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# Professors' "Feminine" Behavioral Cues in the Classroom Close Gender Gaps in Participation

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Record numbers of women students have enrolled in graduate business programs—a path to greater career prospects. Yet gender disparities in grades and career outcomes persist. Research suggests that one reason why they persist is because business schools are—and have been historically—male-dominated with cultures characterized by masculine defaults. These cultures regard stereotypically masculine characteristics and behaviors (e.g., being assertive and competitive) as neutral, necessary, or standard. In business school settings, we investigate whether there are gender disparities in a critical aspect of students' experiences: classroom participation. In an observational field study of 3,159 students across 76 Master of Business Administration classrooms, we find a gender gap in actual student participation behavior. Importantly, however, our findings indicate that this gap is not inevitable. Using thin-slice impressions of professors' behaviors during classroom interactions, we find that when professors diverge from the masculine default by exhibiting "feminine" behavioral cues (e.g., subtle other-oriented behaviors), the gender participation gap closes. In a second, preregistered experiment, we provide causal evidence that professors' behavioral cues affect student participants' anticipated participation by shaping their experiences of inclusion. Our findings highlight that, in male-dominated settings, shifting professors' behavioral cues away from masculine defaults has the potential to create more equitable spaces.

***Public Significance Statement***

Many organizations, including business schools, implement well-intentioned initiatives to reduce gender disparities. Yet gender disparities in grades and career outcomes persist. Across two studies—a field study of students' actual participation behavior and an experiment of students' anticipated participation—we find that, on average, men students participate in classroom discussions more than women students. However, our findings suggest that professors' behavior can mitigate this gender gap in participation. We demonstrate that when professors diverge from the masculine default by displaying "feminine" behavioral cues such as being warm, approachable, and attentive to others, the gender participation gap is closed. The present work points to the significance of subtle behaviors as a potential means to reduce gender disparities in historically male-dominated contexts.

*Keywords:* masculine defaults, academic achievement, gender, inequality, thin-slicing

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All data and syntax are available at https://osf.io/syqfd/. A portion of the data from Study 1 in this article has been presented at academic conferences; however, the full set of analyses and conclusions reported here was not previously disseminated.

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Organizations ranging from business schools to American corporations implement well-intentioned policies and practices to reduce gender disparities in their members' outcomes and performance (Bartels et al., 2013; Nishii, 2013). Organizational initiatives include targeted recruitment practices to increase gender diversity, sponsorship programs that provide women with access to social support, and flexible family leave policies. Notably, within the context of business schools—institutions that confer professional workplace advantages—the top three graduate business schools have enrolled record numbers of women students: University of Chicago's Booth School of Business (41.1%), University of Pennsylvania's Wharton School (49.7%), and Northwestern University's Kellogg School of Management (45.1%; U.S. News and World Report, 2024).

Despite these structural efforts, gender disparities in outcomes persist in male-dominated contexts (Jeong & Harrison, 2017). For example, in Master of Business Administration (MBA) classrooms, women earn lower grades than men (e.g., Kantor, 2013; Wallen et al., 2017). Additionally, in the workplace, women often obtain lower salaries and access top corporate positions less frequently compared to men in similar positions (Asanov & Mavlikeeva, 2023; Bertrand et al., 2010; Liang et al., 2022).

Research suggests that one reason gender disparities persist despite these efforts is that they leave in place a powerful foundation of *masculine defaults* (e.g., Cheryan & Markus, 2020; Lombard et al., 2021; Schmader, 2023). According to Cheryan and Markus (2020), masculine defaults are elements of the culture in which characteristics associated with men's gender role are regarded as neutral, necessary, or standard (Cejka & Eagly, 1999; Cheryan & Markus, 2020; Fiske et al., 2002; Markus & Conner, 2014).[1] Masculine defaults include values, policies, behaviors, and interactional styles that may appear gender-neutral on the surface but ultimately confer greater advantages to men over women. These defaults might include being self-oriented, independent, assertive, and/or competitive.

In business school settings where masculine defaults are ubiquitous (e.g., Cheryan & Markus, 2020; He & Kang, 2025; Kelan & Jones, 2010), we examine whether there are gender disparities in one critical outcome: classroom participation. We focus on classroom participation because it is a consequential, observable behavior that lays the foundation for future inequalities to be reduced or amplified. Classroom participation not only plays an important role in students' learning and academic performance (Fritschner, 2000; Goudeau & Croizet, 2017; Goudeau et al., 2023; Rocca, 2010; Schmidt-Wilk, 2010), but it also signals normative information about whose voices matter, are heard, and are represented (Carter et al., 2018; Lewis et al., 2019). Further, in settings that prepare people for leadership, if men are more likely than women to ask questions and engage in classroom discussions, this inequality can serve as a catalyst for gendered expectations, behavior, and outcomes in the workplace, further perpetuating inequality (Biernat & Hawley, 2017; Jarvis et al., 2022; Ridgeway, 2011; Riegle-Crumb & Morton, 2017).

Although masculine defaults pervade business schools, professors can convey an alternative culture within their individual classrooms. One way they may do this is through their behavioral cues (i.e., subtle nonverbal and verbal behaviors), which can signal to students what is considered appropriate, normative, and valued in their classroom (Cialdini & Trost, 1998; Destin et al., 2022; Silverman et al., 2023; Young-Jones et al., 2014). In the current research, we propose and test the idea that professors' behavioral cues can meaningfully affect gender disparities in classroom participation.

In doing so, our research makes at least two key contributions to the psychological literature on subtle forms of gender biases in organizational contexts. First, prior research has documented gender disparities in grades among students in business schools. This holds true for participation grades as well (Opie et al., 2019). However, it is unclear whether these previously observed gender disparities are due to potential biases in grading (i.e., men and women students being *allocated* different grades despite similar participation behaviors) or actual differences in their classroom participation behavior. In our research, we rule out the possibility of biased evaluations by directly observing students' actual (Study 1) and anticipated (Study 2) participation behavior rather than relying on a relatively indirect proxy (e.g., professors' grading). Second, our research offers the first examination of how professors' behavioral cues shape gender disparities in students' experiences and behavior in the classroom, bridging literatures in cultural psychology, communication, and educational psychology.

In the sections that follow, we explain our theorizing and articulate the rationale underlying it. We suggest that there will be a gender participation gap in business school settings on average and that professors' behavioral cues may serve as a powerful cultural lever to close the gap. We begin by reviewing research in cultural psychology demonstrating that business school contexts are characterized by masculine defaults. We then discuss how professors can reinforce or deviate from masculine defaults within their individual classrooms through the behavioral cues they exhibit. Finally, we explain why gender participation gaps are likely to emerge in contexts characterized by masculine defaults and discuss how professors' behavioral cues can close this gap. Specifically, we consider the role of inclusion as a key mechanism through which professors' behavior helps close gender disparities in participation.

## Business Schools Are Characterized by Masculine Defaults

In business settings throughout the United States, Cheryan and Markus (2020) theorized that masculine defaults are prioritized across the four levels of culture: *ideas* (i.e., broad assumptions about what is good, effective, and successful), *institutions* (i.e., social structures that afford and formalize rules and policies), *individuals* (i.e., behaviors, thoughts, and feelings), and *interactions* (i.e., engagement with others and organizational norms, practices, and artifacts; also see Hamedani & Markus, 2019). In the business school context in particular, at the ideas level, cultural messaging about what it means to be a "good" or "successful" business student includes stereotypically masculine characteristics such as being competitive, assertive, and analytical (Bohlmeyer et al., 1985; Cheryan & Markus, 2020; Lu et al., 2022; Sinclair, 1995). At the institutions level, academic policies reward behaviors associated with men's gender role, including individualistic contributions and standing out from others (e.g., Thomas & Ambrosini, 2021). At the individual level, business students often believe that exhibiting stereotypically masculine behaviors, such as asserting themselves, is essential for success (Kelan, 2013; Simpson, 2006; Vial et al., 2022). Finally, at the interactions level—our primary focus in the

[1] Gender roles are cultural norms and expectations that dictate the characteristics and behaviors that are seen as appropriate or typical for men and women (e.g., Eagly et al., 2000).

current research—business schools often encourage tendencies such as assertiveness, competitiveness, and self-promotion during interpersonal interactions (e.g., class discussions, networking, and socializing with other students; Ames, 2009; Lu et al., 2022). This level of culture represents the primary domain where professors and students engage with one another and where classroom participation occurs. This prior research converges to suggest that, overall, masculine defaults pervade business school contexts.

