AA to emulate Whiteness functions as a survival mechanism or coping strategy in American society by the means of assimilation and for inclusion in the society (Chou & Feagin, 2015; Yi & Todd, 2021). This adaptive function might seem harmless, but it ultimately works against A/AA own interests by maintaining White dominance and supremacy as well as justifying the invisible racial hierarchy (Yi & Todd, 2021). Despite that the internalized racism could manifest in many forms, such as psychological disorder, depression and anxiety (Beiser & Hou, 2006; Gee et al., 2007), we hereby focus the discussion on three common but not universal phenomena or coping strategies – self-silencing and a narrow frame of success.

Discussion

- The three layers of the framework are not exclusive but interconnected to each other
- A/AA is a racial minority group, even in engineering, who experience a great deal of racism and internalized racism
- Need to take historical, critical, and intersectional perspectives to increase awareness of racialized experiences of A/AA students
 - Abandon the practice of treating A/AA as a monolith
- Mend inter-racial and intra-racial wounds of A/AA and non-Asian groups

10

The three layers of the framework are not exclusive but interconnected to each other; they usually compliment the existence and rationale for each other.

In STEM, we need to reconsider the treatment of A/AA to be parallel to White students as A/AA does experience a great deal of racism and internalized racism, which introduces unique and specific challenges and burdens.

When understanding of suggesting improvements on A/AA's experiences, there is a need to take historical, critical, and intersectional perspectives to fully unpack the racialized experiences of A/AA. Foremost, we need to abandon the practice to treat A/AA as a monolith.

Dismantling systemic racism requires understanding different types of racism applied to each racial minority groups, not just Black and Latiné; we need to unite all racial minorities to mend inter- and intra-racial wounds of all groups.

Thank you for your attention

- Please address your comments and questions to weisq@ucmail.uc.edu

Reference list

- [1] United States Census Bureau, 2020 Census. Data Table. Available: <https://data.census.gov/table/ACSD PSY 2020.DP05?q=ace+demographics+2020>. (Accessed August 26, 2024)
- [2] National Center for Science and Engineering Statistics (NCSES), *Diversity and STEM: Women, Minorities, and Persons with Disabilities 2023*. Special Report NSF 23-315. Alexandria, VA, 2023. [E-book] Available: <https://nces.nsf.gov/wmpd>. [Accessed August 26, 2024]
- [3] Alba, R., & Nee, V. (2003). *Remaking the American mainstream: Assimilation and contemporary immigration* (1st ed.). Harvard University Press. <https://doi.org/10.4159/9780674020115>
- [4] Lee, J., & Bean, F. D. (2010). *The diversity paradox: Immigration and the color line in 21st century America* (1st ed.). Russell Sage Foundation.
- [5] Zhou, M., & Lee, J. *Hyper-selectivity and the remaking of culture: Understanding the Asian American achievement paradox*. *Asian American Journal of Psychology*, 8(1), 7–15, 2017. <https://doi.org/10.1037/aap0000069>
- [6] Lee, S. J., Wong, N.-W. A., & Alvarez, A. N. (2009). The model minority and the perpetual foreigner: Stereotypes of Asian Americans. In N. Tewari & A. N. Alvarez (Eds.), *Asian American psychology: Current perspectives* (pp. 69–84). Psychology Press.
- [7] Pew Research Center. (2012). *The rise of Asian Americans*.
- [8] Sue, S., & Okazaki, S. (2009). Asian-American educational achievements: A phenomenon in search of an explanation. *Asian American Journal of Psychology*, 5(1), 45–55. <https://doi.org/10.1037/1948-1985.s.1.45>
- [9] Tewari, N., & Alvarez, A. N. (2009). *Asian American psychology: Current perspectives* (N. Tewari & A. N. Alvarez (eds.)). Psychology Press.
- [10] Lee, J. (2014). Asian American exceptionalism and stereotype promise. In D. Hartmann & C. Uggen (Eds.), *Color lines and racial angles* (pp. 27–44). Norton.
- [11] Yi, J., & Todd, N. R. (2020). Social change behaviors among Asian American college students: Ethnic group differences and campus-level predictors. *Asian American Journal of Psychology*, 11(4), 211–222. <https://doi.org/10.1037/aap0000204>
- [12] Yi, J., & Todd, N. R. (2021). Internalized model minority myth among Asian Americans: Links to anti-Black attitudes and opposition to affirmative action. *Cultural Diversity and Ethnic Minority Psychology*, 27(4), 569–578. <https://doi.org/10.1037/cdp0000448.supp>
- [13] Chou, R. S., & Feagin, J. R. (2015). *Myth of the model minority: Asian Americans facing racism* (2nd ed.). Routledge. <https://doi.org/10.4324/9781315636313>
- [14] Yoo, H. C., Burdick, K. S., & Steger, M. (2010). A preliminary report on a new measure: Internalization of the Model Minority Myth Measure (IM-4) and its psychological correlates among Asian American college students. *Journal of Counseling Psychology*, 57, 114–127. <https://doi.org/10.1037/a0017871>
- [15] Trytten, D. A., Lowe, A. W., & Walden, S. E. (2012). “Asians are good at math. What an awful stereotype”: The Model Minority Stereotype’s impact on Asian American engineering students. *Journal of Engineering Education*, 101(3), 439–468. <https://doi.org/10.1002/j.2168-9830.2012.tb00057.x>
- [16] Wong, N. W. A. (2005). *Cuz they care about the people who goes there”: A portrait of a community-based youth center*. University of Wisconsin-Madison.
- [17] Atkin, A. L., Yoo, H. C., Jager, J., & Yeh, C. J. (2018). Internalization of the model minority myth, school racial composition, and psychological distress among Asian American adolescents. *Asian American Journal of Psychology*, 9, 108–116. <https://doi.org/10.1037/aap0000096>
- [18] Kim, P. Y., & Lee, D. (2014). Internalized model minority myth, Asian values, and help-seeking attitudes among Asian American students. *Cultural Diversity & Ethnic Minority Psychology*, 20, 98–106. <https://doi.org/10.1037/a0033351>