

Patterns of Classroom Organization in Classrooms Where Children Exhibit Higher and Lower Language Gains

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Abstract

Previous research suggests that the ways in which early childhood classrooms are organized may facilitate children's language learning. However, different measures of classroom organization often yield inconsistent findings regarding child outcomes. In this study, we investigated multiple aspects of classroom organization across two time points in classrooms where children made varying language gains. Using a purposeful sample of 60 early childhood classrooms, 30 in which children made higher language gains and 30 in which children made lower language gains, we explored organization of the physical classroom literacy environment, classroom management, classroom time, and classroom activities. *Research Findings:* Results indicated that organization of classroom time and classroom activities, but not of the classroom literacy environment nor of classroom management, differed across classrooms. Differences between classrooms were particularly salient in the fall. *Practice or Policy:* Findings suggest similarities and differences in the organizational patterns of classrooms, both at the start of the school year and across time. This has implications for how early childhood classrooms are organized to facilitate children's language learning and highlights the importance of supporting teachers with establishing classroom organization early in the school year. Furthermore, these results emphasize the value of using multiple measures when exploring classroom organization.

Patterns of Classroom Organization in Classrooms Where Children Exhibit Higher and Lower Language Gains

Early language development is critical for children's long term academic outcomes (Kendeou et al., 2009; Schleppegrell, 2012; Snow et al., 1998). Given that most young children attend some type of nonparental care in the years prior to kindergarten (Cui & Natzke, 2020), early childhood (EC) teachers play a critical role in supporting this language development. Unfortunately, evidence suggests that current language learning opportunities for children in EC classrooms is less than optimal (Dwyer & Harbaugh, 2020; Justice et al., 2008; Pelatti et al., 2014; Wright & Neuman, 2014).

Theoretical models of language-learning identify the critical role of environmental inputs in children's development (see Owens, 2016 for review). Given the importance of these inputs, how classrooms are structured is particularly important for facilitating language-learning opportunities. In other words, the ways that teachers organize both materials and opportunities matter for children's language-learning experiences (Essa & Burnham, 2020; Kostelnik et al., 2018). However, despite its importance, there is minimal literature regarding how EC teachers working with preschool-aged children structure their classrooms to promote language-specific outcomes. There is a critical need for more exploratory research regarding classroom organization and how this supports children's language development. As such, we based our analytic approach on the "beating the odds" and "effective teachers" research literatures which relied on purposeful sampling of schools and educators to identify characteristics that seemed to distinguish those that were most effective in promoting children's reading gains (e.g., Langer, 2001; Taylor, Pearson, et al., 2000; Taylor, Peterson, et al., 2002). Specifically, researchers in these studies used specific criteria to identify classrooms based on children's performance as

they were interested in understanding how aspects of practice supported children's reading outcomes. In the current study, we apply such purposeful sampling to understand classroom organization features facilitative of language gains. Specifically, this study takes advantage of rich observational data from 60 classrooms, 30 in which children demonstrated higher language gains and 30 in which children demonstrated lower language gains, to comprehensively examine how organization shapes environments in these contexts.

Classroom Organization

Classroom organization is a foundational aspect of setting the context for language learning. McLean et al. (2016) define classroom organization as including "both the physical characteristics of the classroom as well as the techniques used by the teacher to promote efficient use of time" (p. 46). Thus, it includes both features of the environment (i.e., availability of physical resources and the organization of such resources for children's use) and elements of how time is used throughout the day. Prior research has examined this organization in multiple ways.

One common mechanism is examining the physical environment (Neuman & Roskos, 1992; Smith et al., 2002) via focusing on the structure of the environment (Guo et al., 2012; Mashburn et al., 2008). Researchers have used different measures for examining the available materials (e.g., writing materials, books, print) and access to those within environments, specifically within the context of the literacy environment (Dynea et al., 2018). How the environment is structured has implications for access to language-learning opportunities that children might have throughout the day (Baroody & Diamond, 2014). For example, access to books might provide opportunities for children to engage in shared reading and conversations about the book, furthering their language skills. Thus, both the materials that are available and

how teachers organize these materials for children's use are important.

Additional research has indicated that other aspects of classroom organization may be more predictive of children's outcomes than the physical literacy environment (Mashburn et al., 2008; Sabol et al., 2013). As such, researchers have also examined process quality-related aspects of classroom organization. This includes a variety of enacted practices around behavior management, perceived organization of time and routines, and the extent to which learning activities are designed to actively engage children (Mashburn et al., 2008). This is commonly measured as part of the Classroom Organization Domain in the *Classroom Assessment Scoring System* (CLASS; Pianta et al., 2006). Whereas the CLASS may give a general sense of the process quality of overall classroom organization, recent reviews have found minimal associations between Classroom Organization and children's outcomes (Aikens et al., 2021; Perlman et al., 2016). In fact, there have been mixed findings in the literature regarding associations between children's outcomes and measures of the physical environment and of the global organizational quality of classrooms. Yet, despite these mixed findings, measures such as the CLASS continue to be used broadly by researchers (Aikens et al., 2021) and also factor heavily in policies and in evaluations of EC classroom quality (Quality Compendium, 2021).

Another way to think about classroom organization is through the allocation and structure of time within a classroom. Recent research has noted the importance of, and variability in, instructional and non-instructional time in the classroom (Day et al., 2015; Pianta et al., 2020). Non-instructional time is commonly defined as activities in the classroom that do not explicitly focus on instruction intended to facilitate learning (Day et al., 2015). It includes time when children are off-task or are engaged in activities such as lining up, waiting for their teacher, or listening to directions (Day et al., 2015). A highly organized classroom may minimize non-

instructional time as classrooms with stronger organization may have clearer expectations for students, which in turn can reduce the amount of time spent on directions or in transition.

Furthermore, a well-organized and managed classroom may reduce the amount of disruptive behaviors children exhibit, which can lead to children spending less time in non-instructional activities (McLean et al., 2020). Classrooms with lower amounts of non-instructional time may have more opportunities for language-learning activities. In fact, McLean and colleagues (2016) found that reductions in off-task and transition time, two key components of non-instructional time, across the first-grade year were associated with higher levels of children's vocabulary skills at the end of the year.

However, other studies have conjectured that some types of non-instructional time may be more or less associated with children's opportunities for, and actual, learning in the classroom. For example, Day et al. (2015) split non-instructional time into two categories: productive non-instructional time, which included time spent switching between activities and listening to teachers' explanations of activities and expectations, and non-productive non-instructional time, which included off-task behaviors, student-initiated disruptions, and transitions and waiting time. Importantly, they found that first grade children in classrooms with more non-productive non-instructional time made lower literacy gains than children in classrooms with lower amounts of non-productive non-instructional time. However, little is known about how non-instructional time looks in early education and care settings, and how it may create or hinder opportunities for children's language learning.