## Professors' Behavioral Cues Can Create Classroom Microcultures

While the broader business school culture generally prioritizes masculine defaults, there can be different *microcultures* within individual classrooms that diverge from the broader culture (e.g., Hamedani & Markus, 2019; Thoman et al., 2017). These microcultures are a product of what occurs in people's "immediate social contexts" and thus can be created at the interactions level of culture (Thoman et al., 2017, p. 761). As leaders of the classroom, professors can shape their classroom's microculture through the behavioral cues they exhibit during lectures and interactions with students. Importantly, this process can occur regardless of the gender of the professors themselves (Cheryan & Markus, 2020; Thoman et al., 2017).

Professors may signal a deviation from the broader culture of masculine defaults by exhibiting what we refer to as "feminine" behavioral cues[2]—subtle behaviors that reflect an other-focused orientation (e.g., warmth, approachability, and attentiveness to others; Cheryan & Markus, 2020). We use the term "feminine" because these cues are stereotypically associated with women's gender role in society (Eagly & Wood, 1999; Heilman, 2001; Martin & Phillips, 2017). When professors exhibit such cues, they can redefine normative expectations in their classroom, conveying that success does not require students to exhibit stereotypically masculine behaviors.

Together, this body of research suggests that although masculine defaults pervade the broader business school culture, professors can cultivate a different classroom microculture that deviates from these defaults through the behavioral cues they exhibit. In the next section, we build on these insights to explain why gender participation gaps are likely to emerge in contexts characterized by masculine defaults and how professors' feminine behavioral cues may close this gap. We further propose that experiences of inclusion, particularly among women students, serve as a key psychological mechanism underlying this effect.

## Masculine Defaults and Behavioral Cues Matter for Students' Participation

In business school settings, we expect to observe a gender participation gap among students, with women participating less in the classroom than men. Given the prevalence of masculine defaults in business schools, this gap may emerge because expectations for classroom behaviors tend to align more closely with societal expectations for men than for women. For instance, behaviors such as being assertive and vocal are often viewed as the "ideal" or "right" way to succeed in these contexts. At the same time, men and women are still encouraged to follow societal norms associated with their respective gender roles (e.g., Cheryan et al., 2011; Cross & Madson, 1997; Eagly & Karau, 2002; Eagly et al., 1991; Gaucher et al., 2011; Schmader & Sedikides, 2018). Specifically, society expects men to be assertive and dominant and women to be communal and responsive to others (e.g., Diekman & Eagly, 2008). Indeed, when women violate these expectations by exhibiting stereotypically masculine behaviors, they face social and professional penalties (i.e., the backlash effect; Bowles et al., 2007; Rudman & Glick, 2001; Rudman & Phelan, 2008; Williams & Tiedens, 2016). Thus, women students may experience a misalignment between what is expected of them by society and what is expected or valued in the business school classroom.

We propose that this misalignment can hinder women business school students' participation by diminishing their experience of *inclusion*—that is, the degree to which individuals feel they belong and are valued within an organization (Nishii, 2013; Johnson, 2020; Shore et al., 2011).[3] Indeed, research suggests that when people confront a misalignment between expectations in a given setting and those expected of them by society, they experience lower inclusion (Bian et al., 2018; Cheryan et al., 2009; Master et al., 2016; Stephens et al., 2012). Research in education demonstrates that this has meaningful consequences: Lower levels of inclusion tend to lead to lower engagement in classroom discussions (Gillen-O'Neel, 2021).

However, we argue that the gender participation gap is not inevitable. When professors deviate from the typical masculine defaults that characterize business school cultures by exhibiting feminine behavioral cues, we theorize that women students will participate in classroom discussions at levels similar to men. By exhibiting feminine behavioral cues, professors signal to students that success in the classroom is not limited to stereotypically masculine characteristics and behaviors (e.g., Cheryan & Markus, 2020). Instead, they may affirm alternative ways to be a successful student—including stereotypically feminine characteristics and behaviors (e.g., collaborative engagement), which align more closely with societal expectations for women (Diekman & Steinberg, 2013; Eagly et al., 2000). In other words, feminine behavioral cues broaden the range of appropriate and valued classroom behaviors, reducing the misalignment between classroom expectations and societal expectations for women (e.g., Cheryan & Markus, 2020). In doing so, women students should experience greater inclusion. This experience of greater inclusion, in turn, may enable women students to participate more equally in classroom discussions, thereby closing the gender participation gap.

Formally, we hypothesize:

> *Hypothesis 1:* In business school classrooms, women (compared to men) students will participate less (H1a) and experience lower inclusion (H1b).

[2] Although we refer to them as "feminine," these behavioral cues are not exclusively displayed by women professors. Instead, by labeling them feminine, we aimed to underscore their divergence from the masculine default that typically characterizes business schools.

[3] The term *inclusion* is closely related to concepts such as *belonging* or *social fit*, and these concepts are often used interchangeably. Importantly, they converge to consistently predict lower engagement when absent or low (e.g., Shore et al., 2011; Stephens et al., 2012; Walton & Cohen, 2007). We focus on *inclusion* because it captures not only the sense of belonging (i.e., "Do I fit in?") but also the perception that one's unique perspectives are valued (i.e., "Am I valued?"), both of which are essential for participation (Johnson, 2020).

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*Hypothesis 2:* In business school classrooms where professors exhibit relatively higher levels of feminine behavioral cues, women and men students will participate at similar levels (H2a) and experience similar levels of inclusion (H2b).

*Hypothesis 3:* Inclusion will serve as a mechanism that helps to explain how professors' feminine behavioral cues shape women students' participation.

## The Current Research

We conducted two studies to examine our hypotheses. Study 1, an observational field study, was the first to directly examine the relationship between the gender defaults signaled by professors' behavioral cues and gender disparities in students' participation. We coded recordings of 76 MBA classes ($N = 3{,}159$ students) for both student and professor gender[4] and student participation behavior. Using a thin-slicing approach (Ambady & Rosenthal, 1992), we also coded professors' behavior to index the extent to which they exhibited feminine behavioral cues. Coding student and professor behavior directly allowed us to test whether there was a gender gap in students' actual participation behavior and how professors' behavioral cues related to this gap over and above other classroom features (e.g., professor gender and classroom gender diversity).

In Study 2, we conducted a preregistered experiment in which we manipulated a description of professors' behavioral cues (feminine behavioral cues vs. a control condition) in a hypothetical scenario to causally examine its impact on the gender participation gap. Rather than examining actual participation behavior (as we did in our observational field study), we measured students' anticipated participation (i.e., how likely they thought they would be to speak in class), as well as their anticipated experience of inclusion in a business school classroom. This enabled us to provide a replication and causal test of our hypotheses. In this study, we also measured our proposed mechanism of experiences of inclusion. Together, our observational field and experimental studies highlight the powerful role of professors' behavioral cues in closing the gender participation gap in business school contexts.

## Study 1: Observational Field Study of MBA Classrooms

In Study 1, we examined the relationship between professors' behavioral cues and the gender participation gap in MBA classrooms. We coded students' participation behavior and thin-slice impressions of professors' behavior in an observational study of 76 MBA classes ($N = 3{,}159$ students). Trained research assistants, unaware of the hypotheses, coded 90-min videos for student and professor gender, as well as student participation behavior. A separate set of trained research assistants, also unaware of hypotheses, coded thin slices of the professors' behavior during a lecture. Using data obtained from coding real MBA classrooms, we examined the overall gender participation gap across classrooms and whether professors' feminine behavioral cues were associated with closing this gap.

