Unequal Opportunities From the Start: Socioeconomic Disparities in Classroom Participation in Preschool

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Why do socioeconomic disparities in achievement emerge so early in life? Previous answers to this question have generally focused on the perceived deficits of parents from disadvantaged backgrounds (e.g., insufficient childrearing knowledge). Here, we instead focus on the structure of early childhood education and argue that early schooling contexts provide *unequal opportunities for engagement* to children of higher versus lower socioeconomic status (SES). As engagement is a longitudinal predictor of achievement, early SES disparities in engagement could serve to maintain or even exacerbate SES disparities in achievement. In Study 1 (1,236 observations; $N = 98$ children), we investigated preschool students' behavioral engagement during whole-class discussions—a core aspect of early childhood education. Low-SES children showed significantly lower engagement than their peers. Consistent with the claim of unequal opportunities for engagement, these differences were not accounted for by SES differences in language proficiency. As students' engagement in school is influenced by their peers' attitudes toward them, we also examined peer perceptions (Study 2, $N = 94$, and a meta-analysis, $k = 2$ studies). We found that preschoolers who show more engagement relative to others during whole-class discussions are perceived as possessing more positive qualities (e.g., intelligence). Given that higher-SES students are afforded more opportunities for engagement (see Study 1), they may be the ones benefiting from these positive peer perceptions as well, which might further boost their engagement. Our results suggest that aspects of early childhood education should be redesigned to foster engagement among *all* students, regardless of their SES.

Public Significance Statement
Although preschool is intended to level the playing field for children from different socioeconomic backgrounds, it fails to do so. Why? We examined whether early schooling contexts provide unequal opportunities for engagement to children of higher versus lower socioeconomic status (SES). Specifically, we focused on whole-class discussions—a core aspect of the preschool curriculum. When we analyzed extensive recordings of whole-class discussions, we found that low-SES children participated considerably less than their peers. Consistent with the claim of unequal opportunities for engagement, these differences were observed even after accounting for SES differences in language proficiency. These engagement disparities are likely to be compounded by peer perceptions: Preschoolers explained the behavior of children who made oral contributions by appealing to internal factors (e.g., "she's smart") and viewed these children as competent and socially skilled. By providing low-SES children with fewer opportunities for engagement, preschool is shortchanging these children and likely amplifying achievement gaps.

Socioeconomic disparities in educational outcomes are observed at all stages of schooling (e.g., Bowey, 1995; Duncan et al., 2010, 2012; Lonigan et al., 1998; Reardon et al., 2015). Given that education is one of the most powerful predictors of lifetime earnings (e.g., Abel & Dietz, 2019; Kim et al., 2018), as well as health and well-being (e.g., Warren et al., 2020), it is crucial to understand the source of these disparities. In addition, because education is cumulative, with new concepts and skills building on previous ones, understanding the sources of socioeconomic status (SES) disparities at the *early* stages of schooling is a priority both scientifically and from a policy-making perspective: Intervening early to provide a solid foundation of skills for all children is likely to be more effective than intervening at later stages (e.g., Cunha et al., 2010; Duncan et al., 2012).

To date, the search for the causes of SES educational disparities in early childhood has largely focused on identifying "deficits" in low-SES children's home environments that put them at risk for underachievement in school, such as their parents' insufficient knowledge of how children learn and develop (e.g., Rowe, 2008) or their limited access to learning resources in the home (e.g., Waldfogel & Washbrook, 2011). In contrast to this deficit perspective (Adair et al., 2017), here we investigate the role of the *school environment* in perpetuating SES educational disparities. Although enrolling in early childhood education (e.g., preschool) does improve low-SES children's academic outcomes relative to informal care (e.g., Bustamante et al., 2022; Cascio & Schanzenbach, 2013; Havnes & Mogstad, 2015; Huang, 2017), we argue that early schooling's potential to reduce SES disparities is underutilized because school environments provide *unequal opportunities for engagement* to children from different SES backgrounds.

School engagement is a key motivational variable that shapes students' educational outcomes (e.g., Fredricks et al., 2005; Skinner et al., 2016; Wang & Eccles, 2012a). In the present research, we assessed preschool students' engagement through intensive observations of their behavior in the context of *whole-class discussions*, a core part of the preschool curriculum (e.g., MENRES, 2015; Millet & Croizet, 2016; Streib, 2011) that provides many opportunities for children to show engagement by raising their hand, volunteering opinions, responding to other children, and so on. In light of our argument that early school environments provide unequal

opportunities for engagement, we hypothesized that children of higher (vs. lower) SES would participate more during whole-class discussions. Moreover, we expected that these differences would not be explained by students' actual ability to contribute: The school context affords more opportunities for engagement to middle- and high-SES students than to *equally capable* low-SES students.

Because a student's engagement in school is shaped to a considerable extent by their peers' attitudes (Fredricks et al., 2005; Wang et al., 2018; Wang & Eccles, 2012b), we also examined peer perceptions. Specifically, we asked whether peers would view individuals who show high levels of engagement during whole-class discussions as possessing more positive qualities (e.g., being smart). If middle- and high-SES students are afforded more opportunities to be engaged in the first place, they would also be the ones benefiting from positive peer perceptions, with plausible downstream consequences for their behavioral engagement in future circumstances.

Investigating SES Differences in Engagement During Early Childhood Education

School Engagement: What Is It, and Why Does It Matter?

Although school engagement has been defined from multiple perspectives, most definitions capture a single core element: the quality of a student's involvement with and participation in classroom activities (e.g., Fredricks et al., 2004; Skinner et al., 2009). Over the last several decades, research has consistently documented a connection between engagement and achievement in school (e.g., Skinner et al., 1990; Wang & Eccles, 2012a; for a review, see Fredricks et al., 2004). School engagement has been a sustained focus of research not just because of its relation to achievement but also because it is *malleable*: The fact that students' engagement is responsive to aspects of the classroom environment and their relationships with peers and teachers (e.g., Wang & Eccles, 2012b; Wang et al., 2018) means that it can be increased, with potential beneficial consequences for their achievement. At the same time, the fact that engagement is shaped by children's school environments and relationships is also a source of vulnerability, particularly for students from underprivileged backgrounds. In fact, low-SES students

show lower levels of engagement in middle and high school than their more privileged counterparts, reporting for example that they are more likely to skip class or not turn in homework (e.g., Wang & Eccles, 2012a).

Motivating a Focus on Early Childhood Education

Building on this prior work, the present research seeks to make two contributions. First, we provide a quantitative examination of SES differences in school engagement *before* the start of elementary school. To our knowledge, no prior work speaks to whether school engagement during early childhood education *already* differs by SES. If observed, such disparities in engagement could provide a powerful explanation for the corresponding early disparities in achievement and might thus be a fruitful target of intervention. Second, we seek to understand the *reasons* for any observed SES differences in school engagement. While low-SES students might show lower levels of school "readiness" in terms of their skills and knowledge (Reardon et al., 2015), does that fully explain their lower levels of engagement? Or is low-SES students' engagement lower than would be expected given their actual skills? If the latter, then it is possible that schools provide *unequal opportunities* for engagement to students as a function of their social class background.

Operationalizing Early Engagement: Contributions to Whole-Class Discussions

Engagement is a multifaceted construct that consists of observable, behavioral components such as participating in class activities or completing work on time (termed *behavioral engagement*), as well as unobservable components that track students' cognitive and emotional connection with the material they are learning in school and with the broader school context. Here, we focused on behavioral engagement, both because it shows stronger predictive relations to school achievement compared to the other facets of engagement (Wang & Eccles, 2012a) and because it can be easily measured in young children just by observing their behavior in the classroom. One potential obstacle is that students' time in preschool is relatively unstructured, and the variable content of unstructured activities makes it difficult to measure behavioral engagement reliably via observation. For this reason, we focused on what is probably the most common *structured* activity in North American and European preschools: teacher-led whole-class discussions (e.g., MENRES, 2015; Millet & Croizet, 2016; Streib, 2011). Whole-class discussions provide a suitable opportunity to observe and measure how engaged children from different socioeconomic backgrounds are with the learning task at hand: discussing a particular topic (e.g., their favorite leisure activities, the contents of a book) with the teacher and with each other.

