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The Links between the Linguistic Designs of L2 Teacher Questions and the Student Responses They Engender ¹

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ABSTRACT

A great deal of research undertaken in child language development, neurolinguistics and various branches of functional and cognitive linguistics has shown that a main source of language development is the spoken input to which learners are exposed. Despite the fact that for most adult L2 learners, the greatest exposure to the L2 is the input they experience in the classroom, we still know very little of the linguistic quality of L2 classroom input and its links to L2 development. The study reported in this paper is a partial response to this gap. Drawing on research from L1 classrooms linking the linguistic quality of teacher questions to the linguistic quality of student responses and grounded in the shared theoretical and methodological framework of conversation analysis and interactional linguistics, our study examines the linguistic designs of L2 teacher questions and the links between them and the L2 student responses they engender.

Keywords: L2 input; classroom interaction; conversation analysis; interactional linguistics

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Introduction

Converging evidence from research undertaken in fields including child language development, neurolinguistics and various branches of functional and cognitive linguistics has shown that a main source of language development is the spoken input to which learners are exposed (Boyd & Goldberg, 2009; Bybee, 2006; Ellis, O'Donnell, & Romer, 2015; MacWhinney, 2015; Tomasello, 2003). It is not just the quantity of language that one hears but the linguistic quality of input that shapes language development (Chaparro-Moreno, Justice, Logan, Purtell, & Lin, 2019; Menninga, van Dijk, Steenbeek, & van Geert, 2017; Roseberry, Hirsh-Pasek, & Golinkoff, 2014; Rowe & Snow, 2020).

Studies of L1 classroom input have shown the pivotal role that teacher questions play in determining the linguistic quality of input. *Known information* or *display questions* typically call for information the teacher already knows so that the teacher can evaluate students' understandings of material being learned or determine how well they can retrieve and recall previously learned information. This type of question is generally thought to be ineffective in facilitating language development because it restricts student contributions to brief responses (Mamelia & Molinaria 2014; Margutti & Drew, 2014; Ruska, Sahlstrom, & Porn, 2017). In contrast, *authentic* or *open-ended question* are argued to better facilitate language development because they are less constrained and generate longer and more linguistically and cognitively complex discourse and thus provide better quality input (Justice, McGinty, Zucker, Cabell & Piasta, 2013; Massey, Pence, Justice, & Bowles, 2008; Menninga et al., 2017; Wasik & Bond, 2001; Wasik, Bond & Hindman, 2006).

In fact, there is suggestive evidence from L1 classrooms linking the linguistic designs of open-ended questions to first language development (Dickinson, 2001; Mashburn, Pianta, Barbarin, Bryant, Hamre, Downer, Burechinal, Early & Howes, 2008; Menninga, et al., 2017; Peisner-Feinberg, Burchinal, Clifford, Culkin, Howes, Kagan & Yazejian, 2001; Rivera, Girolametto, Greenberg & Weitzman, 2005). For example, Menninga and her colleagues (2017) show that teachers' open-ended questions in early elementary science lessons were more syntactically complex and lexically dense than closed questions and that teachers' use of open-ended questions was related to syntactically complex and lexically dense student utterances. They conclude that for learners to become familiar with complex linguistic structures and to ultimately master them, it is important for children to hear linguistic structures in a variety of contexts.

We know that, as for L1 development, a main source of L2 development is the spoken input to which L2 learners are exposed. This has been documented in corpus-based studies, which have examined the statistical properties of L2 input as a basis for formulating hypotheses about the processes of L2 learning (e.g., Collins, Trofimovich, White, Cardoso, & Horst, 2009; Crossley, Salsbury, Titak, & McNamara, 2014; Steinkrauss, 2017). While the studies provide suggestive linguistic evidence on the role of frequency in L2 learning, the nature of the data being analyzed is fairly limited. Many of the corpora used in these studies are, in fact, written data, the linguistic nature of which differs fairly significantly from that of spoken data (Baayen, Milin & Ramscar, 2016; Biber, 2007). Studies that rely on spoken data are similarly limited in that the data are not representative of the type of input typically experienced by L2 learners. For example, the spoken contexts of the British National Corpus (BNC_{spoken}) and the Michigan Corpus of Academic Spoken English (MICASE) are primarily formal events such as academic lectures, interviews, and dissertation defenses. Studies of L2 input that rely on classroom interaction are few and the data are typically limited to experimental or controlled input to which learners are exposed only briefly.