### Method

The videos in our study were recorded as part of an ongoing initiative of the business school to better understand students' classroom experiences. Prior to recording, professors were contacted for consent, with clear communication that the purpose was to understand current classroom dynamics and was not evaluative. One professor opted out of having their class recorded. For professors who did not opt-out, class sessions were videotaped the first week of the term.

Every course offered to full-time MBA students during the time of data collection that met the following criteria was recorded: (a) taught by a full-time faculty member (i.e., not a postdoctoral fellow) on the main campus, (b) offered the previous year (i.e., no new classes), (c) not independent study, foreign study, or fieldwork courses (i.e., no classes where classroom-based recording was unfeasible), (d) had a predetermined schedule, and (e) any additional courses retained upon the dean of MBA programs' recommendation based on previously stated criteria.

#### *Transparency and Openness*

Class session recordings were initially collected for institutional purposes to better understand and improve classroom dynamics and thus did not require institutional review board approval. After the recordings were collected, we obtained institutional review board approval to use them for research. We describe all study materials and measures in the main text and Supplemental Materials. Data were analyzed using SPSS Statistics 28 and R, Version 4.0.0 (R Core Team, 2020) and the package *ggplot*, Version 3.2.1 (Wickham, 2016). Study 1's analyses were not preregistered. Data and analysis code for all our studies are available at the Open Science Foundation and can be accessed at https://osf.io/syqfd/.

#### *Research Setting*

Research was conducted at a private business school in the Midwest of the United States, where approximately 40% of the student body consisted of women at the time of data collection. Therefore, this setting represented a business school where women were relatively well-represented (an analysis of the top full-time U.S. MBA programs reported that, on average, 37% of MBA students were women in 2016, the year these videos were recorded; Graduate Management Admission Council, 2016). The 2016 MBA student population had significant professional work experience ($M = 5.4$ years) in competitive industries (e.g., consulting, banking).

#### *Participants*

We obtained 82 videos of MBA class sessions. Six videos could not be used due to technical errors. The remaining 76 videos included 3,159 MBA students and 46 professors across 51 MBA courses. Among the class sessions, 57 were 90 min (1.5 hr) in length, and 19 were 180 min (3 hr) in length. For the 3-hr classes, we split the videos into two segments at a natural class break (i.e., when the professor gives students a midclass break) and used the coding of the first segment of the class for our analyses. We took this approach to ensure similar session lengths and address potential differences in student attendance and seating arrangements between the first and second segments of the class. Hypothesis tests yielded identical conclusions when analyzing the second segments instead of the first segments (see the Supplemental Materials for results). A post hoc

[4] We note that this observational coding is based on gender presentation, which can diverge from self-identified gender.

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power simulation (specified at $\alpha = .05$, two-tailed test, using *simr* package in R, replication = 1,000; e.g., Green & MacLeod, 2015; Murayama et al., 2022) indicated that we had over 99% power in detecting a small effect size ($d = 0.19$).

### Video Coding Procedure

We trained nine research assistants, unaware of hypotheses, on a coding scheme to code the videos for student and professor gender, student participation, and student confidence. To facilitate their coding, we created a seating chart (see Figure 1). We also trained two additional research assistants to code thin slices of professors' behavior. Each research assistant coded two videos to establish interrater reliability. All thin-slicing codes displayed acceptable levels of reliability between coders ($\rho > 0.82$; Fleiss, 1981). After establishing reliability, research assistants individually coded a random subset of the remaining videos. Once all videos were coded, disagreements were resolved through discussion. In total, research assistants spent over 200 hr coding the videos. Student-level and classroom-level coding are described in greater detail below.

### Student-Level Video Coding

Student-level coding includes students' perceived gender and participation.[5]

**Student Gender.** We instructed research assistants to use their best judgment to identify students as men or women. Across all videos in our analyses, research assistants designated 1,269 students as women (40%) and 1,890 students as men (60%), reflecting the gender composition of the student population enrolled in the full-time MBA program at the time of the study.

**Participation.** To examine the classroom gender participation gap, we used two measures: a raw participation score and a calculated participation discrepancy score described in detail below.

**Raw Participation Score.** Research assistants coded the total number of times each student participated ($M = 0.91$, $SD = 1.47$, range = 0–14) during classroom-wide lectures and discussions (i.e., not during small breakout group discussions). Across all videos, there were a total of 2,869 instances of participation. While our focus was on instances of participation in general, we also categorized types of participation (e.g., whether the student raised their hand or not; Dallimore et al., 2019). See the Supplemental Materials for coding details.

**Participation Discrepancy Score.** We created a participation discrepancy score to account for variation in classroom size (i.e., number of students in class) and opportunities for participation (e.g., lecture-based sessions [72%] may have fewer opportunities for participation than discussion-based sessions [28%]). This score compares students' *observed* participation to their *expected* participation if all students in a particular classroom participated equally.

We computed each student's participation discrepancy score ($M = -0.002$, $SD = 1.34$, range = −2.75 to 12.14) by calculating the difference between their raw participation score (number of times they participated) and the expected participation rate if all students participated equally in a classroom (i.e., dividing the total instances of student participation by the total number of students in a classroom). For example, if a classroom had 30 students and 30 instances of student participation, the *expected* participation if all students participated equally would be one (i.e., 30/30). If a student participated three times, their participation discrepancy score would be two (i.e., three minus one), indicating a higher rate of participation than expected if all students in the class participated equally.

### Classroom-Level Video Coding

As we discuss below, our classroom-level coding included course features, professors' perceived gender, and professors' warmth, likability, comfort, and informality.[6]

**Classroom Gender Diversity.** Consistent with prior work (Reinwald & Kunze, 2020), we calculated the classroom gender diversity by dividing the number of women students by the total number of all students ($M = 0.40$, $SD = 0.14$).

**Professor Gender.** Research assistants coded the perceived gender of professors. Across all sessions, research assistants coded five professors as women (11%) and 41 as men (89%).

**Professor Behavior.** Using the thin-slicing approach, research assistants coded the first 30 s of the professor's behavior while lecturing. The thin-slicing approach is shown to reliably capture perceptions of cultural dynamics and judgments of targets' characteristics (Ambady & Rosenthal, 1992; Kraus & Keltner, 2009).

***Stage 1: Developing First-Order Codes.*** We used an inductive approach to develop our coding scheme (Charmaz & Mitchell, 2001; Glaser & Strauss, 1967; Miles & Huberman, 1994). First, we observed variations in professors' behavior across videos and generated a list of 10 codes based on existing literature on gender defaults, teacher evaluations, and person perception (e.g., Ambady & Rosenthal, 1992; Biernat et al., 2012; Cheryan & Markus, 2020; Dupree & Fiske, 2017). Research assistants were then trained on a reliability sample (20% of videos) using this list, which included the extent to which the professor seemed relatively warm, cold, competent, attentive, likable, comfortable, formal, structured, hierarchical, and appreciative. Through discussions with coders and interrater reliability analyses on this sample, four dimensions of professors' behavior emerged that could be coded reliably (Yoder et al., 2010): warmth, likability, comfort, and formality. Research assistants then used this four-dimension coding scheme to code the remaining videos. Interrater reliability was acceptable across all four dimensions ($r_{average} = 0.68$). Coding instructions are provided in the Supplemental Materials.

