Early Childhood Research Quarterly 27 (2012) 198–209

Contents lists available at SciVerse ScienceDirect

Early Childhood Research Quarterly

Activity settings and daily routines in preschool classrooms: Diverse experiences in early learning settings for low-income children☆

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ARTICLE INFO

Article history:
Received 28 April 2010
Received in revised form
27 September 2011
Accepted 8 October 2011

Keywords:
Preschool quality
Teacher-directed activity
Child-directed activity
Instructional quality
School readiness

ABSTRACT

This paper examines activity settings and daily classroom routines experienced by 3- and 4-year-old low-income children in public center-based preschool programs, private center-based programs, and family child care homes. Two daily routine profiles were identified using a time-sampling coding procedure: a High Free-Choice pattern in which children spent a majority of their day engaged in child-directed free-choice activity settings combined with relatively low amounts of teacher-directed activity, and a Structured-Balanced pattern in which children spent relatively equal proportions of their day engaged in child-directed free-choice activity settings and teacher-directed small- and whole-group activities. Daily routine profiles were associated with program type and curriculum use but not with measures of process quality. Children in Structured-Balanced classrooms had more opportunities to engage in language and literacy and math activities, whereas children in High Free-Choice classrooms had more opportunities for gross motor and fantasy play. Being in a Structured-Balanced classroom was associated with children's language scores but profiles were not associated with measures of children's math reasoning or socio-emotional behavior. Consideration of teachers' structuring of daily routines represents a valuable way to understand nuances in the provision of learning experiences for young children in the context of current views about developmentally appropriate practice and school readiness.

Children from low-income families attend a variety of early learning programs prior to kindergarten. Some programs are specifically designed to provide pre-kindergarten readiness development opportunities. Others are primarily concerned with meeting the child care needs of working parents. Many programs focus on both of these goals. As a result, early learning settings may vary greatly with respect to the services provided, the structure and size of the program, and the setting itself (home- or center-based). Past research has shown that participation in early learning programs can help to alleviate socioeconomic disparities in school achievement by increasing children's academic and social readiness for formal schooling. Importantly, higher-quality programs produce greater gains (Garces, Thomas, & Currie, 2002; Gormley, Gayer, Phillips, & Dawson, 2005; Howes et al., 2008). Decades of research investigating children's early learning settings have advanced our conceptualizations of quality, identifying the environments, interactions, and activities likely to support young children's learning.

This prior body of research has focused on structural and process quality and other features of children's experiences, such as the type of program they attend, the number of hours they spend in care, or the age at which they enter care. The recent focus on children's school readiness has also led to research on the efficacy of specific academically-oriented preschool curricula for children's learning. Less attention has been paid to the ways that children's daily experiences in early education and care are structured. The amount of time that children are expected to engage in activity settings of different group sizes, and the extent to which those activities are teacher-directed or child-initiated may also be important features of children's learning experiences in early education programs. This study builds on the growing body of research exploring time use in preschool programs. Using a diverse sample of early learning programs serving low-income families, we identify patterns in the ways teachers organize time in different group sizes and settings (i.e. free choice, whole group, small group) into daily

☆ The research reported in this paper was supported through the Interagency School Readiness Consortium (NICHD, ACF, ASPE; Grant Number: 5-R01-HD046063). However, the contents do not necessarily represent the positions or policies of the U.S. Department of Education and endorsement by the Federal government should not be assumed.

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0885-2006/$ – see front matter © 2011 Elsevier Inc. All rights reserved.
doi:10.1016/j.ecresq.2011.10.001

classroom routines. We also relate differences in daily classroom routine to structural program characteristics, measures of process quality, children's engagement in activities of various academic contents, teachers' instructional strategies, and children's school readiness skills.

1. Conceptualizing quality in early learning programs

Prior studies have typically conceptualized and assessed children's experiences in early learning settings by exploring various aspects of structural and process quality (Phillips & Howes, 1987). Some studies focus on structural quality, which concerns features of program infrastructure or design. In these studies, program quality is assessed in terms of adherence to standards involving teacher education, teacher–child ratio, class size, and other regulatable aspects of care (Barnett, Hustedt, Robin, & Schulman, 2005). Other studies focus on process quality, which relates to more qualitative aspects of children's direct experiences in classrooms (Pianta et al., 2005). In these studies, observational measures are used to gauge the emotional and instructional quality of teacher–child interactions and the extent to which appropriate materials, activities, and routines are provided for children.

In recent years, there has been a noticeable shift in the field of early childhood education. Debates about how children learn and how best to teach them have taken a back seat to debates about what children should be learning during the preschool years. The school readiness movement has challenged the early childhood field to consider what knowledge and skills children need to learn in order to be adequately equipped for a successful transition into kindergarten (Barbarin & Wasik, 2009; Pianta, Cox, & Snow, 2007). Conceptually, "school readiness" encompasses academic content area learning, especially in the areas of literacy and math, as well as self-regulatory behaviors, such as sitting still, following directions, and taking turns in conversation and play. The push to clearly define what children should be learning during the preschool years has become stronger as the standards-based accountability movement has gained momentum in the K-12 educational system (Brown, 2007; Kagan & Kauerz, 2007). Today, nearly every state has developed early learning standards for children ages 3–5 in language, literacy, and mathematics (Burns, Midgette, Leong, & Bodrova, 2003; Neuman & Roskos, 2005; Scott-Little, Kagan, & Frelow, 2003). The increased focus on content knowledge has met with a variety of responses, ranging from strong resistance to cautious enthusiasm, among early childhood researchers and practitioners. Many practitioners struggle to balance the National Association for the Education of Young Children's Developmentally Appropriate Practice guidelines (Bredekamp & Copple, 2009) with demands to focus on academic content in their early care and education programs.

2. Research on children's experiences in early learning programs

Some recent research has begun to document time use in preschool programs along with other measures of children's experiences. The National Center for Early Development and Learning (NCEDL) conducted two large studies of publicly funded pre-kindergarten programs and employed a large battery of measures of structural and process quality in these programs (Early et al., 2005). Early et al. (2010) used time sampling observational data to describe the amount of time that children spent in child-directed (i.e., free play) versus teacher-assigned (i.e., whole group, small group, individual time) activity settings. Furthermore, they examined associations between time spent in various activity settings, child demographics, structural program characteristics, and measures of process quality. They found that, on average, children spent almost 30% of their pre-kindergarten day in free-choice and 37% in whole-group, small-group, or individual time. Programs meeting for more hours per week had higher proportions of time spent in the free-choice activity settings, and classrooms with higher proportions of Latino or African-American children spent smaller proportions of the day in free-choice and more time in teacher-assigned activity settings. Furthermore, the amount of time spent in whole-group activity settings was negatively correlated with classroom process quality.

Using the same data set, Chien et al. (2010) classified individual children into profiles of classroom engagement. To create the profiles, they used aggregated data on children's time spent in activity settings (i.e., free play, whole group, small group, individual instruction), children's engagement in activities of various pre-academic contents (i.e., letter-sound, fine-motor, math, etc.), and teacher–child interactions (i.e., scaffolding, didactic instruction, etc.). Four profiles of children's classroom engagement were identified: a "free play" category of children who spent the highest proportion of time in free-choice and gross-motor activities and the lowest amount of time in academic engagement; "individual instruction" children who experienced high levels of teacher-assigned individual time and who also engaged in the most fine-motor and letter-sound activities; "group instruction" children who experienced the highest levels of both whole-group and small-group activity settings; and a "scaffolded learning" category in which children experienced high levels of teacher scaffolding and elaborated teacher–child interactions along with more time in academic activities. Chien et al. (2010) found that classroom engagement profiles were associated with classroom quality and child outcomes. Process quality scores for the classrooms of children in the free play and scaffolded learning groups were significantly higher than those in the more didactic group instruction and individual instruction groups. Children in the "free play" profile exhibited smaller gains across the pre-kindergarten year on indicators of language, literacy, mathematics, and social competence compared to children in other profiles. Children in the "individual instruction" profile showed greater gains in their scores on standardized early math assessments.