In addition to the overall time spent in learning activities, *how* teachers structure these activities is a key aspect of classroom organization (Fuligni et al., 2012). In fact, the nature of the activities offered to children and the variability in time spent in those specific activities may also

have implications for language-learning opportunities (Baroody & Diamond, 2014). For example, large-scale studies have taken a snapshot approach where observers capture individual children's activities over a brief period of time, and then cycle through other children before returning to the first child, providing a window into children's moment-by-moment activities in EC classrooms (Chien et al., 2010; Fuligni et al., 2012). Through this approach, Chien and colleagues (2010) found that although children, on average, spent more time in free play than any other activity, there were meaningful profiles that indicated different patterns of children's activities. Specifically, there were two activity profiles in which children demonstrated greater gains in language across the year: 1) profiles with higher levels of teacher instruction, either in individual or group settings; and 2) profiles with high levels of opportunities for scaffolded learning. Building on this work and taking a more holistic perspective of the day, Fuligni and colleagues (2012) found that children in classrooms characterized by greater balance, more time spent in structured activities, both whole and small group, and less time in free play (32% of time in free play) made greater gains in language than children in classrooms where more time was spent in free play (61% of time in free play). However, whereas these studies characterized classroom activities by grouping patterns, they do not capture specific types of activities that commonly occur in EC classrooms (e.g., circle time), each of which may provide different language learning opportunities. For example, spending time in a large group engaged in shared book reading may offer different opportunities than large-group circle time (Zhang et al., 2015). Furthermore, activities such as circle time, free choice time, and music are hallmarks of how EC teachers structure their classroom time. Therefore, understanding their contributions to language learning has direct, practical applications.

Variability in EC Classrooms Across the School Year

EC classrooms are dynamic places that shift over time to accommodate learners, content, and the physical environment (Bronfenbrenner, 1979; Cohen et al., 2003). As such, it is reasonable to anticipate that classroom organization might change across the year with potential implications for children’s language learning. Indeed, recent research specifically using the CLASS has found differences across the year. For example, Gandhi et al. (2021) found that Classroom Organization was lower in the fall compared to spring in EC classrooms. Time spent in instruction versus non-instruction may also differ. In a study of first grade classrooms, McLean et al. (2016) found that time children spent in transitions decreased but that changes in off-task time from fall to spring were more variable. Similarly, Day et al. (2015) found that, on average, productive non-instructional time decreased from fall to spring, although unproductive non-instructional time did not change across the year. Finally, one might anticipate changes to both the physical literacy environment as well as the structure of activities based on developmentally appropriate practices and teachers shifting to accommodate the needs and interests of the children in their classrooms (Essa & Burnham, 2020; Kostelnik et al., 2018).

The Current Study

Given the range of what might be considered part of classroom organization and the potential differences across time, the purpose of this study was to investigate classroom organization in EC classrooms in which children exhibited higher and lower language gains across the school year. Consistent with approaches used in the “beating the odds” and “effective teachers” research literature (Langer, 2001; Taylor, Pearson, et al., 2000; Taylor, Peterson, et al., 2002), we included classrooms with wide variation in children’s language gains. These literatures suggest specific characteristics and practices which may distinguish teachers, classrooms, and schools that are most effective in promoting children’s reading gains. Thus, in grounding our research within these approaches, we set out to explore if certain features of

classroom organization promote children's language development by investigating if classrooms in which children made higher language gains provide differing patterns of organization than those in which children made lower language gains.

Specifically, we were interested in understanding multiple aspects of classroom organization represented in the literature but often investigated separately and in comparing these features of classroom organization across two different occasions during an academic year. We examined organization of the physical classroom literacy environment, classroom management, classroom time, and classroom activities both within and between classrooms in which children made higher and lower language gains. We had three research aims, the findings of which should provide insight into potential differences in organizational practices both within, and between, higher and lower language gains classrooms:

Aim 1: Describe the classroom organization in classrooms where children made higher language gains and lower language gains in both the fall and the spring.

Aim 2: Compare classroom organization within groups (higher language gains classrooms and lower language gains classrooms) across time (fall to spring).

Aim 3: Compare classroom organization across groups (higher language gains to lower language gains) within time (fall and spring).

Method

Participants

Data for this study came from a subset of 60 EC classrooms ($N = 489$) that participated in a larger project evaluating language and literacy professional development provided to EC teachers working with preschool-aged children by one Midwestern state's Department of Education. The professional development had limited effects on classroom practices, specific to

phonological awareness and writing, and no effects on any measures of children's language or literacy learning (for additional details, see Piasta, Farley, et al., 2020; Piasta, Justice, et al., 2017). As part of the larger project, research staff administered the Clinical Evaluation of Language Fundamentals Preschool-2 (CELF-P2; Semel et al., 2004) to participating children, and teachers and families completed background demographic surveys. All procedures for both the larger project and the subsequent analysis presented here were approved through the University Institutional Review Board.

Classrooms included in the current analytic sample were required to be center- or school-based (i.e., not family childcare), have both fall and spring video observation data and teacher questionnaire data, and have language assessment data for at least three children who did not have individualized education plans (IEPs). Classrooms with fewer than three children were excluded from the sample because we were not confident in deriving conclusions based on only one or two children. Additionally, classrooms in which the only available language assessment data was from children with IEPs were excluded from analyses due to the possibility that changes in the children's language ability was a result of additional, external supports or services received, rather than from typical classroom instruction.

From the pool of eligible classrooms that met the inclusion criteria above ($n = 375$), we purposefully selected those in which children exhibited the highest or lowest language gains relative to the larger sample. Full details of the selection process and corresponding analyses are provided at DOI: [10.17605/OSF.IO/6QWRH](https://doi.org/10.17605/OSF.IO/6QWRH). In brief, we selected up to five children in each classroom to complete assessments for the larger project. Employing a latent change framework (McArdle & Hamagami, 2001), we used children's observed scores on the three core subtests (Expressive Vocabulary, Sentence Structure, Word Structure) of the CELF-P2 in the fall and

spring of a single academic year to calculate language change scores (Ferrer & McArdle, 2010). These language change scores represented the fall-to-spring change in standard deviation units, accounting for child age and number of days between measurement occasions.

We averaged across children enrolled in the same classroom to derive the average language change made in each classroom and limited the sample to those in which within-classroom language change was consistent (i.e., within-classroom *SD* below 0.125, which was the median *SD* for the larger sample). We then selected two groups of classrooms: 30 classrooms with the highest average latent language change scores [$M = 0.592$; higher language gains classrooms (HLGC)] and 30 classrooms with the lowest average latent language change scores [$M = 0.340$; lower language gains classrooms (LLGC)].