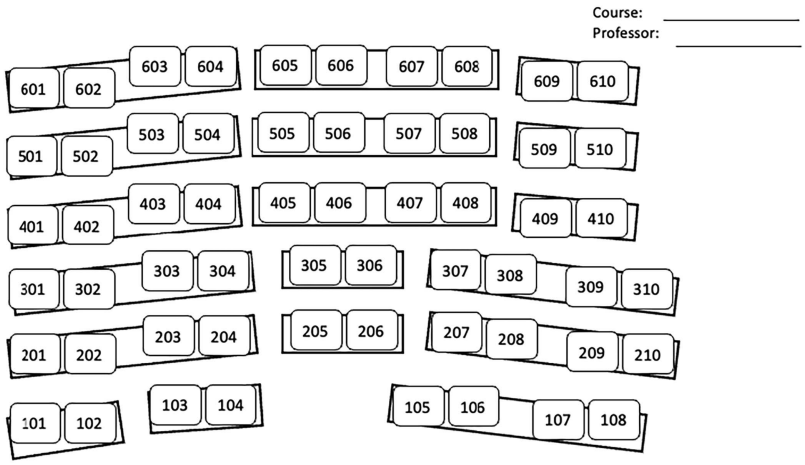
To code for *warmth*, research assistants indicated how much the professor appeared warm using a Likert scale (1 = *cold* to 5 = *most warm*). A higher warmth score indicated that the professor conveyed warm energy, used an approachable speaking style, made eye contact with students, and used humor and/or disarming language ($M = 3.54$, $SD = 0.81$; Effiong, 2016; Fiske, 2018; Roberts & Friedman, 2013).

To code for *likability*, research assistants indicated how much the professor created a likable and appealing classroom using a Likert scale (1 = *least likable* to 5 = *most likable*). A higher likability score indicated that the professor was thoughtfully engaging with

[5] We also coded students' perceived confidence when raising their hand and when speaking. There were no significant gender differences on either measure. We report these results in the Supplemental Materials.

[6] We also coded possible classroom-level moderators in the course syllabi, including cold calling policies, class format, class activities (77% of classes had no class activities, 23% had at least one class activity), and class session length ($M = 88.42$ min, $SD = 12.37$ min, range = 39–116 min). No course features moderated our effects (see the Supplemental Materials).

**Figure 1**
*Example Visual Map of Classroom Layout*




*Note*. This figure illustrates a seating chart that research assistants used to identify and differentiate students throughout the class lecture for Study 1. The chart enabled research assistants to track students in the video recording of the master of business administration class, ensuring accurate and consistent coding for classroom participation.

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students, had inflections in voice tone, walked around and used movement, and created an engaging class ($M = 3.43$, $SD = 0.74$; Hoyle et al., 1989).

To code for *comfort*, research assistants indicated how much the professor appeared comfortable using a Likert scale (1 = *least comfortable* to 5 = *most comfortable*). A higher comfort score indicated that the professor appeared comfortable and at ease when lecturing and speaking to students ($M = 3.80$, $SD = 0.85$; Hoyle et al., 1989).

Finally, to code for *informality* (i.e., lack of formality), research assistants indicated how much the professor appeared formal using a Likert scale (1 = *not at all formal* to 5 = *extremely formal*). A higher formal score indicated that the professor exhibited no humor, a rigid posture, and no light conversation with students ($M = 4.07$, $SD = 0.91$; Hughes & Avey, 2009). To maintain consistency with the other three codes, we reverse-scored ratings of formality to indicate the extent to which the professor appeared *informal*.

***Stage 2: Aggregating Theoretical Dimensions.*** Through an iterative process, we reviewed the coded data and relevant literature to aggregate the themes into categories that captured meaningful features of the classroom culture as conveyed by professors' behavior. Upon reviewing the literature, we identified that these four behavioral dimensions similarly reflect a well-established concept in the communication and educational psychology literature: *immediacy behaviors* (Mehrabian, 1968; Wilson & Locker, 2007; Witt et al., 2004).

Immediacy behaviors are defined as communication patterns that enhance psychological or physical closeness between individuals (Mehrabian, 1971). These behaviors emphasize relationality and interpersonal connection, aligning with the other-oriented characteristics that are typically associated with women's gender roles in society (Cheryan & Markus, 2020; Eagly & Wood, 1999; Heilman, 2001; Martin & Phillips, 2017). In terms of our theorizing, such behaviors should signal or cue a deviation from the masculine defaults that pervade business school cultures. We therefore refer to these immediacy behaviors as feminine behavioral cues in this article. We use this terminology to emphasize their alignment with stereotypically feminine behaviors and their role in signaling a departure from the status quo culture of masculine defaults in business schools.

According to the literature, immediacy behaviors encompass both nonverbal and verbal behaviors (Mehrabian, 1968). Nonverbal immediacy behaviors include smiling, making eye contact, gesturing, using vocal variety, and having a relaxed posture (Finn & Schrodt, 2012; Mehrabian, 1968; Wilson & Locker, 2007; Witt et al., 2004). Verbal immediacy behaviors include using humor and relational language that reduces power dynamics, such as statements like "we" and "this is our classroom" (Gendrin & Rucker, 2002; Wilson & Locker, 2007).[7] When professors exhibit immediacy behaviors (via our collective coding dimensions of warmth, likability, comfort, and informality), they appear more approachable, relational, and collaborative, effectively closing the power gap or psychological distance between themselves and their students (Allen et al., 2006; Gorham, 1988; Witt et al., 2004).

***Professor Feminine Behavioral Cues Composite Measure.*** We created a composite to represent professor immediacy behavior by averaging thin-slice codes of professor's warmth ($M = 3.54$, $SD = 0.81$), likability ($M = 3.43$, $SD = 0.74$), comfort ($M = 3.80$, $SD = 0.85$), and informality ($M = 1.93$, $SD = 0.91$). We conducted a post hoc exploratory factor analysis, which indicated that all four dimensions loaded onto a single factor that explained 77.81% of the variance (all loadings $\geq 0.80$). This suggests that the four dimensions reflect a single underlying construct rather than separate dimensions. The internal reliability of the composite was high ($\alpha = .87$). Higher values indicate

[7] At first glance, some dimensions (e.g., comfort, informality—being at ease, using humor) may appear to overlap with what are typically considered masculine norms. However, the literature and our theorizing suggest that these immediacy behaviors used when communicating emphasize interpersonal connection, closeness, and an other-oriented focus (Wilson & Locker, 2007), thereby clearly deviating from masculine defaults.

that the professor exhibited relatively higher levels of feminine behavioral cues ($M = 3.18$, $SD = 0.70$).

## Results

### Analysis Plan

For all analyses, we included a standard set of covariates: classroom gender diversity (mean-centered) and professors' gender (0 = *woman*, 1 = *man*). Given that business schools typically cannot control which professor is assigned or the gender parity in each course, these factors may systematically influence students' participation. Specifically, we controlled for the professor's gender because research shows that it is associated with student participation (Tatum et al., 2013). We controlled for classroom gender diversity because a higher proportion of women students in the classroom may affect students' participation behavior, regardless of professors' behavioral cues (Maimon et al., 2023; Murphy et al., 2007; Opie et al., 2019). Further, having more women students in the classroom might narrow the gender gap in participation simply by increasing the pool of potential women students. The significance and direction of our results remain unchanged when covariates are not included (see Table 1).[8]

As indicated, we used two measures of student participation: the raw participation score and the participation discrepancy score. For the raw participation score, the intraclass correlation indicated that there was dependence of observations or clustering within sessions ($\rho = 0.16$; Danyluck & Page-Gould, 2018; Gordon, 2018). Therefore, to examine H1a, we conducted a two-level mixed-effects linear regression analysis in which students were nested within class sessions using student gender (0 = *woman*, 1 = *man*) as a predictor. To examine H2a, we conducted two-level mixed-effects moderation analyses using professor feminine behavioral cues (mean-centered).

For our participation discrepancy score measure, which included the number of students and total session participation, there was low dependence of observations within sessions ($\rho < 0.10$). Therefore, to examine H1a, we conducted an analysis of covariance using student gender (0 = *woman*, 1 = *man*) as a predictor. To examine H2a, we conducted a moderated regression analysis on the participation discrepancy score. Specifically, we entered our standard set of covariates on Step 1. We entered student gender and professor feminine behavioral cues (mean-centered) on Step 2 and their interaction on Step 3.

