The Effects of Context on the Classroom Discourse Skills of Children With Language Impairment

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The importance of communicating effectively in the classroom cannot be underestimated as it is the medium of instruction, the medium through which understanding (or misunderstanding) of curricular content is expressed, and the medium through which students are evaluated daily, in both oral and written forms (Cazden, 1988, 2001). Arguably, accurate and clear communication may be more valued in the school context than in any other context that children encounter. Teachers and speech-language pathologists (SLPs) typically identify children with language impairment (LI) within the classroom context, and assessment and intervention are often carried out within this context as well. Clearly, then, the classroom context is an important one in the identification, assessment, and therapy of children with LI. Despite this importance, there is a rich body of research on the genres and discourse types of the classroom among typically developing (TD) children, but the same work has not been carried out among children with LI. This study was informed by work in classroom discourse among TD children as well as among children with LI and by research in cross-contextual language sample analysis.

Classroom Discourse and LI

Classroom discourse refers to the systematic study of classroom communication, with its unique interactional rules and decontextualized language (Cazden, 1988, 2001). The context of the school differs from the context of the home in many important ways and involves a challenging transition for children (Cazden, 2001; Cook-Gumperz, 1977; Dillon & Searle, 1981; Edwards & Mercer, 1987). A child in an elementary school classroom is slowly acquiring not only knowledge and intellectual development, but also socialization in the rules and values of the classroom, many of which are shaped and framed through discourse (Stubbs, 1976). Classroom discourse is characterized by a power asymmetry that exists between teacher and student that results in the teacher mediating turns at talk, evaluating verbal contributions, and choosing or sanctioning the topics of talk (Edwards & Mercer, 1987). It is also characterized by known-answer questions by the teacher (Cazden, 1988, 2001; French & McClure, 1981) and the use of a three-part conversational structure in which the teacher initiates, the student responds, and the teacher evaluates the response (IRE; Cazden, 1988, 2001; Mehan, 1979). Such specific demands are great for a child entering school; they are presumably greater for a child with communicative difficulties.

A systematic analysis of the unique patterns of communication in the classroom has not yet been undertaken for children with LI, although there has been some related research, mostly in comparing children with LI to their TD peers. Rate of language production is important in classroom discourse as a measure of participation. Children with LI have been shown to have lower rates of participation in the classroom (Fujiki, Brinton, Morgan, & Hart, 1999; Rice, Sell,
Children with LI showed conversational turns that were shorter than those of their non-impaired peers in a special needs classroom (Sadler & Mogford-Bevan, 1997) and during nonstructured preschool activities (Rice et al., 1991). There is no strong evidence to suggest that children with LI initiate less in the classroom, but there is evidence of social reticence or withdrawal (Fujiki et al., 2001; Fujiki et al., 1999), and their short responses may be indicative of such social reticence or lack of classroom participation. Furthermore, preschoolers with LI were more likely to choose a non-impaired peer or an adult as a conversational partner (Rice et al., 1991), and have also shown difficulties in social behavior (Redmond & Rice, 1998) and peer communication (Brinton, Fujiki, & Highbee, 1998; Brinton, Fujiki, & McKee, 1998; Fujiki et al., 2001). Children’s opportunities to learn from using language in real settings, and integrating language strategies taught in therapy into these settings, is greatly diminished if the children avoid participating in conversation (Rice et al., 1991).

Turn taking has been the focus of classroom discourse studies in an effort to identify (a) the three-part classroom discourse structure of initiation-response-feed back (IRF; Cazden, 1988, 2001; Lemke, 1990; Mehan, 1979; Orsolini & Pontecorvo, 1992), (b) evidence of teacher control of talk (Sadler & Mogford-Bevan, 1997), and (c) patterns of student participation (Rice et al., 1991). Turn taking has been examined in children with learning disabilities (Dollaghan, 1987; Donahue, 1984) and among first and second language learners (Lerner, 1995), and it is crucial to understand for children with LI within the classroom. There are two related reasons for this importance: First, children with LI have been characterized as not participating in conversation; that is, not initiating turns with their peers and offering minimalist responses in general (Brinton et al., 1998; Rice et al., 1991). Second, the ways in which teachers create opportunities for student turns is strongly related to how children participate (Lerner, 1995). That is, turn taking in the classroom is distinct from turn taking in the home and community, and it is a pattern that must be learned in order to participate effectively in the classroom. It is also the case that most of the verbal production in a classroom is by the teacher (Stubbs, 1976), thus lending particular importance to the relatively rare initiating turns that are made by children. These types of turns, whether they elicit information, initiate topics or opinions, or request clarification, constitute important data for teachers and SLPs.

Turn types that are of particular interest in the classroom include interruptions and clarification questions. Craig and Evans (1993) found that children with LI produced fewer interruptions in conversation with adults than did TD children, which suggests that the children with LI had difficulty in competing for turns at talk. Children with language disorders and learning disabilities have also been shown to have difficulty with both posing and responding to clarification questions (Brinton, Fujiki, & Sommerring, 1988). Dollaghan’s report (1987) showed that children with learning disabilities may not understand language effectively and thus may not be able to identify misunderstandings or respond to those misunderstandings by asking clarification questions. Donahue (1984) found that children with learning disabilities were less able to ask clarification questions to participate effectively in a referential communication task. In responding to the clarification questions of others, Brinton et al. found that children with language disorders showed more difficulties than did their age- and language-matched peers.