The analytic sample of 60 classrooms comprised a range of EC settings that served children between 3 to 5 years of age. Specifically, approximately 40% of classrooms were located in rural areas, 28% in suburban areas, and 22% in urban areas. Most of the classrooms (55%) received subsidized financial support (32% exclusively via Head Start, 20% exclusively from other state programs, 3% from both), and 62% of classrooms enrolled children with IEPs. In addition, most classrooms (52%) were enrolled in the state quality rating and improvement system, which was optional at the time of the original study. Of those teachers who reported using a commercially available curriculum (57%), 97% indicated that they used Creative Curriculum, a commonly used, whole-child curriculum that focuses on children's inquiry and discovery to promote learning (Teaching Strategies, 2022) and often uses interest centers to provide activities and interactions among teachers and children (U.S. Department of Education, 2013). Nearly all 60 teachers in these classrooms were female (97%), and 85% were White; 13% were Black and 2% were multi-racial. All teachers were non-Hispanic/Latinx. Teachers had a

mean age of 40.8 years ($SD = 10.33$; range 24-67) and averaged 12.2 years ($SD = 7.0$; range 0-30) of experience working in EC. Teachers' highest degrees included a high school diploma (12%), an Associate's degree (23%), a Bachelor's degree (15%), or a graduate degree (45%; 5% unreported).

We compared descriptive data from the classrooms, teachers, and specific children selected from each classroom for the 30 HLGC and the 30 LLGC to determine if any significant differences existed in the make-up of the groups. We conducted one-way ANOVA tests, using Tukey's HSD for pairwise comparisons, among the HLGC and the LLGC. Overall, of the 50 individual demographic categories used for comparisons among the two groups, the groups were equal on most (84%) categories, with some exceptions. There were differences by race with teachers and children in the LLGC less likely to identify as Black. Children in the LLGC were also older, on average, than were children in the HLGC and were also more likely to have mothers who had higher educational degrees than were children in the HLGC. Finally, children in the LLGC came from homes with higher annual household incomes than did children in the HLGC. Additional details and statistical comparisons regarding the sample classrooms, including the teachers and children from those classrooms, are available at DOI: 10.17605/OSF.IO/6HUYE.

Classroom Observations

Research staff observed classrooms three times, once each in the fall, winter, and spring of the school year, yielding 180 observations. Fall and spring observations ($n = 120$) were used for the study presented here. Participating teachers indicated a day and time that represented a typical day in their classrooms (i.e., no field trip or special event) and were observed for the full duration of time in which children engaged in classroom activities, including instructional and

non-instructional activities (e.g., meals, transitions). To gauge how representative the observations were of daily classroom experiences, teachers were asked “How typical of a day was today?” using a scale of 1 (not typical at all) to 5 (very typical); teachers generally reported that the day reflected typical activities ($M = 4.17$, $SD = 0.74$). Observation duration varied across classrooms for both fall (HLGC: 56.20 min to 130.70 min, $M = 85.34$ min, $SD = 22.66$ min; LLGC: 24.33 min to 138.43 min, $M = 81.88$, $SD = 22.68$) and spring (HLGC: 34.25 min to 111.85 min, $M = 75.44$ min, $SD = 16.67$; LLGC: 53.80 min to 142.32 min, $M = 79.30$ min, $SD = 23.54$ min). Trained research staff used classroom observations as well as the video recordings of these observations to capture both structural and process quality aspects of classroom organization.

Organization of Classroom Literacy Environment

We used the Classroom Literacy Observation Profile (CLOP; McGinty & Sofka, 2009) to measure the organization of the physical literacy environment of classrooms. The CLOP is a 27-item observational measure analyzing the presence of literacy materials and the extent to which children engage with the materials. CLOP coding occurred live during the classroom observations by research staff who demonstrated greater than 90% item-level agreement on three consecutive administrations with a master observer. Items evaluated via the CLOP include the presence of environmental print (e.g., labels, nametags, child-dictated writing) and the availability of writing (e.g., paper, crayons), language and literacy (e.g., variety of books, puzzles), and technology materials (e.g., literacy- or language-related computer games).

Each item on the CLOP is scored according to its prevalence in the classroom for a total possible sum score of 65. Sixteen items are scored using a scale indicating the number of classroom materials (e.g., “How many different types of writing tools are accessible in the

writing center?” scored as 0 = none, 1 = one to three, 2 = four to six, and 3 = seven or more).

Five items are scored based on presence or absence (1 = yes, 0 = no) of specific classroom materials or areas, such as a designated listening center.

Organization of Classroom Management

We used the Classroom Organization domain of the CLASS, Pre-K version (Pianta et al., 2006) to measure the organization of classroom management. The CLASS is a widely used assessment that uses a 7-point scale to measure classroom process quality; higher scores indicate higher quality. The Classroom Organization domain consists of items assessing the behavior management, productivity, and instructional learning formats available in classrooms.

Research staff coded CLASS for three 20-minute segments (i.e., cycles) randomly selected from a full video observation and computed the average Classroom Organization score across the three cycles (Mashburn et al., 2014). For four observations (two in fall; two in spring) in which three cycles were not available, all available cycles were coded to compute the Classroom Organization score. Coding was completed by research staff who completed a CLASS workshop led by a CLASS-certified instructor and achieved 80% agreement on five gold-standard CLASS training videos (per CLASS developers, agreement is defined as scoring within one point of the master score). For the larger project, we randomly selected and double coded 20% of cycles to monitor ongoing coder agreement. Coders averaged 89% agreement (within one point) on the Classroom Organization domain across all cycles selected for double coding.

Organization of Classroom Time

We used an adapted version of the Individualizing Student Instruction coding scheme (ISI; see Connor et al., 2009 and Pelatti et al., 2014 for additional details) to measure the

organization of classroom time. The ISI is distinct from the other measures used in the present study because it gathers data at the individual child level rather than at the classroom level. ISI captures the amount of time (minutes:seconds) each of the individual target children (up to five children per classroom) spent in language and literacy instruction/activities, as well as the amount of time each of the target children spent in non-language and literacy instruction (non-instruction). The ISI coding scheme is exhaustive in that any evidence of language and literacy instruction/activities are coded as such. This coding procedure therefore yields non-instruction codes which are true representations of non-instruction in that they did not serve any language or literacy instructional purpose. For the present study, we focus on these non-instruction variables to represent the organization of classroom time.

Research staff coded ISI for the entirety of each video observation using Noldus Observer Pro software. Prior to coding, research staff reviewed the project's ISI manual, attended a 2-day training, scored 80% or higher on four quizzes concerning ISI content and procedures, completed buddy coding with a trained coder, and achieved an intraclass correlation (ICC) greater than .70 for each ISI domain on a series of three master-coded observations. To monitor ongoing reliability, we selected approximately 20% of all video observations in the larger project and double coded a randomly selected 20 min segment. The overall ICC for the non-instruction domain was .94.

Expanding on the work of Day et al., (2015), we grouped specific non-language and literacy instructional codes into four subtypes of non-instruction related to teachers' classroom organizational practices. This provided a more nuanced examination of different types of non-instruction that may be more or less productive for children. The four subtypes included: non-instruction due to time in personal care routines (e.g., toileting, snack; ICC = .96), non-

instruction because of time spent waiting in-between activities (e.g., teachers taking attendance, children waiting for their name to be called for activity time; ICC = .79), non-instruction due to disruptive behavior (e.g., an outside visitor enters the room, teacher disciplining children; ICC = .59), and non-instruction because children were off-task (e.g., children gathering activity materials, children not completing their assigned activity; ICC = .67). We also examined the total time that children spent in all non-instruction ISI codes, which includes the four subtypes outlined above as well as any additional non-language and literacy instruction ISI codes (e.g., activities involving a discussion about the weather only, craft-making activities).

