



# Why East Asians but not South Asians are underrepresented in leadership positions in the United States

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Well-educated and prosperous, Asians are called the “model minority” in the United States. However, they appear disproportionately underrepresented in leadership positions, a problem known as the “bamboo ceiling.” It remains unclear why this problem exists and whether it applies to all Asians or only particular Asian subgroups. To investigate the mechanisms and scope of the problem, we compared the leadership attainment of the two largest Asian subgroups in the United States: East Asians (e.g., Chinese) and South Asians (e.g., Indians). Across nine studies ( $n = 11,030$ ) using mixed methods (archival analyses of chief executive officers, field surveys in large US companies, student leader nominations and elections, and experiments), East Asians were less likely than South Asians and whites to attain leadership positions, whereas South Asians were more likely than whites to do so. To understand why the bamboo ceiling exists for East Asians but not South Asians, we examined three categories of mechanisms—prejudice (intergroup), motivation (intrapersonal), and assertiveness (interpersonal)—while controlling for demographics (e.g., birth country, English fluency, education, socioeconomic status). Analyses revealed that East Asians faced less prejudice than South Asians and were equally motivated by work and leadership as South Asians. However, East Asians were lower in assertiveness, which consistently mediated the leadership attainment gap between East Asians and South Asians. These results suggest that East Asians hit the bamboo ceiling because their low assertiveness is incongruent with American norms concerning how leaders should communicate. The bamboo ceiling is not an Asian issue, but an issue of cultural fit.

culture | diversity | leadership | assertiveness | prejudice

Well-educated and prosperous, Asians are known as the “model minority” in the United States. In 2015, 54% of Asians had a bachelor’s degree or above, compared with 33% of the general US population (1). All Asian subgroups (e.g., East Asians [EAs], South Asians [SAs], Southeast Asians) outperform whites in academic achievement (2). For example, Asians receive about 30% of National Merit Scholarships even though they only constitute 5.6% of the US population (3). Moreover, Asians have the highest median income (4), the lowest unemployment rate (5), and the lowest crime rate (6) in the United States. Because Asians are believed to be “doing just fine,” their challenges have received limited attention from scholars and practitioners.

Nevertheless, Asians appear disproportionately underrepresented in leadership positions across different industries in the United States (7, 8). This phenomenon is known as the “bamboo ceiling,” as bamboo “has always played an important economic and cultural role across Asia,” with the world’s largest bamboo areas in South Asia and East Asia (9). In US law firms, 11% of associates are Asian, whereas only 3% of partners are Asian (10). Even in the tech industry, where Asians are the ethnic group most likely to be hired (over 30% of the workforce), they are the least likely to be promoted to senior leadership positions (less than 15% of executives) (3, 7). Descriptive studies of the bamboo ceiling—including Jane Hyun’s book that coined the term (8)—have largely

conceptualized it as a problem faced by all Asian subgroups despite the cultural differences among them. Likewise, most governmental and organizational statistics lump all Asians together indiscriminately. As a result, it remains unclear whether the bamboo ceiling applies to all Asians or only particular Asian subgroups.

To investigate the scope of this problem, the present research compared the leadership attainment of the two largest Asian subgroups in the United States: EAs (e.g., Chinese, Japanese, Koreans) and SAs (e.g., Bangladeshi, Indians, Pakistanis).<sup>\*</sup> Contrasting EAs and SAs enabled us to examine factors beyond prowhite biases, to which both EAs and SAs are vulnerable (11). Across multiple studies using mixed methods, we consistently found that EAs were less likely than SAs and whites to attain leadership positions, whereas SAs were more likely than whites to do so. This phenomenon, while not previously documented in the research literature, has been hiding in plain sight: In contrast to the paucity of EA chief executive officers (CEOs) in the United

## Significance

Whereas extensive research has examined the “glass ceiling” faced by women, little research has examined the “bamboo ceiling,” whereby Asians appear disproportionately underrepresented in leadership positions in the United States. To investigate the mechanisms and scope of this problem, we compared the two largest Asian subgroups: East Asians and South Asians. Across nine studies ( $n = 11,030$ ), East Asians were less likely than South Asians and whites to attain leadership positions, whereas South Asians outperformed whites. The leadership attainment gap between East Asians and South Asians was consistently explained by cultural differences in assertiveness, but not by prejudice or motivation. To leverage diverse leadership talent, organizations should understand the differences among different cultural groups and diversify the prototype of leadership.

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Data deposition: Data for the three field studies (studies 2, 3a, and 3b) are proprietary and unavailable. Data and R code for all of the other studies are available at Open Science Framework (<https://osf.io/gnfwfp/>).

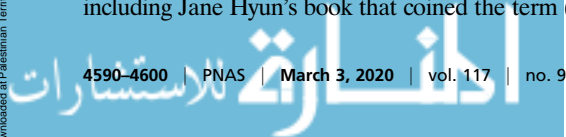
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<sup>\*</sup>Because other Asian subgroups in the United States (e.g., Central Asians, Southeast Asians, West Asians) are much smaller in size, our studies did not have sufficient samples to analyze these groups.



States, well-known companies such as Citigroup, Google, MasterCard, Medtronic, Microsoft, and PepsiCo have all been led by SA CEOs.

To understand why the bamboo ceiling may exist for EAs but not SAs, we examined three categories of mechanisms: prejudice (intergroup), motivation for work and leadership (intrapersonal), and communication assertiveness (interpersonal). In addition, we controlled for potential demographic confounds such as birth country, English fluency, education level, socioeconomic status (SES), and gross domestic product (GDP) per capita of country of cultural origin. As elaborated below, we hypothesized that cultural differences in assertiveness—but not prejudice or motivation—may distinctively predict a disadvantage for EAs relative to SAs in leadership attainment.

### Prejudice

An intuitive explanation for the bamboo ceiling is prejudice, which Allport (12) defined as “antipathy” toward a social group. Much research in the United States indicates the existence of intergroup prejudice toward nonwhites, including Asians (13–17). Nevertheless, little research has compared the prejudice faced by EAs and SAs in the United States. As one of the only studies that compared different Asian subgroups, the recent National Asian American Survey (18) suggests that SAs may experience greater prejudice than EAs in everyday life, possibly because of SAs’ darker skin tone and physical resemblance to certain Middle Easterners (19). For instance, SAs experienced considerable ethnic hostility in the aftermath of 9/11. For these reasons, we tested prejudice as an external, intergroup mechanism of the bamboo ceiling. If SAs were in fact more likely to attain leadership positions despite facing greater prejudice than EAs, then prejudice would be unlikely to be the main reason for the leadership attainment gap between EAs and SAs.

### Motivation

The educational achievements of Asians suggest that they are hardworking in school (2, 8). Indeed, research finds that both EAs and SAs exert greater academic effort than whites (2). However, does this drive translate to motivation in the workplace? A survey by the Pew Research Center found that Asian Americans are more likely than other groups to agree with the statement: “Most people who want to get ahead can make it if they are willing to work hard” (3). Nevertheless, Asians have also been described as passive and obedient—slavishly following instructions rather than actively taking initiatives and expending extra effort (20).

Relatedly, Asians are often stereotyped as “quants” interested in numbers (e.g., accountants) rather than “poets” interested in leadership and management (21). If this stereotype contains a kernel of truth, Asians may be less intrinsically motivated to take on leadership roles. On the other hand, research finds that Asians tend to aspire to status more than non-Asians (22) and thus may be more motivated by leadership roles. Indeed, a survey by the Center for Work-Life Policy found that 64% of Asians aspired to high-ranking jobs, versus 52% of whites (23).

In light of these mixed beliefs and findings, we tested work motivation and leadership motivation as two related intrapersonal mechanisms of the leadership attainment gap between EAs and SAs. To our knowledge, no research has compared EAs and SAs on these variables, and only one study has directly compared the two groups on academic effort, finding no significant difference (2). Thus, we directly tested whether EAs and SAs would differ in work motivation and leadership motivation.

### Assertiveness

According to implicit leadership theory (24, 25), individuals are less likely to attain leadership positions when their characteristics fail to match the cultural prototype of a leader, even if they are motivated to become leaders. In the United States, the prototypical

leader is high in communication assertiveness, which is defined as the tendency to stand up and speak out for one’s interests and concerns when appropriate (26).<sup>†</sup> American leaders are expected to be assertive because actively asserting one’s opinions signals confidence, motivation, and conviction (11, 27); nonassertive communicators may therefore be less likely to attain leadership positions in the United States.

Strongly influenced by Confucianism, EA cultures emphasize humility, conformity, and harmony rather than assertiveness in interpersonal communication (28–30). In EA cultures, assertiveness is often viewed as a threat to group stability (31). This cautionary view is reflected in Eastern proverbs like “The nail that sticks out gets hammered down” and “The loudest duck gets shot”—in stark contrast to Western proverbs like “The squeaky wheel gets the grease” and “Don’t hide your light under a bushel.” In *The Geography of Thought*, Nisbett (32) observed that assertive communication practices common in Western cultures are less prevalent in EA cultures: “The whole rhetoric of argumentation that is second nature to Westerners is largely absent in [East] Asia. North Americans begin to express opinions and justify them as early as the show-and-tell sessions of nursery school. . . . In contrast, there is not much argumentation or trafficking in opinions in [East] Asian life” (p. 73). Research suggests that whereas the prototypical American leader trail-blazes in front of the group, the prototypical EA leader trails behind the group as a steady protector (31). Thus, while nonassertiveness may be positively interpreted as steadiness in EA cultures, it may be negatively interpreted as a lack of confidence, motivation, or conviction in the United States (33). Relatedly, EAs’ emphasis on humility over self-promotion may result in their being passed over for leadership opportunities despite satisfactory performance (8).