Some preschool curricula consider the configuration of children's activities in preschool settings. For instance, the Literacy Express Preschool Curriculum (LEPC; Lonigan, Clancy-Menchetti, Phillips, McDowell, & Farver, 2005) employs small group instruction in various specific components of pre-literacy skills as well as activity suggestions for child-directed activity in independent play centers. This curriculum suggests a balance of teacher-initiated instruction and opportunities for child-initiated activity, and emphasizes the role of modeling and scaffolding during teacher-directed small-group activities. Randomized evaluation of this curriculum has shown positive effects of the LEPC on development of literacy skills for low-income preschoolers (Lonigan, Farver, Phillips, & Clancy-Menchetti, 2011) and for Spanish-speaking English-language learners (Farver, Lonigan, & Eppe, 2009).

Small-group instruction has been shown to promote specific literacy skills in the preschool setting (Piasta & Wagner, 2010; Roberts & Neal, 2004). A meta-analysis of 161 studies of early education interventions categorized programs by their "primary instructional grouping" (whole group, small group, individual instruction, or mixed) and their "primary pedagogical approach" (direct [teacher-led] instruction, inquiry based [hands-on, student directed] instruction, or mixed). When programs utilizing a variety of curricula were categorized in these ways, the analysis revealed that use of a direct instruction approach was associated with more impacts on children's cognitive development, as was the use of smaller or individualized instruction (Camilli, Vargas, Ryan, & Barnett, 2010). Although such findings lend support to the

importance of specific formats for instruction and activities to promote learning in the early education setting, they do not indicate what might be appropriate amounts of time for children to spend in small groups or in teacher-directed versus child-initiated activity settings.

To explicitly study the importance of groupings and activities that children experience in different early learning settings, an eco-behavioral analysis can be useful. The goal of eco-behavioral analysis is to determine the ecological factors that 'set the stage' for particular child behaviors (Carta & Greenwood, 1985; Greenwood & Carta, 1987). Kontos, Burchinal, Howes, Wisseh, and Galinsky (2002) employed eco-behavioral analysis and found that children's complex interactions with objects and peers were most likely to occur during their engagement in "creative" activities, such as fantasy play, block play, and open-ended art activities. In another study, Powell, Burchinal, File, and Kontos (2008) found that, within the context of academic activities, children were more likely to be actively engaged during involvement with a peer group and when teachers provided monitoring and verbal affirmations. In contrast, active engagement during academic activities was least likely when children were involved in a whole group setting and when teachers gave direct verbal instructions.

The studies described above by Early et al. (2010) and Chien et al. (2010) suggest that more time in free play and less time in whole group activity settings is associated with higher scores on measures of process quality. However, complicating the picture is the finding by Chien et al. (2010) that children who spend the most time in free-choice activities exhibit smaller gains on a wide range of school readiness skills. One interpretation of these findings is that, generally speaking, teachers should set aside plenty of time for children to engage in free-choice activities, but too much time in free choice precludes other important learning opportunities that are afforded by activity settings such as whole group and small group, which are more teacher-directed in nature. Child-directed learning in free-choice activity settings may be the hallmark of developmentally appropriate early childhood curriculum, but there is growing recognition that children can experience important opportunities for learning across a range of participation structures, including activity settings such as whole group and small group which typically involve varying levels of didactic instruction and teacher scaffolding.

Although it is useful to examine time spent in various activity settings separately, there are limitations to this approach because the amount of time that children spend in each activity setting is influenced by the amount of time that they spend in every other activity setting. For example, more time in free choice means less time for whole-group activities, and vice versa. An analysis of activity settings across the entire day would provide information about how teachers allocate time to the range of activity settings that collectively make up their daily classroom routine.

3. The current study

The current study builds on the existing body of literature by drawing from a unique sample of early learning programs that captures more of the diversity of early learning settings available to low-income families. In the extant literature, many researchers have limited the focus of their investigations by restricting their sample to public center-based pre-kindergarten programs for 4-year-old. In this study, we cast a wider net by drawing from a rich sample that includes center-based programs from both the public and private sectors, as well as licensed family child care homes, and programs serving 3- and 4-year-old and often other ages as well. Our sample reflects the wide range of early learning programs serving low-income families with preschool-aged children.

This study extends the line of research investigating time spent in preschool activity settings in several ways. First, it uses a unique data set incorporating observations in a diverse sample of early education programs. Second, rather than focusing on discrete activities or activity settings in isolation, in the current study, we focus on understanding how activity settings are distributed relative to each other over the course of a program day. Although this study shares some similarity with the work of Chien et al. (2010), there are several important conceptual and analytical distinctions. This study identifies patterns in the organization of activity settings at the classroom level (unlike Chien et al., 2010, who used a child-level approach), which affords an opportunity to explore how daily classroom routines influence individual children's experiences. Furthermore, unlike Chien et al. (2010), this investigation considers activity settings separately from measures of instructional strategies (such as didactic and scaffolding instructional interactions) and time spent in activities of various academic contents (i.e. letter-sound, fine-motor, math, etc.) that were included in that study's classifications. In this analysis, child-level data on engagement in academic activities and types of instructional interactions with teachers are considered outcomes that may be partially influenced by the daily classroom routine.

Specifically, we address three research questions. First, how can early education programs be characterized in terms of the patterns of time spent in different activity settings? Second, do settings with different patterns of activity routines vary with respect to structure or process quality? And finally, after accounting for potential differences in structure or process quality, do children experiencing different patterns of activity routines show different outcomes?

4. Method

4.1. Sample

This analysis uses data from a larger longitudinal study of school readiness among low-income children. A variety of early childhood education programs serving low-income children in Los Angeles County, California was selected to represent a range of diverse learning settings available to low-income children. In the larger study, the sampling procedure involved recruiting programs serving 3-year-old in the first year of the study as well as recruiting a comparison group of children not attending a licensed early learning program at age three. Family income was not used as a sampling characteristic, but rather programs and agencies were included if they served low-income families exclusively or made spaces available for families qualifying for subsidies. Children were recruited for the comparison group through several methods that were likely to yield low-income families, including waiting lists for subsidized child care and targeted flyers in community health care and WIC clinics.

Target children from the study classrooms and comparison group children were all followed into any early learning program they attended the next year. These procedures resulted in two different samples of child care programs and classrooms-one set of 57 classrooms in year 1 representing the programs in which a set of 3-year-old children were initially sampled, and another set in year 2 representing the 106 classrooms where the study children ended up the following year. In some cases, children stayed in the same program, but other children changed programs, and some of the children who were not in a program in year 1 entered a program in year 2.

This analysis of 125 classroom settings uses data from all programs that were observed, with only the first year of observation

in any particular classroom included in the data set. Thus, all classrooms and programs observed in the first year are included, as well as any new classrooms that target children entered into in the second year. Thus the observations are of each classroom the first year one of the study children attended that classroom. Children themselves had varying child care histories prior to entering our study. The resulting sample is comprised the 57 classrooms from year 1 and 68 additional classrooms attended by our target children in year 2. The sample includes 53 public preschool classrooms, 47 private preschool classrooms, and 25 family child care homes.