Similar to other research on instructional time in classrooms (Pelatti et al., 2014; Pianta et al., 2020; Schachter et al., 2016), individual children's overall time in non-instruction and in each of the four non-instruction subtypes were aggregated to the classroom level in order to create a classroom-level mean for each of the 60 classrooms at each of the two time points. To better interpret classroom-level time means and make clearer comparisons across classrooms, we converted the means into proportions, using the total observation time of each video recording.

Organization of Classroom Activities

We developed the Classroom Schedule Coding Sheet (CS²) to measure the organization of classroom activities from a teacher/teaching perspective. Specifically, the CS² uses conceptualizations and terminology that represent what teachers and other EC practitioners would use to describe the activities that constitute the global daily schedule of an EC classroom. Its design was informed by practitioner-based materials reflecting best practices in EC and EC programming (e.g., classroom contexts, schedules; Essa & Burnham, 2020; Kostelnik et al., 2018). As such, we identified and conceptualized activities similarly to how teachers might. This

provides a different way of conceptualizing organization of activities that may be more meaningful for teachers and practical for informing practice in EC classrooms.

The CS² captures both frequency and duration of various classroom schedule codes, including: *Large Group circle/meeting/group time*, *Large Group music/movement/fingerplays*, *Large Group story time*, *Large Group other*, *Small Group*, *Activity Time: Choice*, *Activity Time: No Choice*, *Individual Time*, *Outdoor/Large Motor*, *Meals/Snack*, *Cleanup*, *Personal Care Routines*, *Nap/Rest*, *Dressing*, and *Teacher Read Aloud*. Classroom schedule codes are not mutually exclusive and therefore several activities can be coded simultaneously. For instance, some children can participate in a *Small Group* activity while others are in *Activity Time: Choice*. The duration that the class spent in each code during the videotaped observations was also recorded, with some exceptions. Exceptions included *Nap/Rest* and any activity that occurred outside of the typical classroom environment such as *Outdoor/Large Motor* and *Personal Care Routines*, as research staff were instructed not to record these types of activities during observations. Similar to procedures used to measure time children spent in non-instruction, available durations were converted to proportion of total observation time of each video recording. See Table 1 for detailed descriptions of each classroom schedule code.

CS² coding was completed by trained research staff who had reached an initial baseline agreement of 90% on both the frequency with which classroom schedule codes occurred and the duration of each code (+/- 5 min). This duration range is supported by best practices literature, indicating that EC classroom schedule items are designated in increments of at least 5 minutes (Kostelnik et al., 2018). To monitor ongoing agreement, 15% of classrooms were randomly selected for double coding, with agreement averaging 92% for the frequency of classroom schedule codes and 96% for the duration of codes.

Results

We report findings by each aspect of classroom organization addressing each of the research aims. We used descriptive statistics to describe the classroom organization, paired samples t -tests to compare classroom organization within groups (HLGC and LLGC) across time (fall to spring), and independent samples t -tests to compare classroom organization across groups (HLGC to LLGC) within time (fall and spring). In some cases, given the distributions across classrooms, assumptions about equality of variances were violated based on the Levene's test and these are noted in the Tables. In these cases, we computed and report a t statistic not assuming homogeneity of variance. Given the descriptive and exploratory nature of this study, we interpreted and report significant findings at $p \leq .10$ (Gaus et al., 2015). We also examined levels of missingness through descriptive analyses. Although all classrooms had fall and spring video observations, we found that some classrooms were missing data for the observational measures used to capture various aspects of classroom organization from the video observations. Specifically, we note that one classroom was missing ISI non-instruction values for spring, one classroom did not have a spring CLASS score, one classroom did not have a spring CLOP score, and one classroom was missing both CLASS and CLOP scores for spring. Analyses were conducted with all available data.

Organization of Classroom Literacy Environment

Table 2 presents the average CLOP score for the HLGc and the LLGC in the fall and spring. In general, scores averaged between 31.37 and 35.03, which is midrange for the CLOP (max score is 65) and aligns with average scores from other studies utilizing CLOP (Dyonia et al., 2018). Scores were relatively stable for both groups between fall and spring [$t(27) = -.676, p = .505$, HLGc; $t(29) = -1.248, p = .222$, LLGC]. Although the scores in the LLGC were slightly

higher than in the HLGC descriptively, these were not significantly different in the fall or spring [$t(58) = -.871, p = .387$, fall; $t(55) = -1.124, p = .266$, spring].

Organization of Classroom Management

The average CLASS Classroom Organization score for the HLGC and the LLGC in the fall and spring is also presented in Table 2. In general, regardless of group, classrooms scored in the mid-range (overall range 4.79 to 5.10) in both the fall and spring. There were no significant differences within groups across time [$t(28) = 1.378, p = .179$ HLGC; $t(28) = .951, p = .350$ LLGC] or across groups at either time point [$t(58) = .591, p = .557$ fall; $t(56) = .165, p = .166$ spring].

Organization of Classroom Time

We examined total time spent in non-instruction as well as time in each of the four subtypes of non-instruction (Table 2). The HLGC spent about 20% of their time in non-instruction and this remained stable across both fall and spring [$t(29) = .712, p = .483$]. The largest amount of non-instruction time was spent in transitions or waiting (16.55%, fall; 18.54%, spring) followed by personal care routines, behavior disruption/management, and children being off-task. Again, these were relatively stable across the year for the HLGC with no significant differences between fall and spring ($ps > .10$).

Patterns of non-instruction time in the LLGC were different. Specifically, for the LLGC non-instruction time comprised over 28% of observed practice in both the fall and the spring with no significant change from fall to spring [$t(29) = .418, p = .679$]. Similar to the HLGC, waiting and transition were the highest proportion of non-instruction time (19.91%, fall; 18.20%, spring). Personal care routines and behavior disruptions comprised lower proportions of time but remained consistent across the academic year ($ps > .10$). For the LLGC, there was a significant

difference between fall and spring in the proportion of time for child-initiated off-task behavior with this time decreasing from fall (1.63%) to spring [0.75%; $t(29) = 2.289$, $p = .030$].

We observed differences between the HLGC and the LLGC on two aspects of non-instruction time. First, at both time points, the LLGC spent almost 10% more of their time in non-instruction. This was significantly different from HLGC at both time points [$t(58) = 2.666$, $p = .010$; $t(50.63) = 2.747$, $p = .008$; respectively]. Additionally, there was also a trend of higher proportion of behavior disruption/management time for the LLGC in the fall (0.51%) compared to the HLGC [0.20%; $t(41.78) = 1.736$, $p = .090$]. There were no other differences in proportion of time in non-instruction across classrooms ($ps > .10$).