By contrast, SA cultures encourage assertiveness in interpersonal communication. For example, as explained in Nobel Laureate Amartya Sen’s book *The Argumentative Indian* (34), there is a long tradition of argumentation and debate in India, where people “encounter masses of arguments and counterarguments spread over incessant debates and disputations” (p. 3). While cultural differences in assertiveness between SAs and EAs have not been tested, Nishimura et al. (35) have observed that Indian people tend to be forceful and lively, use overt body language, and think aloud, whereas Japanese people tend to be modest and quiet, use little body language, and think in silence.

Hence, we predicted that cultural differences in assertiveness would contribute to the leadership attainment gap between EAs and SAs. Specifically, because assertiveness—a feature of interpersonal communication style in the American prototype of leadership—is encouraged in SA cultures but discouraged in EA cultures, EAs but not SAs may hit the bamboo ceiling.

### Overview of Studies

To investigate both the scope and mechanisms of the bamboo ceiling, we compared the leadership attainment of EAs vs. SAs in the United States across nine studies ( $n = 11,030$ ) using complementary methods. In study 1, we collected 8 y of archival data on the Standard & Poor’s (S&P) 500 companies and found that EAs were proportionally less likely than whites to be CEOs, whereas SAs were proportionally more likely than whites to be CEOs. In study 2, we surveyed a broad sample of Asian employees in large US companies and found that EAs were less likely than SAs to occupy senior leadership positions.

<sup>†</sup>It should be noted that communication assertiveness is related to but distinct from the personality trait extraversion, as “there are important aspects of that trait that are not part of assertiveness (e.g., positive affect) and vice versa (e.g., nonverbal displays of disagreement)” (40). In our studies, we controlled for extraversion (as part of the Big Five personality traits) where possible.

To understand why EAs are less likely than SAs to attain leadership positions, two more field surveys were administered in large US companies (studies 3a and 3b) to test assertiveness and work motivation as potential mediators of the leadership attainment gap between EAs and SAs. Across both studies, assertiveness—but not work motivation—emerged as a significant mediator.

Next, studies 4 and 5 examined the leadership attainment of EA, SA, and white Master of Business Administration (MBA) students at a top business school, where all students had undergone the same competitive admissions process. Consistent with study 1, studies 4 and 5 found that EAs were less likely than SAs and whites to attain leadership at the business school, whereas SAs actually outperformed whites. Again, assertiveness—but not leadership motivation—emerged as a significant mediator.

Studies 6a and 6b examined prejudice as a potential alternative explanation for the bamboo ceiling. Analyses revealed that SAs faced greater prejudice than EAs, suggesting that prejudice was not the main reason for the leadership attainment gap between EAs and SAs. Finally, study 7 employed an experimental design and simultaneously tested all three focal mechanisms: prejudice (intergroup), motivation (intrapersonal), and assertiveness (interpersonal). Despite exhibiting greater prejudice toward SAs than EAs, non-Asian Americans were more likely to endorse a SA candidate than an EA candidate for a leadership position. This effect was again mediated by perceived assertiveness, but not by prejudice or perceived motivation.

An overview of the studies on leadership attainment is presented in Table 1. Taken together, our studies demonstrate that EAs—but not SAs—hit the bamboo ceiling, and that this effect is consistently mediated by assertiveness.

All studies were approved by the Institutional Review Board of Columbia University and Massachusetts Institute of Technology. Participants provided informed consent.

### Study 1

Study 1 analyzed an 8-y archival dataset of the S&P 500 companies to compare the representation of EA, SA, and white CEOs in the United States.

**Data Collection.** We collected archival data from 2010 to 2017 on the CEOs of the S&P 500 companies, which are over 500 large-cap US companies that capture about 80% of market capitalization in the United States (sourced from the ExecuComp database). Three research assistants independently tallied and cross-checked the number of EA, SA, and white CEOs based on their biographies. To calculate CEO-to-population ratio, we also sourced yearly total population data from the American Community Survey Five-Year Data collected by the US Census Bureau.

**Results.** In the population of S&P 500 CEOs, there were on average 10.38 SA CEOs versus only 3.50 EA CEOs per year (Table 2; see *SI Appendix, Table S1* for detailed CEO and company names).<sup>‡</sup> This leadership attainment gap was even more pronounced after adjusting for population size, because the EA population was about 1.6 times the size of the SA population in the United States from 2010 to 2017: There were 2.82 CEOs per

million SAs versus 0.59 CEOs per million EAs. Intriguingly, SAs actually had a higher CEO-to-population ratio than whites in the United States (1.92 CEOs per million whites; Table 2).

**Robustness check.** We also collected data on the working population (sourced from the US Bureau of Labor Statistics), although these data were only available from 2013 to 2017 and less complete than the data on the total population. Consistent with the results for the CEO-to-total-population ratio, the CEO-to-working-population ratio (per million) was 1.12 for EAs, 5.75 for SAs, and 3.60 for whites. In other words, whereas EAs had a lower CEO-to-working-population ratio than whites, SAs actually had a higher CEO-to-working-population ratio than whites.

**Discussion.** Our analysis of the population of S&P CEOs revealed notable leadership attainment gaps among EAs, SAs, and whites. Whereas EAs had a lower CEO-to-population ratio than whites, SAs actually had a higher CEO-to-population ratio than whites. These results indicate that at the highest level of US corporate leadership, EAs are less likely than SAs and whites to attain leadership positions, whereas SAs actually outperform whites.

### Study 2

Whereas study 1 focused on the most visible business leaders, study 2 examined more broadly whether EAs are less likely than SAs to attain senior leadership positions in large US companies.

**Participants.** With the support of an Asia-focused nonprofit organization, an anonymous field survey was distributed to Asian employees in 18 S&P 500-level companies. These companies represented diverse industries, including energy, finance, food and beverages, health care, household products, media, technology, and telecommunications. For the purposes of our research, we focused on EA and SA participants who identified the United States as their primary work location. Multiethnic participants (e.g., half-Chinese, half-Indian) were excluded from analyses. Applying these criteria yielded 858 participants who identified with an EA country (e.g., China, Japan, South Korea) and 867 participants who identified with a SA country (e.g., Bangladesh, India, Pakistan). The mean age of our sample was 39.23 (SD = 9.61), and 48.2% were female.

### Measures.

**Leadership attainment.** Leadership attainment was operationalized as whether or not a participant currently occupied an executive/senior leadership position (1 = yes, 0 = no). Leadership attainment data were unavailable for 51 EAs and 54 SAs.

**Control variables.** We controlled for age, gender, whether a participant was US born (1 = yes, 0 = no), education level (1 = high school or below, 2 = bachelor's degree, 3 = master's degree, 4 = doctorate), and tenure at the current company (1 = less than 1 y, 2 = 1 y to less than 2 y, 3 = 2 y to less than 5 y, 4 = 5 y to less than 10 y, 5 = 10 y or more). Moreover, because EA countries tend to be more economically prosperous than SA countries, it is possible that EAs are more interested than SAs in moving (back) to their countries of cultural origin and thus less interested in leadership roles in the United States. To account for this possibility, we controlled for the GDP per capita of each participant's country of cultural origin (sourced from <http://data.worldbank.org/>).

**Results.** Descriptive statistics and bivariate correlations are displayed in *SI Appendix, Table S3*.

A significantly lower percentage of EA participants (17.0%) occupied executive/senior leadership positions than SA participants (29.5%);  $\chi^2 = 34.99$ ,  $P < 0.001$ . This leadership attainment gap was substantively similar for: 1) US-born EAs (23.0%) vs. US-born SAs (33.3%); 2) foreign-born EAs (12.8%) vs. foreign-born SAs (29.3%).

<sup>‡</sup>As a robustness check, we also collected data on the "S&P 1500 plus" companies, which are over 1,500 large-cap US companies that capture about 90% of market capitalization in the United States. Consistent with the S&P 500 analyses, on average there were 36.0 SA CEOs versus only 22.0 EA CEOs per year, which again highlights the leadership attainment gap between the two groups (for details, see *SI Appendix, Table S2*). Notably, several of the companies led by EA CEOs focus on East Asia (e.g., East West Bancorp, Hanmi Financial Corporation, Hope Bancorp) and thus may naturally favor EA CEOs. The CEO representation gap between EAs and SAs would be even more pronounced if we discounted such companies.