Classroom discourse skills and language assessment. As mentioned previously, discourse among populations with LI has been studied from many perspectives, and the importance of context in language sampling has also been addressed in the field of speech-language pathology (Evans & Craig, 1992; Nettelbladt, Hansson, & Nilholm, 2001; Thompson, Craig, & Washington, 2004). However, there has not been an investigation of classroom context on language use among children with LI. Rather, work carried out in cross-contextual samples has focused on questions of school-related language tasks such as picture description and oral reading (Thompson et al., 2004), parent–child conversation (Nettelbladt et al., 2001), or clinician interview versus free-play sampling (Evans & Craig, 1992). Classroom samples provide a glimpse into how language is used as opposed to how language forms are assessed and learned in clinical contexts. This point is critical, because knowing the utility of sampling is different from knowing the nature of the data that are yielded from different situations in the classroom.

Language sample analysis is a way to consider the effectiveness of a child’s communicative competence in context and identify unique strengths and weaknesses that may not be best evidenced in standardized testing. This type of profile is particularly helpful in addressing the diversity of the North American classroom, in which communication differences and bilingualism are common. Although the cognitive advantages of bilingualism are well-documented (Bialystok, Majumder, & Martin, 2003; Campbell, 1995; Cummins, 1978), the reality for many school-age children in North America is that they are required to function (entirely, in many cases) in their second language (i.e., English) with little support for this transition (Genesee, Paradis, & Crago, 2004).

The Goals of This Study

The goals of this study were to characterize the communicative behavior of children with LI in the context of four classroom discourse types, to identify any differences among the children in response to these discourse types, and to attempt to characterize some of the unique challenges of each discourse type. The current study is one part of a larger exploratory and descriptive study (Peets, 2003) of the classroom discourse skills of children with LI. Based on a lack of attention to this topic in the literature, the study seeks to provide preliminary descriptive data. Although a small-scale study of this kind cannot lead directly to clinical applications, it can add to the growing body of literature on the potential utility of sample analysis by contributing some understanding of classroom discourse as a set of unique interactional structures. This study is the first step in a research program that is designed to determine the nature of classroom discourse challenges for children with LI. Ultimately, such a research program can inform how many contexts are used in sample analysis, what contexts are best suited for assessing target forms of the clinician, and what contexts are most useful for teaching particular target forms. By examining children from naturally occurring cohorts in three special education classes, this study sought to be as representative of the population as is possible in a study with a small number of participants. Therefore, although bilingualism is considered as an important descriptive characteristic of the participants in the current study, it was not a focus of investigation. In the larger study, no subgroup patterns emerged as a function of bilingualism versus monolingualism (Peets, 2003), and this finding supports the decision to include all eligible children regardless of language history.
Eleven children’s verbal productivity and complexity, self-monitoring strategies, and turn-taking patterns were examined and compared in four typical contexts of the classroom: a teacher–student writing conference; a group lesson; a collaborative peer interaction; and sharing time, a monologic narrative task. Cross-contextual comparisons were carried out using a repeated measures analysis of variance (ANOVA). The study addressed the following research questions:

- Do the children’s communicative patterns differ as a function of classroom context?
- What do contextual differences tell us about the shifting set of communicative demands in the classroom?

### METHOD

#### Setting

The data were collected in special education primary school classes designed to support children with LI in a large, urban, publicly funded school system in Toronto. These self-contained special education classes typically consisted of 8–12 children with LI in Grades 1 through 4, a special education teacher holding a master’s degree, and a teaching assistant. Children typically remain in these classes for 2 years, during which time the goal is to maintain grade-appropriate curricular progress as well as targeted remediation of language skills through language-based activities in the classroom. The hope is that the children will rejoin the mainstream classroom with an ability to participate more effectively in the class and meet curricular demands. Participating classes were identified by school SLPs based on their assumptions about the willingness of both principals and teachers to participate in research. The principals and teachers of three classes were approached, and all agreed to participate. Primary school-age children were targeted because the primary class is the first level of special education for children with LI, and the study was interested in the broader context of assessing the effectiveness of the special education classroom as a context for language development. By looking at Grades 2 and 3, the study was able to focus on children who represent a relatively early stage in intervention yet who have also had school experience. Three classes were targeted due to the small number of students in each class. All 12 students (i.e., all of the children in second and third grades) in these three classes were asked to participate, and 1 declined, resulting in a sample of 11 participants.

#### Participants

The 11 children (referred to with pseudonyms) across three separate classes who participated in the study ranged in age from 7;10 (years;months) to 9;5, with a mean age of 8;4. Parents of all children in the study filled out a consent form for participation that was approved by the internal review board of Harvard University as well as the research approval committee of the participating school board. The teachers consisted of 3 special education teachers (1 per class) holding master’s degrees and 3 educational assistants (1 per class) with community college certification. It should be noted that despite having three data collection sites with three separate sets of teachers, results from the larger study showed no clustering as a function of classroom membership (Peets, 2003). All parents reported that their children were late talkers, and 3 reported having more than 1 child with LI. Ten of the 11 participants were born in Canada, and 1 was born in Mexico. Six children were monolingual English speakers, 2 of whom were exposed to (although they did not use) a heritage language in the home. Five children were bilingual speakers, but they varied in the use of a heritage language in their lives (see Table 1). These bilingual children were primarily Canadian-born English users, many of whom were exposed to a heritage language in their homes. Although the presence of a heritage language in the home (even when not used by participants) bears heavily on language and communicative patterns, the sample is reflective of the North American urban context in which the data were collected. Moreover, as seen from the patterns in Table 1, all of the children were speaking English in their community and in the school. The children’s school experiences ranged from 2 to 3 years.