Organization of Classroom Activities

We examined classroom organization via the CS² measure by examining both the frequency of activities (Table 3) as well as the proportion of time in activities (Table 4). The most frequent activity implemented in both groups of classrooms was Large Group circle, averaging 1.33 to 1.47 occurrences across groups and time (range 0–4). Most classrooms also had at least one Activity Time: Choice ($M = 0.80$ to 1.23 , range 0–4). Other activities were less frequent (range 0–1). Notably, the frequency of book reading across classrooms was low, in most cases averaging less than one book reading across the entire observation ($M = 0.70$ to 1.10 , range 0–3).

Examining proportion of time in activities provided a different understanding of classroom organization. For both groups at both time points, the largest proportion of time was spent in Activity Time: Choice ($M = 41.43$ – 46.37% ; $SD = 23.19$ – 28.65%) followed by Large Group circle ($M = 24.17$ – 32.30% , $SD = 12.41$ – 21.39%) and Small Group ($M = 12.77$ – 17.80% , $SD = 19.39$ – 29.41%). Other activities made up small proportions of the observation time. Given

that research staff were instructed to record activities that occurred within the typical classroom environment, we did not interpret findings regarding Personal Care Routines, Outdoor/Large Motor, and Nap/Rest as time captured on the video may not adequately reflect the proportion of the observation (e.g., if the video was paused while children were out of the classroom to use the bathroom).

In terms of frequency, there were some differences by time and group. For the HLGC, there were two activities that decreased in frequency from fall to spring: Activity Time: Choice [from 1.07 to .80, $t(29) = 3.246$, $p = .003$] and book reading [$t(29) = 2.183$, $p = .037$]. For the LLGC, frequency of Cleanup time and frequency of Dressing also decreased from fall to spring [from 1.07 to .70, $t(29) = 2.009$, $p = .054$ and .23 to .07, $t(29) = 2.408$, $p = .023$; respectively]. All other classroom activities remained stable in frequency ($ps > .10$). Only frequency of Activity Time: Choice was significantly different between groups in the spring with the HLGC having a lower frequency of activity time ($M = .80$) compared to the LLGC [$M = 1.07$, $t(58) = 2.210$, $p = .031$; remaining $ps > .10$].

We observed significant differences within groups and across groups for proportion of time spent in activities. Within groups, there was a significant difference for Large Group circle time in the HLGC, with proportion of time increasing from fall to spring [from 24.17% to 31.37%, $t(29) = 1.693$, $p = .100$]. Additionally, between fall and spring for LLGC there was a decrease in time Dressing [from 1.53% to .17%, $t(29) = 2.110$, $p = .044$]. There were no differences for the remaining activities across groups ($ps > .10$). Across groups there were two activities in the fall with differences in proportions of time. These were for Large Group circle and Meals/Snack. Specifically, in the fall the HLGC spent a significantly smaller proportion of time in Large Group circle compared to the LLGC [$t(53.18) = -1.964$, $p = .055$]. Additionally,

the HLGC also spent less time in Meals/Snacks than the LLGC in the fall [$t(40.523) = 2.354, p = .024$; remaining $ps > .10$]. There were no differences between groups in the spring ($ps > .10$).

Discussion

In the present study, we investigated the organizational practices of EC classrooms given that the ways in which classrooms are structured facilitate the context for children's language learning and development (Baroody & Diamond, 2014; Mashburn et al., 2008; McLean et al., 2016). Whereas previous work has largely considered singular aspects of classroom organization (e.g., Dynia et al., 2018; Guo et al., 2012; Pianta et al., 2006), we concurrently explored multiple features of classroom organization. Furthermore, this study added to our knowledge by purposely sampling from contexts in which children demonstrated differential language gains. In doing so, we provide a more robust understanding of the classroom organizational practices that may influence children's language gains, with findings indicating that these practices were both similar and different within and between HLGC and LLGC.

Additionally, we introduced a novel measure, the CS², designed to capture the organization of classroom activities in a way that reflects how teachers, rather than researchers, conceptualize and organize activities. This is an important contribution, as EC teachers often make intentional classroom organizational and instructional decisions that may not be obvious to outsiders (Schachter et al., 2021). Moreover, by analyzing data from two time points, this research allowed for both within- and between-group comparisons across an academic year. This methodological decision proved crucial, as findings indicated that HLGC and LLGC significantly differed in patterns of classroom organization in several ways in the fall, more so than in the spring.

Measurement Matters in Regard to Classroom Organization and Children's Language Learning

Our findings indicate that some, but not all, aspects of classroom organization differentiated those classrooms where children made higher language gains from those where children made lower language gains. When looking at measures of the organization of the physical literacy environment and of global classroom management, both groups of classrooms appear to have similar organizational patterns. In examining the structural quality of classrooms via the organization of the physical literacy environment, CLOP scores indicated that teachers in HLGC and LLGC provide comparable physical literacy environments in both the fall and spring. Furthermore, CLASS scores providing a measure of classroom management yielded moderate-to-high levels of classroom management in both groups of classrooms at both time points.

In contrast, our results indicate that the allocation of structure and time within a classroom was different across HLGC and LLGC. The organization of time measured via the ISI and the organization of classroom activities assessed via the novel CS² yielded differential organizational patterns for HLGC and LLGC, suggesting that certain aspects of classroom organization, but not others, may matter for children's language gains.

Organization of Classroom Time

Notably, when using measures of classroom organization specific to the organization of classroom time, we were able to differentiate between classrooms. At both time points, children in the LLGC spent significantly more time in overall non-instruction than did their counterparts in the HLGC. There was also a higher proportion of time spent in behavioral disruption/management time in the fall in the LLGC than in the HLGC. Finally, whereas the organization of classroom time remained stable in the HLGC across fall and spring, there was a

change fall to spring for children in the LLGC in the proportion of child-initiated off-task behavior, with this decreasing over time.

There are several explanations for our findings. Perhaps children in HLGC simply demonstrated less disruptive behaviors than did children in LLGC and therefore spent less time in non-instruction due to teacher management of these behaviors. However, it is also plausible that teachers in HLGC had better behavioral management strategies at the start of the school year than did teachers in LLGC. Although results of the Classroom Organization domain of CLASS indicate that global classroom organization across the two groups of classrooms was similar in the fall, perhaps non-instruction captured via ISI afforded a closer look at how the teachers in HLGC were better able to organize and manage individual children's time. Because the ISI is designed to gather data on individual children's experiences, it offers an understanding of how children spend their time throughout the day, including how much of their day is spent in non-instruction and thus yields more detailed information about children's experiences, above and beyond what is available via a global assessment, such as the CLASS. These findings lend support to recent pushes for incorporating more refined measures designed to assess the classroom experiences of individual children (Burchinal et al., 2021; Pianta et al., 2020). They also align with research in elementary school classrooms indicating that children's behavioral regulation problems predict greater amounts of classroom disruptions and transitions, which in turn predicts smaller gains in children's literacy skills, presumably due to the lost instructional time (Day et al., 2015).