**Table 1. An overview of the studies on leadership attainment**

	Setting	Leadership attainment	Tested mediators	Significant mediator	Control variables
Study 1	S&P 500 CEOs	EA < white < SA	N/A	N/A	N/A
Study 2	Large US company employees	EA < SA	N/A	N/A	Age, gender, US born, education level, company tenure, company, GDP per capita of cultural origin
Study 3a	Large US company employees	EA < SA	Assertiveness Work motivation	Assertiveness	Age, gender, US born, education level, company tenure, company, GDP per capita of cultural origin, English fluency
Study 3b	Large US company employees	EA < SA	Assertiveness Work motivation	Assertiveness	Age, gender, US born, education level, company tenure, company, GDP per capita of cultural origin, English fluency
Study 4	MBA students	EA < white < SA	Assertiveness	Assertiveness	Age, gender, US born, SES, personality, semester
Study 5	MBA students	EA < white < SA	Assertiveness Leadership motivation	Assertiveness	Age, gender, US born, SES, personality, semester, GMAT
Study 7	Profile experiment	EA < SA	Assertiveness Work motivation Prejudice	Assertiveness	N/A

Note. Studies 6a and 6b were not listed in Table 1 because the outcome variable was prejudice rather than leadership attainment. Studies 4 and 5 implicitly controlled for education level, as all students were in the same MBA program.

Because participants (level 1) were nested within companies (level 2), we further conducted multilevel logistic regressions to account for the statistical dependence among participants within the same company. The leadership attainment gap remained robust—whether with or without the control variables (*SI Appendix, Table S4*).<sup>§</sup>

**Discussion.** By analyzing a large-scale field survey distributed to a set of S&P 500-level companies, study 2 provided evidence that the leadership attainment gap between EAs and SAs exists not only at the CEO level (study 1) but also in broader senior leadership across large US companies. Importantly, this effect could not be explained by control variables such as birth country, education level, or the economic prosperity of EA vs. SA countries.

**Study 3a**

Study 3a had two purposes. First, we examined whether the results of study 2 were replicable. Second, we tested assertiveness (interpersonal) and work motivation (intrapersonal) as two potential mechanisms of the bamboo ceiling.

**Participants.** One year after study 2, with the support of the same Asia-focused nonprofit organization, a second anonymous field survey was distributed to Asian employees in another set of 16 S&P 500-level companies. As in study 2, we focused on the 878 EA participants and the 797 SA participants who identified the United States as their primary work location (mean age = 40.52, SD = 10.06; 45.9% female). Multiethnic participants were excluded from our analyses.

**Measures.**

**Leadership attainment.** As in study 2, leadership attainment was operationalized as whether or not a participant currently occupied an executive/senior leadership position (1 = yes, 0 = no). Leadership attainment data were unavailable for 9 EAs and 15 SAs.

Study 3a measured two potential mediators: assertiveness and work motivation. The display order of these two measures was randomized across participants.

**Assertiveness.** To measure assertiveness, we used the three-item scale from Wallen et al. (36): “I speak up and share my views when it is appropriate”; “I am willing to engage in constructive interpersonal confrontations”; “I am able to stand my ground in a heated conflict” (1 = strongly disagree, 6 = strongly agree;  $\alpha = 0.77$ ).

**Work motivation.** To measure work motivation, we used two items from Brockner et al. (37): “I try to work as hard as possible”; “I intentionally expend extra effort in carrying out my job” (1 = strongly disagree, 6 = strongly agree;  $\alpha = 0.60$ ).<sup>¶</sup>

**Control variables.** As in study 2, we controlled for age, gender, whether a participant was US born, education level, tenure at the current company (years), and the GDP per capita of country of cultural origin. Moreover, because individuals who are more fluent in English might be more likely to attain leadership positions in the United States, we also directly controlled for English fluency (“How fluent is your English?”; 1 = not at all fluent, 5 = native speaker).

**Results.** Descriptive statistics and bivariate correlations are displayed in *SI Appendix, Table S5*.

**Leadership attainment.** Replicating the results of study 2, a significantly lower percentage of EAs (15.4%) occupied executive/senior leadership positions than SAs (25.1%);  $\chi^2 = 23.34, P < 0.001$ . This effect remained robust in multilevel logistic regressions that included the control variables (*SI Appendix, Table S6*). Again, this leadership attainment gap was substantively similar for: 1) US-born EAs (18.7%) vs. US-born SAs (27.2%); 2) foreign-born EAs (13.5%) vs. foreign-born SAs (24.7%).

**Assertiveness.** EAs ( $M = 4.93, SD = 0.75$ ) reported significantly lower assertiveness than SAs ( $M = 5.08, SD = 0.74$ );  $t = -4.07, P < 0.001, d = -0.20, 95\% CI = [-0.22, -0.08]$ . This effect remained robust in a multilevel ordinary least-squares (OLS) regression that included the control variables ( $B = -0.11, SE = 0.04, P = 0.008$ ).

<sup>¶</sup>The Cronbach’s  $\alpha$  of the two items was somewhat low because there was a ceiling effect for the first item, “I try to work as hard as possible,” where 61.0% of the participants selected “6 = strongly agree” ( $M = 5.56, SD = 0.63$ ). Importantly, all results were robust when we used just the second item, “I intentionally expend extra effort in carrying out my job” ( $M = 5.19, SD = 0.98$ ).

<sup>§</sup>All results in the paper were robust when we used fixed-effects models instead.



**Table 2. Study 1: EA, SA, and white CEOs of the S&P 500 companies**

Year	No. EA CEOs	No. SA CEOs	No. white CEOs	EA population	SA population	White population	No. EA CEOs per million people	No. SA CEOs per million people	No. white CEOs per million people
2010	3	8	433	5,511,361	3,130,686	224,895,700	0.54	2.56	1.93
2011	3	9	437	5,594,191	3,243,846	227,167,013	0.54	2.77	1.92
2012	4	10	433	5,691,737	3,367,911	229,298,906	0.70	2.97	1.89
2013	3	9	443	5,802,502	3,516,947	230,592,579	0.52	2.56	1.92
2014	4	10	446	5,943,329	3,693,849	231,849,713	0.67	2.71	1.92
2015	4	12	451	6,091,950	3,917,662	232,943,055	0.66	3.06	1.94
2016	4	12	451	6,188,238	4,101,590	233,657,078	0.65	2.93	1.93
2017	3	13	440	6,350,565	4,348,398	234,370,202	0.47	2.99	1.88
Mean	3.50	10.38	441.75	5,896,734	3,665,111	230,596,781	0.59	2.82	1.92

**Work motivation.** EAs ( $M = 5.39$ ,  $SD = 0.64$ ) and SAs ( $M = 5.36$ ,  $SD = 0.73$ ) did not differ significantly in work motivation;  $t = 0.88$ ,  $P = 0.38$ , 95% CI =  $[-0.04, 0.10]$ . This nonsignificant result remained robust in a multilevel OLS regression that included the control variables ( $B = 0.03$ ,  $SE = 0.04$ ,  $P = 0.44$ ), and was corroborated by a Bayesian  $t$  test that compared evidence for the alternative hypothesis  $H_1$  relative to the null hypothesis  $H_0$  (Bayes factor  $B_{10} = 0.03$ , thus strong evidence for the null).

**Mediation analysis.** Assertiveness significantly mediated the effect of ethnicity (1 = EA, 0 = SA) on leadership attainment (indirect effect =  $-0.01$ ,  $P < 0.001$ , bootstrapped 95% CI =  $[-0.020, -0.005]$ ), suggesting that EAs were less likely to attain leadership positions partly as a function of their lower assertiveness. In contrast, work motivation was not a significant mediator (indirect effect =  $0.001$ ,  $P = 0.27$ , bootstrapped 95% CI =  $[-0.001, 0.005]$ ).

**Discussion.** By analyzing another large-scale field survey, study 3a provided evidence that EAs were less likely than SAs to attain senior leadership positions partly because EAs were lower in assertiveness, but not because they were lower in motivation. Again, these effects could not be explained by control variables such as English fluency, birth country, education level, or the economic prosperity of EA vs. SA countries.

### Study 3b

The goal of study 3b was twofold. First, we examined whether the results of study 3a were replicable. Second, in addition to current leadership attainment, we examined prospective leadership attainment. That is, for individuals who were not yet occupying senior leadership positions, we examined whether EAs would be less likely than SAs to be on track for senior leadership positions.

**Participants.** One year after study 3a, with the support of the same Asia-focused nonprofit organization, a third anonymous field survey was distributed to Asian employees in another set of 13 S&P 500-level companies. As in studies 2 and 3a, we focused on the 732 EA participants and the 531 SA participants who identified the United States as their primary work location (mean age = 39.86,  $SD = 10.22$ ; 48.2% female). Multiethnic participants were excluded from our analyses.

### Measures.

**Leadership attainment.** As in studies 2 and 3a, current leadership attainment was operationalized as whether or not a participant currently occupied an executive/senior leadership position (1 = yes, 0 = no). If not, the participant indicated whether they were on track for senior leadership positions: "It is likely that I will become part of the senior leadership at my company" (1 = strongly disagree, 6 = strongly agree).

**Potential mediators.** Study 3b tested the same two mediators as study 3a: assertiveness and work motivation. The display order of these two measures was randomized across participants.