In order to be included in a class for children with LI, all children had to have met the following criteria set out by the school board:

- Assessment indicates that the child’s speech and language is significantly delayed and interferes with the child’s academic and social functioning/development.
- Assessment indicates that the child’s speech and language development is below cognitive functioning, which has been assessed to be in the average range.
- Difficulties are not due to the child’s ongoing hearing difficulties or primarily due to second language issues (that is, a delay is also evident in the first language).
- Behavioral or emotional difficulties are not so severe as to interfere with programming.

This information was verified in student files, although detailed testing results were not consistently available and measurement tools varied. It is noteworthy that although none of the children was diagnosed with phonological delays, there were 3 children in the sample who presented with some minor phonological difficulties. Due to the incompleteness of available assessment information, and in order to establish a common measure of standardized language performance, the children were tested using the Oral and Written Language Scale (OWLS; Carrow-Woolfolk, 1995) (see Table 2 for a summary).

All participants scored more than 1.5 SDs below the mean on their composite language scores, with percentile scores between .5 and 4. Nine of the participants showed scores that indicated both expressive and receptive language impairment, and 2 showed only expressive deficits.

#### Data Collection

Classroom discourse was audiotaped in four different contexts representing different contextual demands as well as different participant structures. The process of identifying the four classroom contexts began with a review of the literature (reported for each context, below), reference to pilot study data (Peets, 2002), consultation with the participating classroom teachers about their typical practices, and observation of the participating classes. Teachers reported using all four contexts in their classrooms on a regular basis, and materials that preexisted in one or more of the classes were chosen for use in each context.

The four contexts included two activities that were directly related to the curriculum (journal-writing conference and small-group
Lesson, and two non-academic activities that targeted the children’s peer interaction and monologic and narrative abilities (structured peer play and sharing time). Guidelines were given for time (e.g., 10 min for journal writing, 15 min for the group lesson), and effort was made to record the same length of segments across participants and contexts. Ultimately, the time varied to a small degree, so proportionate counts were used in coding and analysis to allow for this slight variation.

**Journal-writing conference.** Use of the writing conference was based on its frequent use in research on language and literacy (Dahl, Scharer, Lawson, & Grogan, 1999; Frank, 2001; Gentry, 2005; Strauss & Xiang, 2006; White, Sampson, Seaborg, Fowler, & Kemp, 1994) and its presence as a teaching tool in all three classes examined. The students in all three classes kept journals, and it was either a weekly or a daily task to write in these journals on a teacher-chosen topic that was discussed before writing. Previously, the teachers who had included the journal-writing activity in their classes reported to have used it for events both at home and at school, but they were asked to confine the topics to school-based activities for the purposes of the study. To clearly differentiate the oral from the written components, the teachers were instructed to include a separate discussion to plan the journal entry as well as an actual writing session (which was not necessarily different from their typical practice, but if not followed, would result in data that would have been difficult to compare). The aim of this approach was to help frame the task for the children as a journal-writing task, but to minimize the stress of the written component (which was not the subject of the current investigation). In an attempt to focus on children’s language production as opposed to a student–teacher coconstruction of the journal entry, teacher feedback was restricted to prompts and reminders as opposed to extensive contributions. The session lasted approximately 10 min, occurring privately in a quiet corner of the classroom or in a neighboring classroom.

**Small-group lesson.** Group lessons involved commercially available tools (Achiev cards by LinguiSystems) that were already being used for group lessons in two of the three classrooms observed. The only adaptation to this preexisting teaching tool was to provide the same basic instructions to each teacher in an effort to make the goals of the lessons parallel. The goal of the lesson was to use the cards as a means of practicing group participation in class discussions. The cards depict illustrations of various themes in line drawings, and the theme chosen for the study was spring. Teachers were instructed to use a combination of the suggested questions on the backs of the cards with their own discussion ideas and questions that emerged from the interaction for 15 min.

**Structured peer play.** All three classes had a free-play area in which children were encouraged to play with one another during breaks between formal classroom activities. Due to the small number of total students per class, free-play was typically set up in dyads as opposed to groups. The use of dyads to examine cooperative peer

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<tr>
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<td>43</td>
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<td>92</td>
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<td>67–82</td>
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<td>63</td>
<td>46</td>
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**Table 1.** Use of a language other than English in the home.

<table>
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<tr>
<th>Participant</th>
<th>Second language in the home</th>
<th>Parents speak English to child at home</th>
<th>Child speaks English to parents</th>
<th>Child speaks English to others at home</th>
<th>Child speaks English in the community</th>
</tr>
</thead>
<tbody>
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<td>Frank</td>
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<td>Never</td>
<td>Sometimes</td>
<td>Often</td>
<td>Always</td>
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<tr>
<td>Alex</td>
<td>Yes</td>
<td>Never</td>
<td>Sometimes</td>
<td>Often</td>
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<tr>
<td>Adam</td>
<td>No</td>
<td>Always</td>
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<tr>
<td>Veronica</td>
<td>Yes</td>
<td>Often</td>
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<tr>
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<tr>
<td>Kenny</td>
<td>No</td>
<td>Always</td>
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<tr>
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<td>Yes</td>
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<tr>
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<td>No</td>
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**Note.** Dashes indicate that the questionnaires were not fully completed by the parents.