Taken together, these findings indicate that children in HLGC spent more time in instructional activities (as opposed to non-instructional activities) throughout the year and experienced fewer behavioral disruptions in the fall than did children in the LLGC. This is

similar to findings in first grade classrooms by McLean et al. (2016) who observed that time children spent off-task decreased from fall to spring in some classrooms, while remaining stagnant or even increasing in classrooms rated as low quality. Furthermore, they found that even though the amount of time children spent in transition time decreased in all study classrooms from fall to spring, this time decreased at a quicker rate in the higher quality classrooms. Thus, taken into account with our findings, time children spend in non-instruction is an important classroom practice to consider when exploring the association between aspects of classroom organization and children's language gains from fall to spring. Additionally, these findings have important implications for classroom practice indicating that teachers should organize classroom time in ways that reduce children's time in non-instruction and increase time spent in learning opportunities.

Organization of Classroom Activities

Importantly, examining the organization of classroom activities via the CS² also revealed differences between HLGC and LLGC. We explored organization of classroom activities by examining both the frequency of classroom activities as well as the proportion of time children spent in activities. We found significant differences across time points and within and across HLGC and LLGC for the frequency of activities, as well as significant differences both within groups and across groups of classrooms for the proportion of time spent in classroom activities. In particular, we found several results specific to the proportion of time spent in Large Group circle. First, children in HLGC spent significantly less time proportionally in circle in the fall than they did in the spring. Second, the proportion of time children in the HLGC spent in circle in the fall was significantly less than their counterparts in the LLGC in the fall.

The fall differences in proportion of time spent in Large Group circle for the two groups of classrooms are particularly interesting when considering children's language gains. It may be that children in the HLGC spent significantly less time in Large Group circle than their peers in the LLGC because their teachers were more attuned to developmentally appropriate practices in EC, including the appropriate duration of whole class activities, such as circle time (Essa & Burnham, 2020; Kostelnik et al., 2018). Furthermore, the types of activities common to circle time are often rote and recitation-focused (e.g., attendance, calendar counting, weather; Essa & Burnham, 2020; Kostelnik et al., 2018), which tend to be less linguistically complex. It is possible that longer proportions of time spent in these types of activities in LLGC reduced children's opportunities to engage in more meaningful, developmentally facilitative language exchanges (Beneke et al., 2008; Bustamante et al., 2018). Additionally, Bustamante et al. (2018) showed that teachers do more of the talking during circle time and offer few open-ended questions. Thus, children in the LLGC may have experienced low-quality talk and instruction for longer periods of time than did children in the HLGC. Importantly, there was a shift over time with the HLGC increasing the proportion of time in Large Group circle. This suggests that teachers may have shifted their activities to meet the changing skills and needs of the children in their classroom, which in turn, may have contributed to children's higher language gains (Baroody & Diamond, 2014; Chien et al., 2010; Fuligni et al., 2012).

The CS² also allowed us to identify the frequency of shared book reading activities across classrooms. Shared book reading has long been considered an important and developmentally facilitative practice in EC classrooms, including as an important mechanism for promoting language learning in young children (Gerde & Powell, 2009; McKeown & Beck, 2006; Michaud et al., 2021; Zucker et al., 2021). However, despite its importance, we found that not all

classrooms included a shared book reading activity as part of their observations, and that the frequency of shared reading was generally low, regardless of group. Knowing its value in EC classrooms, we anticipated shared reading to be more commonplace in both HLGC and LLGC, especially as the teachers who participated in this study selected a time to complete observations that was most reflective of their typical instructional day. Of course, it is possible that a shared book reading activity occurred in these classrooms outside of the teacher-selected observation time; however, we cannot assume this to be the case. Future research exploring organization of classroom activities would benefit from additional information from teachers regarding the typical daily activities that occur in their classroom so that those listed can be compared with what was observed by researchers. This would also allow for a better understanding of how teachers organize their classrooms to include (or not) a shared reading activity.

Time Matters in Regard to Classroom Organization and Children's Language Learning

The sum of our results not only suggest that more refined measures of classroom organization differentiate HLGC and LLGC, it also reveals differential experiences regarding the use of time in these classrooms. As noted previously, the children in HLGC classrooms generally spent less time in non-instruction in both the fall and the spring. There were also differences in the proportion of time spent in Large Group circle for the HLGC from fall to spring and between the two groups of classrooms. Therefore, both the proportion of time spent in activities as well as the time of the school year may differentiate classrooms where children made higher and lower language gains.

Specifically, there were patterns of difference across groups for the fall, at the start of the academic year. Children in HLGC spent significantly less proportional time in Large Group circle, Meals/Snacks, and time in non-instruction due to behavioral disruption/management than

did children in the LLGC. When viewed collectively, these findings indicate that the way teachers organized their classrooms in the fall may have mattered for children's language gains, with teachers in the HLGC able to organize their classrooms in ways that may have better supported children's language development. Teachers in these classrooms effectively organized time spent in routinized, large group contexts (i.e., Large Group circle and Meals/Snacks) such that children spent less proportional time in these activities in the fall than did children in the LLGC. As mentioned previously, perhaps teachers in the HLGC were more attuned to developmentally appropriate practices for preschool-aged children, such as reasonable duration expectations of large-group activities. This possible explanation is made more plausible by the finding that children in the HLGC spent more time in Large Group circle in the spring than they did in the fall, when it would be more developmentally appropriate for children to engage in whole-group structured activities for longer durations. Although beyond the scope of this study, additional research is warranted to investigate possible associations between this collective group of findings and teachers' instructional beliefs and knowledge of effective EC practices in order to understand how teachers think about and plan for organizing time within the day and across the year.

Furthermore, the distinctions found between the HLGC and the LLGC in the fall also highlight the importance of assessing classroom organization at multiple time points of an EC academic year. Not only did teachers in the HLGC appear to organize time spent in certain classroom contexts and activities differently in the fall than did teachers in the LLGC, children in the HLGC also spent less proportional time in behavioral disruption/management non-instruction than did children in the LLGC. These results link with emerging research arguing for more repeated sampling of global measures (Buell et al., 2017; Burchinal et al., 2021) and this

approach might also need to be applied to the use of more fine-grained measures of time.

Alternatively, for those with limited resources, it may be more important to measure classroom organization in the fall when there seemed to be meaningful differences between classrooms.

Notably, we only examined measures of classroom organization over time and more research may be needed to investigate how this pattern plays out across aspects of the classroom environment, beyond organization.

Limitations and Future Directions

There are several limitations of this study which are important to mention. First, the classrooms used for this investigation represent the extreme ends of a larger sample of classrooms that participated in a language and literacy professional development project. This sampling procedure allowed us to conduct a detailed comparison of classrooms in which children exhibited higher and lower language gains and offered a unique opportunity to trial the novel CS². Though this design decision was intentional, we acknowledge that the patterns of classroom organization in these classrooms may not represent those found across the larger sample of classrooms. Therefore, future research exploring EC classroom organization would benefit from both a larger sample of classrooms as well as the inclusion of classrooms that are more representative of the variety of EC experiences had by children. Furthermore, we note that children in the HLGC came from homes with lower annual household incomes than did children in the LLGC. Thus, considering how various child and family factors may influence the impact of classroom organization on children's language learning, including which aspects of classroom organization are most beneficial for children from varying SES backgrounds, is an important future direction in promoting EC classroom experiences that support the needs of all children and families.