**Control variables.** Study 3b used the same control variables as study 3a.

**Results.** Descriptive statistics and bivariate correlations are displayed in *SI Appendix, Table S7*.

**Leadership attainment.** Replicating the results of studies 2 and 3a, a significantly lower percentage of EAs (10.2%) occupied executive/senior leadership positions than SAs (19.2%);  $\chi^2 = 19.81$ ,  $P < 0.001$ . Moreover, among the participants who were not currently senior leaders, EAs ( $M = 3.18$ ,  $SD = 1.43$ ) were significantly less likely to indicate being on track for senior leadership positions than SAs ( $M = 3.82$ ,  $SD = 1.42$ );  $t = -7.10$ ,  $P < 0.001$ ,  $d = -0.45$ , 95% CI =  $[-0.81, -0.46]$ . These effects remained robust in multilevel regressions that included the control variables (*SI Appendix, Table S8*).

**Assertiveness.** Replicating the results of study 3a, EAs ( $M = 4.83$ ,  $SD = 0.73$ ) reported significantly lower assertiveness than SAs ( $M = 5.00$ ,  $SD = 0.74$ );  $t = -4.00$ ,  $P < 0.001$ ,  $d = -0.23$ , 95% CI =  $[-0.25, -0.09]$ . This effect remained robust in a multilevel OLS regression that included the control variables ( $B = -0.17$ ,  $SE = 0.05$ ,  $P < 0.001$ ).

**Work motivation.** Replicating the results of study 3a, EAs ( $M = 5.05$ ,  $SD = 0.76$ ) and SAs ( $M = 5.07$ ,  $SD = 0.80$ ) did not differ significantly in work motivation;  $t = -0.41$ ,  $P = 0.68$ , 95% CI =  $[-0.11, 0.07]$ . This nonsignificant result remained robust in a multilevel OLS regression that included the control variables ( $B = -0.02$ ,  $SE = 0.05$ ,  $P = 0.71$ ), and was corroborated by a Bayesian  $t$  test (Bayes factor  $B_{10} = 0.03$ , thus strong evidence for the null).

**Mediation analysis.** Consistent with study 3a, assertiveness mediated the effects of ethnicity (1 = EA, 0 = SA) on both current leadership attainment (indirect effect =  $-0.01$ ,  $P < 0.001$ , bootstrapped 95% CI =  $[-0.021, -0.005]$ ) and prospective leadership attainment (indirect effect =  $-0.10$ ,  $P = 0.002$ , bootstrapped 95% CI =  $[-0.16, -0.03]$ ). In contrast, work motivation was not a significant mediator for either of these two leadership outcomes (both values of  $P > 0.90$ ).

**Discussion.** By analyzing another large-scale field survey, study 3b provided further evidence that EAs were lower than SAs in both current and prospective leadership attainment, partly as a function of EAs' lower assertiveness.

### Study 4

In studies 2, 3a, and 3b, we examined a broad swath of EAs and SAs in large US companies via field surveys. Despite high external validity, these surveys were susceptible to potential self-selection biases and self-report biases. For example, EAs and SAs might have differentially opted to complete the surveys, or EAs might have self-reported lower assertiveness because of cultural habits of modesty.

To address these shortcomings, we next conducted a large study to examine leadership attainment within a business school.

Study 4 involved a required class survey, in which every MBA student nominated leaders within his/her class. This design thus precluded self-selection biases. Moreover, study 4 used peer ratings (e.g., peer-rated assertiveness) to mitigate potential biases in self-ratings. Finally, we included additional control variables such as SES and personality.

**Participants.** Participants were 1,523 MBA students from four consecutive cohorts at a top business school (mean age = 27.91 at matriculation, SD = 2.45; 39.5% female). Of these, 292 self-identified as EA, 149 as SA, 765 as white, and the rest as other ethnicities. The students took their core MBA classes together in “clusters” of about 70 students.

**Measures.**

**Leadership nomination.** As part of a required survey of a core MBA class, students nominated leaders in their cluster: “Who do you view as leaders in your cluster? Please select 1 to 5 students.” We tallied the number of times each student was nominated by other students within their cluster.

**Assertiveness.** One month after the leadership nomination survey, each student was rated anonymously by at least four classmates as part of a required peer evaluation (38). To measure assertiveness, we adapted the three-item scale used in studies 3a and 3b (36): “X speaks up and shares his/her views when it is appropriate”; “X is willing to engage in constructive interpersonal confrontations”; “X is able to stand his/her ground in a heated conflict” (1 = strongly disagree, 7 = strongly agree;  $\alpha = 0.87$ ).

**Control variables.** First, we controlled for the Big Five personality traits (openness to experience, conscientiousness, extraversion, agreeableness, and emotional stability) as potential confounding variables. In particular, extraversion could be positively associated with both assertiveness and leadership attainment (39, 40). The Big Five were measured by students’ self-ratings on the widely used Ten Item Personality Inventory (1 = strongly disagree, 7 = strongly agree) (41). Second, because individuals with high SES might be more likely to emerge as leaders, we controlled for subjective SES with the widely used “ladder question” (42), which featured a drawing of a 10-rung ladder representing all of the people in the United States and asked students to place

themselves on the ladder in terms of SES (1 = lowest SES, 10 = highest SES). Furthermore, we controlled for age, gender, and whether a participant was US born.

**Results.** Descriptive statistics and bivariate correlations are displayed in *SI Appendix, Table S9*.

**Leadership nomination.** EAs (M = 1.35 nominations, SD = 4.70) were significantly less likely to be nominated as leaders than both SAs (M = 4.08 nominations, SD = 7.62;  $t = -4.00, P < 0.001, d = -0.43, 95\% \text{ CI} = [-4.08, -1.39]$ ) and whites (M = 3.61 nominations, SD = 7.28;  $t = -5.93, P < 0.001, d = -0.37, 95\% \text{ CI} = [-3.01, -1.51]$ ). Because leadership nomination was a positively skewed count variable that took only nonnegative integer values, we also performed multilevel Poisson regressions that included the control variables (*SI Appendix, Table S10*). Analyses confirmed that EAs were significantly less likely to be nominated as leaders than whites ( $B = -0.49, SE = 0.06, P < 0.001$ ), whereas SAs were significantly more likely to be nominated as leaders than whites ( $B = 0.32, SE = 0.05, P < 0.001$ ).

**Assertiveness.** Consistent with the results of studies 3a and 3b, EAs (M = 5.38, SD = 0.70) were rated as significantly less assertive than SAs (M = 5.74, SD = 0.53;  $t = -6.03, P < 0.001, d = -0.58, 95\% \text{ CI} = [-0.48, -0.24]$ ). Moreover, EAs were rated as significantly less assertive than whites (M = 5.81, SD = 0.54;  $t = -9.38, P < 0.001, d = -0.69, 95\% \text{ CI} = [-0.51, -0.33]$ ), whereas SAs were not ( $t = -1.32, P = 0.19, 95\% \text{ CI} = [-0.16, 0.03]$ ). These effects remained robust in multilevel OLS regressions that included the control variables (Table 3).

Notably, although assertiveness and extraversion were positively correlated ( $r = 0.23, P < 0.001$ ), the effect of ethnicity on assertiveness remained significant even after controlling for extraversion (Table 3, model 3). This result points to cultural differences between EAs and SAs in assertiveness beyond personality differences in extraversion.

**Mediation analysis.** Replicating the results of studies 3a and 3b, assertiveness significantly mediated the effect of ethnicity (1 = EA, 0 = SA) on leadership nomination (indirect effect =  $-0.50, P < 0.001, \text{bootstrapped } 95\% \text{ CI} = [-0.82, -0.24]$ ), suggesting that EAs were less likely to be nominated than SAs partly as a function of EAs’ lower assertiveness.

**Table 3. Study 4: Multilevel OLS regressions predicting assertiveness**

	Model 1		Model 2		Model 3	
<b>Fixed effects</b>						
Intercept	5.81***	(0.06)	5.94***	(0.24)	5.95***	(0.26)
White (reference category)						
EA	-0.42***	(0.04)	-0.41***	(0.04)	-0.35***	(0.04)
SA	-0.08	(0.05)	-0.10	(0.05)	-0.04	(0.05)
Age			-0.02*	(0.01)	-0.01*	(0.01)
Male			0.17***	(0.03)	0.13***	(0.04)
US born			-0.06	(0.04)	-0.03	(0.04)
SES			0.03*	(0.01)	0.03*	(0.01)
Openness to experience					-0.00	(0.02)
Conscientiousness					-0.02	(0.02)
Extraversion					0.07***	(0.01)
Agreeableness					-0.08***	(0.01)
Emotional stability					0.03*	(0.01)
<b>Random effects</b>						
Intercept	0.01	(0.11)	0.01	(0.11)	0.01	(0.11)
Akaike information criterion	2,093.46		2,087.86		2,029.66	
Bayesian information criterion	2,118.91		2,133.66		2,100.77	
Log likelihood	-1,041.73		-1,034.93		-1,000.83	
$\Omega_0^2$	0.11		0.14		0.19	

Note. Unstandardized regression coefficients are displayed, with SEs in parentheses. \* $P < 0.05$ . \*\* $P < 0.01$ . \*\*\* $P < 0.001$ .  $\Omega_0^2$  represents generalized  $R^2$  for linear mixed-effect models (63).