### Is There a Gender Participation Gap on Average?

First, we examined whether there was a gender participation gap in classroom participation among students (H1a). Supporting our hypothesis, when using raw participation as our outcome, we found a gender gap such that women participated less than men ($b = .260$), $t(3072) = 5.07$, $p < .001$, 95% CI [0.16, 0.36] (see Table 1). Given that women made up 40% of the students, across all student participation, we would expect participation from women to occur at about two thirds the rate of men. Instead, we find that across all student participation, participation from women is only *half* as frequent as participation from men. A chi-square analysis comparing students' expected participation based on their representation compared to their actual participation shows that women (vs. men) disproportionately participated less in the classroom, $\chi^2(1, N = 3{,}155) = 32.52$, $p < .001$, $\varphi_c = .114$.

We found consistent results using the participation discrepancy score; there was a gender gap such that women (vs. men) participated less than expected if all students participated equally ($b = .260$), $t(3151) = 5.13$, $p < .001$, 95% CI [0.16, 0.36] (see Table 1).

### Are Professors' Feminine Behavioral Cues Associated With Closing the Gender Participation Gap?

Next, we tested whether professors' feminine behavioral cues are associated with closing the gender participation gap (H2a).

Consistent with the above results, we found a significant main effect of student gender on raw participation, such that women participated less than men ($b = .285$), $t(2967) = 5.39$, $p < .001$, 95% CI [0.18, 0.39]. We did not find a significant main effect of professor feminine behavioral cues ($b = -.151$), $t(89) = -1.35$, $p = .180$, 95% CI [−0.37, 0.07].

Importantly, we found a significant Student Gender × Professor Feminine Behavioral Cues interaction ($b = -.222$), $t(3012) = -2.95$, $p = .003$, 95% CI [−0.37, −0.07]. When professors exhibited lower levels of feminine behavioral cues (i.e., −1 *SD*), there was a significant gender participation gap such that women participated less than men ($b = .441$), $t(2993) = 5.74$, $p < .001$, 95% CI [0.29, 0.59]. However, consistent with H2a, when professors exhibited higher levels of feminine behavioral cues (i.e., +1 *SD*), there was no gender participation gap ($b = .129$), $t(2990) = 1.78$, $p = .075$, 95% CI [−0.1, 0.27]. Alternative simple slopes analyses revealed that professor feminine behavioral cues were significantly associated with men's ($b = -.373$), $t(78) = -3.45$, $p < .001$, 95% CI [−0.59, −0.16], but not women's raw participation ($b = -.151$), $t(88) = -1.35$, $p = .180$, 95% CI [−0.37, 0.07].

Next, analyses utilizing the participation discrepancy score as our outcome variable yielded consistent results. There was a significant main effect of student gender such that women participated less than expected (and men more than expected) if all students participated equally ($b = .276$), $t(3040) = 5.28$, $p < .001$, 95% CI [0.17, 0.38]. We did not find a significant main effect of professor feminine behavioral cues ($b = -.001$), $t(3040) = -0.03$, $p = .978$, 95% CI [−0.07, 0.07].

Consistent with the raw participation score results, we found a significant Student Gender × Professor Feminine Behavioral Cues interaction ($b = -.210$), $t(3039) = -2.91$, $p = .004$, 95% CI [−0.35, −0.07] (see Figure 2). When professors exhibited lower levels of feminine behavioral cues (−1 *SD*), there was a significant gender gap whereby women had lower participation discrepancy scores than men (i.e., women participated less than what would be expected if all students participated equally), $b = .411$, $t(3039) = 5.89$, $p < .001$, 95% CI [0.27, 0.55]. However, consistent with H2a, when professors exhibited higher levels of feminine behavioral cues (+1 *SD*), there was no significant gender participation gap ($b = .137$), $t(3039) = 1.94$, $p = .052$, 95% CI [−0.01, 0.28]. Alternative simple slopes analyses revealed that professor behavioral cues were not significantly associated with men's participation discrepancy scores ($b = -.093$), $t(3022) =$

[8] As robustness checks, we included two additional covariates in our analyses: whether the course was quantitative or not and years since the professor's bachelor's degree. Including these covariates did not change the significance and direction of results (see the Supplemental Materials).

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**Table 1**
*Results of Analyses Examining Main Effects of Student Gender on Participation*

| Model term | Raw participation score | | Participation discrepancy score | |
|---|---|---|---|---|
| | Model 1 | Model 2 | Model 1 | Model 2 |
| Student gender (1 = *man*) | 0.267*** [0.17, 0.37] | 0.260*** [0.16, 0.36] | 0.238*** [0.14, 0.33] | 0.260*** [0.16, 0.36] |
| Constant | 0.85 | 1.12 | 0.10 | −0.01 |
| Observations | 3,153 | 3,151 | 3,153 | 3,151 |
| $R^2$ | .008 | .020 | .008 | .008 |
| Control variables | No | Yes | No | Yes |

*Note.* Model 1 reflects main effects with no control variables, and Model 2 includes the standard set of covariates (i.e., classroom gender diversity, professor's gender). Brackets reflect 95% confidence intervals.
*** $p < .001$.

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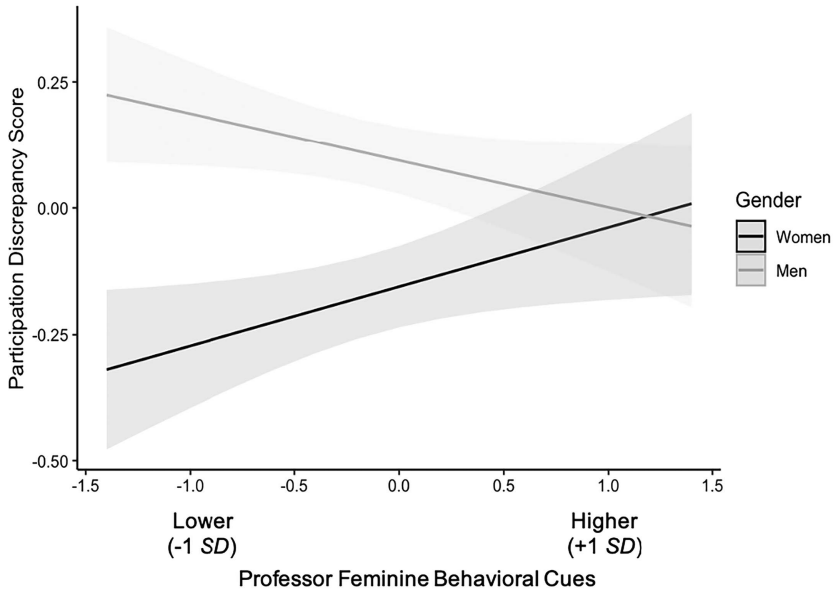
−1.93, $p = .053$, 95% CI [−0.19, 0.00], but were significantly associated with women's participation discrepancy scores ($b = .117$), $t(3039) = 2.16$, $p = .031$, 95% CI [0.01, 0.22].

## Discussion

In an observational field study of MBA classrooms, we found a gender participation gap in two different measures of classroom participation: a raw participation score and a participation discrepancy score. Importantly, however, we also found that professors' feminine behavioral cues were associated with closing this gap. This finding provides ecological support for our predictions, capturing professors' behavioral cues and actual student participation behavior in MBA classes.

While our video recordings provided valuable insights into actual student participation behavior, this study had at least two important limitations. First, it provided correlational—but not causal—evidence that professors' feminine behavioral cues close the gender participation gap. It is possible that different types of students may have self-selected into classrooms taught by professors they expected or perceived to exhibit higher levels of feminine behavioral cues. Second, the observational nature of this study meant that we were unable to identify the process through which behavioral cues shaped participation behavior. As outlined in the introduction, we theorize that a sense of inclusion may be a key mechanism. Specifically, one reason for the gender gap in participation in contexts characterized by masculine defaults may be that women students experience lower inclusion than men students (H1b).