Additionally, data for this research is from classroom observations only and does not include input directly from classroom teachers. Previous research has demonstrated the value of including teachers' perceptions of classroom instruction (Lampert, 2001; Schachter, 2017; Schachter et al., 2021). Thus, providing teachers with the opportunity to discuss patterns and decisions regarding classroom organization should be considered in future research, as this has the potential to yield more robust information regarding EC classroom organization and how teachers see this linked to language-learning opportunities. Moreover, this research is limited by the procedures implemented for conducting video observations of the classrooms, specifically that research staff were instructed to only record activities which occurred within the typical classroom environment. It is possible that information gathered from additional classroom activities not fully captured through video recordings (e.g., outside time, nap/rest, personal care routines) would provide additional information about classroom organization in EC classrooms, particularly as it relates to the organization of classroom time and of classroom activities.

Furthermore, there are additional ways to examine classroom organization beyond those presented in this article. Although we took steps to include a multifaceted approach to investigating organization, additional measures should be included or utilized when trying to tease apart differences in contexts that are more and less supportive of children's language learning. This need is accentuated by our findings regarding the different insights provided across measures. Finally, because this study did not directly test associations between classroom organization and children's language gains, additional research is warranted to explore the possible direct relationships between patterns of EC classroom organization and children's language learning. One potential method for exploring these relationships is through profile analysis, which has been used in previous investigations of classroom organization and

engagement (e.g., Chien et al., 2010; Fuligni et al., 2012). Extending the current work with such an approach would allow for examination into the overall patterns of classroom organization and may provide additional insight into how classrooms are organized to support children's language learning.

Conclusion

Taken together, the results of this study indicate that both similarities and differences exist in the organizational patterns of HLGC and LLGC, both at the start of the school year and across time. This has important implications regarding how EC classrooms are organized to support children's language learning. Our results not only emphasize the importance of individually looking at multiple time points of an academic year when exploring various aspects of EC classrooms, they also highlight how important the beginning of the school year is for establishing developmentally appropriate routines and practices. As such, supporting pre-service and in-service EC teachers with effectively implementing developmentally appropriate practices specific to classroom organization may have important implications for children's language development. Furthermore, our results highlight the value of using multiple measures which explore various aspects of EC classroom organization. Future research is needed to more fully understand associations between differing aspects of classroom organization and children's language outcomes.

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Declaration of Interest Statement

The authors report there are no competing interests to declare.

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Table 1*CS² Schedule Codes*

Label	Definition	Examples
Large Group: circle/meeting/ group time	Whole class gatherings consisting of daily routines/activities	Morning/afternoon meeting, circle time, calendar time (e.g., attendance, weather, counting days of school, etc.)
Large Group: music/movement/ fingerplays	Whole class gatherings focused only on musical based activities and/or fingerplays	Listening to music, dancing, playing instruments; Itsy Bitsy Spider, the Wheels on the Bus, etc.
Large Group: story time	Whole class gatherings focused only on story-related activities	Teacher reading a story to the children, listening to a story on tape/CD, reading and/or reciting poems, oral story telling
Large Group: other	Whole class gatherings that do not fit any of the other “large group” categories	A Spanish lesson, a science activity
Small Group	Children engaged in teacher-directed small group activities where children are assigned to groups and required to participate in the small group activity with the teacher	Four children are assigned to complete a name-writing activity with the teacher; three children are called to complete a sorting activity with the teacher
Activity Time: Choice	Children self-select which materials to play with, activities to engage in, and/or areas of the classroom to visit	Free play; children choose to visit the writing center, paint at the easel, build in the block area, etc.
Activity Time: No Choice	During activity time, (1) the teacher directs all children to certain activities/areas <i>and</i> (2) the teacher is not engaged in those activities/areas	Two children are assigned the computer station, three children are assigned to the math center, four children are assigned to the dramatic play area, etc.
Individual Time	All children are required to engage in the same activity at the same time in an individual/independent, parallel fashion	All children looking at books independently, all children drawing pictures/writing in journals
Outdoor/Large Motor	Children are engaged in outdoor play or in indoor large motor activities	Children go outside for recess or to an indoor gym/large motor room
Meals/Snack	Children are eating meals and/or snacks	Breakfast, lunch, snack time
Cleanup	Children are cleaning up all classroom materials	Children are putting materials away after activity time

Personal Care Routines	All children are participating in personal care routines simultaneously as a group (i.e., <i>not</i> when one child is washing their hands after painting)	Toileting, brushing teeth, washing hands
Nap/Rest	All children are napping/resting simultaneously as a group (i.e., <i>not</i> when one child has fallen asleep during the day)	Teachers and children take out nap mats/cots after lunch and the class prepares for nap time.
Dressing	Children are dressing/undressing typically during arrival/dismissal or outdoor time.	Putting on/taking off coats, snow or rain boots, etc.
Teacher Read Aloud	The teacher reads a book out loud to children	Reading can be to the whole group of children, a small group of children, or one-on-one with a child. Includes fiction, non-fiction, homemade books, etc. Poems, oral stories, or listening to a story on tape/CD are excluded.

Table 2*Descriptive Statistics and Comparisons for Organizational Measures*

	Higher Language Gains Classrooms		Lower Language Gains Classrooms	
	Fall	Spring	Fall	Spring
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
CLOP	31.37 (8.53)	32.37 (10.17)	33.60 (7.40)	35.03 (7.65)
CLASS Classroom Organization	5.03 (0.55)	4.79 (0.70) _a	5.10 (0.49)	5.01 (0.42) _a
ISI Total Non-Instruction (Proportion)	18.82% ^a (10.33%)	20.70% ^b (9.62%) _b	28.04% ^a (16.86%)	29.45% ^b (14.46%) _b
Waiting/Transition time	16.55% (9.27%)	18.54% (8.64%)	19.91% (8.04%)	18.20% (1.47%)
Personal care routines	1.62% (3.56%)	1.60% (4.81%)	2.54% (4.11%)	1.86% (3.41%)
Child off-task	0.37% (0.61%) _c	0.43% (0.75%)	1.63% ¹ (4.60%) _c	0.75% ¹ (2.71%)
Behavioral disruption/management	0.20% ^c (0.43%) _d	0.45% (1.06%)	0.51% ^c (0.89%) _d	0.55% (1.05%)
Total Observation Time	85.34 (22.66)	75.44 (16.67) _e	81.89 (22.70)	79.30 (23.54) _e

^{a-e} Levene's test for equality of variances was found to be violated for differences across groups:

^a $F = 5.771, p = .020$; ^b $F = 5.816, p = .019$; ^c $F = 6.333, p = .015$; ^d $F = 7.959, p = .007$; ^e $F = 4.296,$

$p = .043$. ^{a-c} Differences across groups: ^a $t(58) = 2.666, p = .010$; ^b $t(50.63) = 2.747, p = .008$;

^c $t(41.78) = 1.736, p = .090$. ¹ Differences across time: $t(29) = 2.289, p = .030$.