Despite the fact that for most adult L2 learners, the greatest exposure to the L2 is the input they experience in the classroom, we still know very little of the linguistic quality of L2 classroom input and its links to L2 development. This study is a partial response to this gap. Drawing on findings of L1 classrooms linking the linguistic quality of teacher questions to the linguistic quality of

student responses, summarized above, and grounded in the shared theoretical and methodological framework of conversation analysis (CA) and interactional linguistics (IL), our study examines the linguistic designs of L2 teacher questions and the links between them and the L2 student responses they engender.

Contributions of Interactional Linguistics and Conversation Analysis

Rooted in sociology, CA focuses on how actions are accomplished in unfolding sequences of interactional turns. Based in linguistics, IL's concern is with uncovering the recurring linguistic practices of sequentially specific social actions. IL and CA share the basic premise that social order is fundamentally empirical, grounded in recurring sequences of stable interdependent actions to which participants normatively orient. In their interactions, members of a society respond to each other, negotiate their participation, and adapt their linguistic practices and actions to the contingencies of their interactions as they unfold. This is made possible by mutually recognizable, publicly observable, interactional infrastructure (Heritage, 1984; Sacks, 1992, 1995, Schegloff, 2007).

The specification of interactional infrastructure has formed the research program of CA. One structure found to be integral to interaction is sequence organization. This concerns the relative positioning of turns in interaction. Turns are the means for accomplishing actions; their positionings in sequences are fundamental to the analysis of their meanings as actions (Schegloff, 2007).

A turn's position in a sequence and the action the turn accomplishes shape the linguistic practices of that turn (Fox, 2007). That is to say, for any particular sequential position in an interaction, there is a restricted set of linguistic practices for carrying out the relevant action in that slot. The term 'positionally sensitive' refers to the fact that "for any one specifiable sequential position, there is a certain set of forms that can be used to perform the action relevant for that slot" (Fox, Thompson, Ford & Couper-Kuhlen, 2012, p. 739).

Drawing on CA methods, IL research seeks to explicate the positionally sensitive grammar of interaction through the identification of the linguistic practices of specific actions and courses of action as they are constructed in interaction. Their pursuits are driven by a concern with how the actions taken in interaction give shape to their linguistic designs. One example of the type of research this entails is Fox and Thompson's (2010) study of responses to two types of *wh*-information seeking questions, specifying and telling questions. Their findings show systematic linguistic differences in the responsive actions they elicit, depending on the work they are doing. Specifying information-seeking questions seek specific information and the linguistic design of the expected or preferred response to such questions is a phrase. This is shown in Excerpt 1, where Molly asks Felicia a question seeking specific information (line 1) to which Felicia provides a response in the form of a phrase (line 2).

Excerpt 1² (Fox & Thompson, 2010, p. 134)

- 1 Molly: hhh How - far up the canyon are you.=
- 2 Felicia: =Ten miles.

Telling questions, on the other hand, are topic offers and seek responses that do extended tellings, which typically come in the form of clauses. This is shown in Excerpt 2, where we see that in response to Vivian's *wh*-telling question (line 1), Nancy provides an extended report that takes the form of two clauses (line 2).

Excerpt 2 (Fox & Thompson, 2010, p. 134)

- 1 VIV So what did you guys do today.
(2 lines omitted)
- 2 NAN I went grocery shopping 'n we went over to the mall

These findings on how even slight differences in information seeking questions make a difference to the language used in their responses strongly suggest that the types of teacher question actions in instructional interactions in L2 classrooms are consequential to both the linguistic resources that are available to L2 learners and the ways in which the learners orient to and use them in responsive actions. In the study we present here, we draw on this work to understand more fully the relationships between two types of teacher question actions and the types and linguistic formats of the student responses they engender.