Relation to Prior Evidence of SES Differences in Contributions to Whole-Class Discussions

Prior studies have documented that low-SES students' contributions to class discussions are sometimes interrupted by teachers, who perceive them as providing irrelevant information (Heath, 1983; Michaels, 1981, 1991), and by their higher-SES peers, whose socialization experiences lead them to feel entitled to take the floor (Streib, 2011). Although revealing, these prior studies document only the qualitative aspects of students' engagement. To

our knowledge, no studies have documented the *quantitative* differences in participation during classroom discussions: Are there SES differences in the amount of language that students contribute or the number of contributions they make—concrete indicators of their behavioral engagement? And are these differences greater than one would expect simply based on students' language proficiency? Precise answers to these questions, which are inherently quantitative, are necessary for a comprehensive understanding of SES differences in early engagement.

Why Might Early Childhood Education Provide Unequal Opportunities for Engagement During Classroom Discussions?

There are at least two reasons to expect that early childhood education settings, as currently structured, do not offer the same opportunities for behavioral engagement to equally qualified lower- and higher-SES students. Although the present research did not address these potential mechanisms, it is nevertheless informative to articulate how the hypothesized differences might arise.

Cultural Mismatch Between the Home and School Contexts. Many scholars have argued that there is a *cultural mismatch* between low-SES students' home experiences and the norms and expectations of academic contexts (e.g., Bourdieu & Passeron, 1990; Lareau, 2003; Stephens et al., 2012, 2014). Schools value specific forms of language and knowledge that are closer to the cultural dispositions developed in middle- and high-SES families than in low-SES families (Bernstein, 1975; Bourdieu & Passeron, 1990; Calarco, 2018; Heath, 1983; Kinzler, 2020; Michaels, 1981; Miller & Sperry, 2012; Sperry et al., 2019; Stephens et al., 2012, 2014). During many class activities such as whole-class discussions, for instance, students are expected to express their own opinions and share personal experiences—behaviors that are more encouraged by middle- and high-SES parents than low-SES parents (Kusserow, 2004; Lareau, 2003; Schieffelin & Ochs, 1986). In addition, children from higher-SES families engage in out-of-school activities that are more in tune with academic standards, such as reading storybooks or visiting museums (Bradley et al., 2001; Lahire, 2019; Lamont & Lareau, 1988; Lareau, 2003). As a result, these students have more "cultural capital" to contribute during whole-class discussions relative to low-SES peers with similar language proficiency. Teachers may also perceive middle- and high-SES students as having more "relevant" or "appropriate" things to contribute to discussions, so they may provide these students with more opportunities to speak relative to low-SES students with similar language proficiency.

Stereotypes About Competence. Another likely factor undermining low-SES students' behavioral engagement is the widely held *social class stereotype* that portrays low-SES students as less competent (Durante & Fiske, 2017; Fiske et al., 2002). Even young low-SES students are aware of this widespread stereotype (Désert et al., 2009; Sigelman, 2012). The fear of being judged in light of negative stereotypes about their group may give rise to the experience of social identity threat for low-SES students (Croizet & Claire, 1998). In turn, social identity threat might make whole-class discussions feel psychologically "unsafe" for low-SES students, undermining their engagement and leading them to contribute less than would be expected given their language proficiency.

The same stereotype could also lower teachers' evaluation of low-SES students' contributions, which could prompt them to call on low-SES students less, beyond differences in language proficiency. This possibility is suggested by the rich literature on teacher bias against low-SES students (for reviews, see Batruch et al., 2023; Turetsky et al., 2021). For instance, when assessing equally performing students, teachers perceive low-SES (vs. middle- and high-SES) students as less competent (Campbell, 2015); they also tend to assign low-SES students lower grades and recommend lower, less challenging "tracks" for them relative to equally performing students from more privileged backgrounds (Autin et al., 2019; Batruch et al., 2019, 2023; Doyle et al., 2023).

Investigating Peers' Perceptions of Differences in Engagement

A second goal of the present research was to investigate how preschool children perceive differences among their peers in their levels of school engagement. This topic is important for a nuanced understanding of SES differences in engagement during early childhood education: Even though some students contribute more than others simply because of their circumstances (e.g., socialization experiences at home) rather than because they are inherently more competent, their peers might not see it this way. If preschoolers instead explain differences in engagement as the product of inherent attributes (e.g., some students are smarter than others), over time this could *amplify* initial SES differences in engagement. We will not examine this amplification process here but rather focus on the initial step: how differences in engagement are perceived.

Even young children notice differences among their peers in the classroom (Butler, 2005; Cimpian, 2017). When trying to explain these differences, children are more likely to appeal to inherent or intrinsic factors (e.g., intelligence, sociability) rather than extrinsic ones (e.g., family wealth; Goudeau & Cimpian, 2021). This tendency to explain (differences in) behavior as the consequence of personal characteristics rather than external constraints is known as the fundamental attribution error (e.g., Ross, 1977) or the correspondence bias (e.g., Gawronski, 2004; Gilbert & Malone, 1995), both of which are specific instantiations of a more general explanatory tendency: the inherence bias (Cimpian & Salomon, 2014a, 2014b; Horne et al., 2019).

Given this explanatory bias, children may interpret SES-driven differences in classroom participation as a consequence of inherent characteristics (e.g., how smart or sociable students are), essentially mistaking a social (dis)advantage for differences in personal traits (e.g., Hussak & Cimpian, 2015). In turn, students who are perceived as smarter, more sociable, etc., are likely to be more accepted and valued by their peers—attitudes that positively predict a student's school engagement, both cross-sectionally (e.g., Fredricks et al., 2005) and longitudinally (e.g., Wang & Eccles, 2012b), and even when adjusting for other relevant social support variables (such as perceived teacher or parent support). To the extent that it is higher-SES students who are afforded the most opportunities for participation during whole-class discussions, their peers' positive perceptions of their engagement could amplify the disparities in subsequent engagement between these students and their low-SES counterparts (e.g., Wang & Eccles, 2012b). Here, we examined the first step in this potential cycle: preschoolers' explanations for differences in engagement.

The Present Research

Our goals in the present research were to investigate (a) whether SES differences in behavioral engagement are present during early childhood education, as well as (b) whether young children explain differences in their peers' behavioral engagement in inherent terms (i.e., as a product of personal traits and dispositions), which could amplify SES disparities in this important motivational variable.

First, we used intensive, naturalistic observations to examine whether SES differences in the frequency and duration of participation during whole-class discussions can be observed in preschool classrooms (Study 1). Specifically, we video-recorded and intensively coded 49 whole-class discussions from four French preschools to provide a nuanced description of students' behavioral engagement as a function of their SES. We also measured students' language proficiency. We expected that low-SES students would contribute less to whole-class discussions than equally proficient middle- and high-SES students.

Second, because students' engagement in school is shaped by their peers' attitudes toward them, we also examined children's perceptions of differences in participation in whole-class discussions in an experimental study with preschoolers (Study 2) and a meta-analysis of this study and a recent replication with a larger sample. We expected that children would view peers who show high levels of engagement during whole-class discussions as possessing more positive qualities (e.g., being smart).

Study 1: Are There SES Differences in Behavioral Engagement During Whole-Class Discussions in Early Childhood Education?

The goal of Study 1 was to examine whether participation in whole-classroom discussions (which is how we operationalized behavioral engagement) differs as a function of SES among preschoolers. We videotaped whole-classroom discussions and coded the *frequency* and *duration* of each child's participation. We expected that SES differences would emerge in both of these aspects of participation: how often children speak and how long they speak for. In addition, we examined both *solicited* participation (i.e., contributions provided at the teacher's request) and *unsolicited* participation (e.g., spontaneous comments, interruptions with relevant information), which previous qualitative studies have identified as an important element of classroom discussions at the early stages of schooling (e.g., Millet & Croizet, 2016; Streib, 2011). Both of these types of participation are face-valid indicators of deeper behavioral engagement with the ongoing discussion. As illustrated in Figure 1, we hypothesized that compared to middle- and high-SES students:

Hypothesis 1 (H1; Frequency of Solicited Participation): Low-SES students will be less likely to be called on (*H1a*) and less likely to be called on for follow-up (*H1b*) by the teacher.

