



**Why Do Preschools Fail to Level the Playing Field for Students of Lower Socioeconomic Status? The Role of Oral Interactions in the Classroom**

Journal:	<i>Psychological Science</i>
Manuscript ID	Draft
Manuscript Type:	Research Article
Keywords:	Language, Schools, Socioeconomic Status, Social Cognition

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Manuscripts

## Abstract

Socioeconomic status (SES) achievement gaps begin in preschool. Here, we investigated whether whole-class discussions—a core aspect of preschool education—put low-SES students at a disadvantage, amplifying these gaps. Specifically, we examined (1) SES differences in the quantity of oral participation during whole-class discussions, and (2) children’s perceptions of these differences, which have implications for their sense of belonging and competence. In Study 1 ( $N = 1236$  observations; 98 children), we found that low-SES students spoke less than their peers during whole-class discussions, even after accounting for differences in language proficiency. Study 2 suggested that peers’ perceptions may compound low-SES students’ disadvantage: Preschoolers ( $N = 94$ ) explained differences in oral participation mostly via internal factors (e.g., smarts) and evaluated children who participated more as more competent and warmer. Our results suggest that interventions to design class discussions that encourage participation by all students could help narrow SES achievement gaps.

*Keywords:* inequality, education, preschool, socioeconomic status, social class, video observations

Word count: 149 (150 max)

### Statement of Relevance

Although preschool is intended to level the playing field for children from different socioeconomic backgrounds, it fails to do so. Why? We examined whether whole-class discussions—a core aspect of the preschool curriculum—put low-SES children at a disadvantage. Indeed, when we analyzed extensive recordings of whole-class discussions, we found that low-SES children spoke considerably less than their peers, even after accounting for differences in language proficiency. This difference emerged for both solicited and unsolicited contributions. These results suggest that low-SES students have fewer opportunities to participate in class and build language skills. This disadvantage is then compounded by their peers' perceptions: Preschoolers explained the behavior of children who made oral contributions via 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 language practice and positive self-regard, preschool is shortchanging these children and likely amplifying achievement gaps.

Word count: 150 (150 max)

## Why Do Preschools Fail to Level the Playing Field for Students of Lower Socioeconomic Status? The Role of Oral Interactions in the Classroom

In many countries, socioeconomic status (SES) achievement gaps are observed very early (e.g., Bowey, 1995; Lonigan et al., 1998). Preschool is designed in part to reduce these initial inequalities. However, although preschool is overall beneficial for achievement (Huang, 2017), it does not in its current form act as an equalizer: Low-SES children enter first grade still lagging behind higher-SES children in terms of academic skills (Lee & Burkam, 2002; Maurin, 2007; Rocher, 2015). As these initial achievement gaps lay the groundwork for subsequent SES differences in educational outcomes, it is critical to understand why preschool fails to level the playing field. Here, we investigate one aspect of preschool that is likely to feed into these gaps: whole-class discussions, a core part of the preschool curriculum. Specifically, we investigate (1) whether children of higher (vs. lower) SES participate more during whole-class discussions, and (2) whether children who participate more are viewed by their peers as possessing more positive qualities, which is likely to boost their sense of belonging and competence, as well as legitimize SES differences in language skills.

### Are There SES Differences in Oral Participation?

In preschools in North America and Europe, children's participation is valued and expected during whole-class discussions that occur several times a day (e.g., MENRES, 2015; Millet & Croizet, 2016; Streib, 2011). A key objective of these sessions is to reduce SES gaps in language skills by encouraging *all* children to speak. Despite this goal, there are reasons to expect that preschools settings do not offer equal opportunities for oral participation and instead put low-SES children at a disadvantage.

One relevant factor is the *cultural mismatch* between low-SES students' home

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3 experiences and the norms and expectations of academic contexts. Schools value specific forms  
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5 of language and knowledge that are closer to the cultural dispositions developed in middle- and  
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7 high-SES families than in low-SES families (Bernstein, 1975; Bourdieu & Passeron, 1990;  
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9 Calarco, 2018; Heath, 1983; Kinzler, 2020; Michaels, 1981; Miller & Sperry, 2012; Sperry,  
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11 Sperry, & Miller, 2018; Stephens et al., 2012, 2014). During whole-class discussions, students  
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13 are expected to express their own opinions and share personal experiences—behaviors that are  
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15 more encouraged by middle- and high-SES parents than low-SES parents (Kusserow, 2004;  
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17 Lareau, 2003; Schieffelin & Ochs, 1986). In addition, because outside of school, children from  
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19 higher-SES families engage in activities that are more in tune with academic standards, such as  
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21 reading storybooks or visiting museums, their contributions are more likely to be valued  
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26 (Bradley et al., 2001; Lahire, 2019; Lamont & Lareau, 1988; Lareau, 2003). As a result, middle-  
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28 and high-SES students may feel more comfortable contributing during whole-class discussions  
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30 relative to low-SES peers with similar linguistic skills; teachers may also provide them with  
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32 more opportunities to speak relative to low-SES students with similar linguistic skills.  
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36 Another likely factor putting low-SES students at a disadvantage during whole-class  
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38 discussions is the widely-held *social class stereotype* that portrays low-SES students as less  
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40 competent (Durante & Fiske, 2017). Even young low-SES students are aware of this widespread  
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42 stereotype (Désert et al., 2009; Sigelman, 2012). The fear of being judged in light of negative  
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44 stereotype about their group may give rise to the experience of social identity threat for low-SES  
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46 students (Croizet & Claire, 1998). In turn, social identity threat might make whole-class  
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48 discussions feel psychologically “unsafe” for low-SES students, undermining their engagement  
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50 and leading them to contribute less than would be expected given their linguistic skill. The same  
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52 stereotypes could also lower teachers’ evaluation of low-SES students’ contributions, which  
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3 could prompt them to call on low-SES students less, beyond differences in linguistic skills.  
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5           Prior studies have documented that low-SES students' oral contributions are more likely  
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7 to be interrupted by teachers, who often perceive them as providing irrelevant information  
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9 (Heath, 1983; Michaels, 1981, 1991), and by their higher-SES peers, whose socialization  
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11 experiences lead them to feel entitled to take the floor (Streib, 2011). Although revealing, these  
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13 prior studies document only the qualitative aspects of oral participation. To our knowledge, no  
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15 studies have documented the *quantitative* differences in participation during classroom  
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17 discussions: Are there SES differences in the *amount* of language that students contribute?  
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19 Importantly, are these differences greater than one would expect simply based on students'  
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21 linguistic proficiency? If so, preschool settings may be depriving low-SES children of  
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23 opportunities to contribute to whole-class discussions, putting them at a disadvantage. In the  
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25 present research, we use intensive, naturalistic observations to examine whether SES differences  
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27 in frequency and duration of oral participation can be observed in preschool classrooms (Study  
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### 35 **How Do Children Perceive Differences in Oral Participation?**