Early learning settings included public preschool programs, private preschools or community child care, and licensed home-based family child care programs. In this study, we conceptualize any of these types of out-of-home early education experiences as early learning settings. We use the term "classroom" to refer to units of children with their adult caregivers whether they are in a traditional center-based classroom or a family child care program. Furthermore, the adults in these settings are professionals providing child development services to the children in their care and we use the term "teachers" or "early educators" to refer to the classroom teachers and family child care providers in the study.

Up to four target children were randomly selected from those eligible in each participating classroom in year 1. In some classrooms, particularly the family child care programs, there were fewer than four children meeting age and parental permission requirements. In these cases, all eligible children were included in the study. The number of target child participants in each year-1 classroom therefore ranged from one to four children (one to three children in family child care homes). The average number of participants was 2.8 in public preschool classrooms, 2.9 in private preschool classrooms, and 1.6 in family child care programs (the modal number of children was four in both public and private classrooms and one in family child care). In the second year, when many children entered new or different classrooms, the level of nesting of children within classrooms was decreased, while the number of classrooms observed increased. In public preschool classrooms, the number of target children per classroom ranged from one to seven (only one classroom with over four children) and averaged 1.7. In private preschool classrooms, the range was also one to seven (two classrooms with over four target children), and the average was 2.0. For family child care programs, the range was unchanged from year 1 (one to three) and the average was 1.4 children. The modal number of target children per classroom in year 2 was one child for all three program types. The 206 target children represented in this analysis come from primarily low-income families (median income-to-needs ratio of 1.21, $SD = 2.60$), with diverse maternal education levels (ranging from 2nd grade to graduate degree; median = high school graduate).

Structural characteristics (program length, number of children and adults, child–adult ratio) varied according to program type. Most classrooms were full-day programs (66% full day, 14% morning only, 20% afternoon only), but public preschool classrooms were most likely to be part-day (56% part-day in public preschools, 24% in private centers, and 9% in family child care programs; $X^2[4] = 18.20$, $p < .001$). On average, family child care providers cared for the fewest children (10.0, compared with 20.7 in public and 21.1 in private center-based classrooms, $F(2,113) = 21.6$, $p < .001$) and teachers in center-based programs had the highest average number of children per adult (8.1 in private centers, 7.1 in public centers, and 6.3 in family child care homes, $F(2,114) = 4.3$, $p < .05$).

Teachers indicated via a self-administered questionnaire whether or not they used a formal curriculum, and if so, indicated the name of the curriculum from a list of the 10 most-commonly used curricula in early childhood classrooms (High/Scope, Creative Curriculum, Montessori, High Reach, Curiosity Corner, and others). If the curriculum was not listed, the teacher could write in the name of the main curriculum used. Teachers could indicate using multiple curricula, but were asked to specify one primary curriculum. Across all teachers in this sample who returned questionnaires ($N = 87$), only four reported that they did not use some form of curriculum (two family child care providers, one public and one private center-based teacher). High/Scope and Creative Curriculum were the most commonly reported curricula in use (30% and 35%, respectively, across all three program types). A third curriculum was reported only by teachers of 4-year-old in public centers: Developmental Learning Method (DLM) Express. Several other curricula were mentioned by only one or two teachers, including Montessori, Reggio Emilia, and responses such as "locally developed curriculum" or "we draw from many sources." Because of such small cell sizes, all other responses were grouped into a single "Other" category ($n = 16$). Family child care providers were significantly more likely to report an "Other" curriculum (60%) than teachers in public or private centers (10% and 9% respectively). Creative Curriculum was the only curriculum among the three main reported curricula that was used by family child care providers (28%).

4.2. Procedure and measures

For each early learning program, highly trained research staff conducted observations on two different days to measure global quality of the interactions and academic experiences provided; emotional and instructional support; and time spent in various activity settings, academic activities, and interactions. In addition, teachers and child care providers completed questionnaires providing information about their own education background and experience, and the characteristics of their classrooms and child care programs. Target children were assessed in several school-readiness domains at the beginning and end of the academic year.

All programs, whether publicly- or privately funded centers or family child care homes, were observed using the same set of tools. These observational tools were selected in order to measure a wide variety of instructional practices and features of the child care environment for the purpose of providing rich but quantitative documentation of children's daily experiences. Although there have been observational measures designed specifically for use in family child care programs (e.g. Family Child Care Environment Rating Scale Revised; FCCERS-R, Harms, Cryer, & Clifford, 2007), these measures do not provide analogous variables that could be directly compared with measures used in center-based programs. The focus of this investigation is on children's experiences in different settings, and therefore it was important to use the same objective measurement of children's experiences, regardless of the type of program they were attending. Therefore, the observed domains were specifically selected to represent experiences that would be positive for children in any setting.

4.2.1. Snapshot observations-Emergent Academics Snapshot scale (Ritchie, Howes, Kraft-Sayre, & Weiser, 2001)

The Emergent Academics Snapshot (EAS) is a time-sampling procedure used to capture aspects of adult–child interaction, teaching style, and the activities in which children are engaged. Over the course of a program morning, a minimum of 30 and up to 50 observations are collected for each child. Up to four target children are observed in sequence throughout the morning. To complete a Snapshot, the observer locates the first target child and spends a 1-min period observing and coding the child's activities and interactions. The observer then moves on to the next child on the list. This process is repeated in 4-min blocks of time throughout the morning. Domains coded using this system include: (1) *activity setting:* a forced-choice category indicating the general structure of the time period, including Free Choice, Basics, Meals/Snacks, Whole Group, Small Group, Individual Time, Outside Time or Unengaged;

(2) *child engagement*: a non-mutually exclusive rating of the pre-academic content area addressed by the observed child's activity, including Pre-Reading, Letter-Sound, Math/Number, Social Studies, Oral Language Development, Gross Motor, and others; and (3) *teacher instructional interactions:* a non-mutually exclusive rating of the teaching style experienced by the target child (as applicable), including scaffolding (supporting and enhancing children's learning in developmentally appropriate ways) and didactic (presenting information and instructions) interactions with the child being observed.

Each of the observational tools used in this study required extensive observer training and assessment of reliability. Training included initial group introductions and background readings for each measure, videotaped observations for practice purposes, in-the-field practice including debriefing with a certified trainer, and reliability testing done either in the field or via master-coded videotapes. The trainers were individuals with MAs or PhDs in child development or psychology who had been trained by and established interobserver reliability with the PIs and/or the developers of each measure and also had skills in training others on the measure. These trainers were considered to have achieved "gold standard' status on the measures. Training for the EAS was conducted in the summer, several weeks prior to its fall administration in the study.

Requirements for certification of observers before collecting data included successful completion of the training course as well as achievement of item-level scores of at least *kappa* (κ) greater than or equal to .65 with gold-standard trainers. Kappas of .65 or higher are viewed as indicating good agreement (Landis & Koch, 1977).

Data from each individual observation are aggregated to produce summary scores, at both the child and classroom level, of the percentage of the observation time spent in various activity settings and interaction types. For this analysis, classroom aggregate scores were used to describe the proportion of time children experienced activity settings, and child-level aggregates were used in analyses of the associations between classroom characteristics and individual children's engagement in academic activities and experiences of teacher instructional interactions. Child-level scores for academic engagement represent the proportion of the observed day that an individual target child was engaged in oral language development activities, or science activities, for example. Scores for scaffolds and didactic represent the proportion of the total observation in which the teacher was engaged in each of these instructional interaction modes with the target child.