Hypothesis 2 (H2; Duration of Solicited Participation): Low-SES students will speak for a shorter time after being called on (*H2a*) and after follow-up questions from the teacher (*H2b*).

Hypothesis 3 (H3; Frequency of Unsolicited Participation): Low-SES students will be less likely to speak without being

Figure 1
Schematic Representation of Our Five Hypotheses

		TYPE OF CODING	
		Frequency	**Duration**
TYPE OF CONTRIBUTION	**Solicited**	**H1**: low SES < middle and high SES **H5**: SES differences not explained by proficiency	**H2**: low SES < middle and high SES **H5**: SES differences not explained by proficiency
	Unsolicited	**H3**: low SES < middle and high SES **H5**: SES differences not explained by proficiency	**H4**: low SES < middle and high SES **H5**: SES differences not explained by proficiency

Note. SES = socioeconomic status.

called on by the teacher (*H3a*), to interrupt another child (*H3b*), and to interrupt the teacher (*H3c*).

Hypothesis 4 (*H4*; Duration of Unsolicited Participation): Low-SES students will speak for a shorter time when they are not called on (*H4a*), after interrupting another child (*H4b*), and after interrupting the teacher (*H4c*).

Hypothesis 5 (*H5*; Differences not Explained by Proficiency): The differences tested under *H1*–*H4* will be observed even after adjusting for students' language proficiency. In other words, SES differences in behavioral engagement will not be accounted for by differences in language proficiency, contrary to common deficit perspectives (e.g., Adair et al., 2017).

Method

Ethics Approval

This study has been approved by the Ethics Committee of the University Paris Descartes (IRB CER Paris Descartes: 00012019-50).

Transparency and Openness

The coding scheme, data, and R scripts used in the analysis of Study 1 are available on the Open Science Framework (OSF): https://osf.io/2xd4u/?view_only=bae22e868a304e7f86f60bd9b4941515. Videos are not available due to restrictions of General Data Protection Regulation rules regarding the anonymity of children.

Participants

Participants included 98 preschoolers from four classrooms of *Grande Section*, the last year in French preschools before first grade (47 girls, 51 boys; $M_{age} = 5.79$ years, $SD = 0.40$). Recruitment proceeded in several steps. We first sought the approval of the academic authorities in the region of Nouvelle-Aquitaine in France. Once this approval was received, we asked for a complete list of teachers in the region who had a preschool class consisting exclusively of children in Grande Section (i.e., 5-year-olds). (Many preschool classes combine Grande Section with younger children from Petite Section and Moyenne Section, which consist of 3- and 4-year-olds, respectively.) This requirement was important for our purposes because in mixed classes, children's age introduces considerable variability in how much they participate in classroom discussions, which

could make it more difficult to detect the effect of SES. From this smaller set, we selected the six classes that exhibited the highest levels of socioeconomic diversity, as determined by parental occupation (see below). We then contacted all six relevant teachers. Two did not agree to participate because they did not want to be videotaped; the other four agreed to take part in our study. Consent was sought from parents of all children in these four classes; only one parent did not provide consent for their child to participate. The numbers of children with parental consent were relatively similar across classes: 19, 26, 26, and 27 (*N* = 98).

The fact that some teachers declined to participate due to concerns about having their behavior recorded raises the possibility of selection bias: Perhaps the teachers who agreed to participate might meaningfully differ from the ones who did not (e.g., more egalitarian, more experienced). However, this argument highlights the stringent nature of our test: If we find the hypothesized SES differences in oral participation even in the classrooms of teachers who were comfortable allowing researchers to observe their behavior, these differences are likely to be even larger in the average preschool classroom.

Between eight and 19 whole-class discussions were observed in each classroom (*M* = 12.5; *SD* = 4.80), with a mean duration of 23 min and 23 s per discussion (*SD* = 8 min and 47 s). Ninety-eight children took part in the study, 43 of whom were categorized as low-SES and 51 as middle- or high-SES (four undetermined; see below for details). The proportion of low- versus middle- and high-SES students did not differ across classrooms, $\chi^2(3, N = 94) = 0.66, p = .658$. A total of 1,236 Child × Discussion observations (i.e., one child's behavior throughout an entire whole-class discussion) were coded.

Although information about the ethnicity of the children in our sample was not available (because this information cannot legally be collected in France), the children were recruited from a region of France whose population is ethnically homogeneous (e.g., INSEE, 2018). Thus, the differences in SES among children were not confounded by differences in ethnicity, which also relates to linguistic socialization practices (e.g., Heath, 1983).

A sensitivity analysis performed with G*Power 3.1.9 (Faul et al., 2009) suggested that our sample (*N* = 94 students with SES information) was sufficient to detect a minimum effect size of $d = 0.59$ with 80% power on a simple between-groups comparison. However, because our design relies on intensive repeated observations of the same children, the estimate above is only a lower bound of the statistical power of this study (May & Hittner, 2012; Snijders, 2005).

Procedure and Measures

The study consists of a series of video-recorded observations of whole-class discussions in French preschools. These discussions are included in the French national curriculum for preschool and are meant to support the development of language skills; they take place three or four times a day. Children usually raise their hands to ask the teacher for a turn to speak, but sometimes children also speak without permission. The discussions range in content and style: Teachers and students might read a book, discuss arts, share personal experiences (e.g., "what did you do this weekend?"), or express personal opinions and interests (e.g., "what is your favorite thing to do with your parents?"; "what is happiness?").

Between three and five days of observations were performed in each classroom. All videos were recorded and time-stamped with Noldus Media Recorder (Version 2.5, 2013). At the beginning of each day of observation, four cameras, filming children from different angles, were installed in the area where the discussions would take place before the children arrived in the classroom. The recording was initiated before the beginning of each whole-class discussion by a researcher, whose presence was as unobtrusive as possible. Before starting the first observation, children were told that they will be video-recorded to help researchers better understand how children learn to speak during preschool. The footage from the four cameras was synchronized and aggregated using Noldus Observer XT software (Version 14.2, 2018).

A coding scheme was established before data collection (see Figure S1 in the online supplemental materials) and applied to code oral participation using Noldus Observer XT (Zimmerman et al., 2009). This software allows researchers to record and code a variety of behaviors than can occur simultaneously or consecutively over a very short period of time (e.g., children interrupting each other), producing detailed quantitative data (i.e., frequency and duration).

Coding Students' Engagement

We operationalized behavioral engagement as contributions to whole-class discussions. This operationalization is consistent with theorizing on this topic, as well as with previous measurement approaches. For instance, Skinner et al. (2009) self-report measure of behavioral engagement includes the item, "When I'm in class, I participate in class discussions." We note that, due to the young age of our participants, we did not use self-report measures of their behavioral engagement. Rather, we observed students' actual behaviors in the classroom to gauge their engagement; arguably, a behavioral measure such as ours provides a more accurate index of behavioral engagement than self-report.

We coded each preschooler's contributions to whole-class discussions along two dimensions: *frequency* and *duration*. In line with previous qualitative research on classroom discussions (e.g., Millet & Croizet, 2016; Streib, 2011), we coded for five different types of contributions: (a) speaking after being called on by the teacher; (b) speaking after being called on again for follow-up; (c) speaking without being called on by the teacher; (d) speaking by interrupting another child; and (e) speaking by interrupting the teacher. These behaviors were grouped into two main categories: *solicited* participation (behaviors a and b) and *unsolicited* participation (behaviors c, d, and e). Both of these types of participation are valid markers of behavioral engagement. Although solicited participation is perhaps a more prototypical way of engaging with peers

and the teacher during discussions, whereas unsolicited participation can sometimes be disruptive, we included the latter in our coding as well for two reasons: First, children's unsolicited contributions were almost always on topic, revealing engagement with the discussion activity. At this young age, children tend not to make unsolicited contributions simply for the purpose of disrupting class activities. Second, qualitative research in sociology has documented that middle- and high-SES children are more likely to interrupt than low-SES children (Streib, 2011), so we reasoned that the unsolicited element of classroom discussions might be particularly revealing of social class dynamics. In total, our coding scheme consisted of 10 codes: two types of codes (frequency + duration) × five types of contributions (two types of solicited contributions + three types of unsolicited contributions).