**Discussion.** Complementing the field studies involving large US companies (studies 2, 3a, and 3b), study 4 analyzed a large MBA dataset that mitigated self-selection and self-report biases. Replicating the prior studies, EAs were less likely to be nominated as leaders than SAs; this effect was again mediated by assertiveness. Consistent with study 1's finding about CEO representation, SAs were more likely to be nominated as leaders than whites. Importantly, these effects could not be explained by control variables such as personality, SES, and birth country.

## Study 5

Study 5 had three purposes. First, we aimed to replicate and extend study 4 by examining objective leadership attainment within a business school. Second, we tested another intrapersonal mechanism—leadership motivation—to test whether EAs are less likely to attain leadership positions because they are less interested in leadership roles. Third, because academic aptitude could be a confounding variable related to leadership attainment, we also collected data on MBA students' performance on the Graduate Management Admission Test (GMAT).

This study was preregistered at <https://aspredicted.org/k98ey.pdf>.

**Participants.** Participants were 3,639 MBA students from nine cohorts at the same business school in study 4 (mean age = 27.80 at matriculation,  $SD = 2.39$ ; 38.3% female). Of these, 704 self-identified as EA, 329 as SA, 1,885 as white, and the rest as other ethnicities. The students took their core MBA classes together in “clusters” of about 70 students.

## Measures.

**Leadership attainment.** Per school policy, each cluster has 14 leadership positions (e.g., Cluster Chair, Social Chair, Academic Representative) filled through competitive elections. Our outcome variable was whether or not a student was elected to one of these leadership positions (1 = yes, 0 = no).

**Assertiveness.** As in study 4, other-rated assertiveness ( $\alpha = 0.85$ ) was measured as part of a required peer evaluation (36).

**Control variables.** As in study 4, we controlled for age, gender, whether a participant was US born, subjective SES (42), and the Big Five personality traits (41).

**Additional variables.** For another (nonoverlapping) four cohorts of MBA students ( $n = 1,429$ ), we procured data on leadership motivation and GMAT scores. These MBA students (219 EAs, 126 SAs, 804 whites; mean age = 28.08 at matriculation,  $SD = 2.43$ ; 33.5% female) were demographically similar to our main sample, but data were unavailable for their leadership attainment or assertiveness.

**Leadership motivation.** Prior to MBA orientation, students completed a career interest inventory used by career counselors (36, 43). This inventory contained ~190 different work activities (e.g., union labor leader, design a scientific experiment), and MBA students indicated their interest in each activity on a four-point scale (0 = I would not like this activity, 1 = I would like this activity somewhat, 2 = I would like this activity, 3 = I would very much like this activity). To capture an individual's motivation to lead others, we computed a variable that averaged scores on the 25 work activities involving leadership (e.g., union labor leader, chief executive officer, mayor of a city or town, high-level government official;  $\alpha = 0.93$ ).

**GMAT score.** The MBA admissions office provided us with data on overall GMAT score (range: 570 to 790) and percentile (range: 57th to 99th percentile). Unsurprisingly, these two variables were highly correlated ( $r = 0.95$ ,  $P < 0.001$ ).

**Results.** Descriptive statistics and bivariate correlations are displayed in *SI Appendix, Table S11*.

**Leadership attainment.** Consistent with the prior studies, a significantly lower percentage of EAs (12.8%) attained leadership

positions than whites (20.1%) ( $\chi^2 = 18.28$ ,  $P < 0.001$ ), whereas a significantly higher percentage of SAs (26.4%) attained leadership positions than whites ( $\chi^2 = 6.90$ ,  $P = 0.009$ ). These effects remained robust in multilevel logistic regressions that included the control variables (*SI Appendix, Table S12*). These leadership attainment gaps were substantively similar for: 1) US-born EAs (15.9%) vs. US-born whites (21.7%) vs. US-born SAs (26.1%); 2) foreign-born EAs (11.9%) vs. foreign-born whites (16.0%) vs. foreign-born SAs (26.6%).

**Assertiveness.** In a multilevel OLS regression that included the control variables (e.g., extraversion), EAs were rated as significantly less assertive than SAs ( $B = -0.25$ ,  $SE = 0.05$ ,  $P < 0.001$ ). Moreover, whereas EAs were rated as significantly less assertive than whites ( $B = -0.31$ ,  $SE = 0.03$ ,  $P < 0.001$ ), SAs were not ( $B = -0.04$ ,  $SE = 0.04$ ,  $P = 0.24$ ).

**Mediation analysis.** Consistent with the prior studies, assertiveness significantly mediated the effect of ethnicity (1 = EA, 0 = SA) on leadership attainment (indirect effect =  $-0.02$ ,  $P < 0.001$ , bootstrapped 95% CI =  $[-0.03, -0.01]$ ), suggesting that EAs were less likely to be elected to leadership positions than SAs partly as a function of EAs' lower assertiveness.

## Additional analyses.

**Leadership motivation.** EAs ( $M = 1.32$ ,  $SD = 0.53$ ), SAs ( $M = 1.32$ ,  $SD = 0.45$ ), and whites ( $M = 1.36$ ,  $SD = 0.50$ ) did not differ significantly in leadership motivation ( $F = 0.60$ ,  $P = 0.55$ ; Bayes factor  $B_{10} = 0.002$ ), suggesting that this motivational factor was unlikely to be the main reason for the leadership attainment gap among the three groups.

**GMAT percentile.** EAs ( $M = 94.25$ ,  $SD = 4.42$ ) and SAs ( $M = 93.99$ ,  $SD = 3.90$ ) did not differ significantly in GMAT percentile ( $t = 0.57$ ,  $P = 0.57$ , 95% CI =  $[-0.64, 1.16]$ ; Bayes factor  $B_{10} = 0.05$ ). Consistent with prior research (2), whites ( $M = 92.39$ ,  $SD = 5.62$ ) performed significantly worse than both EAs ( $t = -5.20$ ,  $P < 0.001$ ,  $d = -0.37$ , 95% CI =  $[-2.57, -1.16]$ ) and SAs ( $t = -4.02$ ,  $P < 0.001$ ,  $d = -0.33$ , 95% CI =  $[-2.39, -0.82]$ ). These effects remained robust in multilevel regressions with control variables.

**Discussion.** By analyzing the objective leadership attainment of a large dataset of MBA students, study 5 provided further evidence that EAs were less likely to attain leadership positions than SAs; this effect was again mediated by assertiveness. Consistent with the prior studies, SAs were more likely to attain leadership positions than whites. In addition, EAs and SAs did not differ significantly in leadership motivation or aptitude, suggesting that these two factors were unlikely to be the main reasons for the leadership attainment gap between EAs and SAs.

## Study 6a

Whereas our previous studies examined both intrapersonal and interpersonal mechanisms of the bamboo ceiling (assertiveness, work motivation, leadership motivation), study 6a tested prejudice as an external, intergroup mechanism. Using the same MBA population from studies 4 and 5, we examined whether SAs experience greater prejudice than EAs in the United States. Such results would suggest that prejudice is unlikely to be the main reason for the observed leadership attainment gap between EAs and SAs.

**Participants.** Participants were a cohort of 470 MBA students from the same business school in studies 4 and 5 (mean age = 27.65,  $SD = 2.18$ ; 42.1% female). Of these, 86 self-identified as EA, 56 as SA, 233 as white, 25 as black, and the rest as other ethnicities.

## Measures.

**Experienced prejudice.** As part of a required core MBA class, students responded to two questions adapted from Kaiser et al.

(44): “Sometimes I am treated unfairly because of my ethnicity”; “I often experience discrimination because of my ethnicity” (1 = strongly disagree, 7 = strongly agree;  $\alpha = 0.85$ ).

**Control variables.** Similar to prior studies, we controlled for age, gender, whether a participant was US born, and subjective SES (42).

**Results and Discussion.** Among the MBA students, SAs ( $M = 3.87$ ,  $SD = 1.64$ ) reported experiencing significantly greater prejudice than EAs ( $M = 3.33$ ,  $SD = 1.27$ );  $t = 2.18$ ,  $P = 0.031$ ,  $d = 0.37$ , 95% CI = [0.05, 1.02]. This effect remained robust in an OLS regression that included the control variables ( $B = 0.54$ ,  $SE = 0.24$ ,  $P = 0.029$ ). Compared with both EAs and SAs, whites ( $M = 2.33$ ,  $SD = 1.28$ ) reported experiencing significantly less prejudice (both values of  $P < 0.001$ ) and blacks ( $M = 5.20$ ,  $SD = 1.57$ ) reported experiencing significantly greater prejudice (both values of  $P < 0.001$ ).

### Study 6b

Complementing study 6a, which compared SAs’ and EAs’ self-reported prejudice, study 6b examined whether non-Asian Americans actually exhibit greater prejudice toward SAs than EAs. This study was preregistered at <https://aspredicted.org/9ey86.pdf>.

**Participants.** We recruited participants from TurkPrime to complete the short study in exchange for \$0.20. Participants qualified only if they were non-Asian, native English speakers born in the United States, had an approval rate above 95% for their previous tasks on TurkPrime, and passed our attention check question (see below). These exclusion criteria yielded 339 qualified participants (mean age = 38.47,  $SD = 12.31$ ; 51.9% female). Among them, 85.0% self-identified as white, 7.7% as black, 6.5% as Latino, and the rest as other ethnicities.