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37           Low-SES students' disadvantage in preschool may be compounded by how their peers  
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39 *perceive* differences in oral participation. Young children notice differences among their peers in  
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41 the classroom (Butler, 2005; Cimpian, 2017). When trying to make sense of these differences,  
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43 children are more likely to appeal to inherent or intrinsic factors (e.g., intelligence) rather than  
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45 extrinsic ones (e.g., family wealth; Goudeau & Cimpian, 2021). We argue that this tendency—  
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47 known as the fundamental attribution error (Ross, 1977) or the inherence bias (Cimpian &  
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49 Salomon, 2014a, 2014b)—leads children to interpret differences in oral participation as a  
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51 consequence of inherent characteristics (e.g., language ability), essentially mistaking a social  
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(dis)advantage for differences in individual merit. Children who contribute more during whole-class discussions will be then perceived as more competent and socially skilled (e.g., Hussak & Cimpian, 2015). Peers' positive perceptions may in turn increase students' sense of belonging and competence, both of which are likely to enhance their subsequent academic engagement and achievement (e.g., Bandura, 1982; Phillips et al., 2020; Wiederkehr et al., 2015). To the extent that it is higher-SES students who provide most contributions during discussions, these perceptions could amplify and legitimize their advantages. In the present research, we also examined children's perceptions of differences in oral participation in an experimental study with preschoolers (Study 2).

### **Study 1: Are There SES Differences in Oral Participation?**

The goal of Study 1 was to examine whether participation in whole-classroom discussions differs as a function of preschoolers' SES. We video-recorded whole-classroom discussions and coded the frequency and duration of unsolicited and solicited participation. We hypothesized that compared to middle- and high-SES students:

**H1 (Frequency of Unsolicited Participation):** Low-SES students will be less likely to speak without being called on by the teacher (*H1a*), to interrupt another child (*H1b*), and to interrupt the teacher (*H1c*).

**H2 (Duration of Unsolicited Participation):** Low-SES students will speak for a shorter time when they are not called on (*H2a*), after interrupting another child (*H2b*), and after interrupting the teacher (*H2c*).

**H3 (Frequency of Solicited Participation):** Low-SES students will be less likely to be called on (*H3a*) and called on for follow-up (*H3b*).

**H4 (Duration of Solicited Participation):** Low-SES students will speak for a shorter time

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3 after being called on (*H4a*) and after follow-up questions from the teacher (*H4b*).  
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5 **H5 (Differences not Explained by Proficiency):** The differences tested under H1–H4 will  
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7 be observed even after adjusting for students' language proficiency. In other words, SES  
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9 differences in oral participation will not be accounted for by differences in language  
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11 competence, contrary to common deficit perspectives (e.g., Adair et al., 2017).  
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## 14 **Method**

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16 **Ethics.** This study has been approved by the Ethics Committee of the [*blinded for*  
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18 *review*] University.  
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21 **Participants.** Participants included 98 preschoolers from 4 classrooms of *Grande-*  
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23 *Section*, the last year in French preschools before first grade (47 girls, 51 boys; mean age = 5.79  
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25 years, *SD* = 0.40). Our sample size (4 classrooms) was determined in part by the logistical  
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27 constraints of this study: It can be disruptive for teachers and distracting for children to have  
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29 their classroom activities videotaped, and teachers may also be concerned about having their  
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31 behavior recorded. These considerations raise the possibility of selection bias: Perhaps the  
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33 teachers who agreed to participate might meaningfully differ from the ones who did not (e.g.,  
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35 more egalitarian, more experienced). However, this argument highlights the stringent nature of  
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37 our test: If we find the hypothesized SES differences in oral participation even in the classrooms  
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39 of teachers who were comfortable allowing researchers to observe their behavior, these  
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41 differences are likely to be even larger in the average preschool classroom.  
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47 Between 8 and 19 whole-class discussions were observed in each classroom (*M* = 12.5;  
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49 *SD* = 4.80), with a mean duration of 23 minutes and 23 seconds per session (*SD* = 8 minutes and  
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51 47 seconds). Ninety-eight children took part to the study, among which 43 were categorized as  
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53 low-SES and 51 as middle- or high-SES (4 undetermined; see below for details). A total of 1236  
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3 observations of individual oral participation were coded. The proportion of low- vs. middle- and  
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5 high-SES students did not differ across classrooms,  $\chi^2(3, N = 94) = 0.66, p = .658$ .