Participation was not coded when more than three children spoke at the same time because it was extremely difficult to properly code who spoke and for how long. These situations were also rare: We only observed 23 instances of more than three children talking at the same time across all 49 discussions ($M = 0.47$ instances per discussion).

All discussion sessions were coded independently by two researchers. As we coded for a mix of discrete events (frequency of participation) and continuous variables (length of participation), we used a Pearson correlation coefficient r as a common measure of interrater reliability for all 10 codes. Reliability for each of the 10 codes was calculated separately for each of the 49 discussion sessions. To derive an overall index of reliability for each code, we calculated the median r across the 49 sessions. The average of these 10 median rs (one per code) was .79, indicating adequate reliability ($r > .70$; Multon, 2010). The median rs ranged from .52 (for the duration of unsolicited interruptions of another child) to .95 (for the duration of solicited contributions). Only two of the 10 codes had median rs that were below the .70 threshold for adequate reliability: the duration of unsolicited interruptions of another child ($r = .52$) and the frequency of unsolicited interruptions of another student ($r = .65$). It is perhaps unsurprising that the codes pertaining to interruptions among students had the lowest reliability: These interruptions often made up the most chaotic, least structured portions of the discussions. For all codes, the two researchers discussed disagreements and settled on a final decision together. Asking coders to arrive at a consensus about disagreements typically ensures greater accuracy in the final codes than relying on a single coder's output, even for codes on which reliability was reached (e.g., Richards & Hemphill, 2018).

Coding SES

In the social sciences, and in psychology in particular, it is typical to use several different indicators (e.g., income, parental occupation) jointly to determine SES (Antonoplis, 2022; Kraus & Stephens, 2012; Oakes & Rossi, 2003). For this study, the only indicator available from French school authorities was parental occupation, which is a reliable proxy for overall SES, especially in France (Croizet & Claire, 1998; Goudeau & Croizet, 2017). We assigned occupations to an SES category using the classification scheme used and validated by Goudeau and Croizet (2017): The low-SES group included children of manual and administrative workers, other blue-collar workers (e.g., artisans, farmers), and unemployed persons. The middle- and high-SES group included children whose parents have middle-class

occupations such as technicians, nurses, or educators, as well as children of managers, professors, and the professional and managerial elite (e.g., lawyers, doctors). If occupation information was available for more than one parent, that child's SES classification was based on the parent with the higher-SES occupation.

Notably, we grouped together the middle- and high-SES groups for purposes of the present research. This way of dichotomizing the SES continuum is common in research on SES disparities in educational outcomes (e.g., Phillips et al., 2020; Stephens et al., 2012) and is motivated by the fact that socialization practices in middle- and high-SES families are generally more similar to each other than they are to socialization practices in low-SES families (Lahire, 2019; Lareau, 2003).

Language Proficiency Measure

Teachers were asked to rate each student's oral French proficiency level ("How do you estimate the oral proficiency level of this student?") on a scale from $1 = low$ to $4 = high$ ($M = 3.16$, $SD = 0.81$, $skewness = -0.53$). We used these ratings as measures of language proficiency because there is no standardized language assessment system in French preschools, and there is great variability across teachers in how they rate students' skills (e.g., smileys, points, colors). We note that adjusting for teachers' ratings in our analyses is conservative because these ratings could be biased against low-SES students. That is, teachers may underestimate low-SES students' proficiency due to some of the same factors that we hypothesize are preventing low-SES children from fully participating in classroom discussions (e.g., cultural mismatch, social class stereotypes). If we observe SES differences in participation even after adjusting for these (potentially biased) ratings, that would provide strong evidence for the claim that preschool settings provide unequal opportunities for engagement, disadvantaging low-SES students.

Although researchers are sometimes reluctant to use single-item measures, we note that there is nothing inherently problematic about such measures, especially for constructs that are narrow in scope and unambiguous (such as a student's oral language proficiency; for discussion, see Allen et al., 2022). In addition, we have evidence for the validity of this measure. For instance, teachers rated the average proficiency of low-SES students ($M = 2.88$, $SD = 0.85$) as significantly lower than that of middle- and high-SES students ($M = 3.44$, $SD = 0.67$), $t(91) = 3.51$, $p < .001$, $d = 0.74$. This difference aligns with prior evidence of SES disparities in achievement from the earliest stages of schooling (e.g., Reardon et al., 2015). Notably, adjusting for this substantial disparity when testing for SES differences in engagement sets a high bar for finding such differences. As additional evidence of validity, we note that teachers' rating of students' proficiency also correlated with students' actual linguistic behavior during whole-class discussions. For example, students who were rated as more proficient by their teachers were also likely to speak longer when called on, $b = 1.52$, $SE = 0.63$, $p = .016$. This relation suggests, again, that teachers' ratings of students' language proficiency are likely to provide a valid measure of this construct.

Analysis Plan

The analyses were performed using R Version 4.2.1 (R Core Team, 2022), and the packages *sandwich* (Zeileis et al., 2020), *fixest* (Berge, 2018), and *lmtest* (Zeileis & Hothorn, 2002). In our data,

observations (i.e., individual children's contributions during a particular session; Level 1) were nested within students (Level 2) and sessions (Level 2), which were nested within classrooms (Level 3), thereby violating the assumption of independence of residuals. In such a case, multilevel models can be used, but they produce biased estimates when the number of higher-level clustering units is low (e.g., Maas & Hox, 2005; Sommet & Morselli, 2017). As we only had four classrooms (the highest-level cluster), we instead used fixed effects models with each Classroom × Discussion session combination as clusters. Fixed effects here do not refer to a component of a multilevel model but to a different modeling framework in which clusters are included in the model as predictor variables (McNeish & Kelley, 2019). As a result, all variation *between* classroom-sessions is removed and instead we estimate the pooled within-classroom-session relation between SES and participation. We computed clustered standard errors to further account for the stratification of the data.[1]

SES was contrast-coded: Low SES was coded as -0.5, and middle and high SES were coded as $+0.5$. We report observed means and standard deviations below. Analyses that adjust for student gender are reported in Table S1 in the online supplemental materials; all SES differences reported below replicate in these models as well.

Results and Discussion

Each of the analyses below maps directly onto one of the first four hypotheses, which posit SES differences in the frequency and duration of solicited and unsolicited participation in classroom discussions (see Figure 1). The fifth hypothesis is that these SES differences in oral participation are not accounted for by SES differences in actual language proficiency (suggesting unequal opportunities for engagement). We will report these results in parentheses after each result pertaining to H1–H4.

Frequency of Solicited Participation (H1)

The total number of times children spoke at the teacher's request during a particular discussion was analyzed with negative binomial regressions to account for the distribution and overdispersion of the outcomes.

Number of Times Children Spoke After Being Called on (H1a). Middle- and high-SES children spoke about 1.46 times as often after being called on by (i.e., at the request of) the teacher as low-SES children did, *incidence rate ratio* (IRR) = 1.47, $p < .001$, 95% confidence interval (CI) = [1.29, 1.67] (adjusting for proficiency: $IRR = 1.34$, $p < .001$, 95% CI = [1.17, 1.52]), consistent with *H1a* and *H5* (see Figure 2A).

Number of Times Children Spoke After Being Called on Again for Follow-up (H1b). Middle- and high-SES children spoke about 1.42 times as often after being called on again for follow-up as low-SES children did, $IRR = 1.42$, $p = .007$, 95% CI = [1.10, 1.83] (adjusting for proficiency: $IRR = 1.41$,

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[1] As a robustness check, we also computed multilevel models with observations (Level 1) nested within students (Level 2) and sessions (Level 2), which were cross-classified. The third level (i.e., classrooms) was treated as incidental and modeled with fixed effects (i.e., a dummy variable was included in the model; McNeish & Wentzel, 2017). These models were calculated with the R package *lme4* (Bates et al., 2015) and yielded estimates similar to those obtained with our main estimation strategy.

Figure 2
Low-SES Versus Middle- and High-SES Students' Solicited Participation: Frequency (A and B) and Duration (C and D)

Solicited oral participation

■ Low-SES   ■ Middle- and high- SES

Oral participation after being called on

Oral participation after being called on for follow up

Note. Values are predicted (or marginal) means. Error bars represent $\pm$ 1 *SE*. SES = socioeconomic status. See the online article for the color version of the figure.