The Study

The study draws on both the methods and findings of CA/IL studies on social action sequences and their linguistic formats to identify the linguistic designs of teacher-student information seeking question-answer sequences in L2 whole group instruction. We distinguish between telling and specifying questions in these sequences, drawing on Fox and Thompson's (2010) study, discussed above. To reiterate, specifying questions seek specific information and prefer specifying responses in the form of phrases. Telling questions are topic offers and seek extended tellings that are typically in the form of clauses.

We chose to use the term 'information seeking' to label the question sequences and the terms specifying and telling to distinguish the two types of teacher questions instead of the more common terms display and open-ended for the following reasons. First, the concepts of display and open-ended evoke differently valued meanings, with display questions negatively evaluated as monologic or authoritarian as they often seek known information (Nystrand, 1997; Nystrand Wu, Gamoran, Zeiser, & Long, 2003). In contrast, open-ended questions are positively valued as authentic or dialogic as they seek students' opinions and thoughts. These different meanings, in turn, imply a value distinction between fact and opinion, with expressions of opinion seeming to be preferred student responses in contrast to retrievals or demonstrations of factual knowledge. This distinction overlooks the fact that a great deal of teaching entails determining what students know. Retrieval or display questions can be instructive in this regard (Fazio, 2019; Houen, Danby, Farrell, & Thorpe, 2016). Using the term information seeking to refer to teacher-question-student-response sequences suggests a more neutral stance toward the educational work the different types of question sequences do.

Data Source

The data come from the Corpus of English for Academic and Professional Purposes (CEAPP, 2014; ceapp.la.psu.edu), a growing, publicly available, searchable, and longitudinal online corpus of videos and their transcripts of naturally occurring classroom interactions housed and curated at The Pennsylvania State University. The database consists of data from intensive English programs (IEP) and university level classes in STEM, as well as from ClassBank, a corpus of various educational contexts originally from TalkBank.org. The video recordings are transcribed using the Codes for the Human Analysis of Transcripts (CHAT) system, a standardized format for producing transcripts of face-to-face interactions that supports the transcription system of CA. The conventions mark the sequential relationships within and between actions including overlaps, gaps, and pauses; the qualities of speech delivery including tempo, pitch, and intonation; and features accompanying talk, such as laugh particles, and hesitation markers (MacWhinney, 2000).

The videos also make possible the analysis of nonverbal resources such as gestures, gazes, and body postures. The features of CEAPP allow users, such as researchers, language teachers, and students, to browse and search for specific linguistic and CA conventions as well as interactional practices and actions, such as repair and teacher questions.

Context and Participants

The data for this study come from a high intermediate grammar course in an intensive English program (IEP) affiliated with a large public university in the Northeastern region of the U.S. Weekly two-hour class sessions of the course were video-recorded over an entire 15-week semester as part of a larger research project on L2 classroom interaction and the video-recordings and their transcriptions were added to CEAPP.³ For this study, we used four hours of video-recorded classroom interactions from the first two weeks of the semester.

The teacher of the course is a native speaker of English and has over ten years of experience teaching English to adult speakers of other languages. Most of the students in the class come from Arabic speaking countries, such as Saudi Arabia, Kuwait, and the United Arab Emirates, with a smaller number of students from other Asian and South American countries⁴. These students, like many students enrolled in the IEP program, intend to enroll in the university's undergraduate or graduate programs after they have improved their academic English skills.

Data analysis

To analyze the data, we relied on the CA methods of analytic induction and constant comparison. We first identified all teacher question-sequences by reviewing the transcripts and video clips. Each author was responsible for coding different sections of the four hours of video data and logging the information on a shared spreadsheet. In order to identify whether the question in the sequence was telling or specifying, we considered its linguistic design, i.e., its prosodic and linguistic practices, and sequential practices, such as overlaps of turns and gaps of silence within and between turns. We also considered the sequential positioning of the question in relation to the prior turn, and how the question was responded to in the next turn. Finally, we considered the question's position in sequences of actions in relation to the larger ongoing interactional activity. Questions whose actions were ambiguous were coded as such and excluded from further analysis.