**Design.** Participants were randomly assigned to answer a series of questions about one of six Asian American subgroups: Chinese/Japanese/Korean/Bangladeshi/Indian/Pakistani Americans. We chose these six groups because the former three are the most populous EA groups in the United States, while the latter three are the most populous SA groups (45).

**Procedures and Measures.** Upon consenting to the study, participants first completed demographic questions on age, gender, ethnicity, education, birth country, and English fluency. Participants could proceed to the next screen only if they self-identified as non-Asian, native English speakers born in the United States.

Next, participants were informed that they would be randomly assigned to answer a series of questions about one of the many ethnic groups in the United States. To clarify that our study was referring to Asian Americans, we provided a definition for each Asian American subgroup (e.g., Indian American = US-born citizen whose family roots are in India).

**Prejudice.** Prejudice is often operationalized as affective social distance, or antipathy toward close interactions with members of a group (46). We measured prejudice with seven items from commonly used social distance scales (14, 47). Participants were asked: “How comfortable would you be if a [Chinese/Japanese/Korean/Bangladeshi/Indian/Pakistani] American \_\_\_?” for seven everyday scenarios, including “dated your sibling,” “shared an office cubicle with you,” and “became your next-door neighbor” (1 = very uncomfortable, 6 = very comfortable;  $\alpha = 0.95$ ). The display order of these seven scenarios was randomized across participants, along with an embedded attention check question (“Please select the leftmost option for this question”).

Although prejudice is typically viewed as “antipathy” (12), research suggests that prejudice against some groups is ambivalent and thus better captured on two dimensions: warmth and competence (48). Therefore, we also compared EAs and

SAs on perceived warmth and competence. Participants were asked to rate their randomly assigned Asian subgroup on warmth and competence: “How likely are Chinese/Japanese/Korean/Bangladeshi/Indian/Pakistani Americans to exhibit the following characteristics?” (1 = extremely unlikely, 6 = extremely likely). Following Fiske and colleagues (48, 49), we measured warmth with four items (warm, friendly, good-natured, sincere;  $\alpha = 0.95$ ) and competence with four items (competent, capable, intelligent, skillful;  $\alpha = 0.95$ ).

**Results.** An independent-samples  $t$  test revealed that (non-Asian American) participants preferred to maintain significantly more social distance from SA Americans ( $M = 5.06$ ,  $SD = 1.15$ ) than from EA Americans ( $M = 5.46$ ,  $SD = 0.97$ );  $t = -3.45$ ,  $P < 0.001$ ,  $d = -0.38$ , 95% CI = [-0.62, -0.17]. This pattern was true for each of the seven scenarios (all values of  $P < 0.05$ ). There was no significant difference either within the three EA groups ( $F = 0.04$ ,  $P = 0.96$ , Bayes factor  $B_{10} = 0.006$ ) or within the three SA groups ( $F = 1.48$ ,  $P = 0.23$ , Bayes factor  $B_{10} = 0.025$ ).

Compared to EA Americans, SA Americans were rated as both significantly less warm ( $M_{SA} = 4.88$ ,  $SD_{SA} = 0.91$ ,  $M_{EA} = 5.12$ ,  $SD_{EA} = 0.74$ ;  $t = -2.69$ ,  $P = 0.007$ ,  $d = -0.29$ , 95% CI = [-0.42, -0.07]) and significantly less competent ( $M_{SA} = 5.06$ ,  $SD_{SA} = 0.90$ ,  $M_{EA} = 5.44$ ,  $SD_{EA} = 0.62$ ;  $t = -4.57$ ,  $P < 0.001$ ,  $d = -0.49$ , 95% CI = [-0.55, -0.22]).

**Discussion.** Dovetailing with study 6a, study 6b found that non-Asian Americans exhibited greater prejudice toward SAs than EAs. These results suggest that prejudice is unlikely to be the main reason for the observed leadership attainment gap between EAs and SAs. As a robustness check, we replicated these results in another preregistered study that employed a group comparative design (for details, see *SI Appendix*).

### Study 7

As the final study, study 7 employed an experimental design and randomly assigned non-Asian Americans to view the profile of either an EA or SA leadership candidate. We tested whether they would be more likely to select the SA candidate for the leadership position yet also exhibit greater prejudice toward him (in light of studies 6a and 6b’s findings). Relatedly, we simultaneously tested the three focal mediating mechanisms: prejudice, work motivation, and assertiveness.

**Participants.** We recruited current employees from TurkPrime to complete the short study in exchange for \$0.30. Participants qualified only if they were non-Asian, native English speakers born in the United States, had an approval rate above 95% for their previous tasks on TurkPrime, and passed our attention check questions (see below). These exclusion criteria yielded 396 qualified participants (mean age = 38.82,  $SD = 12.59$ ; 52.3% female). Among them, 80.1% self-identified as white, 12.4% as black, 4.5% as Latino, and the rest as other ethnicities.

**Experimental Design.** Participants were randomly assigned to one of four experimental conditions in a between-subjects design: Chinese, Korean, Indian, or Pakistani condition. We chose these four groups because the former two are the most populous EA groups in the United States, while the latter two are the most populous SA groups (45).

**Procedures and Measures.** Participants were asked to imagine that they were part of a leadership selection committee randomly assigned to evaluate a candidate for a senior leadership position. According to the profile, the leadership candidate was a 36-y-old, native English-speaking American born in New Jersey who held an MBA degree and had a 7-y tenure at the company. The profile



was identical across the four conditions, except for the “name” and “ethnicity” sections, which were listed as follows: A. Wang (Chinese), A. Kim (South Korean), A. Patel (Indian), or A. Bakhsh (Pakistani). These four surnames are among the most prevalent in their respective cultures.

After viewing the profile (for at least 30 s before they could proceed), participants responded to questions about perceived leadership potential, assertiveness, work motivation, and prejudice. These four measures were randomized across participants and separated by filler questions.

**Leadership potential.** We measured perceived leadership potential with the three-item scale from Porath et al. (50): “I would recommend this person as a leader”; “I believe this person possesses leadership qualities”; “I view this person as a leader” (1 = strongly disagree, 6 = strongly agree;  $\alpha = 0.90$ ).

**Assertiveness.** We measured perceived assertiveness with the three-item scale used in our previous studies (36): “This person would speak up and share his own views when appropriate”; “This person would be willing to engage in constructive interpersonal confrontations”; “This person would be able to stand his ground in a heated conflict” (1 = strongly disagree, 6 = strongly agree;  $\alpha = 0.83$ ).

**Work motivation.** We measured perceived work motivation with the same two items used in studies 3a and 3b (37): “This person would try to work as hard as possible”; “This person would intentionally expend extra effort in carrying out his job” (1 = strongly disagree, 6 = strongly agree;  $\alpha = 0.84$ ).

**Prejudice.** We measured prejudice with the seven social distance items used in study 6b: “How comfortable would you be if this person \_\_\_?” (e.g., “dated your sister”; 1 = very uncomfortable, 6 = very comfortable;  $\alpha = 0.91$ ). The display order of the seven scenarios was randomized across participants, along with an embedded attention check question (“Please select the leftmost option for this question”).

**Attention check.** After these four measures, participants completed another attention check question: “What is the candidate’s ethnic background?” Participants were disqualified if they failed to select the correct answer from a drop-down list of different Asian subgroups.

**Results.** Across the variables, there was no significant difference between the Chinese American candidate and the Korean American candidate (all values of  $t < 1.29$ ; all values of  $P > 0.20$ ), and no significant difference between the Indian American candidate and the Pakistani American candidate (all values of  $t < 1.57$ ; all values of  $P > 0.12$ ). Thus, for the rest of our data analysis, we collapsed the four conditions into two conditions: EA condition vs. SA condition.

**Leadership potential.** Consistent with our previous studies, the EA candidate ( $M = 4.60$ ,  $SD = 0.71$ ) was rated as significantly lower on leadership potential than the SA candidate ( $M = 4.80$ ,  $SD = 0.70$ );  $t = -2.92$ ,  $P = 0.004$ ,  $d = -0.28$ , 95% CI =  $[-0.35, -0.07]$ .

**Assertiveness.** Consistent with our previous studies, the EA candidate ( $M = 4.52$ ,  $SD = 0.71$ ) was rated as significantly less assertive than the SA candidate ( $M = 4.78$ ,  $SD = 0.70$ );  $t = -3.68$ ,  $P < 0.001$ ,  $d = -0.37$ , 95% CI =  $[-0.40, -0.12]$ .

**Work motivation.** Consistent with studies 3a and 3b, the EA candidate ( $M = 4.87$ ,  $SD = 0.78$ ) and the SA candidate ( $M = 4.99$ ,  $SD = 0.77$ ) were not rated significantly differently on work motivation;  $t = -1.53$ ,  $P = 0.13$ , 95% CI =  $[-0.27, 0.03]$ .