$p = .032$, 95% CI = [1.03, 1.92]), consistent with *H1b* and *H5* (see Figure 2B).

Duration of Solicited Participation (H2)

Because the total duration of a child's solicited contributions is confounded with the frequency of their contributions, we instead calculated and analyzed the *average* duration (in seconds) of each child's solicited contributions during a particular discussion. This variable was analyzed with a linear regression.[2]

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[2] As is typically the case with duration data, this variable was positively skewed, as were all the other duration variables in the dataset. Ancillary analyses on square-root-transformed versions of these variables, which exhibited lower positive skew, replicated the findings reported in the main text.

Mean Speech Duration After Being Called on (*H2a*). Low-SES children spoke significantly less after being called on by the teacher ($M = 3.40$ s; $SD = 5.71$) than middle- and high-SES children did ($M = 7.86$ s; $SD = 18.1$), $b = 3.68$, $SE = 1.00$, $p < .001$ (adjusting for proficiency: $b = 3.05$, $SE = 0.80$, $p < .001$), consistent with *H2a* and *H5* (see Figure 2C).

Mean Speech Duration After Being Called on Again for Follow-up (*H2b*). Low-SES children spoke significantly less in response to a follow-up question ($M = 0.82$ s; $SD = 2.36$) than middle- and high-SES children did ($M = 1.64$ s; $SD = 4.06$), $b = 0.79$, $SE = 0.20$, $p < .001$ (adjusting for proficiency: $b = 0.73$, $SE = 0.23$, $p = .002$), consistent with *H2b* and *H5* (see Figure 2D).

Frequency of Unsolicited Participation (H3)

As for *H1* above, the per-discussion frequency of children's unsolicited contributions was analyzed with a negative binomial regression.

Number of Times Children Spoke Without Being Called on (*H3a*). Middle- and high-SES children spoke without being called on about 1.71 times as often as their low-SES peers, $IRR = 1.71$, $p < .001$, 95% CI = [1.49, 1.97] (adjusting for proficiency: $IRR = 1.47$, $p < .001$, 95% CI = [1.22, 1.78]), consistent with *H3a* and *H5* (see Figure 3A).

Number of Times Children Interrupted Another Child (*H3b*). Middle- and high-SES children interrupted another child about 1.74 times as often as their low-SES peers, $IRR = 1.74$, $p < .001$, 95% CI = [1.45, 2.08] (adjusting for proficiency: $IRR = 1.41$, $p = .003$, 95% CI = [1.12, 1.78]), consistent with *H3b* and *H5* (see Figure 3B).

Number of Times Children Interrupted the Teacher (*H3c*). Middle- and high-SES children interrupted the teacher about 1.79 times as often as their low-SES peers, $IRR = 1.79$, $p < .001$, 95% CI = [1.51, 2.12] (adjusting for proficiency: $IRR = 1.52$, $p < .001$, 95% CI = [1.23, 1.87]), consistent with *H3c* and *H5* (see Figure 3C).

Duration of Unsolicited Participation (H4)

As for *H2* above, we calculated the average number of seconds children spoke per unsolicited contribution and analyzed this variable with a linear regression.

Mean Speech Duration Without Being Called on (*H4a*). Low-SES children spoke significantly less when they had not been called on by the teacher ($M = 1.66$ s, $SD = 4.46$) than their middle- and high-SES peers did ($M = 4.04$ s, $SD = 8.97$), $b = 1.93$, $SE = 0.45$, $p < .001$ (adjusting for proficiency: $b = 1.98$, $SE = 0.47$, $p < .001$), consistent with *H4a* and *H5* (see Figure 3D).

Mean Speech Duration After Interrupting Another Child (*H4b*). Low-SES children spoke significantly less after interrupting another child ($M = 0.49$ s, $SD = 0.91$) than their middle- and high-SES peers did ($M = 1.15$ s, $SD = 2.22$), $b = 0.54$, $SE = 0.12$, $p < .001$ (adjusting for proficiency: $b = 0.44$, $SE = 0.13$, $p < .001$), consistent with *H4b* and *H5* (see Figure 3E).

Mean Speech Duration After Interrupting the Teacher (*H4c*). Low-SES children spoke significantly less after interrupting the teacher ($M = 0.66$ s, $SD = 1.24$) than their middle- and high-SES peers did ($M = 1.51$ s, $SD = 3.13$), $b = 0.66$, $SE = 0.16$, $p < .001$ (adjusting for proficiency: $b = 0.61$, $SE = 0.19$, $p = .002$), consistent with *H4c* and *H5* (see Figure 3F).

Conclusion

To summarize, we found that low-SES preschool students participate substantially less than their middle- and high-SES peers during whole-class discussions. This difference was observed when examining both solicited participation and instances in which children "took the floor" themselves (i.e., unsolicited participation). It was also observed after accounting for children's language proficiency, and remained substantial in size, suggesting that it does not reflect ability differences but rather inequalities in opportunities for engagement. That is, the present evidence suggests that early childhood education may be structured in ways that discourage or suppress the behavioral engagement of children from low-SES backgrounds, which is likely to put them at a disadvantage.

Study 2: How Do Children Perceive Differences in Behavioral Engagement?

SES differences in behavioral engagement may be amplified by their peers' *perceptions* of these differences—especially if children tend to infer that those who contribute more in classroom discussions (like middle- and high-SES children tend to do) are more competent and socially skilled than those who speak up less. The goal of Study 2 was to examine children's perceptions of patterns of behavioral engagement during whole-class discussions that are similar to those demonstrated by middle- and high-SES children in Study 1.

We measured children's perceptions in two ways. First, we elicited children's open-ended explanations for the behavior of fictional peers who displayed middle- and high-SES patterns of participation. Given the previous evidence of an inherence bias in children's explanations (for reviews, see Cimpian & Salomon, 2014a, 2014b; Goudeau & Cimpian, 2021; Horne et al., 2019), we expected that children will appeal mostly to inherent (vs. extrinsic) factors to explain differences in oral participation (e.g., "they are smart"). Second, we measured children's perceptions of the same fictional peers along the two fundamental dimensions of social judgment: competence and warmth (e.g., Abele et al., 2008; Fiske et al., 2007). We expected that children would evaluate fictional peers who display middle- and high-SES patterns of oral participation as higher in competence and warmth than other children in their class.

Method

Transparency and Openness

The materials, R scripts, and the data for Study 2 are also available on OSF: https://osf.io/5a4fm/?view_only=b3fdcdb509474b49920cb04ce9f0ba14.

Participants

Participants included 94 preschoolers (enrolled with administrative authorization and parental consent) from five classrooms of Grande Section (53 girls, 41 boys; $M_{age} = 5.52$ years, $SD = 0.32$). No children had participated in Study 1. Based on their parental occupation, 34 children were categorized as low-SES and 55 were categorized as middle- and high-SES (five undetermined). The proportion of low- versus middle- and high-SES students did not differ across classrooms, $\chi^2(4, N = 89) = 3.57$, $p = .467$. A sensitivity

Figure 3
Low-SES Versus Middle- and High-SES Students' Unsolicited Participation: Frequency (A, B, and C) and Duration (D, E, and F)
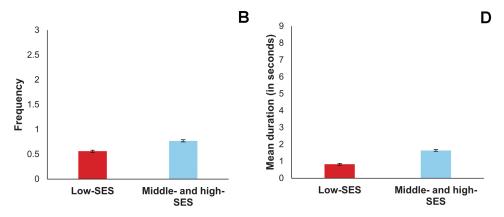

Note. Values are predicted (or marginal) means. Error bars represent ± 1 *SE*. SES = socioeconomic status. See the online article for the color version of the figure.

analysis performed with G*Power 3.1.9 (Faul et al., 2009) suggested that our sample ($N = 94$ students) was sufficient to detect a minimum effect size of $d = 0.29$ with 80% power on a two-tailed one-sample t test (see "Analysis Plan" section).[3]

Materials

Based on the patterns observed in Study 1, we developed two scenarios that illustrate typical middle- and high-SES patterns of participation in whole-class discussions. Before hearing the scenarios, children were presented with a picture of 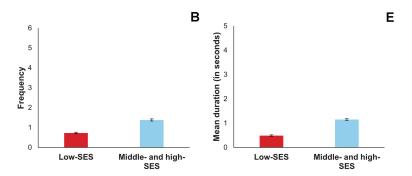children at an unfamiliar preschool during a whole-class discussion, which served to make our hypothetical scenarios more concrete. The first scenario focused on the *frequency* of solicited oral participation and described a situation in which the teacher calls on a fictional child more often than other children ("When the teacher asks the class a question, several children raise their hands. However, the teacher calls on [Theodore/Zélie] more often than other children"). The second scenario focused on the *duration* of solicited oral participation and described a situation in which a fictional child speaks for longer than other children ("When the teacher asks the class a question, several children raise their hands. When the teacher asks [Leopold/Suzon] a question, [Leopold/Suzon] talks longer than the other children"). The order of presentation of the scenarios and the gender of the protagonist in each scenario were counterbalanced across participants.