The coding of the larger activities emerged from the teacher's own labeling of the activities in her interactions with the students. For example, before the start of one activity in which students were asked to write down quotes from the presentation slides and then discuss their interpretations, the teacher announced the name of the activity as 'quotation interpretation' and also included the name on the slide outlining her agenda.

Initial analytic codes of the linguistic designs of the questions included *wh*-questions (WH), yes/no interrogatives (YNIs), and tag questions. As our analysis progressed, we refined the codes and added the following categories as question formats: decidedly incomplete utterances (DIUs) (Koshik, 2002), statement questions (STQs), what do you think questions (WDYT), alternative questions (ALT), and two phrasal questions 'anything else', and 'what else' (see Table 1 for a list of codes). DIUs are turns that are intentionally designed to be incomplete to elicit "a knowledge display" (Koshik, 2002, p. 277) from students to complete the turn. Excerpt 3, taken from our data, is an example of a DIU⁵. It comes from a review of homework on verb tenses that JUL, the teacher, and the students were doing. Here, JUL reads a line from an exercise that is displayed on a large screen in front of the students, stopping before she completes it (lines 1-3). After a brief silence (line 4), ABD, one of the students, completes the utterance (line 5).

Excerpt 3 (GRA4012213T1)⁶

- 1 JUL: so:→ I shut the door last night[^]
 2 (0.5)
 3 JUL: and then→ person a sa:ys→
 4 (1.2)
 5 ABD: are you joking[^]

STQs are statements that are taken up as questions. WDYT's were coded separately from WHs because 'what do you think' occurred as a complete unit, unlike other WHs, whose linguistic designs differed. Excerpt 4 illustrates a WDYT. In this activity, students were to identify whether sentence functions in a text were specific or general. After MAN, a student, reads a sentence from the exercise (lines 1-3), JUL uses the linguistic unit 'what do you think' in her question to MAN to elicit a response of either specifying or general (line 5), to which MAN responds (line 6).

Excerpt 4 (GR4J012213T1)

- 1 MAN: our penchant for informality and egalitarianism→
 2 MAN: and spontaneity→
 3 MAN: sometimes jars people[^]
 4 (3.5)
 5 JUL: Δwhat do you think about thatΔ[^]
 6 MAN: i think it's (.) general[^]
 7 JUL: yeah[^]
 8 JUL: these two seem really general

Table 1
Linguistic Codes of Teacher Questions

WH-questions (WHs)
Yes/no interrogatives (YNIs)
Tag questions (TAGs)
Decidedly incomplete utterances (DIUs)
Statement questions (STQs)
What do you think (WDYT's)
Alternative questions (ALTs)
Anything else
What else

To code student responses as either specifying or telling, we used their linguistic designs, the types of questions they responded to and their positionings in relation to the larger ongoing interactional activities. Student responses whose actions were ambiguous were coded as such and excluded from further analysis. Once we coded student responses for types of actions, we identified their linguistic designs, organizing them into the following categories: no response, minimal response, one-word phrase, multi-unit phrase, dependent clause, simple clause, and complex clause. We distinguished one-word phrases from multi-unit phrases because of the frequency of one-word responses (See Table 2 for a list of the response codes)⁷.

Table 2
Linguistic Codes of Student Responses

No response
Minimal response
One-word phrase
Multi-unit phrase
Dependent clause
Simple clause
Complex clause

To further clarify the instructional work of the two types of information seeking questions, we coded the information being sought as fact, i.e., statements that can be verified with evidence, or opinion, i.e., a view or belief about something that is not necessarily based on fact. Once each of us completed the first round of analysis, we reviewed the analyses, and calibrated and resolved any discrepancies. In the next section, we present our findings on (1) the two types of information-seeking question-response (ISQR) sequences, and their linguistic designs and (2) the types of information, i.e., fact or opinion, that the questions seek.