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

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19 A sensitivity analysis performed with G\*Power 3.1.9 (Faul et al., 2009) suggested that  
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21 our sample ( $N = 94$  students) was sufficient to detect a minimum effect size of  $d = 0.59$  with  
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23 80% power on a simple between-groups comparison. However, because our design relies on  
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25 intensive repeated observations of the same children, the estimate above is only a lower bound of  
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27 the statistical power of this study (May & Hittner, 2012; Snijders, 2005).

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

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49 Between three and five days of observations were performed in each classroom. All  
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51 videos were recorded and time-stamped with Noldus Media Recorder (version 2.5, 2013). At the  
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53 beginning of each day of observation, four cameras, filming children from different angles, were  
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3 installed in the area where the discussions would take place before the children arrived in the  
4 classroom. The recording was initiated before the beginning of each whole-class discussion by a  
5 researcher, whose presence was as unobtrusive as possible. Before starting the first observation,  
6 children were told that they will be video-recorded to help researchers better understand how  
7 children learn to speak during preschool. The footage from the four cameras was synchronized  
8 and aggregated using Noldus Observer XT software (Version 14.2, 2018). A coding scheme was  
9 established before data collection (see Figure S1 in the Supplementary Online Materials [SOM])  
10 and applied to code oral participation using Noldus Observer XT (Zimmerman et al., 2009). This  
11 software allows researchers to record and code a variety of behaviors than can occur  
12 simultaneously or consecutively over a very short period of time (e.g., children interrupting each  
13 other), producing detailed quantitative data (i.e., frequency and duration).

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28 **Coding solicited and unsolicited oral participation.** For each preschooler, we coded (1)  
29 the number of times they contributed to the discussion and (2) the duration of their contributions.  
30 Five different types of contributions were coded: (1) speaking after being called on by the  
31 teacher; (2) speaking after being called on again for follow-up; (3) speaking without being called  
32 on by the teacher; (4) speaking by interrupting another child; and (5) speaking by interrupting the  
33 teacher. These behaviors were grouped into two main categories: *solicited* participation  
34 (behaviors 1 and 2) and *unsolicited* participation (behaviors 3, 4, and 5). Oral participation was  
35 not coded when more than three children spoke at the same time because it was impossible to  
36 properly code for frequencies and durations. All sessions were coded independently by two  
37 researchers (average inter-rater reliability across categories:  $r = .61$ ). Disagreements were  
38 resolved through discussion.

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54 **Coding SES.** In social sciences, and in psychology in particular, it is typical to use  
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3 several different indicators (e.g., income, parental occupation) jointly to determine SES (Kraus &  
4 Stephens, 2012; Oakes & Rossi, 2003). For this study, the only indicator available from French  
5 school authorities was parental occupation, which is a good proxy for overall SES (Oakes &  
6 Rossi, 2003). SES classification was determined by the highest-level occupation held by either  
7 parent. The low-SES group included children of manual and administrative workers, other blue-  
8 collar workers (e.g., artisans, farmers), and unemployed persons. The middle- and high-SES  
9 group included children whose parents have middle-class occupations such as technicians,  
10 nurses, or educators, as well as children of managers, professors, and the professional and  
11 managerial elite (e.g., lawyers, doctors).  
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24 **Language proficiency measure.** Teachers were asked to rate each student's oral French  
25 proficiency level ("How do you estimate the oral proficiency level of this student?") on a scale  
26 from 1 = *low* to 4 = *high*. We used these ratings as measures of language proficiency because  
27 there is no standardized language assessment system in French preschools, and there is great  
28 variability across teachers in how they rate students' skills (e.g., smileys, points, colors). We note  
29 that adjusting for teachers' ratings in our analyses is conservative because these ratings could be  
30 biased against low-SES students. That is, teachers may underestimate low-SES students'  
31 proficiency due to some of the same factors that we hypothesize are preventing low-SES children  
32 from fully participating in classroom discussions (e.g., cultural mismatch, social class  
33 stereotypes). If we observe SES differences in oral participation even after adjusting for these  
34 (potentially biased) ratings, that would provide strong evidence for the claim that preschool  
35 settings *disadvantage* low-SES students.  
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## 51 **Results**

52 The analyses were performed using R version 3.4.3 (R Core Team, 2019), and the  
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3 packages *sandwich* (Zeileis et al., 2020), *fixest* (Berge, 2018), and *lmtest* (Zeileis & Hothorn,  
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5 2002). In our data, observations (i.e., individual children's oral contributions; level 1) were  
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7 nested within observation sessions (level 2) and classrooms (level 3), thereby violating the  
8  
9 assumption of independence of residuals. In such a case, multi-level models can be used, but  
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11 they produce biased estimates when the number of higher-level clustering units is low (e.g.,  
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13 Maas & Hox, 2005; Sommet & Morselli, 2017). Because we only had four classrooms (the  
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15 highest-level cluster), we instead analyzed our data with a generalized linear model with  
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17 classroom-session fixed effects (i.e., indicator variables for each classroom  $\times$  observation session  
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19 combination), which remove all variation *between* classroom-sessions and instead estimate the  
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21 pooled *within*-classroom-session relation between SES and oral participation. We computed  
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23 clustered standard errors to further account for the stratification of the data.  
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29 SES was contrast-coded so that we can compare low-SES children (coded  $-0.5$ ) with  
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31 middle- and high-SES children (coded  $+0.5$ ). The means and standard deviations reported below  
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33 adjust for classroom  $\times$  observation session fixed effects (see also Table S1 in the SOM).  
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36 Analyses that adjust for student gender are reported in Table S2 in the SOM.