Open-Ended Explanations. After each scenario, children were asked to explain the protagonist's behavior ("Why do you think [Theodore/Zélie] is called on more often than other children?" for Scenario 1 and "Why do you think [Leopold/Suzon] talks longer than the other children?" for Scenario 2). If the child said they did not know, two follow-up questions were asked (e.g., "All answers are right in this game. Do you want to try to guess? Why […]?"). If the child still did not answer after these follow-ups, the experimenter moved on to the next question.

Children's answers were coded independently by two researchers using four categories: (a) inherent factors (e.g., "because she/he is smart," "because she/he has a lot to tell"), (b) extrinsic factors (e.g., "because the teacher likes her/him," "because the other children are disobedient"), (c) incoherent or irrelevant explanations (e.g., "because we are in school"), and (d) no explanation (e.g., "I don't know"). Interrater reliability was high (Scenario 1: 87.2% agreement, Cohen's $\kappa = 0.80$; Scenario 2: 92.6% agreement, Cohen's $\kappa = 0.88$),[4] and disagreements were again resolved by discussion to consensus.

Competence and Warmth Evaluations. For each scenario, after the open-ended explanation question, children were asked to evaluate the protagonist along the two fundamental dimensions of social judgments (i.e., competence and warmth; Fiske et al., 2007). Two ratings pertained to the *competence* dimension: (a) perceived intelligence ("How intelligent do you think [child] is? Do you think [child] is more intelligent than the other children, or less intelligent than the other children?"; follow-up: "Do you think [child] is a little [more/less] intelligent, or a lot [more/less] intelligent than the other children?") and (b) perceived academic achievement ("How good at school do you think [child] is? Do you think [child] is better at school than the other children, or worse at school than the other children?"; follow-up: "Do you think [child] is a little [better/worse] at school, or a lot [better/worse] at school than the other children?"). Two other ratings pertained to the *warmth* dimension: (c)

perceived niceness ("How nice do you think [child] is? Do you think [child] is nicer than the other children, or less nice than the other children?"; follow-up: "Do you think [child] is a little [nicer/less nice] or a lot [nicer/less nice] than the other children?"), and (d) teacher's liking of the protagonist ("How much do you think the teacher likes [child]? Do you think the teacher likes [child] more than the other children, or less than the other children?"; follow-up: "Do you think the teacher likes [child] a little [more/less] or a lot [more/less] than the other children?"). Answers to all four questions were recorded on a scale from 1 (*a lot less than other children*) to 4 (*a lot more than other children*). The order of the four questions was counterbalanced across children.

Analysis Plan

The data were analyzed using Jamovi (Version 1.6.23). For the open-ended explanations, we compared the frequency of inherent and extrinsic explanations for each scenario with goodness-of-fit χ^2 tests. For the competence and warmth evaluations, we compared the mean ratings to the midpoint of the 1–4 scale (i.e., 2.5) with one-sample t tests. As evaluations of the fictional protagonist were elicited *relative* to other children in their class (e.g., more intelligent than others vs. less intelligent than others), this comparison to the midpoint revealed whether participating children evaluated the protagonist as being above, below, or no different from the average child in competence and warmth.

Results and Discussion

Scenario 1 (Frequency of Solicited Participation)

Open-Ended Explanations. The frequency of each type of explanation (i.e., inherent, extrinsic, incoherent/irrelevant, no explanation), along with examples of each, is reported in Table 1. As expected, children used significantly more inherent than extrinsic factors to explain why a fictional child made frequent contributions to classroom discussions, $\chi^2(1, N = 54) = 35.85$, $p < .001$, Cohen's $w = 0.81$. Values of Cohen's w greater than 0.50 are conventionally considered to indicate "large" effects (Cohen, 1988).

Competence and Warmth Evaluations. Presentation order of the scenarios and questions did not affect children's ratings (ps > .05), so we will not discuss it further. Correlations between the four ratings are reported in the top half of Table 2.

We compared the means to the midpoint of the scale (i.e., 2.5) using one-sample t tests. Overall, the fictional child who made frequent contributions to classroom discussions was perceived as possessing more positive characteristics than other children in their class:

- as being more intelligent, $t(89) = 4.74$, $p < .001$, $d = 0.50$, 95% CI = [0.28, 0.72],
- as being better at school, $t(89) = 5.32$, $p < .001$, $d = 0.56$, 95% CI = [0.34, 0.78],

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[3] We included all children in our sensitivity analysis, including those for whom we did not have SES information, because our main analyses were conducted on the whole sample. Participating children's own SES was of secondary importance in Study 2.

[4] We report Cohen's κ as a measure of interrater reliability (rather than r, as in Study 1) because the dependent variable here is categorical.

Table 1
Frequency and Examples of Open-Ended Answers in Each Category for Scenarios 1 and 2

Type of explanation	Scenario 1	Examples	Scenario 2	Examples
Inherent factors	49 (52.1%)	"s/he is nicer"; "s/he is wiser"; "s/he raise his/her hand more often"	52 (55.3%)	"she wants to explain more things"; "s/he has a lot to say"; "s/he works hard"
Extrinsic factors	5 (5.3%)	"the teacher likes her/him"; "the other children make trouble"	5 (5.3%)	"the question was longer"; "it was her birthday"
Incoherent or irrelevant	16 (17.0%)	"because there is a lot of children"; "because we are in school"	14 (14.9%)	"we need to listen to the teacher"; "because he says a sentence"
No explanation	24 (25.5%)	"I don't know"	23 (24.5%)	"I don't know"

Note. The examples using "s/he" were observed multiple times and were sometimes about girls and other times about boys.

- as being nicer, $t(91) = 7.01$, $p < .001$, $d = 0.73$, 95% CI = [0.50, 0.96], and
- as being better liked by the teacher, $t(85) = 6.25$, $p < .001$, $d = 0.67$, 95% CI = [0.44, 0.91].

Descriptive statistics are presented in Table 3.[5]

Scenario 2 (Length of Solicited Participation)

Open-Ended Explanations. The frequency of each type of explanation (i.e., inherent, extrinsic, incoherent/irrelevant, no explanation), along with examples of each, is reported in Table 1. As expected, children used significantly more inherent than extrinsic factors to explain why a fictional child made longer contributions to classroom discussions, $\chi^2 (1, N = 57) = 38.75$, $p < .001$, Cohen's $w = 0.83$.

Competence and Warmth Evaluations. As for Scenario 1, presentation order of the scenarios and questions did not affect children's ratings ($ps > .05$). Correlations between the four items are reported at the bottom of Table 2.

One-sample t tests against the scale midpoint revealed that, similar to Scenario 1, the fictional child who made longer contributions to classroom discussions was perceived as possessing more positive characteristics than other children in their class:

- as being more intelligent, $t(91) = 3.16$, $p = .002$, $d = 0.33$, 95% CI = [0.12, 0.54],
- as being better at school, $t(89) = 3.93$, $p < .001$, $d = 0.41$, 95% CI = [0.20, 0.63], and
- as being nicer, $t(90) = 2.58$, $p = .011$, $d = 0.27$, 95% CI = [0.06, 0.48].