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play has also been used to study peer discourse in the classroom and other contexts in previous research (Cole, 1986; Getz, 1981; Neppel & Murray, 1997; Tanta, Deitz, White, & Billingsley, 2005) when the focus has typically been to study negotiation and cooperation.

The game “Super Marbleworks” was chosen for the study because it is nonverbal, is easily played cooperatively between two people, and was already being used with dyads in one of the three classrooms studied. It is nonverbal in the sense that it is constructive play; that is, it is oriented around the building of a three-dimensional structure. Because language is not required to play the game, the game was used in the study to focus on the collaborative interaction and negotiations in this goal-oriented task. Children were given a tutorial on how to construct an apparatus with the pieces, using the pictures on the box of the toy as a reference. The children were then instructed to build a structure together, with the only rule being that they must collaborate.

Dyads for this activity were chosen from among the peer group within the class. This means that an impaired child never played with a non-impaired or unfamiliar child, or a child of drastically different ability or age. The goal of this approach was to maximize ecological validity; that is, these children are typically paired to work collaboratively in this way, so such a matching reflects classroom practices and goals.

**Sharing time.** Sharing time was identified by Cazden (2001) as a typical preschool or kindergarten language event. Many language researchers who are interested in classroom discourse have studied sharing time as a source for narrative elicitation that has strong ecological validity (Evans, 1987; Gee, 1986; Michaels, 1991; Murphey, 2003; Poveda, 2001; Silliman & Lamanna, 1986). Moreover, as a discourse structure, it preexisted in all of the three classes studied, as either “show and tell” or “Monday morning news.” For this study, teachers were instructed to carry out “Monday morning news” with the goal of generating a personal anecdote by the children (versus a description of an object, as in show and tell). There was no time limit suggested, and the activity took place as a monologue with the child speaking to the class—a format that all participants would be familiar with due to the presence of sharing time in one form or another in the class before data collection. To ensure ecological validity and task familiarity to the children, the teacher was instructed to give support to the child during this monologic task as he or she typically would in such a context in the classroom.

**Transcription**

Transcription of the audiotapes was carried out using the Codes for the Human Analysis of Transcripts (CHAT) conventions of the Child Language Data Exchange System (CHILDES; MacWhinney, 2000). CHILDES is a system for online data sharing, information sharing, and language analysis software. The software packages (Child Language Analysis Tools, or CLAN) and transcription system (CHAT) were developed to ease communication and data comparisons among child-language researchers, and they include both automated analyses (e.g., mean length of utterance [MLU], type-token ratio [TTR]) and automated coding capacities with independently authored schemes. The speaker turn was chosen as the unit of analysis due to the theoretical importance of the control of talk by the teacher in the classroom, and to enable an examination of conversational shifts from speaker to speaker. TTR has been challenged as a reliable measure of lexical diversity in the past (Hess, Haug, & Landry, 1989; Richards, 1987), particularly with varying lengths of samples. Because the current study did not have the goal of investigating the developmental level of the participants’ language, but rather had cross-contextual comparison as its goal, types per minute (TPM), which controls for time talking in each context, was deemed a more relevant measure of lexical complexity. Special attention was paid to disfluency and self-monitoring phenomena. Ten percent of the data were transcribed by a graduate student in speech-language pathology. Passages were randomly selected to ensure representation from all conditions. Interrater agreement, calculated as the percentage of words agreed divided by total words, was 81%.

**Language Measures and Coding**

Language samples were transcribed and coded in their entirety, within the constraints of time allocations to each task, with the exception of sharing time. For this measure, all narratives were coded for narrative structure, and the “best” narratives were selected for analysis from the total produced, which ranged from one to three narratives per child. To determine participation and self-monitoring rates, the CLAN programs FREQ and MLU of the CHILDES system (MacWhinney, 2000) were used to generate word and turn counts; TTR; mean length of turn (MLT); and frequency counts of pauses, self-repetition, and self-correction. That is, the CHILDES programs enable frequency counts (using FREQ) of phenomena that are identifiable in the transcript itself and therefore need no explicit coding. Rates of language production were calculated based on words, turns, words per minute (WPM), and proportion of child talk to the overall talk produced. Rates of self-monitoring were counted using the FREQ program of the CHILDES system, and proportions were then calculated using words as the denominator. It is only in the case of self-monitoring that words were used as a denominator instead of the turn. This decision was based on precedent in other work on speech fluency (Evans, 1985) and the position that the monitoring of language most often occurs at the word or phrase level.

The turn-taking coding scheme employed here was piloted in the case study (Peets, 2002). The scheme involved turn-level codes that identified the function of talk for both teacher and student. Multi-functional codes were assigned to single turns having more than one function. The scheme elaborated on the IRF interactional structure used by Cazden and others (e.g., Mehan, 1979) by including conversational moves that previous research indicated pose discourse difficulties for children with LI. Turn-taking codes included initiations, responses, feedback (corrective and supportive), attention-getters, clarification questions, directives, private speech, general category (catch-all for phenomena such as exclamations, laughing, sound effects, etc.), and uncodable (i.e., due to intelligibility problems). Turns that involved more than one function were coded as complex, to be available for subsequent analysis should they prove to be frequent. Repeated measures ANOVAs were run on each set of outcome variables as well as the verbal production variables to determine if any observed differences between the contexts were statistically significant.