**Prejudice.** Consistent with study 6b, participants preferred to maintain marginally more social distance from the SA candidate ( $M = 5.02$ ,  $SD = 0.97$ ) than from the EA candidate ( $M = 5.20$ ,  $SD = 0.88$ );  $t = -1.87$ ,  $P = 0.06$ ,  $d = -0.19$ , 95% CI =  $[-0.36, 0.01]$ .

**Mediation analysis.** Consistent with studies 3a and 3b, perceived assertiveness significantly mediated the effect of the experimental condition (1 = EA condition, 0 = SA condition) on

perceived leadership potential (indirect effect =  $-0.15$ ,  $P < 0.001$ , bootstrapped 95% CI =  $[-0.24, -0.07]$ ). In contrast, perceived work motivation (indirect effect =  $-0.06$ ,  $P = 0.12$ , bootstrapped 95% CI =  $[-0.13, 0.02]$ ) and prejudice (indirect effect =  $0.05$ ,  $P = 0.07$ , bootstrapped 95% CI =  $[-0.01, 0.10]$ ) were not significant mediators.

**Discussion.** Study 7 provided experimental evidence that non-Asian Americans rated EAs lower on leadership potential than SAs. Consistent with our prior studies, this effect was significantly mediated by perceived assertiveness, but not by prejudice or perceived motivation. Together, these results suggest that, despite facing less prejudice than SAs and being equally motivated, EAs are less likely to attain leadership positions.

## General Discussion

Using large samples ( $n = 11,030$ ) and mixed methods (archival analyses of S&P 500 CEOs, field surveys in large US companies, MBA leader nominations and elections, and experiments), the present research systematically examined the scope and the mechanisms of the bamboo ceiling in the United States. Our studies consistently found that EAs were less likely than SAs and whites to attain leadership positions, whereas SAs were more likely than whites to do so. Importantly, cultural differences in assertiveness reliably mediated the leadership attainment gap between EAs and SAs, suggesting that EAs suffer from the bamboo ceiling partly because they communicate less assertively.

**Theoretical Contributions.** This research makes important contributions to the literatures on culture, diversity, and leadership. Whereas a vast amount of research has examined the glass ceiling faced by women (51, 52), limited research has examined the bamboo ceiling. In investigating the scope of the bamboo ceiling, our research is among the first to compare the leadership attainment of different Asian subgroups in the United States. We consistently found that EAs hit the bamboo ceiling, whereas SAs transcend it. These findings shift how researchers and practitioners should understand the bamboo ceiling: It is not a problem faced by all Asians, but a cultural problem faced by EAs.

Moreover, our research sheds light on the mechanisms of the bamboo ceiling by testing intergroup, intrapersonal, and interpersonal factors. We provide evidence that the leadership attainment gap between EAs and SAs is not due to differences in motivation or prejudice: EAs were neither less hardworking nor less motivated to take on leadership roles than SAs, and SAs actually faced greater prejudice than EAs. Similarly, this leadership attainment gap could not be explained by demographics such as birth country, English fluency, education level, and SES. Instead, cultural differences in assertiveness consistently explained the leadership attainment gap, suggesting that EAs are less likely to attain leadership positions partly because their low assertiveness is incongruent with how leaders are expected to communicate in the United States.

More broadly, we contribute to cultural psychology by moving beyond the predominant East-vs.-West rubric. Whereas past research has mostly contrasted Asians with Westerners (32, 53–55), our research highlights the importance of examining the differences within the Asian umbrella.

**Practical Implications.** The present research also has important practical implications. First, rather than assuming that Asians are the model minority “doing just fine,” American organizations should be cognizant of the underrepresentation of EAs in leadership roles. Next, it is important to understand the cultural differences among different Asian subgroups. Currently, the diversity efforts of American organizations tend to lump all Asians together as a single cultural group. For example, organizations

typically have a single employee resource group for all Asian employees. To break the bamboo ceiling, organizations need to understand how EAs' low assertiveness may be incongruent with the American prototype of leadership. For example, EAs may benefit from communication training that focuses on assertiveness (e.g., the EA Democratic presidential candidate Andrew Yang actively practiced debate and represented the US National Debate Team in the World Championships) (56). On the other hand, while the leadership success of SAs serves as a beacon for other minority groups (57), individuals and organizations should beware of the prejudice toward SAs, which may handicap them in roles that involve close interpersonal interactions.

Critically, the onus of breaking the bamboo ceiling should not fall on EAs themselves. American organizations should evolve their implicit prototype of leadership to fit a diversifying workforce, and recognize that there can be more than one successful leadership style. For example, American organizations could benefit from EA cultures' group-focused, protection-oriented leadership style (31, 58). By appreciating diverse leadership styles, American organizations can better leverage EA leadership talent—especially since EAs appear no less interested in leadership roles than SAs or whites.

**Limitations and Future Directions.** While our studies have identified cultural differences in assertiveness as a reliable explanation for the bamboo ceiling faced by EAs, other mechanisms may also be

at play. Indeed, it remains unclear why SAs were even more likely to attain leadership positions than whites across our studies. Future studies could explore other intergroup, intrapersonal, and interpersonal mechanisms such as immigration selectivity (59, 60), social networks (60, 61), and perceived physical masculinity (62). Moreover, while the present research measured assertiveness via self-report or other-report, future research could measure assertiveness behaviorally. Finally, while our studies have focused on leadership in the private sector in the United States (which employs about 85% of the US workforce), future research could examine whether the bamboo ceiling also exists in the public sector or in other Western countries.

## Conclusion

In summary, the current research has revealed that EAs—but not SAs—hit the bamboo ceiling, partly because EAs communicate less assertively. The bamboo ceiling is not an Asian issue, but an issue of cultural fit—a mismatch between EA norms of communication and American norms of leadership.