Findings

Our analysis revealed a total of 397 ISQR sequences, with specifying questions (SQs) being the predominant question type in 65% of the sequences while 35% of the sequences contained telling questions (TQs). Table 3 shows the linguistic designs of the two types of information-seeking questions. As can be seen, SQs are most frequently formatted as YNIs and WHs, at, respectively, 38% and 36%. Other formats used include DIUs (13%), STQs (7%), and ALTs (4%). In contrast, TQs are overwhelmingly formatted as WHs, accounting for 74% of the TQs. Additional formats used for TQs, with far less frequency, include the phrasal questions ‘anything else’ and ‘what else’ (7% each) and DIUs (4%).

Table 3
Linguistic Designs of Questions

Linguistic Designs of Questions	SQs %	TQs %
YNI	38	2
WH	36	75
DIU	13	4
STQ	7	2
Anything else	0	7
WDYT	1	2
What else	0	7
ALT	4	0
TAG	1	0

In terms of student responses, we found that they were similar to SQs and TQs frequencies, with specifying responses (SRs) comprising 65% of all student responses and telling responses (TRs) accounting for 35% of the responses. The linguistic designs of SRs and their frequencies are

shown in Table 4. As can be seen, the linguistic quality of SRs is fairly simple, with one-word (52%) and multi-unit phrasal (22%) responses the most frequently used formats. The linguistic quality of TRs is more complex in that they are most frequently designed as simple clauses at 28%. The next most frequent type of SRs to TQs is actually no response; 24% of the TQs receive no response at all. In comparison, only 10% of the SQs receive no response. Additional formats of student responses with far fewer occurrences, including minimal responses and complex clauses, are omitted from the table.

Table 4
Linguistic Designs of Responses

Linguistic Designs of Responses	SRs %	TRs %
1 word	52	9
phrase	22	12
simple clause	8	28
no response	10	24
dependent clause	3	18

Excerpt 5 is an example of a specifying ISQR sequence. During a discussion on a sentence's present perfect tense, the teacher directs the students' attention to what they have previously learned about the perfect tenses by asking an SQ designed as a WH question (lines 1-2). The question elicits specifying one-word responses from MAD (line 3) and AMI (line 4).

Excerpt 5(GRA4012213T7)

- 1 JUL: review from last time↘ when you hear perfect→
 2 Δwhat do i want youΔ to thi:nk↗
 3 MAD: before=
 4 AMI: =before

Excerpt 6 illustrates a telling ISQR sequence. The sequence comes from the same activity as Excerpt 5. The class is discussing the American television sitcom *The Big Bang Theory*. Here, they are talking about Sheldon's use of the verb "conversing". In the sitcom, Sheldon is a scientist who constantly uses sophisticated words in daily conversations. The teacher's TQ (line 1) is designed as a so-prefaced conventional WH that projects an upshot formulation or gloss of what was just discussed. The student provides such a response in the form of a simple clause (line 5).

Excerpt 6 (GRA4012213T6)

- 1 JUL: °okay°→ so what does this tell you about sheldon↗
 2 (1.0)
 3 MAN: he feels smart↘
 4 (0.7)
 5 JUL: yea:h↘ he thinks he's really smart a:nd→

Table 5 shows additional information linking the linguistic designs of student responses to the linguistic designs of the two types of questions. As noted earlier, the two most frequent designs of SQs are YNIs and WHs, accounting for 71% of all question types. However, as shown here, while the frequencies of specifying YNIs and WHs are similar, the responses they elicit vary. 90% of the student responses to YNIs are one-word responses, while WHs elicit, almost equally, both one-word and multi-unit phrasal responses, for a total of 79% of all responses.

Table 5
Types of Questions/Types of Responses

Question Types	Linguistic Designs of Questions	Linguistic Designs of Responses
SQ	YNI (36%)	one-word phrase (90%) simple clause (6%)
	WH (35%)	multi-unit phrase (40%) one-word phrase (39%) simple clause (10%) dependent clause (9%)
	DIU (15%)	one-word phrase (47%) multi-unit phrase (28%) simple clause (21%)
TQ	WH (74%)	simple clause (41%) dependent clause (28%) multi-unit phrase (14%)

Excerpt 7 is an example of the most frequently occurring SQ YNI sequence. Here, during a discussion on vocabulary, JUL asks a YNI (line 1) that elicits one-word SRs from two students (lines 2 and 3).