4.2.2. Classroom Assessment Scoring System (CLASS) – Pre-K version (LaParo, Pianta, Hamre, & Stuhlman, 2001; LaParo, Pianta, & Stuhlman, 2004)

The CLASS is an observational instrument developed to assess instructional quality. Data collection in the pre-kindergarten years of this study was done before the 2004 version of the CLASS was finalized, so the 2001 version was used in this study. Individual items were summarized to closely resemble the current version into two scales: emotional climate and instructional climate. Each of the individual constructs in the scale is rated on a 7-point rubric. The constructs are rated multiple times throughout the program morning, after each 20-min EAS cycle is completed. The EAS and CLASS observations were conducted during a single observation day at each site by the same observer.

Training on the CLASS was done concurrently with training on the EAS, since these observations were conducted in concert during classroom observations in the field. Training included use of mastercoded video clips to provide examples of various levels (high, low, and moderate) of the CLASS dimensions. Requirements for certification on the CLASS were to code five reliability clips independently and score within one point on the master-coded videotapes on 80% of their scores averaged across the segments, and within one point on each dimension for over 50% of the dimensions. This is a standardized set of reliability tests developed by the publishers of the CLASS.

The CLASS observation yields individual ratings in emotional and instructional domains, ranging from 1 to 7 possible points. In this analysis, we used the Emotional Climate composite score and the Instructional Climate subscales. The Emotional Climate composite is an average of the individual scores on positive climate, negative climate, teacher sensitivity, over-control, and behavior management (α = .89). Positive and respectful child–teacher and child–child interactions rather than hostility, anger, and aggression characterize classrooms with high Emotional Climate scores. The Instructional Climate score is an average of individual scores for concept development and quality of feedback (α = .48).

4.2.3. Early Childhood Environment Rating Scale – Revised (ECERS-R; Harms, Clifford, & Cryer, 1998) and Early Childhood Environment Rating Scale – Extended (ECERS-E; Sylva, Siraj-Blatchford, & Taggart, 2003)

The ECERS and ECERS-R have been widely used in child development research (Helburn, 1995; Phillips & Howes, 1987). This observational scale comprehensively assesses the overall day-to-day quality of care provided for children after a detailed 4–5-h observation of the classroom and activities when children are present. ECERS-R items are rated on 7-point scales with a 3 indicating minimal quality, a 5 indicating good quality, and a 7 indicating excellent quality. The ECERS-E is a relative newcomer to the field of environmental rating scales, and uses the same scoring rubric to observationally evaluate the quality of curricular features in various academic domains. In the present study, a reduced set of ECERS-R and ECERS-E items was used in a modified approach to assessing observational quality. Perlman, Zellman, and Le (2004) have shown that reduced numbers of ECERS-R items may reliably measure program quality, and a set of 10 items was identified to adequately capture quality. We chose to use this modified approach, but to include some additional items to capture specific content areas which may reflect use of curriculum or programs' philosophy toward enhancing school readiness. In this study, we considered that family child care homes that are both licensed and professionally attached to supporting agencies should be observed through the same lens as center-based programs, and therefore we administered the same set of ECERS-R and ECERS-E items when observing child care homes and child care centers.

The modified set of ECERS items was rated during a second day of observation in each classroom, conducted a few months after the EAS and CLASS observation, in the winter of the program year. The observer spent the entire morning (until program end for half-day programs or nap time for full-day programs) conducting a naturalistic observation and coding the ECERS items based on the whole observation. Training was done in the weeks prior to data collection, and included lecture-based introduction to the background and scoring procedure for ECERS items. This training was followed by in-the-field practice and debriefing with the group and a certified trainer. Reliability testing was done in the field with gold-standard trainers. Observers were certified to administer the ECERS in the field when they achieved scores of at least *kappa* (κ) greater than or equal to .65 with gold-standard trainers.

The reduced set of ECERS-R and ECERS-E items was combined into a scale reflecting global quality of the academic materials and experiences of children (ECERS Academic Environment Scale), reflecting an average of five ECERS-R items (22-Blocks, 24-Dramatic Play, 25-Nature/Science, 26-Math/Number, and 20-Art) along with six ECERS-E items (Language items 1–5: Environmental print, Books and literacy, Adult reading with children, Sounds in words, Emergent writing/mark making, and Math item 1: Counting). Each

of the items had possible scores ranging from 1 to 7 points. This Academic Environment scale had a mean of 3.42 (*SD* = .71) reflecting low to adequate quality, and good internal consistency (α = .73).

4.2.4. Child school readiness outcomes

As part of the larger longitudinal study, children participated in individually administered assessments at the beginning and end of the academic year. The focus of analyses of children's academic skills for this paper is children's English vocabulary development, math reasoning skills, and socio-emotional behaviors. The Peabody Picture Vocabulary Test, 3rd edition (PPVT-3; Dunn & Dunn, 1997) is a receptive language test that can be reliably administered to children as young as 21/2 years, and is used extensively in studies of young children's development. For each vocabulary item, the child is asked to point to the picture in an array of four pictures which represents the word spoken by the test administrator. Scores are standardized with respect to norms for child age. Math reasoning was assessed using the Woodcock–Johnson Tests of Achievement Applied Problems subtest (Woodcock, McGrew, & Mather, 2001). This assessment incorporates increasingly difficult questions involving reasoning about numbers, beginning with simple counting of pictures of items and advancing to reasoning about quantity and arithmetic transformations. Applied Problems scores are also standardized relative to age norms. Standardized PPVT and Applied Problems scores in the general population have a mean of 100 and a standard deviation of 15 points.

At the end of the assessment battery, assessors rated the behavior of children during the assessment on a series of dimensions, including positive and negative emotionality, frustration, persistence, and self-regulation. These ratings include items from the Woodcock–Johnson assessment and a subset of items used by Raver and colleagues in their self-regulation battery (Smith-Donald, Raver, Hayes, & Richardson, 2007). Principal components factor analysis of these assessor ratings guided our conceptual grouping of the items into three composite measures of happy, less anxious, and regulated (total variance = 60.19%). The happy composite is composed of three items: intense positive emotions (ranging from 0 = child does not show positive emotions during assessment to 3 = child is very positive, exhibiting laughter and/or prolonged giggle, broad smiles, or clapping), takes pleasure in accomplishment (0 = child makes negative comment or negative expression when completing task, 3 = child appears happy after completing task; may show excited body movements), and intense sad/worried emotion – reverse coded (0 = child does not appear apprehensive, sad or worried during assessment to 3 = child is upset, cries, or whimpers during testing or assessment ended due to child distress). This scale had adequate internal reliability of α = .66. The less anxious composite is the average of the following three items: anxious/self-confidence – reverse coded (0 = child appeared self-confident and assured, 3 = appeared overly anxious), won't try difficult tasks – reverse coded (0 = noticeably increased effort for difficult tasks, 3 = would not try difficult tasks at all), and confident (0 = child shows hesitation or reluctance on easy items, gives up easily [e.g. "I can't do this"], 3 = child shows confidence by comments such as "I know this one;" child is eager, energetic). The internal reliability for the less anxious composite was also acceptable, α = .69. Finally, the regulated composite was composed of 8 items (well-regulated, takes care in responding, and all of the following reverse-coded: uncooperative, overly active, distracted, defiant, non-compliant, intense angry emotions). Examples of these items include well-regulated (0 = child becomes very sad, frustrated or silly, and has difficulty regaining self-control, 2 = child becomes briefly sad, frustrated, or silly, but quickly calms without help from adult assessor, 3 = child highly regulated; never becomes sad, frustrated, or silly) and non-compliant – reverse coded (0 = child hears requests and responds appropriately; 2 = child ignores examiner but responds to prompt when assessor repeats request/directive; 3 = child appears not to hear instruction, even when assessor repeats request). This composite had a good internal reliability, α = .82.