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38 Each of the analyses below maps directly onto one of the first four hypotheses, which  
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40 posit SES differences in the frequency and duration of unsolicited and solicited participation in  
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42 classroom discussions. The fifth hypothesis is that these SES differences in oral participation are  
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44 not accounted for by SES differences in actual language proficiency (contrary to deficit  
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46 perspectives). We will report these results in parentheses after each result pertaining to H1–H4.  
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50 **Frequency of unsolicited oral participation (H1).** The total number of times children  
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52 spoke (averaged between the two coders) was analyzed with negative binomial regressions to  
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54 account for the distribution and overdispersion of the outcomes.  
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3        **Number of times children spoke without being called on (H1a).** The negative binomial  
4 regression revealed that middle- and high-SES children spoke without being called on about 1.71  
5 times as often as their low-SES peers, *Incidence Rate Ratio (IRR)* = 1.71,  $p < .001$ , 95% *CI* =  
6 [1.49; 1.97] (adjusting for proficiency: *IRR* = 1.47,  $p < .001$ , 95% *CI* = [1.22; 1.78]), consistent  
7 with H1a and H5 (see Figure 1A and Table S1).  
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12        **Number of times children interrupted another child (H1b).** Middle- and high-SES  
13 children interrupted another child about 1.74 times as often as their low-SES peers, *IRR* = 1.74,  $p$   
14  $< .001$ , 95% *CI* = [1.45; 2.08] (adjusting for proficiency: *IRR* = 1.41,  $p = .003$ , 95% *CI* = [1.12;  
15 1.78]), consistent with H1b and H5 (see Figure 1B and Table S1).  
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20        **Number of times children interrupted the teacher (H1c).** Middle- and high-SES children  
21 interrupted the teacher about 1.79 times as often as their low-SES peers, *IRR* = 1.79,  $p < .001$ ,  
22 95% *CI* = [1.51; 2.12] (adjusting for proficiency: *IRR* = 1.52,  $p < .001$ , 95% *CI* = [1.23; 1.87]),  
23 consistent with H1c and H5 (see Figure 1C and Table S1).  
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28        **Duration of unsolicited oral participation (H2).** We computed mean speech duration  
29 by dividing the total duration of each child's speech during a session by the number of times the  
30 child spoke in that session. These durations therefore refer to the average time children speak per  
31 contribution. Duration was analyzed with a linear regression.  
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36        **Mean speech duration without being called on (H2a).** Low-SES children spoke  
37 significantly less when they had not been called on by the teacher ( $M = 1.66$  s,  $SD = 4.46$ ) than  
38 their middle- and high-SES peers ( $M = 4.04$  s,  $SD = 8.97$ ),  $b = 1.93$ ,  $SE = 0.45$ ,  $p < .001$   
39 (adjusting for proficiency:  $b = 1.98$ ,  $SE = 0.47$ ,  $p < .001$ ), consistent with H2a and H5 (see Figure  
40 1D and Table S1).  
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45        **Mean speech duration after interrupting another child (H2b).** Low-SES children spoke  
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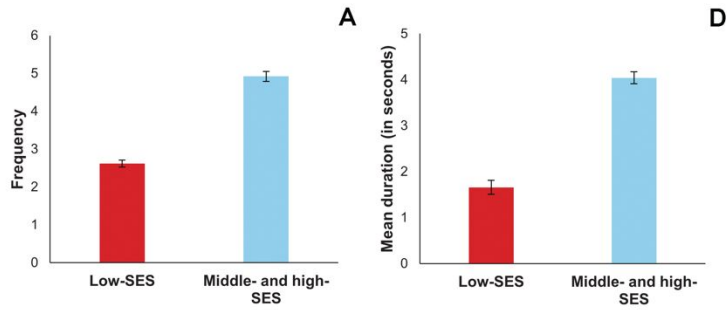
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3 significantly less after interrupting another child ( $M = 0.49$  s,  $SD = 0.91$ ) than their middle- and  
4 high-SES peers ( $M = 1.15$  s,  $SD = 2.22$ ),  $b = 0.54$ ,  $SE = 0.12$ ,  $p < .001$  (adjusting for proficiency:  
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8  $b = 0.44$ ,  $SE = 0.13$ ,  $p < .001$ ), consistent with H2b and H5 (see Figure 1E and Table S1).  
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10 ***Mean speech duration after interrupting the teacher (H2c).*** Low-SES children spoke  
11 significantly less after interrupting the teacher ( $M = 0.66$  s,  $SD = 1.24$ ) than their middle- and  
12 high-SES peers ( $M = 1.51$  s,  $SD = 3.13$ ),  $b = 0.66$ ,  $SE = 0.16$ ,  $p < .001$  (adjusting for proficiency:  
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17  $b = 0.61$ ,  $SE = 0.19$ ,  $p = .002$ ), consistent with H2c and H5 (see Figure 1F and Table S1).  
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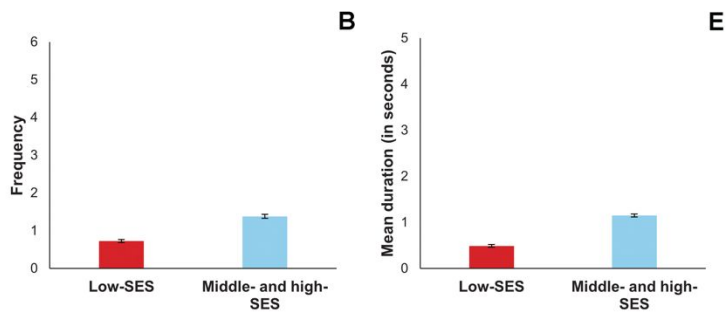
### Unsolicited oral participation