Excerpt 7 (GRA4011713T3)

- 1 JUL: u:mm→ but i imag- Δdo you know what aΔ lo:g is⁷
 2 ABD: yeah
 3 ATH: °yeah°

Excerpt 8, which comes from a discussion on verb tenses, illustrates an SQ WH (line 2) that elicits a one-word SR (line 3).

Excerpt 8 (GRA4011713T6)

- 1 JUL: he has seen\`
 2 when did that happen\
 3 MAD: past

Designs of student responses to TQs are a bit more linguistically varied. As noted earlier, WHs are the most frequent design of TQs, accounting for 74% of all question types. As shown in Table 7, these questions elicit more linguistically complex responses, primarily in the forms of simple clauses (41%) and dependent clauses (28%). Excerpt 9 illustrates the most frequently occurring WH/simple clause sequence. It is taken from the same activity as Excerpt 5. Here, the teacher invites the class to use linguist Deborah Tannen's idea of meta-message to interpret Sheldon's line "I made tea" by asking a TQ WH (line 1-3) to which SAL, a student, provides a simple clausal response (line 4).

Excerpt 9 (GRA4012213T5)

- 1 JUL: what might
 2 (0.6)
 3 °uhm tannen say about sheldon here°

4 SAL: uhm→ he might be funny↗

Additional findings revealed that, regardless of whether the questions sought SRs or TRs, a majority of the questions (89%) sought facts rather than opinions. Excerpt 10 is an example of a SQ that seeks factual information. In this sequence, JUL is checking students' understanding on the use of an apostrophe in a sentence by asking an SQ WH question (line 1), which elicits two one-word SRs stating factual information from MAN and SAL (lines 3 and 4).

Excerpt 10 (GRA4012213T6)

1 JUL: that's what is the apostrophe es↗
 2 (0.4)
 3 MAN: is
 4 SAL: i:s
 5 JUL: is↘ is↘ okay↘

Excerpt 11 illustrates a TQ seeking factual knowledge about a verb tense. After several students have identified the tense of the verb in a sentence as present continuous, JUL asks the class to explain their answer with a TQ WH (line 1), to which AMI provides the relevant factual information explaining the answer in the form of a dependent clause (line 3).

Excerpt 11 (GR4J012213T5)

1 JUL: why present continuous↗
 2 (1.2)
 3 AMI: because it's happening right now
 4 JUL: happening right now→

Discussion

To recap, our findings show that L2 classroom whole group instruction is overwhelmingly comprised of ISQR sequences. The most frequent type of question in these sequences is the SQ, which is most commonly formatted as either a YNI or WH question. Student responses are also overwhelmingly specifying and most frequently formatted as one word and phrasal responses. Although less frequent, TQs generated responses that were more linguistically complex in that they were most frequently formatted as simple and dependent clauses. These findings suggest that while the quantity of L2 input is high in this classroom, with information seeking question sequences the predominant instructional sequence, an overemphasis on SQ versus TQ sequences limits L2 learner language use to brief, linguistically simple responses.

However, although the linguistic quality of student responses to SQs is less complex than they are for TQs, they appear to do valuable instructional work in that they allow the teacher to quickly assess students' knowledge and maintain their shared orientation to the task at hand. In addition, using SQs appear to be helpful in getting more students to participate. As our findings revealed, while TQs elicited more linguistically complex responses, they were less productive in eliciting any type of responses than SQs were. In other words, SQs were more effective in eliciting student responses than TQs were. We speculate that this difference may be due to the linguistic designs of SQs. It is certainly easier to provide type conforming responses, e.g., yes or no, to YNIs than it is to respond to WH-questions. It may also be due to the type of instructional activity being accomplished by the sequence, to where in the unfolding instructional sequence the questions occurred, and to students' levels of knowledge about the information sought by both types of questions, i.e., whether the questions sought information on previously learned material or

material that was new. Sorting through the differences in frequencies of response versus no response elicited by each type of question is certainly worthy of further research.