Data collectors assessing children also were required to complete a rigorous training program to learn the complex administration rules for the PPVT, Woodcock–Johnson, and other measures used in the full assessment battery. Training for the assessor behavior ratings included videotape clips and group consensus discussions. Assessors could not begin fieldwork until they passed an assessment with an age-appropriate child with 100% accuracy on all technical aspects of the procedures, and achieved 90% reliability within one point on each of the behavioral ratings with the gold standard trainer on the assessor-ratings items.

Different teams of data collectors were trained on each measure. As described above, the CLASS and EAS measures were conducted on the same day by the same observer. The ECERS observations were conducted on a second day 2–4 months later by a different team of observers. Child assessments were occasionally conducted in the child care setting by the same observer who collected the ECERS observation data (fewer than 15% of cases), but there were no systematic differences between children's assessment scores for those assessed in school and those who attended preschool but were assessed by home-visiting data collectors.

5. Results

Means, standard deviations, and percentages of all analysis variables as used at the child- and classroom-levels are presented in Tables 1 and 2. The classroom quality measures are each positively correlated with each other (CLASS Emotional Support and Instructional Support r = .48; CLASS Emotional Support and ECERS Academic r = .28; CLASS Instructional Support and ECERS Academic r = .34; all ps < .01). The assessor ratings of children's assessment behaviors were also significantly intercorrelated (regulated with happy r = .24, regulated with less anxious r = .44, and happy with less anxious r = .50; all ps < .01).

The first step in data analysis was to examine patterns of activity settings, as measured by the EAS. When these data are aggregated at the child level, they indicate the proportion of time that each child was observed engaged in each activity setting. Most classrooms included multiple target children observed. Although activity settings were coded based on observation of individual children, we expected that these variables could be considered measures of the classroom-level engagement in different settings throughout the day. Activity setting is conceptualized as the engagement mode typically specified by the adult in charge-the type of classroom format that the entire group of children is expected to be involved in.

To confirm the validity of using activity-setting data aggregated at the classroom level rather than the individual-child level as they were originally recorded, intraclass correlations were computed to assess the similarity of child-level aggregates of activity settings within classroom groupings. Intraclass correlations were computed in all classrooms with three or more children. These are presented in the third column of Table 1 along with the classroom-level means and standard deviations for each of the activity-setting variables. Virtually all of the intraclass correlations are high (.65 and above) with the exception of meals/snacks which was .41, suggesting that classrooms may provide more child-level flexibility for the provision of food based on children's needs. Overall these intraclass correlations suggested little child-level variability in activity settings within classrooms. Therefore, because activity setting is reasonably conceptualized as a group variable, the following analyses regarding activity settings use classroom-level aggregates of time spent in each activity setting.

Table 1
Descriptive statistics for classroom-level measures overall and by daily routine profile.

	Total	*ICC*	Structured balanced		High free choice		X^2/F
	%/*M*(*SD*)		*N*	%/*M*(*SD*)	*N*	%/*M*(*SD*)	
EAS activity settings[a]			89		36		
Basics	.16(.09)	.75		.18(.09)		.11(.05)	14.17*
Meals	.13(.08)	.41		.13(.09)		.13(.05)	.01
Whole group	.17(.14)	.74		.19(.14)		.10(.09)	12.13*
Small group	.11(.11)	.70		.13(.12)		.04(.07)	17.09*
Free choice	.40(.17)	.65		.32(.11)		.61(.09)	179.94*
Outside time	.24(.16)	.88		.19(.12)		.36(.18)	39.37*
Primary curriculum			49		33		11.92*
None	4.9			6		3.0	
Creative curriculum	34.1			26.5		45.5	
High/scope	31.7			36.7		24.2	
DLM express	11.0			18.4		0	
Other	18.3			12.2		27.3	
CLASS			88		36		
Emotional support	5.98(.53)			6.01(.49)		5.90(.62)	.98
Instructional support	2.15(.61)			2.16(.62)		2.15(.62)	.01
ECERS Academic	3.60(.85)		76	3.61(.80)	30	3.51(.95)	.28

[a] Means and standard deviations represent proportion of the full observed day spent in each activity setting. Proportions for EAS activity settings do not sum to 1.00 because outside time was always double-coded with another activity setting code to describe the nature of outside time. ICC = Child-level Intraclass Correlations for children within individual classrooms in which 3 or more children per classroom were observed.
* $p < .05$.

The intra-class correlations were computed in the classrooms with 3 or more target children observed in order to support the use of data gathered at the child level and aggregated at the classroom level to indicate a classroom-level phenomenon. Intra-class correlations computed for all classrooms, regardless of the number of children observed yielded similar results. Further analysis described in this paper includes all classrooms, regardless of the number of children observed.

5.1. Latent class analysis of activity settings

The most prevalent classroom activity setting was free-choice activities, followed by time spent outside (which often overlapped with the free choice category), basics (activities like transitioning from one activity setting to another, waiting in line or for materials, toileting, and the like), whole-group activities, and meals (see Table 1). Most classrooms spent nearly three quarters of their day or more in a combination of free-choice, basics/transition, and whole-group activity settings. A series of latent class analyses was conducted in MPlus (Muthén & Muthén, 2006) to test whether the data supported distinct patterns of daily routine profiles. Latent class analysis allows the existing data to guide the grouping of individual cases into "classes" in which members of each class are most similar to each other in their values on the variables in question, and most dissimilar in comparison to members of other classes (McCutcheon, 1987). The variables used in this analysis are the EAS activity settings variables (basics, meals, free choice, whole group, small group, outside time) aggregated at the classroom level.

Table 2
Descriptive statistics for all child level variables.

	M(*SD*)/%
EAS child engagement	
Read to	.04(.04)
Letter-sound	.03(.04)
Oral language development	.10(.11)
Writing	.01(.03)
Math/number	.08(.09)
Science	.13(.10)
Aesthetics	.16(.12)
Gross motor	.12(.11)
Fantasy play	.12(.10)
EAS teacher instructional interactions	
Didactic	.30(.18)
Scaffolding	.14(.13)
Child school readiness outcomes	
PPVT-3 standard score	81.08(18.62)
Woodcock–Johnson applied problems	92.65(15.24)
Assessor ratings: Happy	2.96 (.47)
Assessor ratings: Less anxious	2.98 (.49)
Assessor ratings: Regulated	3.26 (.56)
Control variables	
Child age in months at assessment	52.6(5.7)
Home language is not English	49%
PPVT-standard score baseline	82.3(17.9)

Note: The EAS code for outside time is not mutually exclusive with the other codes and therefore EAS proportions do not sum to 1.00.

A 2-class model was supported by the data, whereas a 3-class model was not (indicated by a non-significant LRT; 2-class model: Loglikelihood = 558.072, Lo-Mendel-Rubin Adjusted LRT $p = .02$, SS-BIC = −1084.49; 3-class model: Loglikelihood = 574.25, Lo-Mendel-Rubin Adjusted LRT $p = .25$, SS-BIC = −1105.18). When the profiles for 2- and 3-class models were examined for conceptual coherence, the 2-class model seemed to identify one daily schedule profile that could be labeled "High Free Choice" with an average of 61% of the day spent in free-choice activity settings and 36% of the day spent outside, and a second profile that was more "Structured-Balanced" with relatively higher proportions of the day spent in teacher-directed settings (19% in whole group and 13% in small group, compared to 10% and 4%, respectively in the High-Free-Choice profile). This more balanced daily schedule profile still included a significant proportion of the day in free-choice activities (32%; which is equivalent to the amount of time spent by this group of classrooms in teacher-directed settings [whole and small group combined]). (The rejected 3-class model similarly identified the High-Free-Choice profile, and divided cases from the Structured-Balanced group into one group with relatively higher proportion of time spent in meals and one with less time in meals.)