**Figure 2**
*Feminine Behavioral Cues Close Gender Gap on Participation Discrepancy Score (Study 1)*




*Note.* The figure shows the plot at ±1.5 *SD* from the mean of professor feminine behavioral cues. The participation discrepancy score indicates the difference score between the students' raw participation score and the expected participation if all students in the class participated equally. Shaded regions around each line represent 95% confidence intervals for predicted means.

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However, when professors deviate from masculine defaults by exhibiting feminine behavioral cues, it may increase women students' experience of inclusion (H2b) and in turn promote their engagement, ultimately closing the gender participation gap (H3).

To address the limitations of Study 1, we conducted a preregistered experiment in which we manipulated professors' feminine behavioral cues to establish causality and measured participants' experience of inclusion to better understand the mechanism through which feminine behavioral cues close the gender participation gap. A pilot of this study, which yielded results consistent with those reported below, is detailed in the Supplemental Materials (Study S1).

## Study 2: Manipulating Professor Behavioral Cues

Study 2 had two primary objectives: first, to provide causal evidence that professors' feminine behavioral cues close the gender participation gap; and second, to examine the underlying mechanism. To this end, we experimentally manipulated a written description of a professor who either exhibited feminine behavioral cues (feminine behavioral cues condition) or did not exhibit these cues (control condition) and then measured business school student participants' anticipated experience of inclusion and participation in a classroom discussion. Based on our preregistration, we predicted that the control condition would produce the typical gender gap, such that women would report anticipating lower levels of inclusion and participation compared to men (H1a, b). However, in the feminine behavioral cues condition, we predicted that this gender gap would not be present (H2a, b). We further predicted that anticipated experiences of inclusion would mediate the relationship between the feminine behavioral cues condition and anticipated participation, with this mediated effect being especially pronounced for women (H3). This study's design, hypotheses, and analysis plan were preregistered prospectively, before data were collected (see https://aspredicted.org/t6g6-3ckq.pdf).

### Method

#### *Participants*

We recruited 528 undergraduate business school students from two private universities—one in the Midwest and one on the West Coast of the United States—to complete an online study for course credit. At the time of data collection, approximately 50% and 49% (respectively) of the business students were women. Per our preregistration, we excluded two participants who indicated they did not identify as a woman or man and 45 who failed our attention check. Our final sample was 458 participants (60.5% women, 39.5% men, 44% Asian/Asian American, 6% Black/African American, 8% Latino/Hispanic, 31% White/Caucasian, 11% other/multiracial; $M_{age} = 20.13$, $SD_{age} = 2.09$).

#### *Procedure*

Participants read a hypothetical scenario in which they were instructed to imagine themselves as a student in a business school classroom. They were randomly assigned to be in the classroom of a professor who was described as either exhibiting feminine behavioral cues or not. Specifically, all participants first read a description of the school's culture, which characterized the school as embodying masculine defaults (e.g., the business school valued individual achievement, assertiveness, and taking bold actions; see Study S1 in the Supplemental Materials for the full text). They were then told to imagine walking into a lecture the first week of school and read that "the professor who is teaching this class holds a PhD in the field and is a highly respected expert, with over 10 years of experience at the school. The professor demonstrates deep knowledge of the course subject." We provided this information to create a vivid vignette (e.g., Aguinis & Bradley, 2014) and to hold constant the professor's expertise across conditions. Next, participants were randomly assigned to the feminine behavioral cues condition ($n = 233$) or control condition ($n = 225$).[9] We created our preregistered manipulation of the professors' feminine behavioral cues based off our warmth, likeability, comfort, and informality codes from Study 1. Specifically, participants in the feminine behavioral cues condition read the following:

> As you enter the classroom and sit down, you notice your professor standing with a friendly smile, warmly greeting students before beginning the lecture. The professor maintains eye contact with students, moves around the room with a relaxed posture, and uses a dynamic tone of voice throughout. The professor occasionally adds a touch of humor, making the class atmosphere feel informal.

Participants in the control condition read the following:

> As you enter the classroom and sit down, you notice your professor standing at the front of the room with a neutral expression, quietly looking down at their notes before beginning the lecture. The professor maintains their focus on the lecture slides, remains behind the podium with a tense posture, and uses a steady, flat voice throughout. The professor focuses on delivering the material in a straightforward manner, making the class atmosphere feel formal.

Next, participants indicated their anticipated experience of inclusion and likelihood of participating as a student in a classroom. Finally, they responded to demographics items.

#### *Measures*

**Inclusion.** To examine participants' anticipated experience of inclusion at the business school, participants responded to four items adapted from Chung et al. (2020) using a Likert scale (1 = *strongly disagree* to 7 = *strongly agree*), $\alpha = .847$, $M = 4.74$, $SD = 1.53$. The items were "I feel like I would belong as a student in this classroom," "I feel like I would fit in with the culture of this classroom," "I feel like I would be comfortable being my unique self at in this classroom," and "I feel like who I am as an individual would be valued in this classroom."

**Participation.** Participants indicated their anticipated likelihood of participating in the classroom with four items we developed using a Likert scale (1 = *not at all likely* to 7 = *extremely likely*), $\alpha = .931$, $M = 4.08$, $SD = 1.34$. The items were "Raise my hand to share my recommended strategy," "Volunteer to share my recommended strategy in class," "Ask a clarifying question if I did not fully

[9] In our preregistration, we labeled this condition as "low feminine cues." However, to better reflect our theorizing, here, we opt to label it as the "control" (i.e., status quo) condition. This label clarifies that the control condition provides a basis for comparison where professors' behaviors neither deviate from nor reinforce prevailing masculine defaults.

understand the assignment," and "Participate in the discussion even if I was unsure whether my response was correct."

**Manipulation Check.** Participants indicated how warm the professor was with a single item on a Likert scale (1 = *not at all* to 7 = *very*), $M = 4.43$, $SD = 1.71$.

## Results

### Analysis Plan

Consistent with our preregistration, we conducted 2 (gender: man vs. woman) × 2 (condition: feminine behavioral cues vs. control) analyses of variance to examine the effects of gender, condition, and their interaction on participants' inclusion and anticipated participation.[10]

### Manipulation Check

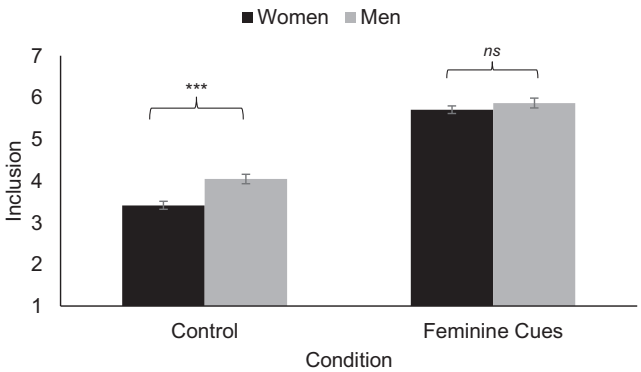
Our manipulation check was successful. Participants in the feminine behavioral cues condition perceived the professor as warmer ($M = 5.75$, $SD = 0.91$) than those in the control condition ($M = 3.07$, $SD = 1.21$), $F(458) = 720.34$, $p < .001$, $\eta_p^2 = .612$.

### Inclusion

There was a main effect of gender on inclusion, $F(455) = 14.11$, $p < .001$, $\eta_p^2 = .030$, such that women indicated significantly lower levels of inclusion than men. There was also a main effect of condition, $F(455) = 382.39$, $p < .001$, $\eta_p^2 = .457$, such that participants indicated significantly greater levels of inclusion in the feminine behavioral cues (vs. control) condition.