**Reliability**

The language productivity variables, as well as self-monitoring, were part of the transcription process, and, as such, did not need to be coded. The only coding carried out on the data was for turn
taking, which was done by the author and involved a mutually exclusive and exhaustive system applied at the level of the speaker turn, as described above. A second coder (a doctoral student in language and literacy) was then trained in the coding system, with all discrepancies discussed and a mutual agreement reached on the final code. For the reliability coding itself, 20% of the data was selected randomly, and the second coder coded the data independently, with one conference halfway through the process. This conference was to ensure that there was not “coder drift” by either the first or second coder; that is, that the reliability coding had not changed as a result of applying the codes over time, individually. No codes were changed or altered as a result of this conference, and all codes were included in the determination of the final reliability figure for turn taking, which was 80%, with a Cohen’s (1960) kappa of .77 (i.e., when corrected for chance).

Analysis

One-way repeated measures ANOVAs were used to assess the impact that context played across the dimensions of communication studied. If significant differences in the mean rates of communication dimensions as a function of context were found, pair-wise comparisons of the means were reported.

RESULTS

Repeated measures ANOVAs were used to assess the impact that context had on the communicative performance of the children. Results showed that the communicative performance of the children did vary as a function of context in rates of participation and patterns of self-monitoring and turn taking.

Language Production and Complexity

Rates of language production were calculated based on WPM and proportion of child talk to the overall talk produced. Language complexity was measured by MLT (as an equivalent to MLU), TTR, and WPM (this last variable was used based on the high rate of variation in time spent talking from context to context). According to repeated measures ANOVA, WPM differed as a function of context, with a medium effect size: $F(3, 30) = 6.68, p = .001, \eta^2_p = .40$. Pair-wise comparison of the means showed that sharing time had a higher rate of WPM than did journal writing ($p = .032$) or group lesson ($p = .05$), as summarized in Table 3. Peer play also showed a high rate of WPM, also higher than journal writing ($p = .008$) and group lesson ($p = .001$). When the distribution of talk was considered, group lesson was the only context in which the children were not producing roughly half of the overall talk, showing a large effect size: $F(3, 30) = 62.07, p = .001, \eta^2_p = .861$. According to pair-wise comparisons, the children produced, on average, less of the overall talk in the group lesson than they did in journal writing ($p = .001$), peer play ($p = .001$), and sharing time ($p = .001$).

MLT was used descriptively and TTR provided a measure of vocabulary complexity or diversity by considering the number of unique words as a proportion of total words. To further describe vocabulary diversity, the number of unique words, or types, was also calculated as a proportion of time spent interacting. MLT differed as a function of classroom context, with a medium effect size, $F(3, 30) = 13.96, p = .001, \eta^2_p = .58$, as seen in the means reported in Table 4. Pair-wise comparisons showed that sharing time had a longer MLT than journal writing ($p = .005$), group lesson ($p = .001$), and peer play ($p = .006$). In the journal, lesson, and peer play contexts, the means for MLT were similar, although the MLT for journal writing was higher than that for group lesson ($p = .043$). These three contexts showed a low rate of variability across children, whereas sharing time once again showed a high rate of variability. The longer MLT can be explained by the nature of the task, which was monologic; consequently, the turns were anticipated to be higher in this context relative to the others. What is of considerably more interest is the wide range of performance by the children, with a minimum of 2.9 words per turn and a maximum of 22 words per turn. Although the goal of this context was to elicit a monologue by the children, it was often the case that the teacher offered a lot of input, as evidenced in the mean rate of teacher talk for sharing time of 47.7%. Therefore, it may be the case that those children who were successfully able to generate a monologue were represented in the top quartile (14.8–22) and those unable to do so in the lowest quartile (2.93–5.22).

Self-Monitoring

The self-monitoring variables of self-repetition, self-correction, pauses, and speaker interruptions are summarized in Table 5. Self-repetition varied as a function of context, with a small effect size, $F(3, 30) = 3.90, p = .018, \eta^2_p = .281$, and according to pair-wise comparisons, peer play showed a significantly lower rate than did journal writing ($p = .045$), group lesson ($p = .002$), or sharing time ($p = .036$), and extremely low variability as well. Moreover, the high variability seen only in sharing time once again differentiated this context from the others. Although the rates of self-correction showed a similar pattern to the rates of repetition, in that the children showed the lowest rates in peer play and the highest variability in sharing time, these differences were not significant. There were,
however, several outliers in rates of self-correction in all four contexts at the high end of the distribution (Gloria, Cecelia, and Adam).

A different picture emerged in self-monitoring with respect to pause rate, as the lesson was differentiated from the other three contexts, with a medium effect size, \(F(3, 30) = 17.91, p = .001, \eta^2_p = .44\). Pair-wise comparisons showed that the mean pause rate in the lesson was significantly lower than those in journal writing \((p = .007)\), peer play \((p = .009)\), and sharing time \((p = .035)\). The distributions in each context were not skewed and appeared to be normal-like, and there were no outliers in any context.