■ Low-SES ■ Middle- and high-SES

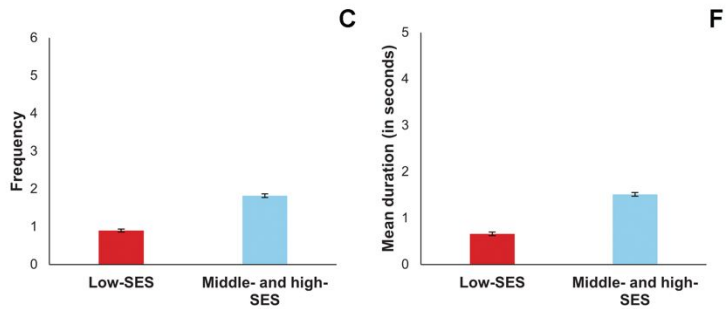
#### Oral participation without being called on



#### Oral participation after interrupting another child



#### Oral participation after interrupting the teacher



**Figure 1.** Unsolicited oral participation (predicted/marginal values). Per-session mean frequencies (A, B and C) and durations (D, E and F) of unsolicited oral participation for low-SES vs. middle- and high-SES students. Error bars represent  $\pm 1 SE$ .

### Frequency of solicited oral participation (H3).

*Number of times children spoke after being called on (H3a).* Middle- and high-SES children spoke about 1.46 times as often after being called on by the teacher as low-SES children did,  $IRR = 1.46, p < .001, 95\% CI = [1.29; 1.67]$  (adjusting for proficiency:  $IRR = 1.34, p < .001, 95\% CI = [1.17; 1.52]$ ), consistent with H3a and H5 (see Figure 2A and Table S1).

### *Number of times children spoke after being called on again for follow-up (H3b).*

Middle- and high-SES children spoke about 1.42 times as often after being called on again for follow-up than low-SES children did,  $IRR = 1.42, p = .007, 95\% CI = [1.10; 1.83]$  (adjusting for proficiency:  $IRR = 1.41, p = .032, 95\% CI = [1.03; 1.92]$ ), consistent with H3b and H5 (see Figure 2B and Table S1).

### Duration of solicited oral participation (H4).

*Mean speech duration after being called on (H4a).* 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 ( $M = 7.86$  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 H4a and H5 (see Figure 2C and Table S1).

*Mean speech duration after being called on again for follow-up (H4b).* 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 ( $M = 1.64$  s;  $SD = 4.06$ ),  $b = 0.79, SE = 0.20, p < .001$  (adjusting for proficiency:  $b = 0.73, SE = 0.23, p < .001$ ), consistent with H4b and H5 (see Figure 2D and Table S1).

To summarize, we found that low-SES children speak less than their middle- and high-SES peers during whole-class discussions. This difference was observed when examining both



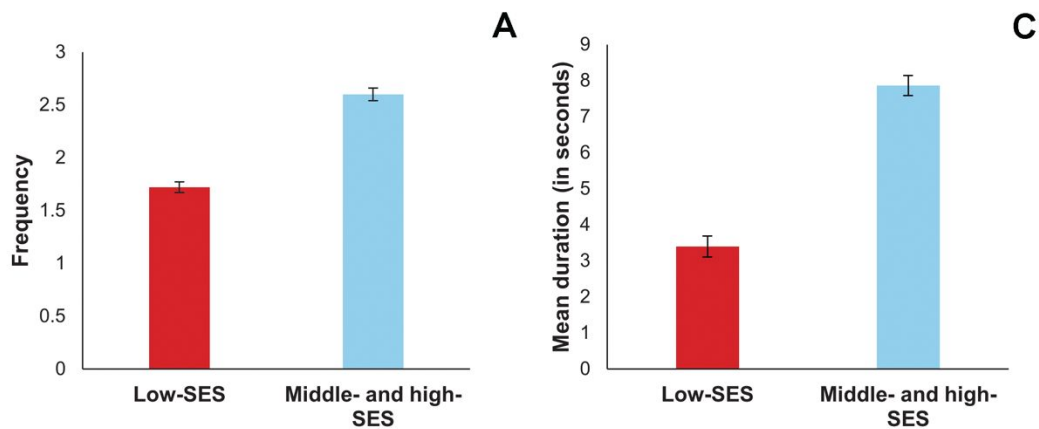
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3 solicited participation and instances in which children “took the floor” themselves. It was also  
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5 observed after accounting for children’s language proficiency, and remained substantial in size,  
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7 suggesting that it does not reflect ability differences. This evidence suggests that the format of  
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9 typical whole-class discussions may not be conducive to fostering the oral participation of  
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11 children from low-SES settings, which is likely to put them at a disadvantage.  
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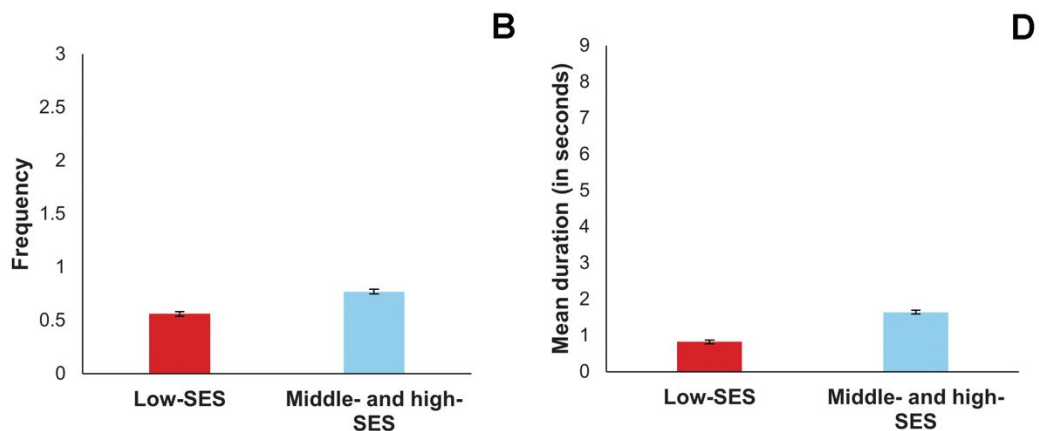
## Solicited oral participation