Comparisons of mean values for each of the activity-setting variables used in the latent class analysis revealed that classrooms in the Structured-Balanced profile spent more time in whole group and small group activity settings than classrooms in the High-Free-Choice profile. Additionally, Structured-Balanced classrooms spent more time in "basics," which includes activities like transitioning from one activity setting to another, waiting in line or for materials, toileting, and the like. In contrast, classrooms in the High-Free-Choice profile spent more time in free-choice activity settings and more time engaged in outdoor activities than classrooms in the

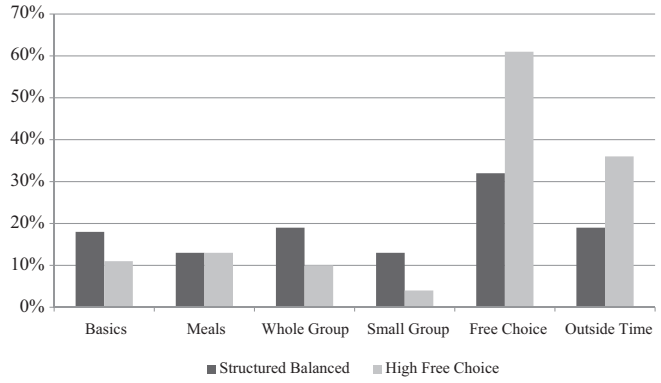

Fig. 1. Percentage of time in each activity setting by daily routine profile.

Structured-Balanced profile. Classrooms in the two profiles did not differ significantly in terms of the amount of time spent in meals (see Table 1 and Fig. 1).

5.2. Daily routine profiles and program-level correlates

Program type was associated with the daily routine profiles ($X^2 = 8.45$, $p = .02$). Within each program type, Structured-Balanced was the modal group, which is not surprising given that over 70% of the programs in the sample fit the Structured-Balanced daily routine profile. Examining the distribution of program types within each daily routine profile reveals that family child care programs and private center-based programs were more likely to display the High-Free-Choice daily routine profile than public center-based programs. Family child care programs and private center-based programs accounted for 28% and 53% of the classrooms in the High-Free-Choice group, respectively. These frequencies are disproportionately high given that family child care and private center-based programs accounted for 20% and 38% of the entire sample, respectively. In contrast, public center-based programs were underrepresented in the High-Free-Choice group, accounting for only 22% of the classrooms identified as High Free Choice, but 42% of the entire sample.

Teacher-reported primary curriculum was significantly associated with their classroom's daily routine profile. Creative Curriculum was more nearly evenly distributed in High-Free-Choice and Structured-Balanced classrooms, but High/Scope and DLM Express were more likely to be reported by teachers who had Structured/Balanced classrooms (see Table 1). When the program type (public, private, family child care) was taken into account along with curriculum use, we found a significant association between curriculum and activity profile for public center-based programs only, such that the distribution of curricula within each activity profile varied ($X^2[3] = 10.22$, $p < .01$). Within public classrooms, Structured-Balanced classrooms were more likely to use the High/Scope curriculum or the DLM Express curriculum whereas the High-Free-Choice classrooms had a more equal distribution of curriculum use but no instances of DLM Express. There were no differences in curriculum use by daily activity profile in private center-based classrooms or family child care homes ($X^2 < 1.0$ for each).

The three measures of classroom quality did not differ as a function of daily routine profile. Mean comparisons of CLASS and ECERS composite scores yielded no significant differences between Structured-Balanced and High-Free-Choice classrooms (see Table 1). Each of these analyses was also conducted while controlling for program type. There were no meaningful differences in the results, suggesting that after accounting for structural differences, daily routine profiles are not significantly related to these measures of process quality (results available from the authors).

5.3. Predicting children's opportunities for learning and teachers' instructional strategies

The analyses above addressed program- and classroom-level correlates of the two daily routine profiles we identified. In this next set of analyses, we sought to identify the possible association of each of these profiles with individual children's engagement in activities of varying academic content and instructional interactions with their teachers. For these analyses, multi-level regressions were conducted using MPlus, accounting for the nesting of individual children within classrooms, and the use of both child-level and classroom-level predictors of child-level dependent variables. Two-level regressions predicted each of the following outcomes: time in academic activities (being read to, letter/sound activities, oral language development, writing, math, science, aesthetics [art/dance/music], gross-motor play, and fantasy play), and time experiencing different types of teacher engagement (didactic instruction and scaffolding). A dummy variable indicating Structured-Balanced activity class (with the High-Free-Choice class as the contrast group) was the predictor variable. Regressions controlled for program type (classroom-level dummy codes representing public center and private center, with family child care as the contrast group) in order to account for variations in activity profiles that were associated with structural differences in program types. Process quality (CLASS Emotional Support, CLASS Instructional Support, and ECERS Academic) was also included as a control variable in order to determine the unique association between activity profiles and children's time engaged in learning activities, regardless of process quality. Finally, children's age in months at observation was used as a child-level covariate.

Results of these regressions are presented in Table 3. After controlling for variation in classrooms' process quality, children in Structured-Balanced programs spent more of their day being read to, and engaged in letter/sound, math, and art and music activities (aesthetics). Time in oral-language and science activities was not predicted by activity routine profile, and there was not enough variance in children's time in writing activities to run the regression model. More time in gross motor and fantasy play was associated with being in a High-Free-Choice program.

Regression results for children's experiences of didactic and scaffolded interactions with their teachers are presented in Table 4. After controlling for program type and process quality variables, being in a Structured-Balanced classroom was associated with more scaffolding but not associated with the amount of didactic interactions children experienced.

5.4. Classroom routines and children's school readiness skills

The final set of analyses addressed the question of whether being in a classroom that has a Structured-Balanced or High-Free-Choice daily routine profile is associated with children's school-readiness skills in language, reasoning, and socio-emotional domains. These multi-level regressions incorporate child-level controls of home language to account for potential differences in early school readiness for children from language-minority homes, child age at observation, and a baseline (beginning of the observed school year) measure of receptive English vocabulary (PPVT) to account for children's developmental starting point. Early language skills can be considered a proxy for baseline skills in many school readiness domains, as children with stronger language in the preschool years tend to have better social skills and fewer behavioral problems that could stem from communication frustrations (Cohen & Mendez, 2009; Kaiser, Cai, Hancock, & Foster, 2002).

Table 3
Results from multi-level regression models predicting child engagement in academic and developmental activities.