We also found a significant interaction, $F(454) = 4.97$, $p = .026$, $\eta_p^2 = .011$ (see Figure 3). Consistent with our hypotheses, simple-effects analyses revealed that in the control condition, there was a gender gap where women indicated lower levels of inclusion ($M = 3.42$, $SD = 1.13$) than men ($M = 4.05$, $SD = 1.25$), $F = 18.02$, $p < .001$, $\eta_p^2 = .038$ (H1b). In the feminine behavioral cues condition, this gender gap closed: women ($M = 5.71$, $SD = 1.05$) and men ($M = 5.87$, $SD = 0.95$) indicated similar levels of inclusion, $F = 1.16$, $p = .282$, $\eta_p^2 < .003$ (H2b). Alternative slopes revealed that women ($F = 299.97$, $p < .001$, $\eta_p^2 = .398$) and men ($F = 124.14$, $p < .001$, $\eta_p^2 = .215$) indicated greater levels of inclusion in the feminine behavioral cues (vs. control) condition. Taken together, this suggests that feminine behavioral cues benefit all participants' anticipated inclusion, but that this effect is particularly pronounced for women.

**Figure 3**
*Anticipated Inclusion by Condition (Study 2)*




*Note*. Error bars represent ± standard error. *ns* = not significant. *** $p < .001$.

### Participation

There was a main effect of gender on participation such that women indicated significantly lower levels of anticipated participation than men, $F(455) = 13.17$, $p < .001$, $\eta_p^2 = .028$. There was a main effect of condition such that participants indicated significantly higher levels of anticipated participation in the feminine behavioral cues (vs. control) condition, $F(455) = 33.45$, $p < .001$, $\eta_p^2 = .069$.

The interaction did not reach statistical significance, $F(454) = 1.33$, $p = .249$, $\eta_p^2 = .003$ (see Figure 4). However, consistent with our preregistered hypotheses, simple-effects analyses revealed that in the control condition, there was a gender gap where women ($M = 3.47$, $SD = 1.24$) indicated lower levels of anticipated participation than men ($M = 4.05$, $SD = 1.48$), $F = 11.51$, $p < .001$, $\eta_p^2 = .025$ (H1a). In the feminine behavioral cues condition, the gender gap closed whereby women ($M = 4.32$, $SD = 1.21$) and men ($M = 4.62$, $SD = 1.21$) indicated similar levels of anticipated participation, $F = 3.05$, $p = .082$, $\eta_p^2 < .007$ (H2a). Alternative slopes revealed that women ($F = 30.43$, $p < .001$, $\eta_p^2 = .063$) and men ($F = 8.86$, $p = .003$, $\eta_p^2 = .019$) indicated greater levels of anticipated participation in the feminine behavioral cues (vs. control) condition.

### Moderated Mediation

Following our preregistered analyses, we conducted moderated mediation analyses to test whether the indirect effect of condition on participation through inclusion would be stronger for women than for men (Hayes, 2013; PROCESS macro for SPSS 23, Model 8, 10,000 bootstrapped samples). We found a significant moderated mediation effect, index = −.182, *boot SE* = 0.08, 95% CI [−0.35, −0.02][11] (see Figure 5). Specifically, consistent with H3, the indirect effect of condition on participation through inclusion was stronger for women ($b = .889$, $SE = .144$, 95% CI [0.61, 1.17]) than for men ($b = .707$, $SE = .129$, 95% CI [0.46, 0.97]). This indicates that while both women and men anticipated greater levels of inclusion in the feminine behavioral cues (vs. control) condition, which in turn increased anticipated participation, this effect was stronger for women (vs. men).

[10] The significance and direction of our results remain unchanged when we include the following covariates (perceived professor gender, university, race, college generation status, and major). See the Supplemental Materials for these analyses.

[11] We conducted the same moderated mediation analysis separately for the Belonging and Uniqueness subscales of inclusion. The Belonging subscale yielded a significant moderated mediation effect, index = −0.163, *boot SE* = 0.08, 95% CI [−0.33, −0.02], whereas the Uniqueness subscale did not reach significance, index = −0.148, *boot SE* = 0.08, 95% CI [−0.32, 0.00]. While belonging emerged as the primary driver in these analyses, inclusion comprises both belonging and uniqueness. All items in the measure demonstrated high internal reliability ($r = .847$) and loaded onto a single factor in a factor analysis.

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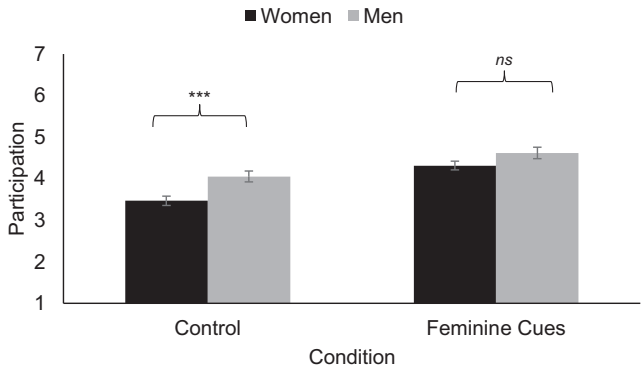
**Figure 4**

*Anticipated Participation by Condition (Study 2)*




*Note*. Error bars represent ± standard error. *ns* = not significant. *** $p < .001$.

## Discussion

While Study 1 provided correlational evidence consistent with our hypotheses, it did not allow us to examine causation or a mechanism. Thus, in our preregistered Study 2, we provided direct causal evidence in support of our hypotheses by randomly assigning participants to either a control or feminine behavioral cues condition based on the coding dimensions derived from our field study. Although the Gender × Condition interaction on anticipated participation did not reach statistical significance, the significant simple effects are consistent with our preregistered predictions: In the control condition, women reported lower anticipated participation than men, while in the feminine behavioral cues condition, this gender gap was not significant. Thus, overall, the pattern of results is consistent with our theory that professors' feminine behavioral cues close the gender participation gap. Nevertheless, the nonsignificant interaction also revealed an additional, unanticipated pattern: Feminine behavioral cues boosted anticipated participation for both women and men. This suggests that such cues in the business school setting may help foster a more inclusive classroom overall.

Additionally, in Study 2, we examined how professors' feminine behavioral cues shaped participants' psychological experiences by measuring their anticipated experience of inclusion. We found that professors' feminine behavioral cues closed the gender participation gap primarily by increasing women's experiences of inclusion more than men's. Interestingly, anticipated inclusion mediated the effect of professors' feminine behavioral cues on anticipated participation for both women and men, although the effect was stronger for women. These results suggest that the gender participation gap does not simply close because men experience less inclusion (and thus participate less) when professors exhibit feminine behavioral cues. Rather, the results suggest that feminine behavioral cues may close the gender participation gap because women's inclusion is boosted. These cues "level the playing field," allowing both women and men to experience similar levels of inclusion and comfort participating. In sum, feminine behavioral cues appear to counteract cultural defaults that otherwise disadvantage women.