■ Low-SES    ■ Middle- and high-SES

### Oral participation after being called on



### Oral participation after being called on for follow up



**Figure 2.** Solicited oral participation (predicted/marginal values). Per-session mean frequencies (**A** and **B**) and durations (**C** and **D**) of solicited oral participation for low-SES vs. middle- and high-SES students. Error bars represent  $\pm 1 SE$ .

## Study 2: How Do Children Perceive Differences in Oral Participation?

SES differences in oral participation may amplify the disadvantage that low-SES students face in preschool by shaping children's *perceptions* of themselves and each other—especially if children tend to infer that those who contribute more in classroom discussions 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 oral participation similar to those demonstrated by middle- and high-SES children in Study 1.

We first 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 inference bias in children's explanations (for reviews, see Cimpian & Salomon, 2014a, 2014b; 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're smart"). Second, we measured children's perceptions of the same fictional peer along the two fundamental dimensions of social judgment: competence and warmth (e.g., 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

**Participants.** Participants included 94 preschoolers from five classrooms of *Grande-Section* (53 girls, 41 boys,  $M_{\text{age}} = 5.52$  years,  $SD_{\text{age}} = 0.32$ ). Based on their parental occupation, 34 children were categorized as low-SES and 55 were categorized as middle- and high-SES (5 undetermined). The proportion of low- vs. middle- and high-SES students did not differ across classrooms,  $\chi^2(4, N = 89) = 3.57, p = .467$ . A sensitivity analysis performed with G\*Power 3.1.9 (Faul et al., 2009) suggested that our sample ( $N = 94$  students) was sufficient to detect a

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3 minimum effect size of  $d = 0.25$  with 80% power on a one-tail t-test (test against the midpoint).  
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5       **Materials.** Based on the patterns observed in Study 1, we developed two scenarios that  
6 illustrate typical middle- and high-SES patterns of participation in whole-class discussions.  
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8 Before hearing the scenarios, children were presented with a picture of a children at an  
9 unfamiliar preschool during a whole-class discussion as a means of making these hypothetical  
10 scenarios more concrete. The first scenario focused on the *frequency* of solicited oral  
11 participation and described a situation in which the teacher calls on a fictional child more often  
12 than other children (“When the teacher asks a question to the class, several children raise their  
13 hands. However, the teacher calls on [Theodore/Zélie] more often than other children”). The  
14 second scenario focused on the *duration* of solicited oral participation and described a situation  
15 in which a fictional child speaks for longer than other children (“When the teacher asks a  
16 question to the class, several children raise their hands. When the teacher asks [Leopold/Suzon] a  
17 question, [Leopold/Suzon] talks longer than the other children”). The order of presentation of the  
18 scenarios and the gender of the protagonist in each scenario were counterbalanced across  
19 participants.  
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37       **Open-ended Explanations.** After each scenario, children were asked to explain the  
38 protagonist’s behavior (“Why do you think [Theodore/Zélie] is called on more often than other  
39 children?” for Scenario 1 and “Why do you think [Leopold/Suzon] talks longer than the other  
40 children?” for Scenario 2). If the child said they did not know, two follow-up questions were  
41 asked (e.g., “All answers are right in this game. Do you want to try to guess? Why [...]?”). If the  
42 child still did not answer after these follow-ups, the experimenter moved on to the next question.  
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51       Children’s answers were coded independently by two researchers using four categories:  
52 (1) inherent factors (e.g., “because she/he is smart”, “because she/he has a lot to tell”), (2)  
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3 extrinsic factors (e.g., “because the teacher likes her/him”, “because the other children are  
4 disobedient”), (3) incoherent or irrelevant explanations (e.g., “because she/he is small”), and (4)  
5 no explanation (e.g., “I don’t know”). Inter-rater reliability was high (87.2% agreement, Cohen’s  
6  $\kappa = 0.80$  for Scenario 1 and 92.6%, Cohen’s  $\kappa = 0.88$  for Scenario 2), and disagreements were  
7 resolved by discussion.  
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14 ***Competence and Warmth Evaluations.*** For each scenario, after the open-ended  
15 explanation question, children were asked to evaluate the protagonist along four ratings linked to  
16 the two fundamental dimensions of social judgments (i.e., competence and warmth; Fiske et al.,  
17 2007) on scales ranging from 1 (*a lot less than other children*) to 4 (*a lot more than other*  
18 *children*). Two of the ratings pertained to the *competence* dimension: (1) perceived intelligence  
19 (“How intelligent do you think [child] is? Do you think [child] is more intelligent than the other  
20 children, or less intelligent than the other children?”; follow-up: “Do you think [child] is a little  
21 [more/less] intelligent, or a lot [more/less] intelligent than the other children?”) and (2) perceived  
22 academic achievement (“How good at school do you think [child] is? Do you think [child] is  
23 better at school than the other children, or worse at school than the other children?”; follow-up:  
24 “Do you think [child] is a little [better/worse] at school, or a lot [better/worse] at school than the  
25 other children?”). The other two ratings pertained to the *warmth* dimension: (3) perceived  
26 niceness (“How nice do you think [child] is? Do you think [child] is nicer than the other children,  
27 or less nice than the other children?”; follow-up: “Do you think [child] is a little [nicer/less nice]  
28 or a lot [nicer/less nice] than the other children?”), and (4) teacher’s liking of the protagonist  
29 (“How much do you think the teacher likes [child]? Do you think the teacher likes [child] more  
30 than the other children, or less than the other children?”; follow-up: “Do you think the teacher  
31 likes [child] a little [more/less] or a lot [more/less] than the other children?”). The order of the  
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four questions was counterbalanced across children.