In theory, speaker interruption may be initiated by either interlocutor, but in practice, this determination is not always easily made. Therefore, all instances of simultaneous speech involving the target child and another participant were counted, reflecting an overall rate of interruption, which did differ as a function of classroom context, with a medium effect size, \(F(3, 30) = 14.78, p = .001, \eta^2_p = .59\). Group lesson showed a much higher mean rate of interruption than did journal writing \((p = .001)\), peer play \((p = .001)\), or sharing time \((p = .003)\). Once again, sharing time showed a lot of variability, with a standard deviation that was higher than the mean, as well as an outlier at the high end of the distribution (Frank).

### Turn Taking

There were contextual differences with medium effect sizes in the rates at which children tended to elicit, \(F(3, 30) = 14.31, p = .001, \eta^2_p = .59\), and initiate, \(F(3, 30) = 9.94, p = .001, \eta^2_p = .49\). Children also tended to respond, \(F(3, 30) = 78.90, p = .001, \eta^2_p = .89\), and use complex turns, \(F(3, 30) = 17.91, p = .001, \eta^2_p = .64\), differently as a function of context within the classroom (both showing large effect sizes), but not in their use of directives or clarification questions, as summarized in Table 6. Pair-wise comparisons of means showed that the children used elicitations in similar rates in the two most academic contexts: journal writing \((M = 7.9, SD = 2.4)\) and group lesson \((M = 2.56, SD = 2.92)\). They did not elicit at all during sharing time (consistent with expectations for a monologic task), and they elicited more in peer play \((M = 6.55, SD = 3.57)\) than in journal writing \((p = .008)\), group lesson \((p = .001)\), or sharing time \((p = .001)\).

Of all four contexts, children initiated less in journal writing than in group lesson \((p = .026)\), peer play \((p = .001)\), or sharing time \((p = .007)\). On average, the number of initiating turns in peer play was more than twice as many as in journal writing and notably more than both the lesson and sharing time. Although the lesson was significantly lower than peer play \((p = .001)\), there was no statistical difference between it and sharing time. There was no statistical significance to the observed difference between sharing time and peer play. The children used complex turns more frequently in sharing than in journal writing \((p = .001)\), group lesson \((p = .001)\), and peer play \((p = .011)\). More than two thirds of the children’s turns in the journal, more than half in the lesson, and more than a third in sharing time consisted of responses. The journal showed the highest mean at 70.16%, which was higher than the lesson \((p = .003)\), peer play \((p = .001)\), or sharing time \((p = .001)\). The lesson showed a higher response rate than did sharing time \((p = .001)\).

### DISCUSSION

To address the first research question, I compared four classroom contexts on dimensions of language production and complexity, self-monitoring, and turn taking. I found that the children’s communicative patterns did differ as a function of classroom context, as seen in different patterns of language production and complexity, self-monitoring, and turn taking. From a clinical perspective, these findings support the notion that multiple samples may be more representative of how well a child can use language in the context of a classroom than may any one single sample. To address the second research question, I examined the variability of performance among children across the four contexts to determine what contexts appeared to yield what types of language use, and ultimately, what

<table>
<thead>
<tr>
<th>Language monitoring</th>
<th>Journal writing</th>
<th>Group lesson</th>
<th>Peer play</th>
<th>Sharing time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Self-repetition</td>
<td>.002</td>
<td>.002</td>
<td>.002</td>
<td>.001</td>
</tr>
<tr>
<td>Self-correction</td>
<td>.001</td>
<td>.007</td>
<td>.001</td>
<td>.001</td>
</tr>
<tr>
<td>Pauses</td>
<td>.127</td>
<td>.006</td>
<td>.004</td>
<td>.002</td>
</tr>
<tr>
<td>Interruption</td>
<td>.010</td>
<td>.008</td>
<td>.070</td>
<td>.030</td>
</tr>
</tbody>
</table>

Table 5. Descriptive statistics of self-monitoring variables.
challenges each context posed to the children. The pattern of results suggests that children may be strong in one context and not as strong in another, and that there is tremendous variability in children’s ability to meet contextual demands, as seen in sharing time, for example. Contextual differences, as well as a consideration of the demands of each context, are discussed within each dimension of communication that was studied.

**Language Production and Complexity**

The children’s language production rates did vary as a function of context. Some of the findings were anticipated due to the structure of the situation; other patterns of performance offered multiple perspectives on important developmental indices. It is not surprising that the children produced less talk in a group interaction that was led by the teacher while producing more talk in the monologic sharing time. It is surprising, however, that measures of language complexity differed as a function of context—a finding that has important implications for research and clinical language sampling. We cannot make assumptions about the consistency of common developmental indices such as MLT (or typically, MLU), TTR, or other measures of lexical diversity (TPM). These indices are used to compare children with LI to their non-impaired peers, when in fact such measures do not remain constant across contexts. As discussed previously, challenges have been made as to the reliability of TPM across different lengths of samples (Hess et al., 1989; Richards, 1987), and it may be that this applies to different contexts of usage as well. In addition to considering alternate ways of measuring lexical diversity (e.g., number of different words, see Hewitt, Hammer, Yont, & Tomblin, 2005), we must also bear in mind what types of discourse structures demand what type of lexical diversity, and what social interactional effects come into play in the measurement of lexical diversity.