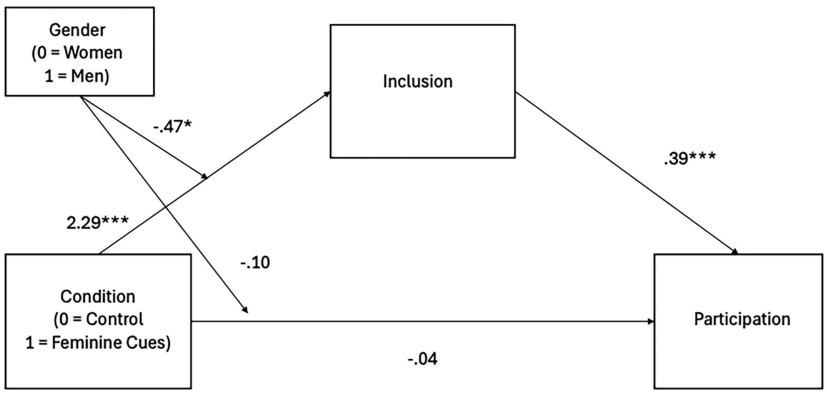
## General Discussion

To mitigate gender disparities, organizations have implemented substantial and well-intentioned initiatives. However, these efforts often fall short because they do not disrupt the powerful foundation of masculine defaults (Cheryan & Markus, 2020; Ely & Meyerson, 2010). In an extensive observational field study of MBA classrooms and a preregistered experiment, we documented a significant gender gap in student participation, with women participating less than men. This gap was evident in both observed classroom participation behavior (Study 1) and reports of anticipated participation (Study 2). Importantly, our results suggest that the gender participation gap is not inevitable. Across both studies, we found that when professors exhibited feminine behavioral cues (e.g., being other-oriented), the gender gap in participation closed.

Our multimethod research makes important theoretical and practical contributions. To our knowledge, this is the first research to directly examine how professors' behavior in business school classrooms

**Figure 5**

*Inclusion Mediating the Effect of Condition on Anticipated Participation More for Women Than Men (Study 2)*




* $p < .05$. *** $p < .001$.

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relates to gender disparities in student participation. While prior work has revealed gender differences in participation grades (Opie et al., 2019), it is unclear whether these gaps reflect grading biases or actual behavioral differences. Our field study documents observable gender disparities in actual student participation behavior. Specifically, we analyzed video recordings of 76 MBA classrooms with a total of 3,159 students, spending over 200 hr coding student and professor gender, students' actual participation behavior, and thin-slice impressions of professors' behavior. These data reveal that there is a gender gap in students' participation *behavior* in historically male-dominated contexts. Our preregistered experiment replicated these effects and provided convergent causal evidence. Together, these results illuminate that efforts focused on recruiting gender-balanced cohorts in isolation may not be sufficient to reduce gender disparities within contexts that are characterized by masculine defaults (e.g., business schools; Park et al., 2023; Pérezts & Mandalaki, 2024).

The findings also highlight the pivotal role professors play in shaping classroom microcultures and their impact on the gender gap in participation. Previous research in cultural psychology has shown how physical objects or messages (e.g., posters on the wall) can reinforce gendered defaults and exacerbate gender disparities (Cheryan et al., 2009). We extend this literature by demonstrating that behavioral cues at the interaction level of culture, namely, professors' feminine behavioral cues, can close gender gaps in participation by promoting inclusion. Although research has identified correlations between perceptions of leaders' behavior and inclusion (Randel et al., 2018; Shore & Chung, 2022), our work provides causal evidence that leaders' behavior can directly affect experiences of inclusion.

Further, our results suggest that interventions may be incomplete if they fail to consider how microcultures, such as those created by professors within classrooms, can reinforce or diverge from the broader culture (e.g., Canning et al., 2022; Homan & Greer, 2013; Peterson et al., 2016; Rattan et al., 2012). This underscores that, despite the overarching culture of an organization, individuals have the power to create microcultures that influence others' behavior and experiences. Practically, a simple yet impactful initiative to reduce gender gaps in participation and foster inclusive classrooms is training professors to use behaviors and language that convey feminine behavioral cues (e.g., warmth, approachability, responsiveness).

## Limitations and Constraints on Generality

Our work is the first to our knowledge to document how professors' behavior relates to gender disparities in business school classroom participation at both the MBA and undergraduate levels. However, it is not without limitations and thus has promising directions for future research. First, we focused on how professors' feminine behavioral cues can convey a classroom microculture that diverges from the broader business school culture. Although professors have significant influence over the classroom environment, other features in the classroom (e.g., classroom gender composition, student interactions during group activities, messaging about student ability; Canning et al., 2022; Covarrubias et al., 2019; Eagly & Wood, 1999; Murphy et al., 2007) also likely play a role. Indeed, our field data show that having more women students in the classroom is associated with closing the gender participation gap (see the Supplemental Materials). This finding is consistent with our theorizing, as a higher representation of women students may signal a deviation from masculine defaults (e.g., Schmader, 2023). While achieving equal gender representation in every classroom may not always be feasible, this result suggests that multiple aspects of the classroom experience can shape the classroom culture and foster more equitable participation. Professors' feminine behavioral cues are not the only way to counter masculine defaults, but they represent one promising approach to address gender participation gaps. Future research should investigate whether and how other classroom features may convey a deviation from masculine defaults and, in turn, shape student participation.

Second, our naturalistic field study was conducted at a top U.S. business school where the representation of women students was relatively high, in line with other top business schools. This context may limit the generalizability to other school contexts with substantially lower proportions of women students. Our experiment partially addresses this limitation by recruiting participants from two universities and presenting a hypothetical business school without specifying student gender composition. However, both universities had gender parity in student enrollment at the time of data collection. Given that research suggests very small numbers of members from historically underrepresented groups can heighten concerns about standing out (e.g., Apfelbaum et al., 2016; Sekaquaptewa & Thompson, 2003), business schools with few women students may have a more pronounced gender participation gap that requires additional signals beyond professors' behavioral cues to mitigate.

Third, although our field-level data reflect the distribution of women professors in top U.S. business schools, this low proportion (11%) meant we did not have sufficient statistical power to directly examine the role of professor gender. Nevertheless, we conducted exploratory analyses testing the impact of professor gender, given the relevance of this factor to the phenomenon under study. Results (as reported in the Supplemental Materials) indicated that professor gender did not moderate the effect of feminine behavioral cues on the gender participation gap in Study 1, nor in Study 2 when using participants' perceptions of professor gender. These results suggest that exhibiting feminine behavioral cues may confer benefits regardless of professor gender; merely exhibiting these cues appears to be sufficient to signal a deviation from masculine defaults. Interestingly, when professor gender and classroom gender diversity were both included as moderators, a significant four-way interaction emerged. When decomposing this interaction, we discovered that this effect was driven by a single classroom session taught by one woman professor and therefore cannot be interpreted reliably. However, it raises the possibility that professor gender may matter under certain conditions (e.g., varying levels of classroom gender diversity). Future research with larger and more balanced samples is needed to understand whether and how professor gender and classroom gender composition might interactively impact the effects of feminine behavioral cues on the gender participation gap.

Last, we assessed the extent to which professors exhibited feminine behavioral cues by coding for immediacy (e.g., warmth, likability, comfort, and informality)—features that reliably emerged in our thin-slice coding approach. While these behaviors clearly reflect key elements of a microculture that deviates from the masculine defaults that pervade business school cultures, professors may exhibit *other* feminine behavioral cues (e.g., conveying patience; Cheryan & Markus, 2020; Fiske et al., 2002; Hu et al., 2024) that were not evident in our classroom videos. Additionally,

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an open question beyond the scope of our research is what effect "masculine" behavioral cues might have on the gender participation gap. Given the prevailing culture of masculine defaults, the presence of masculine cues may have little additional impact on students' participation behavior. However, it is also possible that exhibiting "masculine" behavioral cues could further reinforce masculine defaults and heighten their salience to students, thereby exacerbating the gender gap in participation. Future work should investigate a broader range of behavioral cues to better understand how they may help or hinder efforts to foster more equitable classroom environments.

## Conclusion

Despite well-intentioned policies and practices to promote gender equality, gender disparities in experiences and outcomes persist in business schools and American corporations. While structural changes such as increased access are undoubtedly necessary for reducing these disparities, our findings suggest that they may not be sufficient. We show convergent evidence that even in business schools with high gender diversity, the gender participation gap persists in business school classrooms. However, across our field and experimental studies, we also show that this gap can be eliminated: When professors exhibit feminine behavioral cues, the gender participation gap is closed. Our findings reveal that subtle cues conveyed by a leader hold the potential to foster greater equity in historically male-dominated contexts.

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