**Data Analysis.** 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  $\chi^2$  tests of independence. 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

### Scenario 1 (frequency of solicited oral participation).

**Open-ended Explanations.** The frequency of each type of explanation (i.e., inherent, extrinsic, incoherent/irrelevant, no explanation), along with a few examples, 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,  $\chi^2(1, N = 53) = 34.89, p < .001$ .

**Competence and Warmth Evaluations.** Presentation order of the scenarios and questions did not affect children's ratings ( $ps > .05$ ), so we will not discuss them 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,  $t(89) = 4.74, p < .001, d = 0.50, 95\% \text{ CI} = [0.28, 0.72]$ ; as having higher

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3 academic achievement,  $t(89) = 5.32, p < .001, d = 0.56, 95\% \text{ CI} = [0.34, 0.78]$ ; as being nicer,  
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5  $t(91) = 7.01, p < .001, d = 0.73, 95\% \text{ CI} = [0.50, 0.96]$ ; and as being more liked by the teacher,  
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7  $t(85) = 6.25, p < .001, d = 0.67, 95\% \text{ CI} = [0.44, 0.91]$ . Descriptive statistics are presented in  
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10 Table 3.

### 11 12 **Scenario 2 (length of solicited oral participation).**

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14 **Open-ended Explanations.** The frequency of each type of explanation (i.e., inherent,  
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16 extrinsic, incoherent/irrelevant, no explanation), along with examples, is reported in Table 1. As  
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18 expected, children used significantly more inherent than extrinsic factors (see examples in Table  
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20 1) to explain why a fictional child made longer contributions to classroom discussions,  $\chi^2(1, N =$   
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22  $54) = 46.30, p < .001$ .

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

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33 One-sample  $t$  tests against the scale midpoint revealed that, similar to Scenario 1, the  
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35 fictional child who made longer contributions to classroom discussions was perceived as  
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37 possessing more positive characteristics than other children in their class: as being more  
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39 intelligent,  $t(91) = 3.16, p = .002, d = 0.33, 95\% \text{ CI} = [0.12, 0.54]$ ; as having higher academic  
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41 achievement,  $t(89) = 3.93, p < .001, d = 0.41, 95\% \text{ CI} = [0.20, 0.63]$ ; and as being nicer,  $t(90) =$   
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43  $2.58, p = .011, d = 0.27, 95\% \text{ CI} = [0.06, 0.48]$ . However, the protagonist in Scenario 2 was not  
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45 rated as being better liked by the teacher than other children in their class,  $t(87) = 1.20, p = .241,$   
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47  $d = 0.13, 95\% \text{ CI} = [-0.08, 0.34]$  (see Table 3 for descriptive statistics).

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51 The findings of Study 2 suggest that preschoolers explain differences in oral participation  
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53 as the consequence of intrinsic characteristics. In addition, children who contribute more  
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3 frequently and speak longer during classroom discussions are perceived as overall more  
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5 competent and warmer than their peers.  
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### 7 8 **General Discussion**

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10 To date, few studies have examined the processes that perpetuate SES achievement gaps  
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12 at the earliest stages of schooling. We tackled this question by investigating whole-class  
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14 discussions, a core part of the preschool curriculum in Europe and North America. Although  
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16 prior ethnographic research had provided a qualitative description of how low-SES children's  
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18 oral contributions are received in the classroom, the goal of the present research was to assess  
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20 SES differences in participation quantitatively, with intensive observations of whole-class  
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22 discussions. Our observations, collected from four preschool classrooms in France, showed  
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24 substantial SES differences in the number and duration of oral contributions (Study 1).  
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26 Moreover, these differences were not accounted for by SES variations in oral language  
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28 proficiency: We found that low-SES students contributed less even adjusting for their level of  
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30 proficiency, which suggests that preschool is shortchanging these students of opportunities to  
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32 contribute to class discussions, and of the social and academic benefits of such contributions.  
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38 Regarding these benefits, we also found that SES differences in oral participation shape  
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40 how students are *perceived* by their peers. In Study 2, preschoolers explained differences in oral  
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42 participation as a consequence of children's inherent characteristics. Preschoolers also perceived  
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44 students who contributed more as more competent and likable. These results suggest that the  
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46 patterns of oral participation typical of middle- and high-SES students increase the extent to  
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48 which they are valued by their peers, potentially reinforcing their patterns of participation and  
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50 setting them up for academic success in the future.  
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54 A limitation of this research is that we did not examine the mechanisms underlying the  
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3 observed SES differences in participation. We expected such differences based both on the well-  
4 documented cultural mismatch between low-SES students' experiences at home and at school  
5 and on the negative stereotypes about low-SES students' competence. These factors may make  
6 low-SES children less likely to take and hold the floor and teachers less likely to call on them.  
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8 However, future research should investigate whether these (or other) mechanisms are in fact  
9 responsible for SES differences in preschoolers' oral participation. We also reiterate that SES  
10 differences in oral participation are not simply a function of preexisting SES differences in  
11 language proficiency. Adjusting for this variable did not affect the conclusions of our analyses,  
12 so—contrary to the deficit perspective held by many teachers and administrators (e.g., Adair et  
13 al., 2017)—it is clear that low-SES children do not participate less simply because they are less  
14 proficient.