Equally important is the finding that, although the two types of questions differed in terms of the linguistic complexity of the student responses they elicited, they did not differ in terms of the types of information sought. That is, the main work of both specifying and telling questions was to elicit factual knowledge rather than opinions from the students. This suggests that, contrary to studies on the linguistic input of L1 classrooms (Dickinson, 2001; Mashburn et al., 2008; Menninga et al., 2017; Peisner-Feinberg et al., 2001; Rivera et al., 2005), the linguistic complexity of student responses is not a factor of whether the questions are display or open-ended questions. Rather, it is a factor of whether the questions seek specific items of information or more extended reports and tellings, regardless of whether the information is factual or opinion.

In addition to providing suggestive evidence on the links between types of L2 teacher questions and the linguistic complexity of L2 student responses, these findings raise concerns about continued use of the terms display and open-ended to refer to teacher questions in that they appear to obfuscate rather than clarify the important instructional work that teacher questions do. This is especially the case for TQs, for, as we saw here, questions seeking extended tellings of factual information are as productive in eliciting linguistically complex sentences as questions seeking opinions are. We suggest then that conceptualizing L2 teacher questions as specifying or telling information seeking questions is more empirically useful to understanding their links to L2 learner language use than is conceptualizing the questions as display and open-ended.

As the findings on ISQRs show, they have a direct consequence on the quality of the input comprising the L2 classroom and, in particular, on the opportunities that L2 learners have to use the linguistic resources that are made available to them. Given that the course we examined was a grammar course, it may not be surprising that more SQs than TQs were asked. After all, grammar is about the specifics of language use. However, too many SQs may limit students' opportunities to use linguistically complex language. While not every TQ is guaranteed to elicit linguistically complex responses, asking more TQs may expand students' opportunities to do so. In grammar classes like this one, it could entail simple changes to the linguistic designs of the questions, from, for example, a specifying question such as 'what's that', in a lesson on verb tenses to the telling question 'what do you know about this tense', to expand options for student responses that are more linguistically complex (Houen et al., 2016).

Conclusions and implications

For most adult L2 learners, the greatest exposure to the L2 is the input they experience in the classroom. As shown here, L2 teacher questions are significant not only to the linguistic quality of the classroom input experienced by L2 learners, but, as importantly, to the linguistic quality of learners' responses. These findings contribute new understandings to research on L2 classroom input by demonstrating how the choices that L2 teachers make in designing their questions give shape not only to linguistic resources that are available to learners in their activities but as importantly to the ways in which L2 learners orient to the resources and use them in their responses.

The findings can also contribute to the design of studies examining the extent to which modifications of information seeking questions can increase the possibility of more interactionally complex student responses, that is, involving more diverse actions and designed with phrases that are longer than one word, and/or with clauses. L2 classrooms are natural laboratories in that their

interactions can be redesigned to test whether and how differences in types of interactional sequences and the linguistic quality of the social actions comprising the sequences influence L2 learner language use, and ultimately, their L2 development.

Surely more investigations on L2 classroom input is needed. These include a closer look at the links between the ISQRs and pedagogical activities being accomplished by the sequences. We suspect, for example, that a greater number of specifying sequences appear in activities such as homework or exercise reviews and fewer in activities such as discussing topics or new material. A corpus, such as CEAPP, is invaluable to such pursuits. The quantity and quality of the input in terms of the close transcriptions, synchronized with video recordings of both the teacher and the students, afford detailed sequential analyses, a close look at the multimodal turn designs, and an emic understanding of the larger instructional activities and goals. Methodologically, its search and browse capabilities allow researchers to manage and use a large data set to conduct a more robust analysis.