The patterns observed in the various contexts in language production help to identify the differences associated with sampling in each context. It is surprising that the participation rate for sharing time, a monologic task, was comparable to that of journal writing, a dialogic task. The teachers were instructed to support the production of narratives in ways that they typically would in their everyday classes. Therefore, unlike elicitation strategies used by many researchers (e.g., those developed by Peterson & McCabe, 1983), teachers were not limited to neutral back-channelling (e.g., *ahhuh, mmhm, tell me more about that*). Consequently, many of the sharing time interactions involved one or more coconstructed narratives. Thus, the mean rate of child language production may reflect the more dialogic nature of this interaction. An example of this kind of teacher–student dialogue is seen in Alex’s narrative:

> Teacher: ok Alex what did you do on the weekend? Alex: I went my cousin house. Teacher: sorry? Alex: I went my cousin house. Teacher: ok. Alex: to eat and my cousin had a dog. Teacher: pardon? Alex: my cousin had a dog. Teacher: your cousin has a dog is this a new dog? Alex: [unintelligible speech]. Teacher: oh ok was this Saturday or Sunday? Alex: Sunday. Teacher: Sunday ok.

This type of dialogic structure may also be different from the narrative structure of language samples that are taken by clinicians. That is, when clinicians use standard measures of narrative assessment or interact with a child in conversation to generate a more naturalistic narrative, it is unlikely that the resulting structure would be dialogic. It could be that both monologic and dialogic narrative samples would offer a more complete profile of narrative abilities in assessment.

Although it is important to consider TTR as a measure of lexical diversity, the current results demonstrate that this measure may have misrepresented patterns in the data. That is, when time spent talking was considered in the measure of lexical diversity, a different perspective emerged that differentiated sharing time from the other three contexts. These results suggest that monologic communication may require a more varied use of vocabulary than highly structured, academically oriented talk (e.g., the journal-writing and group lesson contexts) or peer talk around an activity with visual referents present. Given the documented limitations of TTR as a variable, it may also be that both TTR and TPM results must be interpreted with caution. It may be that the child was talking on a self-chosen topic in an independent manner and producing longer turns and therefore a wider variety of vocabulary. Perhaps to address such issues of context-dependent vocabulary, a qualitative comparison of vocabulary may be preferable over the use of quantitative measures such as TTR or TPM. A study of this kind could better inform speech-language practice as to which context is likely to provide the most diverse vocabulary, and which may

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### Table 6. Descriptive statistics of major turn-taking variables as a proportion of total turns.

<table>
<thead>
<tr>
<th>Turn type</th>
<th>Journal writing</th>
<th>Group lesson</th>
<th>Peer play</th>
<th>Sharing time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Elicitation</td>
<td>2.50</td>
<td>2.92</td>
<td>2.70</td>
<td>2.42</td>
</tr>
<tr>
<td>Initiation</td>
<td>7.18</td>
<td>5.03</td>
<td>2.44</td>
<td>8.61</td>
</tr>
<tr>
<td>Response</td>
<td>70.16</td>
<td>14.62</td>
<td>55.12</td>
<td>15.32</td>
</tr>
<tr>
<td>Feedback</td>
<td>1.80</td>
<td>2.31</td>
<td>3.15</td>
<td>1.67</td>
</tr>
<tr>
<td>Complex turns</td>
<td>8.90</td>
<td>8.56</td>
<td>5.52</td>
<td>4.96</td>
</tr>
<tr>
<td>Clarification question</td>
<td>.59</td>
<td>.84</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Directives</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**Note.** Dashes indicate that variables did not occur in the data.
constitute adequate evidence in support of a quantitative clinical method.

Self-Monitoring

Self-monitoring also varied as a function of context. The two most academic contexts of journal writing and group lesson showed higher self-monitoring, as seen in self-repetition, in contrast to the least academic context of peer play. What is surprising is that these results did not hold for self-correction. It has been suggested that self-repetition may be a different form of speech planning than self-correction (Evans, 1985; Fox Tree, 1995), which may help to explain why there were differences in the one but not the other. It is also important that self-repetition has been shown to be less disruptive to the message, and in many cases virtually unnoticeable (Evans, 1985; Fox Tree, 1995). Therefore, the children appear to have been effectively using self-monitoring strategies to help plan their messages without having these strategies detract from the message. The journal-writing session offers an example of how repetition may not be disruptive to the message, in the case of Cecelia:

Cecelia: ok today we… today we made many cupcakes for Ken’s birthday. We dumped the cake mix one cup of water and and two eggs in the… in the mixing bowl… we mix the ingredient with a mixmaster… we put it into the muffin holder.

Although disfluency or speech planning phenomena are difficult to characterize (e.g., they may reflect careful self-monitoring or effortful processing or they may disrupt the message), arguably, the only way to assess their impact is to see them in a variety of contexts. If a clinician observes a child with a high rate of disfluency in the context of content-based interaction, that clinician may hypothesize that this performance reflects effortful processing, for example, and may then decide to sample sharing time to see if the pattern persists.

Few pauses combined with a high rate of interruption and a low proportion of child talk in the lesson together form a picture of a fast-paced, teacher-controlled, group interaction. It may be that pauses were fewer due to teacher demands for targeted responses to known-answer questions and that interruptions by fellow students were high due to competition for the conversational floor. An example of this fast-paced dynamic is seen in the group lesson involving Adam, Veronica, and Melanie:

Teacher: and how is a raincoat like a snowsuit… how are they the same… Adam?
Adam: cause raincoat raincoats… if you if you’re in the rain and you can… it won’t go in your shirt and wet your pants.
Veronica: and [overlapping unintelligible speech]
Teacher: <and how is> [overlaps with previous] it the same as a snowsuit? Melanie: first… um <you put them on the snow will> [overlaps with next speaker].
Adam: what <the snow… snowsuit> [overlaps with previous speaker].
Teacher: one at a time.
Adam: <snowsuit> [overlaps with next speaker]
Melanie: <snow will go> [overlaps with previous speaker] down your suit.
Teacher: just a second… Adam.
Adam: a snowsuit is that it won’t go down your pants into <your [unintelligible speech]> [overlaps with next speaker].
Melanie: <Miss> [overlaps with previous speaker] that’s what I said.