However, the protagonist in Scenario 2 was not rated as being better liked by the teacher than other children in their class, $t(87) = 1.20$, $p = .24$, $d = 0.13$, 95% CI = [−0.08, 0.34] (see Table 3 for descriptive statistics).[6]

Conclusion

The findings of Study 2 suggest that preschoolers explain differences in engagement during whole-class discussions as the consequence of intrinsic characteristics, including ones relating to competence and warmth. Given that the scenarios presented to children in this study were modeled on patterns of participation that are typical of middle- and high-SES preschool students, the present findings also suggest that these students are likely to be viewed more positively by their peers because of their substantial engagement during whole-class discussions. In addition, since school engagement is

shaped by the extent to which students feel accepted and valued by their peers, the results of Study 2 hint at a self-reinforcing cycle whereby privileged students' high levels of initial engagement foster positive peer perceptions of competence and warmth, which in turn foster even more engagement among middle- and high-SES students. If present, such a cycle would also exacerbate the inequality in opportunities for engagement that already disadvantages low-SES students.

Mini Meta-Analysis of Study 2 and a Preregistered Replication of It

A subset of the authors of this article, along with several other collaborators, conducted a direct preregistered replication of Study 2 with a new, larger sample of preschool students drawn from the same region of France as those who participated in Study 2 ($N = 306$). The same scenarios and questions as in Study 2 were administered in this replication study as well, with only minor alterations.[7] While the full details of this replication study will be published elsewhere (Renoux et al., 2023), here we meta-analyzed its results with those of Study 2 to more accurately describe the magnitude of children's tendency to explain differences in engagement during whole-class discussions via inherent characteristics, including competence and warmth. Meta-analyses are useful even when they summarize small numbers of effect sizes, in part because they shift the focus from significance testing to estimating effect sizes with greater precision—the foundation of a cumulative science (e.g., Cumming, 2014; Goh et al., 2016). We conducted separate random-effects meta-analyses for each outcome and scenario using the *metaprop* (Nyaga et al., 2014), *metan* (Harris et al., 2008), and *meta* commands in Stata 16.1 (StataCorp, 2019). The data and Stata code

[5] There was no relation between children's own SES and their ratings of the fictional child's perceived intelligence ($b = 0.20$, 95% CI = [−0.28, 0.67], $p = .42$), academic achievement ($b = 0.36$, [−0.13, 0.85], $p = .14$), or niceness ($b = 0.002$, [−0.43, 0.44], $p = .99$). However, low-SES children perceived the fictional child as being marginally less liked by the teacher ($M = 2.97$, $SD = 1.21$) than their middle- and high-SES peers did ($M = 3.42$, $SD = 0.87$), $b = 0.45$, 95% CI = [−0.01, 0.91], $p = .057$.

[6] There was no relation between children's own SES and their ratings of how intelligent the protagonists were ($b = 0.004$, 95% CI = [−0.49, 0.49], $p = .99$), how good at school they were ($b = −0.22$, [−0.72, 0.29], $p = .40$), how nice they were ($b = 0.41$, [−0.11, 0.94], $p = .12$), or how much the teacher liked them ($b = 0.39$, [−0.13, 0.92], $p = .14$).

[7] For example, the response scale for the warmth and competence evaluation questions was expanded to include an explicit neutral midpoint ("the same as other children"). This replication study also included a few additional control questions intended to investigate the possibility of response biases (see General Discussion for additional details).

Table 2
Correlation Matrix of Warmth and Competence Evaluation Scores (r [95% CI])

Item	1. More intelligent	2. Better at school	3. Nicer	4. Better liked by teacher
1	—	.37 [.18, .54]***	.26 [.05, .44]*	.42 [.23, .59]***
2	.56 [.40, .69]***	—	.38 [.18, .54]***	.32 [.12, .50]**
3	.53 [.36, .66]***	.50 [.32, .64]***	—	.39 [.20, .56]***
4	.44 [.26, .60]***	.44 [.26, .60]***	.70 [.58, .80]***	—

Note. Correlations for the first scenario are reported at the top of the table, while correlations for the second scenario are reported at the bottom. CI = confidence interval.
* $p < .05$. ** $p < .01$. *** $p < .001$.

are available on the same OSF repository as for Study 2 (https://osf.io/5a4fm/?view_only=b3fdcdb509474b49920cb04ce9f0ba14).

Scenario 1 (Frequency of Solicited Participation)

Open-Ended Explanations

The meta-analytic estimates of the percentage of children providing inherent and extrinsic explanations in response to Scenario 1 were 56.0%, 95% CI = [51.1%, 60.9%], and 8.1%, 95% CI = [5.6%, 11.0%], respectively, Cohen's $w_+ = 0.75$, 95% CI = [0.63, 0.87].

Competence and Warmth Evaluations

The meta-analytic estimates indicated that the fictional child who made more frequent contributions to classroom discussions (compared to their peers) was perceived as more competent and warmer than other children in their class—specifically:

- as more intelligent, $d_+ = 0.47$, 95% CI = [0.37, 0.58],
- as better at school, $d_+ = 0.48$, 95% CI = [0.37, 0.58],
- as nicer, $d_+ = 0.57$, 95% CI = [0.30, 0.85], and
- as better liked by the teacher, $d_+ = 0.53$, 95% CI = [0.28, 0.77].

Scenario 2 (Length of Solicited Participation)

Open-Ended Explanations

The meta-analytic estimates of the percentage of children providing inherent and extrinsic explanations in response to Scenario 2 were 67.7%, 95% CI = [63.0%, 72.2%], and 4.7%, 95% CI = [2.7%, 7.0%], respectively, Cohen's $w_+ = 0.87$, 95% CI = [0.76, 0.97].

Competence and Warmth Evaluations

The meta-analytic estimates indicated that the fictional child who made longer contributions to classroom discussions (compared to

their peers) was perceived as more competent and warmer than other children in their class—specifically:

- as more intelligent, $d_+ = 0.23$, 95% CI = [0.11, 0.35],
- as better at school, $d_+ = 0.29$, 95% CI = [0.08, 0.49],
- as nicer, $d_+ = 0.23$, 95% CI = [0.13, 0.33], and
- as better liked by the teacher, $d_+ = 0.13$, 95% CI = [0.03, 0.23].

Conclusion

The present meta-analysis of Study 2 and its preregistered replication (Renoux et al., 2023) reinforces the conclusion that preschoolers explain observed differences in school engagement as the consequence of inherent characteristics, with peers who are more engaged being perceived as more competent and warmer.

It is interesting to note that the effect sizes for the competence and warmth evaluation questions were considerably smaller for Scenario 2 (where the protagonist was said to speak for a long time when called on) than those for the Scenario 1 (where the protagonist was said to be called on frequently). It is possible that some children perceived the act of speaking for a long time as rude or selfish, which in turn led them to adopt somewhat less positive views of this protagonist, at least compared to the protagonist in Scenario 1. This difference suggests that children paid attention to and understood the scenarios, giving reasoned responses rather than automatically giving the same (positive) ratings to all protagonists.

General Discussion

To date, most explanations for socioeconomic achievement gaps in early childhood have focused on perceived deficits in low-SES parents' knowledge, practices, or the resources they provide to their children (e.g., Kalil, 2015). In the present research, we instead turned our attention to ways in which early childhood education might be shortchanging children from underprivileged socioeconomic backgrounds. Although preschool attendance is undoubtedly beneficial for low-SES students' achievement

Table 3
Mean (and Standard Deviation) of Competence and Warmth Evaluation Scores for Scenarios 1 and 2

Scenario	1. More intelligent	2. Better at school	3. Nicer	4. Better liked by teacher
Scenario 1	3.04 (1.09)***	3.12 (1.11)***	3.22 (0.98)***	3.21 (1.05)***
Scenario 2	2.87 (1.12)**	2.97 (1.13)***	2.82 (1.20)*	2.65 (1.17)

* $p < .05$. ** $p < .01$. *** $p < .001$ from one-sample t tests against the midpoint of the scale (2.5).

(e.g., Bustamante et al., 2022; Cascio & Schanzenbach, 2013; Havnes & Mogstad, 2015; Huang, 2017), our research also suggests that early childhood education is not currently maximizing its potential as an equalizing force. This is so because it does not provide equal opportunities for engagement with learning to all students, regardless of social class. Instead, the early schooling context introduces obstacles to low-SES students' engagement. Given the well-established longitudinal relationships between engagement and achievement (e.g., Wang & Eccles, 2012a), this aspect of early childhood education may be accentuating, rather than helping to equalize, the SES disparities in achievement.