Table 3

Descriptive Statistics and Comparisons for Frequency of CS² Activities

	Higher Language Gains Classrooms		Lower Language Gains Classrooms	
	Fall <i>M (SD)</i> Range	Spring <i>M (SD)</i> Range	Fall <i>M (SD)</i> Range	Spring <i>M (SD)</i> Range
Large Group Circle	1.33(0.80) 1 to 3	1.30(0.79) 0 to 4	1.47(0.57) 1 to 3	1.33(0.61) 0 to 3
Activity Time Choice	1.07(0.58) ¹ _a 0 to 2	0.80(0.48) ¹ _a 0 to 2	1.23(0.94) _a 0 to 4	1.07(0.45) ^a 0 to 2
Cleanup	0.83(0.75) 0 to 2	0.63(0.56) _f 0 to 2	1.07(0.98) ² 0 to 4	0.70(0.47) ² _f 0 to 1
Personal Care	0.63(0.67) 0 to 2	0.47(0.68) _g 0 to 2	0.40(0.56) 0 to 2	0.33(0.48) _g 0 to 1
Small Group	0.47(0.51) 0 to 1	0.30(0.54) 0 to 2	0.50(0.68) 0 to 3	0.47(0.57) 0 to 2
Meals/Snack	0.37(0.56) 0 to 2	0.40(0.62) 0 to 2	0.57(0.68) 0 to 3	0.40(0.50) 0 to 1
Individual Time	0.27(0.62) 0 to 2	0.30(0.47) 0 to 1	0.37(0.67) 0 to 2	0.37(0.56) 0 to 2
Outdoor/Large Motor	0.22(0.48) 0 to 1	0.23(0.50) 0 to 2	0.30(0.47) 0 to 1	0.17(0.38) 0 to 1
Large Group Story	0.20(0.41) _b 0 to 1	0.13(0.35) _h 0 to 1	0.07(0.25) _b 0 to 1	0.03(0.18) _h 0 to 1
Large Group Other	0.17(0.38) _c 0 to 1	0.20(0.41) _i 0 to 1	0.07(0.25) _c 0 to 1	0.07(0.25) _i 0 to 1
Dressing	0.13(0.35) _d	0.13(0.43)	0.23(0.50) ³ _d	0.07(0.35) ³

	0 to 1	0 to 2	0 to 2	0 to 1
Large Group Music	0.07(0.25)	0.07(0.25)	0.10(0.31)	0.10(0.21)
	0 to 1	0 to 1	0 to 1	0 to 1
Activity Time No Choice	0.02(0.18)	0.10(0.31) _j	0.03(0.18)	0.03(0.18) _j
	0 to 1	0 to 1	0 to 1	0 to 1
Nap/rest	0.07(.25) _d	0.00(.00)	0.00(.00) _d	0.00(.00)
	0 to 1	0	0	0
Number of shared book readings	1.10(8.45) ⁴ _e	0.70(0.60) ⁴	0.93(0.52) _e	0.73(0.64)
	0 to 3	0 to 2	0 to 2	0 to 2
Number of small groups	1.47(0.94)	1.20(0.76)	1.77(1.65)	1.23(0.728)
	0 to 3	0 to 3	0 to 9	0 to 3

Note. We did not interpret findings regarding Personal Care Routines, Outdoor/Large Motor, and Nap/rest as time captured on the video may not adequately reflect the frequency of the observation.

¹⁻⁴ Differences across time: ¹*t*(29) = 3.246, *p* = .003; ²*t*(29) = 2.009, *p* = .054; ³*t*(29) = 2.408, *p* = .023; ⁴*t*(29) = 2.183, *p* = .037. _{a-i} Levene's test for equality of variances was found to be violated for differences across groups: _a*F* = 4.577, *p* = .037; _b*F* = 10.63, *p* = .002; _c*F* = 6.286, *p* = .015; _d*F* = 3.485, *p* = .067; _e*F* = 9.609, *p* = .003; _f*F* = 5.527, *p* = .022; _g*F* = 2.874, *p* = .095; _h*F* = 5.024, *p* = .029; _i*F* = 8.930, *p* = .004; _j*F* = 10.629, *p* = .002. ^a Differences across groups: *t*(58) = 2.210, *p* = .031.

Table 4*Descriptive Statistics and Comparisons for Proportion of Time Spent in CS² Activities*

	Higher Language Gains Classrooms		Lower Language Gains Classrooms	
	Fall <i>M (SD)</i>	Spring <i>M (SD)</i>	Fall <i>M (SD)</i>	Spring <i>M (SD)</i>
Activity Time Choice	42.67% (25.33%)	41.43% (28.65%)	41.93% (23.19%)	46.37% (26.52%)
Large Group Circle	24.17% ^{1, a} (18.29%) _a	31.37% ¹ (21.39%)	32.30% ^a (13.41) _a	31.47% (17.69%)
Small Group	17.80% (23.84)	13.60% (29.41%)	12.77% (19.39%)	14.67% (23.26%)
Individual Time	5.03% (10.00%)	4.20% (8.08%)	5.73% (12.68%)	5.93% (10.00%)
Meals/Snack	1.27% ^b (4.24%) _b	3.23% (9.44%)	5.67% ^b (9.32%) _b	5.03% (10.54%)
Cleanup	4.47% (5.74%) _c	3.47% (4.41%) _g	2.80% (3.27%) _c	2.40% (2.87%) _g
Large Group Other	4.03% (9.78%) _d	3.07% (8.44%) _h	1.43% (5.46%) _d	1.13% (4.44%) _h
Large Group Story	2.47% (5.44%) _e	1.77% (4.67%)	0.87% (3.30%) _e	0.93% (5.11%)
Activity Time No Choice	1.30% (7.12%)	2.40% (8.00%) _i	1.90% (10.41%)	0.23% (1.28%) _i
Large Group Music	0.53% (2.29)	1.00% (3.82%)	1.00% (3.35%)	1.27% (4.65%)
Dressing	1.53% (2.37%) _f	1.00% (3.68%) _j	1.53% ² (3.88%) _f	0.17% ² (0.65%) _j

¹⁻² Differences across time: ¹ $t(29) = -1.693, p = .100$; ² $t(29) = 2.110, p = .044$. ^{a-b} Differences across groups: ^a $t(53.180) = 1.964, p = .055$; ^b $t(40.523) = 2.354, p = .024$. ^{a-j} Levene's test for equality of variances was found to be violated for differences across groups: ^a $F = 3.515, p = .066$; ^b $F = 21.378, p < .001$; ^c $F = 3.677, p = .060$; ^d $F = 6.903, p = .011$; ^e $F = 7.500, p = .008$; ^f $F = 4.849, p = .032$; ^g $F = 3.626, p = .062$; ^h $F = 4.815, p = .032$; ⁱ $F = 9.728, p = .003$; ^j $F = 6.343, p = .015$.