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1. C. L. Ryan, K. Bauman, Educational attainment in the United States: 2015. US Census Bureau (2016). <https://www.census.gov/content/dam/Census/library/publications/2016/demo/p20-578.pdf>. Accessed 1 October 2019.
2. A. Hsin, Y. Xie, Explaining Asian Americans' academic advantage over whites. *Proc. Natl. Acad. Sci. U.S.A.* **111**, 8416–8421 (2014).
3. The model minority is losing patience. *The Economist*, 3 October 2015. <https://www.economist.com/node/21669595>. Accessed 1 October 2019.
4. US Census Bureau, Income and poverty in the United States: 2018 (2019). <https://www.census.gov/content/dam/Census/library/publications/2019/demo/p60-266.pdf>. Accessed 1 October 2019.
5. US Department of Labor, Labor force statistics from the current population survey (2019). [https://data.bls.gov/timeseries/LNS14000003&series\\_id=LNS14000006&series\\_id=LNS14032183&series\\_id=LNS14000009https://data.bls.gov/pdq/SurveyOutputServlet](https://data.bls.gov/timeseries/LNS14000003&series_id=LNS14000006&series_id=LNS14032183&series_id=LNS14000009https://data.bls.gov/pdq/SurveyOutputServlet).
6. Federal Bureau of Investigation, Crime rates in the United States, 2008–2018 (2019). <https://crime-data-explorer.fr.cloud.gov/explorer/national/united-states/crime>. Accessed 1 October 2019.
7. B. Gee, D. Peck, Asian Americans are the least likely group in the U.S. to be promoted to management. *Harvard Business Review*, 31 May 2018. <https://hbr.org/2018/05/asian-americans-are-the-least-likely-group-in-the-u-s-to-be-promoted-to-management>.
8. J. Hyun, *Breaking the Bamboo Ceiling: Career Strategies for Asians* (HarperBusiness, New York, 2005).
9. M. Lobovikov, S. Paudel, M. Piazza, H. Ren, J. Wu, *World Bamboo Resources: A Thematic Study Prepared in the Framework of the Global Forest Resources, Assessment 2005* (Food and Agriculture Organization of the United Nations, 2007).
10. E. Chung, S. Dong, X. A. Hu, C. Kwon, G. Liu, *A Portrait of Asian Americans in the Law* (Yale Law School and National Asian Pacific American Bar Association, New Haven, CT, 2017). <https://www.apaportraitproject.org>.
11. A. S. Rosette, G. J. Leonardelli, K. W. Phillips, The white standard: Racial bias in leader categorization. *J. Appl. Psychol.* **93**, 758–777 (2008).
12. G. W. Allport, *The Nature of Prejudice* (Addison-Wesley, New York, 1954).
13. K. L. Milkman, M. Akinola, D. Chugh, What happens before? A field experiment exploring how pay and representation differentially shape bias on the pathway into organizations. *J. Appl. Psychol.* **100**, 1678–1712 (2015).
14. D. A. Butz, K. Yogeewaran, A new threat in the air: Macroeconomic threat increases prejudice against Asian Americans. *J. Exp. Soc. Psychol.* **47**, 22–27 (2011).
15. S. Cheryan, B. Monin, "Where are you really from?": Asian Americans and identity denial. *J. Pers. Soc. Psychol.* **89**, 717–730 (2005).
16. W. W. Maddux, A. D. Galinsky, A. J. C. Cuddy, M. Polifroni, When being a model minority is good ... and bad: Realistic threat explains negativity toward Asian Americans. *Pers. Soc. Psychol. Bull.* **34**, 74–89 (2008).
17. M. H. Lin, V. S. Y. Kwan, A. Cheung, S. T. Fiske, Stereotype content model explains prejudice for an envied outgroup: Scale of anti-Asian American Stereotypes. *Pers. Soc. Psychol. Bull.* **31**, 34–47 (2005).
18. K. Ramakrishnan, J. Wong, J. Lee, T. Lee, 2016 Post-Election National Asian American Survey (2017). <https://naasurvey.com/wp-content/uploads/2017/05/NAAS16-post-election-report.pdf>. Accessed 1 October 2019.
19. A. Kaduvettoor-Davidson, A. G. Inman, South Asian Americans: Perceived discrimination, stress, and well-being. *Asian Am. J. Psychol.* **4**, 155–165 (2013).
20. B. M. Bass, R. Bass, *The Bass Handbook of Leadership: Theory, Research, and Managerial Applications* (Free Press, New York, 2008).
21. S. E. Park, A. A. Harrison, Career-related interests and values, perceived control, and acculturation of Asian-American and Caucasian-American college students. *J. Appl. Soc. Psychol.* **25**, 1184–1203 (1995).
22. K. Wu, S. M. Garcia, S. Kopelman, Frogs, ponds, and culture: Variations in entry decisions. *Soc. Psychol. Personal. Sci.* **9**, 99–106 (2018).
23. S. A. Hewlett, Breaking through the bamboo ceiling. *Harvard Business Review*, 3 August 2011. <https://hbr.org/2011/08/breaking-through-the-bamboo-ce>. Accessed 1 October 2019.
24. R. G. Lord, K. J. Maher, *Leadership and Information Processing: Linking Perceptions and Performance* (Unwin Hyman, Boston, MA, 1991).
25. R. House, M. Javidan, P. Hanges, P. Dorfman, Understanding cultures and implicit leadership theories across the globe: An introduction to project GLOBE. *J. World Bus.* **37**, 3–10 (2002).
26. D. R. Ames, Assertiveness expectancies: How hard people push depends on the consequences they predict. *J. Pers. Soc. Psychol.* **95**, 1541–1557 (2008).
27. T. Sy et al., Leadership perceptions as a function of race-occupation fit: The case of Asian Americans. *J. Appl. Psychol.* **95**, 902–919 (2010).
28. S. Kitayama, D. Cohen, *Handbook of Cultural Psychology* (Guilford Press, New York, 2010).
29. G. Hofstede, M. H. Bond, The Confucius connection: From cultural roots to economic growth. *Organ. Dyn.* **16**, 5–21 (1988).
30. S. S. Liu, M. W. Morris, T. Talhelm, Q. Yang, Ingroup vigilance in collectivistic cultures. *Proc. Natl. Acad. Sci. U.S.A.* **116**, 14538–14546 (2019).
31. T. Menon, J. Sim, J. H. Y. Fu, C.-Y. Chiu, Y.-Y. Hong, Blazing the trail versus trailing the group: Culture and perceptions of the leader's position. *Organ. Behav. Hum. Decis. Process.* **113**, 51–61 (2010).
32. R. E. Nisbett, *The Geography of Thought: How Asians and Westerners Think Differently... and Why* (The Free Press, New York, 2004).
33. T. Sy, S. Tram-Quon, A. Leung, Developing minority leaders: Key success factors of Asian Americans. *Asian Am. J. Psychol.* **8**, 142–155 (2017).
34. A. Sen, *The Argumentative Indian: Writings on Indian History, Culture and Identity* (Farrar, Straus and Giroux, New York, 2005).
35. S. Nishimura, A. Nevgi, S. Tella, "Communication style and cultural features in high/low context communication cultures: A case study of Finland, Japan and India" in *Proceedings of a Subject-Didactic Symposium in Helsinki*, A. Kallioniemi, Ed. (University of Helsinki, 2008), pp. 783–796.
36. A. S. Wallen, M. W. Morris, B. A. Devine, J. G. Lu, Understanding the MBA gender gap: Women respond to gender norms by reducing public assertiveness but not private effort. *Pers. Soc. Psychol. Bull.* **43**, 1150–1170 (2017).
37. J. Brockner, S. Grover, T. F. Reed, R. L. Dewitt, Layoffs, job insecurity, and survivors' work effort: Evidence of an inverted-U relationship. *Acad. Manage. J.* **35**, 413–425 (1992).
38. H. Adam, O. Obodaru, J. G. Lu, W. W. Maddux, A. D. Galinsky, The shortest path to oneself leads around the world: Living abroad increases self-concept clarity. *Organ. Behav. Hum. Decis. Process.* **145**, 16–29 (2018).
39. T. A. Judge, J. E. Bono, R. Ilies, M. W. Gerhardt, Personality and leadership: A qualitative and quantitative review. *J. Appl. Psychol.* **87**, 765–780 (2002).
40. D. R. Ames, F. J. Flynn, What breaks a leader: The curvilinear relation between assertiveness and leadership. *J. Pers. Soc. Psychol.* **92**, 307–324 (2007).
41. S. D. Gosling, P. J. Rentfrow, W. B. Swann, A very brief measure of the Big-Five personality domains. *J. Res. Pers.* **37**, 504–528 (2003).

42. N. E. Adler, E. S. Epel, G. Castellazzo, J. R. Ickovics, Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy white women. *Health Psychol.* **19**, 586–592 (2000).
43. T. Butler, J. Waldroop, A function-centered model of interest assessment for business careers. *J. Career Assess.* **12**, 270–284 (2004).
44. C. R. Kaiser et al., Presumed fair: Ironic effects of organizational diversity structures. *J. Pers. Soc. Psychol.* **104**, 504–519 (2013).
45. Pew Research Center, Key facts about Asian Americans, a diverse and growing population (2017). <https://www.pewresearch.org/fact-tank/2017/09/08/key-facts-about-asian-americans/>. Accessed 1 October 2019.
46. E. S. Bogardus, A social distance scale. *Sociol. Soc. Res.* **17**, 265–271 (1933).
47. H. C. Triandis, L. M. Triandis, Race, social class, religion, and nationality as determinants of social distance. *J. Abnorm. Soc. Psychol.* **61**, 110–118 (1960).
48. S. T. Fiske, A. J. C. Cuddy, P. Glick, J. Xu, A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *J. Pers. Soc. Psychol.* **82**, 878–902 (2002).
49. A. J. C. Cuddy, M. I. Norton, S. T. Fiske, This old stereotype: The pervasiveness and persistence of the elderly stereotype. *J. Soc. Issues* **61**, 267–285 (2005).
50. C. L. Porath, A. Gerbasi, S. L. Schorch, The effects of civility on advice, leadership, and performance. *J. Appl. Psychol.* **100**, 1527–1541 (2015).
51. R. M. Fernandez, S. Campero, Gender sorting and the glass ceiling in high-tech firms. *Ind. Labor Relat. Rev.* **70**, 73–104 (2017).
52. W. M. Williams, S. J. Ceci, National hiring experiments reveal 2:1 faculty preference for women on STEM tenure track. *Proc. Natl. Acad. Sci. U.S.A.* **112**, 5360–5365 (2015).
53. K. Savani, M. W. Morris, N. V. R. Naidu, S. Kumar, N. V. Berlia, Cultural conditioning: Understanding interpersonal accommodation in India and the United States in terms of the modal characteristics of interpersonal influence situations. *J. Pers. Soc. Psychol.* **100**, 84–102 (2011).
54. H. R. Markus, S. Kitayama, Culture and the self: Implications for cognition, emotion, and motivation. *Psychol. Rev.* **98**, 224–253 (1991).
55. H. G. Barkema, X. P. Chen, G. George, Y. Luo, A. S. Tsui, West meets East: New concepts and theories. *Acad. Manage. J.* **58**, 460–479 (2015).
56. M. O'Connor, Random man runs for president. *The Washington Post*, 6 June 2019. <https://www.washingtonpost.com/news/magazine/wp/2019/06/10/feature/random-man-runs-for-president-the-odd-saga-of-andrew-yang-explained/>. Accessed 1 October 2019.
57. C. Heath, D. Heath, *Switch* (Broadway Books, New York, 2010).
58. S. Gündemir, A. M. Carton, A. C. Homan, The impact of organizational performance on the emergence of Asian American leaders. *J. Appl. Psychol.* **104**, 107–122 (2019).
59. J. Lee, M. Zhou, *The Asian American Achievement Paradox* (Russell Sage Foundation, New York, 2015).
60. S. Chakravorty, D. Kapur, N. Singh, *The Other One Percent: Indians in America* (Oxford University Press, 2016).
61. J. G. Lu et al., “Going out” of the box: Close intercultural friendships and romantic relationships spark creativity, workplace innovation, and entrepreneurship. *J. Appl. Psychol.* **102**, 1091–1108 (2017).
62. B. R. Spisak, P. H. Dekker, M. Krüger, M. van Vugt, Warriors and peacekeepers: Testing a biosocial implicit leadership hypothesis of intergroup relations using masculine and feminine faces. *PLoS One* **7**, e30399 (2012).
63. W. Wei et al., Regional ambient temperature is associated with human personality. *Nat. Hum. Behav.* **1**, 890–895 (2017).