Our conclusions on this point are licensed by our investigation of students' behavioral engagement during whole-class discussions (Study 1), a core part of the preschool curriculum in Europe and North America. Although prior ethnographic research had provided a qualitative description of how low-SES children's oral contributions are received in the classroom (e.g., Heath, 1983; Michaels, 1981, 1991), the goal of the present research was to assess SES differences in engagement quantitatively, with intensive observations of whole-class discussions. Our observations, collected from four preschool classrooms in France, showed substantial SES differences in the number and duration of contributions to whole-class discussions. Importantly, these differences were not accounted for by SES differences in oral language proficiency: We found that low-SES students contributed less even when adjusting for their (lower) level of proficiency, which suggests that preschool is shortchanging these students of opportunities to contribute to class discussions, and of the social and academic benefits of such contributions.

Regarding these benefits, we also found that SES differences in oral participation shape how students are *perceived* by their peers. In Study 2, preschoolers explained differences in engagement during whole-class discussions as a consequence of children's inherent characteristics, including their competence and warmth. These results suggest that the patterns of school engagement typical of middle- and high-SES students increase the extent to which they are valued by their preschool peers. Given that perceived peer acceptance and support is a major driver of school engagement, these positive perceptions might reinforce middle- and high-SES students' (already strong) patterns of engagement, setting them up for academic success in the future. Conversely, these same perceptions may lead low-SES students to perceive themselves as less competent and warm, which might make them more reluctant to contribute in the future—a vicious cycle. In addition, the fact that teachers seem to call less on low-SES students could reinforce children's own class-based perceptions and stereotypes.

Under certain conditions, the success of others can be a source of inspiration that is beneficial for one's self-image and performance (e.g., Huguet et al., 2001). Might low-SES students benefit from these processes? It is important to note that others' successes provide inspiration when they are perceived as attainable (Lockwood & Kunda, 1997; for a review, see Gladstone & Cimpian, 2021). The fact that differences in the classroom are often explained as reflecting relatively stable individual differences in intelligence or motivation (Goudeau & Cimpian, 2021) makes it less likely that others' success will be motivating and more likely that it will be threatening to low-SES students' self-image (Normand & Croizet, 2013).

Implications for Early Childhood Education

What could preschools do to "level the playing field" and provide equal opportunities for engagement for students from different SES backgrounds? Importantly, our results make clear that to provide the same opportunities to everyone, it is not sufficient to treat everyone the same. Rather, school settings will need to adapt to students' needs and backgrounds if they wish to foster all students' engagement to the same extent. One means of accomplishing this goal may be to increase preschool teachers' awareness of the cultural mismatch between the socialization experiences of low-SES students and the school environment (e.g., Stephens et al., 2014, 2015; Townsend et al., 2019). This awareness may help teachers to devise ways of interacting with low-SES students and structuring class activities that afford these students the same opportunities for engagement that are currently afforded to their more privileged counterparts. Explaining to teachers how the cultural stereotypes about low-SES students' abilities may affect these students' behavior in the classroom (e.g., Croizet & Claire, 1998), as well as their own behavior toward these students (e.g., Batruch et al., 2023), could have similarly beneficial effects.

In addition, equalizing opportunities for engagement across social class may entail redesigning aspects of early childhood education. Consider, for example, whole-class discussions: One means of increasing the engagement of low-SES students during such discussions might be to inform students of the discussion topics ahead of time (e.g., "what is your favorite book?"), so that they all have a chance to prepare. Instituting a rule that each student should take a turn first before a student makes a second comment could help as well. Teachers could also be instructed to model that all topics are interesting and appropriate—not just museums and the arts but sports and TV shows as well.

Interventions to equalize engagement could also target children directly by making them aware of the contextual determinants that put low-SES students at a disadvantage in the classroom. Previous research targeting college students has suggested that making students aware of how their familial background shapes their experiences at university has positive consequences for working-class students' achievement (Stephens et al., 2014, 2015). Further research is needed to examine how this type of intervention could be adapted for administration to young children—for example, by highlighting differences in socialization experiences at home.

Limitations and Constraints on Generality

A limitation of this research is that we did not comprehensively examine the mechanisms underlying the observed SES differences in participation. We expected such differences based both on the well-documented cultural mismatch between low-SES students' experiences at home and at school and on the negative stereotypes about low-SES students' competence. These factors may make low-SES children less likely to take and hold the floor and teachers less likely to call on them. However, future research should investigate whether these (or other) mechanisms are in fact responsible for SES differences in preschoolers' behavioral engagement. We also reiterate that SES differences in oral participation are not simply a function of preexisting SES differences in language proficiency. Adjusting for this variable did not affect the conclusions of our analyses, so—contrary to the deficit perspective held by many teachers

and administrators (e.g., Adair et al., 2017)—it is clear that low-SES children do not participate less simply because they are less proficient.

Another important limitation of this work is that we assessed SES with a single indicator: parental occupation, which is the only variable relevant to SES provided to us by French school authorities. Although previous research has shown that parental occupation is a good proxy for SES in France—specifically for research in education (Croizet & Claire, 1998; Goudeau & Croizet, 2017)—we acknowledge that social class is a context of socialization that encompasses other dimensions, such as income and educational level (Antonoplis, 2022; Goudeau et al., 2017; Oakes & Rossi, 2003).

In addition, the conclusions of Study 2 would have been strengthened by the inclusion of reverse-coded items to rule out response biases: Perhaps children did not follow our scenarios and gave positive ratings without truly understanding what they were rating. This interpretation is contradicted by the fact that children did differentiate between the two scenarios, exhibiting less positivity toward the protagonist who spoke a lot when the teacher called on them. In addition, the preregistered replication of Study 2 (Renoux et al., 2023) included several reverse-coded items (e.g., an item asking whether the protagonist is "bad"), which children responded to appropriately. These ancillary findings reinforce the conclusion that children explain high levels of engagement in the classroom as being driven by students' positive inherent attributes.

It is important to consider the details of (a) where, (b) with whom, and (c) how the present studies were conducted and articulate how these details constrain the generality of our findings (Simons et al., 2017). Regarding *where*, these studies were conducted in France. Although France has a unique history and tradition of thought with respect to social class (e.g., Bourdieu & Passeron, 1990), its educational and cultural context may be sufficiently similar to those of other countries in Western Europe and North America (e.g., Markus & Kitayama, 1991; Muthukrishna et al., 2020) that the present results could plausibly generalize to these other countries. It is unclear, however, if our results generalize beyond these contexts: The pedagogical structure and intended goals of preschool in other countries, as well as the dynamics of social class, may be too dissimilar to those of France to allow generalization. Regarding *with whom*, we note that these studies were conducted in a region of France whose student population was relatively ethnically homogeneous (primarily White). Caution is warranted when generalizing the present results to more ethnically diverse student populations, especially since socialization practices—and thus the "cultural capital" (Bourdieu & Passeron, 1990) that children bring to the classroom—tend to vary across ethnic groups (e.g., Heath, 1983; Sabatier & Berry, 2008). Finally, regarding *how*, our methods arguably impose the weakest constraints on the generality of the present findings. Study 1 relied on unobtrusive observations of spontaneous classroom behavior and is thus likely to provide a veridical window onto SES differences in oral participation in France (and potentially Western Europe and North America, as discussed above). Study 2 relied on a combination of open-ended explanations and simple evaluation questions, which are face-valid measures of children's perceptions of their peers. However, the hypothetical scenario methodology in Study 2, as well as our reliance on only two classroom scenarios, are potential limitations whose effects on the generalizability of our conclusions are worth exploring in future work.

Conclusion

This study sheds new light on the causes of early socioeconomic disparities in school achievement. We found that early childhood education provides *unequal opportunities for engagement* to children from more versus less privileged socioeconomic backgrounds. Given the close link between engagement and achievement, this evidence shifts the focus away from perceived inadequacies in low-SES parents' knowledge and practices as a cause of early achievement gaps and spotlights the role that early childhood education might play in these disparities. Our results also hint at the self-reinforcing nature of these early SES differences in school engagement. Preschool students perceive differences in school engagement in ways that might further increase the school engagement of socioeconomically advantaged students over time and decrease the engagement of more disadvantaged students.

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