	Read to	Letter/sound	Oral language development	Math	Science	Aesthetics	Gross motor	Fantasy play
Intercept	−.093 (.049)	.049 (.060)	.035* (.153)	.067 (.081)	.305* (.108)	.381* (.143)	.285* (.136)	.502* (.101)
Child age	.000 (.001)	−.001 (.001)	−.003 (.002)	.000 (.001)	−.001 (.001)	−.001 (.002)	.000 (.001)	.000 (.001)
Program type								
Public center	.004 (.014)	−.013 (.014)	−.020 (.022)	−.013 (.016)	−.026 (.024)	.004 (.039)	.002 (.026)	−.027 (.028)
Private Center	−.018 (.012)	−.021 (.013)	−.018 (.023)	−.042* (.017)	.021 (.025)	.026 (.042)	.022 (.024)	−.024 (.032)
Program quality								
CLASS-emotion	.024* (.008)	.001 (.013)	−.044* (.022)	.016 (.013)	−.042* (.018)	−.046* (.023)	−.035 (.020)	−.059* (.015)
CLASS-instructional	−.017* (.008)	.016* (.009)	.107* (.018)	.062* (.014)	.057* (.015)	.071* (.028)	.014 (.014)	.043* (.014)
ECERS-academic	.003 (.005)	−.007 (.005)	−.021* (.010)	−.010 (.007)	−.001 (.010)	−.021 (.018)	.005 (.012)	−.013 (.010)
Daily activity structure								
Structured-balanced	.021* (.008)	.024* (.008)	.027 (.018)	.027* (.014)	−.019 (.019)	.059* (.025)	−.051* (.025)	−.089* (.021)
SRMR								
Value for within	.000	.000	.000	.000	.000	.000	.005	.002
Value for between	.000	.000	.001	.000	.000	.000	.002	.002

Note: Values in table are regression estimates (*B*) and values in parentheses are standard errors (*SE*). *N* = 183. The contrast group for Public Center and Private Center is Family Child Care. The contrast group for Structured-Balanced is High Free Choice. SRMR = Standardized Root Mean Residual.
* $p < .05$.

Classroom-level control variables in the model are the same as in the previous regressions: dummy variables for program type, CLASS Emotional and Instructional Climate scores, and ECERS Academic Environment score. A dummy variable indicating the Structured-Balanced daily routine profile is the predictor variable. Results are presented in Table 5. Being in a classroom with a Structured-Balanced daily routine profile was associated with higher end-of-year PPVT scores after controlling for baseline PPVT scores and the other child and classroom characteristics. Activity profile did not have an independent association with the other school-readiness variables.

6. Discussion

The current outcomes-based educational climate emphasizing teacher-directed and academically oriented instruction is counterbalanced by supporters of early educational approaches arguing that children do their best learning in all domains in play-based settings (e.g. Bodrova & Leong, 2007; Zigler & Bishop-Josef, 2006) and free-play opportunities should not be reduced for the sake of teacher-directed academic activities. Indeed, advocacy organizations concerned about what seems to be the disappearance of play in early childhood programs have also organized around this topic (see for example the Alliance for Childhood's recent report *Crisis in the Kindergarten*, Miller & Almon, 2009). Furthermore, the developmental research community has responded to the increased focus in schooling on standardized testing by calling for more attention to teaching the "whole child" – emphasizing critical thinking skills, problem solving, and providing more open-ended learning opportunities to enhance all the inter-related domains of children's development including cognitive, physical, social, and emotional learning (e.g. Diamond, 2010).

Table 4
Results from multi-level regression models predicting teacher engagement: didactic and scaffolding.

		Didactic	Scaffolding
Intercept	*B*	.146*	.340
	(*SE*)	.158	.161
Age	*B*	.002	−.004
	(*SE*)	.002	.002
Public center	*B*	−.038	,026
	(*SE*)	.047	.025
Private center	*B*	−.031	.014
	(*SE*)	.046	.024
CLASS-emotion	*B*	−.021	−.058*
	(*SE*)	.026	.024
CLASS-instructional	*B*	.161*	.159*
	(*SE*)	.029	.017
ECERS-academic	*B*	−.044*	−.012
	(*SE*)	.019	.011
Structured-balanced	*B*	.026	.043*
	(*SE*)	.037	.019
SRMR (Standardized Root mean Residual)			
Value for within		.001	.000
Value for between		.000	.000

Note: *N* = 183. The contrast group for Public Center and Private Center is Family Child Care. The contrast group for Structured-Balanced is High Free Choice.
* $p < .05$.

Our findings provide some descriptive data relevant to this conversation. First, the two activity profiles we identified suggest that there are a significant number of early learning settings in which free play may be balanced along with time in more structured activity settings. These activity profiles can be found in different types of programs, but public school settings and particularly those implementing the very structured DLM Express curriculum are especially likely to incorporate this type of daily routine. On the other hand, programs engaging in high levels of free choice also exist, particularly in private preschool classrooms. We did not identify a group of program dominated by highly rigid, teacher-directed activity patterns. This finding alone might be reassuring to those who fear that early education programs are moving too far away from their traditional focus on hands-on child-directed activities. Even among the classrooms with a Structured-Balanced daily routine profile, children spent on average 32% of their day in free-choice settings.

One advantage of the Emergent Academics Snapshot measure is the ability to consider the real time that is represented by its measurement. On average, the children in this study spent 40% of their day in one activity setting-free-choice-which has implications for their opportunities for various types of experiences and instruction measured in this study. An average EAS observation lasts approximately 4 h (all of a half-day program, or all morning in a full-day program). Thus, the overall value of 40% of the day in Free Choice is equivalent to 96 min, or 1.6 h. Time spent in teacher-directed activity settings (small-group and whole-group) on average was 28% of children's day, representing about 67 min. The difference in the amount of time classrooms in the two activity profiles spent in Free Choice is about 70 min (an average of 146.4 min in the Structured-Balanced classrooms and 76.8 min in the High-Free-Choice classrooms). The other striking difference in time between the two profiles is in teacher-directed small-group time which differs by about 22 min (31.2 min in Structured-Balanced classrooms, and 9.6 min in High-Free-Choice classrooms).

Table 5
Results from multi-level regression models predicting child school readiness outcomes.

		PPVT	Applied problems	Assessor ratings: happy	Assessor ratings: less anxious	Assessor ratings: regulated
Intercept	*B*	41.77*	55.83*	2.01*	2.19*	1.98*
	(*SE*)	19.15	19.48	.691	.527	.87
Home language	*B*	2.69	−.947	.010	−.011	−.l62
	(*SE*)	2.59	3.42	.109	.098	.134
Age	*B*	.047	−.438	.004	.010	.012
	(*SE*)	.249	.233	.009	.006	.009
Baseline PPVT	*B*	.713*	.523*	.002	.009*	.009*
	(*SE*)	.076	.104	.003	.003	.004
Public center	*B*	1.56	−2.80	.061	−.044	.069
	(*SE*)	4.28	3.32	.147	.122	.205
Private center	*B*	1.56	−2.59	.020	−.074	.014
	(*SE*)	4.28	4.10	.155	.130	.205
CLASS-emotional	*B*	−2.69	3.49	.068	−.079	.008
	(*SE*)	2.82	3.18	.123	.078	.130
CLASS-instructional	*B*	−.977	.374	−.101	.104	.105
	(*SE*)	2.50	3.02	.076	.070	.096
ECERS-academic	*B*	−2.07	−.506	.079	−.047	−.057
	(*SE*)	1.55	2.08	.068	.054	.086
Structured-balanced	*B*	6.51*	6.99	.027	.042	.169
	(*SE*)	2.86	4.53	.124	.106	.149
SRMR (Standardized Root mean Residual)						
Value for within		.001	.000	.001	.001	.000
Value for between		.010	.001	.006	.005	.000

Note: *N* = 183. The contrast group for Public Center and Private Center is Family Child Care. The contrast group for Structured-Balanced is High Free Choice. The contrast group for home language is not English.

* $p < .05$.