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Based on this research, we argue that it is desirable to design whole-class discussions to promote more equal participation. For example, one means of doing so 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 model that all topics are interesting—not just museums and the arts but soccer and TV shows as well.

To conclude, the present research investigated SES disparities at the earliest stages of education—in preschool—by focusing on (perceptions of) patterns of participation in whole-class discussions. Although these discussions are intended to help *all* children develop their oral language skills, they seem unlikely to do so because (1) participation differ according to SES, even after adjusting for language skills, and because (2) participation differences are perceived in ways that might further increase (vs. decrease) the extent to which more (vs. less)

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3 socioeconomically advantaged students feel they belong and can succeed in school. This study  
4 therefore sheds new light on the early roots of SES achievement gaps, and it does so precisely in  
5 the educational setting that was designed as a tool to combat these gaps.  
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### 11 12 **Open Practices Statement**

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14 The coding scheme, data, and R scripts used in the analysis of Study 1 are available on  
15 Open Science Framework at the URL: [https://osf.io/2xd4u/?view\\_only=](https://osf.io/2xd4u/?view_only=bae22e868a304e7f86f60bd9b4941515)  
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17 [bae22e868a304e7f86f60bd9b4941515](https://osf.io/2xd4u/?view_only=bae22e868a304e7f86f60bd9b4941515). Videos are not available due to restrictions of General  
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19 Data Protection Regulation rules regarding the anonymity of children. The R scripts as well as  
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21 the data for Study 2 are also available on OSF: [https://osf.io/5a4fm/?view\\_only=](https://osf.io/5a4fm/?view_only=b3fdcdb509474b49920cb04ce9f0ba14)  
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### 28 29 **Competing interests**

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31 Authors declare no competing interests.  
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### 33 34 **Supplementary Materials**

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36 Supplementary Materials include Figure S1 and Tables S1 and S2.  
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## Tables

**Table 1**

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

	Scenario 1	Examples	Scenario 2	Examples
Inherent factors	48 (51.06%)	“s/he is nicer”; “s/he is wiser”; “s/he raise his/her hand more often”	52 (55.32%)	“she wants to explain more things”; “s/he has a lot to say”; “s/he works hard”
Extrinsic factors	5 (5.32%)	“the teacher likes her/him”; “the other children make trouble”	5 (5.32%)	“the question was longer”; “it was her birthday”
Incoherent or irrelevant	17 (18.09%)	“because there is a lot of children”; “because we are in school”	14 (14.90%)	“we need to listen to the teacher”; “because he says a sentence”
No explanation	24 (25.53%)	“I don’t know”	23 (24.47%)	“I don’t know”

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

**Table 2**

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

	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.

\*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$

**Table 3***Mean (SD) of Competence and Warmth Evaluation Scores for Scenarios 1 and 2*

	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)

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

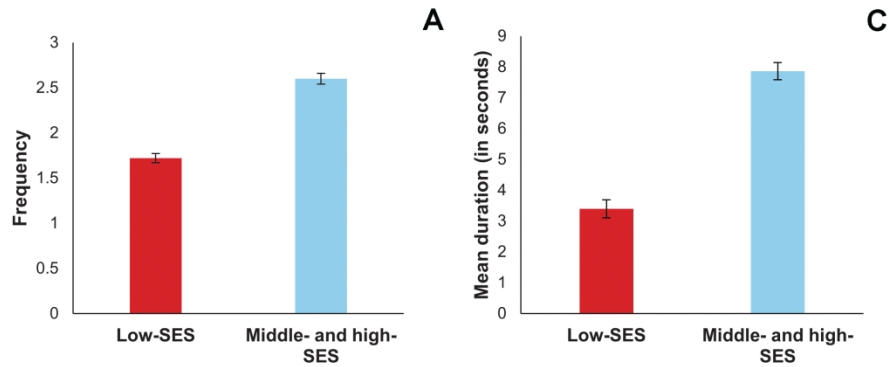
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## Solicited oral participation

■ Low-SES ■ Middle- and high- SES

### Oral participation after being called on



### Oral participation after being called on for follow up

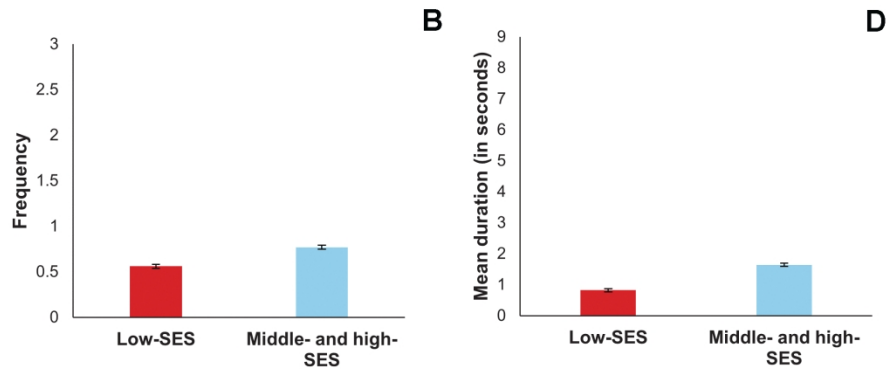


Figure 2. Solicited oral participation (predicted/marginal values). Per-session mean frequencies (A and B) and durations (C and D) of solicited oral participation for low-SES vs. middle- and high-SES students. Error bars represent  $\pm 1$  SE.

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