Given what is known about low participation rates among children with LI in the classroom, it may be that conversational turn taking should be observed both in this fast-paced group interaction and in other contexts of the classroom.

Turn Taking

Children’s turn taking patterns did differ as a function of context. The question then emerges, what are the implications of such variation, and what can we learn from the children’s differing performances? Perhaps a primary finding of interest is the fact that only initiations, elicitations, responses, directives, clarification questions, and complex turns were sufficiently frequent for analysis. There was little private speech and few attention-getters, and even among the turns listed above, clarification questions and directives were infrequent. These findings provide evidence of the constraints of classroom discourse that have been described in the literature, as turn types associated with classroom discourse, initiations, elicitations, and responses were by far the most frequent. From a clinical perspective, these findings suggest that clinicians may want to target forms that may not typically arise in the contexts of the classroom (e.g., clarification questions, private speech) in a more focused way in one-on-one sessions.

The next question concerns the ways in which the contexts differ along these dimensions. One context that emerged as distinct from the others on more than one measure was structured peer play. It has already been mentioned that this context is not typical of classroom discourse due to its lack of academic content and the absence of the teacher. However, it is important as an interactional context in classrooms in which collaborative peer work is being used more and more frequently. The findings suggest that, although children were perhaps more active participants in interaction with a peer than in the presence of an adult (as seen in more initiations as well as elicitations), the children may not have been very conscious of their interlocutor’s needs (as seen in the lower rate of responses), while highly conscious of their own (as seen in a high rate of directives). Children frequently asked each other questions that did not get answered and told each other what to do. An example of this pattern was observed with Melanie, who was interacting with a slightly older peer who was not a focal child in the study (Sandy). The 2 girls were approximately a year apart in age and were frequent playmates in the class. Despite this friendship, the older child, Sandy, tended to dominate social interactions by occasionally ignoring Melanie’s questions and by using highly directive language (although Melanie, too, used directive language):

Melanie: no no no no a yellow one goes there this one goes there!
Sandy: let’s see… yeah you’re right.
Melanie: then it’s a squiggly one.
Sandy: let’s see [unintelligible speech that overlaps with next speaker].
Melanie: [that one> [overlaps with previous speaker] the squiggly one?
Sandy: wait oh… wait wait… ok now we’ll just make it look like… now give me green things.
Melanie: green things?
Sandy: yeah
Melanie: all of them?
Sandy: any.

These findings suggest that peer talk may offer a unique opportunity for observing certain linguistic forms (such as directives) as well as children’s ability to cope with complex social demands in their use of language.

Journal writing differed from the other contexts in a high rate of responses, followed by group lesson, which is consistent with expectations for classroom discourse. That is, classroom discourse is characterized by a teacher-controlled turn-taking pattern in which the teacher elicits talk from the children who, in turn, provide responses. Peer play and sharing time were similar in rates of complex
Conclusion and Future Work

In assessing children’s language, varied samples provide a better, more comprehensive perspective of children’s strengths and weaknesses than any one sample can provide. Moreover, the choice of sampling contexts should represent the diverse demands that are encountered in the classroom and may also inform intervention. The findings of the current study suggest that a representative sample should include narrative (due to its wide variability and the complexity of the language produced), peer interaction (due to the unique forms that it demands), and academic (due to its fast-paced turn-taking demands that may prove difficult for a child with LI) discourse. In carrying out a curriculum-based assessment, an SLP would need to know more than what the current study has demonstrated because the links between discourse performance and academic success have not been formally made here, but this is an important area for future research. In carrying out a language-sample-based assessment, the SLP would have data on the contextualized use of language that has been assessed by other means (e.g., standard language assessments) for the purpose of comparison. Indeed, a future plan of the current research study is to examine the relationship between dimensions of language that are assessed through standard tests with their use in discourse. This combined approach not only informs what a child can do in naturalistic contexts as well as in a testing environment, but it also informs intervention by identifying possible discrepancies in these two areas. That is, if a child can use a form in the clinician’s office but not in the classroom, then intervention may have to also take place for that form within the context of the classroom. This approach to intervention would also be best carried out through collaboration with classroom teachers in specific activities that have been identified as challenging for a given student or group of students.

Acknowledgments

This research was supported in part by a doctoral fellowship to the author from the Social Sciences and Humanities Research Council of Canada and by an Advanced Doctoral Student Grant from the Harvard Graduate School of Education.

Thank you to Gina Biancarosa who acted as the reliability coder for turn taking, and to the doctoral supervising committee who contributed richly to this research: Catherine Snow, Barbara Alexander Pan, and Lowry Hemphill. Thank you also to the teachers and children who participated in the study.

References


Received March 1, 2007
Revision received July 12, 2007
Accepted March 5, 2008
DOI: 10.1044/0161-1461(2008/07-0012)

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