When exploring possible program characteristics that might predict the High-Free-Choice or Structured-Balanced pattern of activity profiles, we found that the Structured-Balanced profile was most common for all program types. This finding challenges the commonly held belief that family child care programs are always less structured than center-based programs. Among the three program types sampled, public programs had the highest proportion of classrooms that fit the Structured-Balanced profile, however, private center-based programs were equally likely to have either activity profile. One interpretation of this finding is that public programs are under the most pressure to produce measureable progress in children's school readiness outcomes, especially in the areas of language and literacy. Another interpretation is that public programs are most closely aligned with the K-12 education system, which traditionally emphasizes teacher-directed instruction over child-directed learning.

Together, the findings of this study suggest that analyzing activity settings and daily routines is useful because it provides additional information about children's experiences in early education programs that is not captured by structural program characteristics or traditional measures of process quality. The two activity-settings profiles did not exhibit differences in measures of process quality, yet were associated with differences in children's opportunities for learning and their language scores. Therefore traditional observational measures of process quality may be missing important information relevant to children's learning in early education settings. Researchers who study activity settings and daily routines in order to understand child development have argued that activity settings and daily routines are meaningful units of analysis because they are perceptible instantiations of the larger ecological and cultural system (Gallimore & Goldenberg, 1993; Weisner, 2002). When applied to the context of preschool learning environments, this suggests that early childhood teachers balance ecological resources and constraints, as well as personal and societal values and beliefs as they organize activity settings into sustainable daily classroom routines.

The two identified patterns of daily routines were related to some differences in children's opportunities for learning, teachers' instructional strategies, and the development of children's language skills. After controlling for structural program characteristics (program type) and process quality, we found that daily classroom routines predict children's opportunities for engagement in activities of various academic content and different kinds of instructional interactions with teachers. Regression analyses revealed that children in Structured-Balanced classrooms experience significantly more scaffolded interactions with their teachers than children in classrooms that fit the High-Free-Choice routine profile. Children in Structured-Balanced classrooms also engaged in more language and literacy, math, and art activities than those in High-Free-Choice classrooms. In contrast, children in High-Free-Choice classrooms experienced more opportunities for fantasy play and gross motor activity than children in Structured-Balanced classrooms.

Finally, in regression models controlling for children's baseline characteristics, we found that few child outcomes were associated with classroom characteristics. Children in Structured-Balanced classrooms had higher vocabulary scores than children in High-Free-Choice classrooms. This outcome is not surprising and seems to follow logically from the finding that these children experience more language-related activities and scaffolded interactions with their teachers. On the other hand, there was no significant effect of daily routine profile on math reasoning despite the fact that children in Structured-Balanced classrooms engage in more math-related activities than children in High-Free-Choice classrooms. Children's social–emotional behaviors also did not differ as a function of daily routine profile, which suggests that neither routine is more likely to support or suppress children's development in the social–emotional domain.

Our findings are consistent with those of Chien et al. (2010), who identified a "free play" profile in a child-centered latent class analysis that incorporated activity settings, children's pre-academic engagement, and teacher engagement. The children in that group spent a large amount of time in free-choice activity settings and engaging in gross-motor activities. Considerably less time was devoted to academic activities. It is important to highlight the differences between the Chien et al. "free play" group of children and the "High-Free-Choice" group of classrooms identified here.

In Chien et al.'s child-level analysis, the combination of high levels of free-choice with children's engagement in gross-motor activities helped define this group of children. In our classroom-level analysis, the High Free-Choice group of classrooms was defined wholly with respect to time spent in activity settings (an abundance of free-choice time and relatively little whole-group, small-group, and transition time). Children's engagement in academic activities and teachers' instructional strategies were then explored with respect to the daily routine profiles. Each of these approaches uniquely contributes to our understanding of how time spent in different activity settings is an important aspect of children's experiences in early childhood classrooms.

Mashburn et al. (2008) found in a large study of public pre-kindergarten programs that general structural measures of quality and global environmental quality did not predict children's school readiness outcomes, but that the important features of pre-kindergarten classrooms for children's learning were CLASS Emotional and Instructional Support scores. Our findings add to this conclusion by showing that even after controlling for significant associations with CLASS scores, the activity profile was associated with more scaffolded teacher–child interactions and higher child vocabulary scores. Overall, our findings imply that a structured-balanced daily activity routine provides greater opportunities for children to engage in academic activities and teacher interactions that may promote language skills. Future research using a larger sample could test pathways that are suggested by these findings, testing the notion that teacher–child interactions and the time engaged in academic activities are mediators of the association between daily activity routines and children's outcomes.

It is reasonable to consider that rather than making an independent contribution, activity routine profiles might interact with process quality to affect children's experiences. In our study, we did run additional regression models with interaction terms to test this hypothesis, but none of these were significant predictors or added any strength to the models (results available from the authors). Therefore, in this sample, the profiles seem to have an independent association. However, it is important to note that these programs are of low to moderate quality overall, particularly in terms of the CLASS Instructional Support measure. It is possible that in classrooms exhibiting higher instructional quality, daily routines may interact with measures of classroom quality to affect children's experiences.

6.1. Limitations

It will be important to consider the effects of sampling bias as we explore implications of these findings. The sample of programs and classrooms represented here was not designed to be representative of all programs serving low-income children in Los Angeles County. Instead, the sample was originally designed to provide a diverse set of program types (in year 1), and the sample of programs in year 2 represents the places where the original sample of children wound up at age 4. The programs added in year 2 represent some study children entering programs for the first time in year 2, and others transitioning from family child care into center-based care or from one center-based setting to another, so that the sample of programs observed in year 2 includes a larger proportion of center-based classrooms, particularly public preschools and prekindergarten classrooms. Therefore, these data represent a diverse sample of programs but are not statistically representative of the universe of programs serving low-income 3- and 4-year-old children. Generalizing these findings should be done cautiously. These findings can serve as a point of comparison to studies that have focused solely on public center-based programs serving 4-year-old only.

An additional limitation in this study is the fact that the daily activity profiles are based on a single day of program observation. Future research would benefit from measuring daily activity profiles across multiple typical days.

6.2. Implications

This study describes and advances our understanding of the daily experiences of low-income 3- and 4-year-old children attending a diverse set of early learning settings. It adds to findings from other recent studies examining time use in early learning settings by incorporating a more diverse set of early learning program types, and by considering patterns of time in activity settings separately from other observed classroom experiences (Chien et al., 2010; Howes et al., 2008). In addition to several others described in the introduction, our study highlights the need for ongoing consideration of children's actual experiences throughout their day in early learning settings. Future research should use larger samples of programs to explore interactions between the daily routine profiles we identified (High-Free-Choice and Structured-Balanced) and measures of classroom quality to further explain the associations between time in different instructional groupings, program quality, and children's learning. It is possible that these associations are non-linear. Perhaps there is a threshold above which free-choice time negatively impacts the quality of children's experiences; an overabundance of free-choice time precludes engagement in teacher-directed activity settings, which may provide important opportunities for learning.

Although the daily routine profiles we identified were associated with a small number of program characteristics, they appear to measure something different from general measures of program quality. Additionally, our data show that structural program characteristics alone do not necessarily capture the nature of children's actual experiences in classrooms. Considering the way young children's preschool days are structured in addition to classic measures of structural and global quality may add value to investigations of children's experiences in diverse types of early learning programs. The two patterns of daily classroom routine that we identified are helpful in identifying differences in the opportunities children have to engage in various academic activities and to receive different forms of instruction. This information may be particularly relevant for informing critical or intentional teaching practice. Results of this study might push early childhood educators to reflect on the extent to which the daily routines that they implement in their classrooms support children's opportunities for learning, and to be more intentional in their allocation of children's time to various activity settings and activities.

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