Even with a capable corpus system like CEAPP, research utilizing CA and IL is complex. Developing coding protocols requires concerted collaboration among researchers. We are working on the design of a collaborative commentary feature for CEAPP to allow for this. This component will include the coding protocols developed for this and other studies utilizing CEAPP, with links to specific segments of the videos and their transcripts and a platform for users to comment on and provide feedback on the coding protocols and segments (MacWhinney, 2007). With this feature, analytic codes can be independently checked and used for comparison across contexts.

Making visible the practices and actions of how L2 teaching is accomplished can be especially useful to L2 teacher education. Knowing how the questions teachers ask are empirically linked to the linguistic quality of L2 classroom input can raise L2 teachers' awareness of the consequences their language use has on their students' L2 use and development. This knowledge may be especially helpful to novice L2 teachers or ESL/EFL teachers who are not familiar with English-medium instructional settings, as the findings reveal common linguistic designs for accomplishing specific actions and illustrate their pedagogical consequences. Also useful is knowing that conceptualizing L2 teacher questions as specifying or telling rather than display or open-ended is a more effective way to understand the important work that different types of teacher questions do. Exhorting teachers to steer away from display questions, as some studies have done (e.g., Nystrand, 1997; Nystrand et al., 2003), misses the mark in terms of the important pedagogical work that specifying questions do. Helping teachers to understand the different types of actions accomplished by their questions and their links to L2 learners' language use can improve their effectiveness in teaching and may be a simple way to improve student achievement.

More generally, such close scrutiny of the details of teaching can reveal to teachers and other interested stakeholders in L2 teaching informative differences between their idealized understandings of the work of teaching and "its interactional reality" (Freebody, 2013, p. 73). This, in turn, can raise L2 teachers' awareness of the specialized nature of teaching and facilitate sound decision-making in their own teaching contexts.

References

- Baayen, R. H., Milin, P. & Ramscar, M. (2016). Frequency in lexical processing. *Aphasiology*, 30, 1174-1220. doi.org/10.1080/02687038.2016.1147767.

- Biber, D. (2007). *University language: A Corpus-based study of spoken and written registers*. Amsterdam: John Benjamins.
- Boyd, J. K., & Goldberg, A. E. (2009). Input effects within a constructionist framework. *The Modern Language Journal*, 93, 418–429.
- Bybee, J. L. (2006). From usage to grammar: The mind's response to repetition. *Language*, 82, 711–733. doi.org/10.1353/lan.2006.0186.
- CEAPP (2014). *Corpus of videos and accompanying transcripts from educational contexts*. Unpublished raw data.
- Chaparro-Moreno, L. J., Justice, L. M., Logan, J. A. R., Purtell, K. M., & Lin, T. (2019). The preschool classroom linguistic environment: Children's first-person experiences. *Plos One*, 14(8), e0220227. doi.org/10.1371/journal.pone.0220227.
- Collins, L., Trofimovich, P., White, J., Cardoso, W., & Horst, M. (2009). Some input on the easy/difficult grammar question. *The Modern Language Journal*, 93, 336–353.
- Crossley, S., Salsbury, T., Titak, A., & McNamara, D. S. (2014). Frequency effects and second language lexical acquisition: Word types, word tokens, and word production. *International Journal of Corpus Linguistics*, 19, 301–332. doi.org/10.1075/ijcl.19.3.01cro.
- Dickinson, D. K. (2001). Large-group and free-play times: Conversational settings supporting language and literacy development. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning literacy with language: Young children learning at home and school* (pp. 223–255). Baltimore, MD: Brookes.
- Ellis, N. C., O'Donnell, M. B., & Romer, U. (2015). Usage-based language learning. In B. MacWhinney & O'Grady, W. (Eds.) *The handbook of language emergence* (pp. 163–180). Malden, MA: Wiley-Blackwell.
- Fazio, L.K. (2019). Retrieval practice opportunities in middle school mathematics teachers' oral questions. *British Journal of Educational Psychology*, 89, 653–669. doi: 10.1111/bjep.12250
- Fox, B. (2007). Principles shaping grammatical practices: An exploration. *Discourse Studies*, 9, 299–318.
- Fox, B. A., & Thompson, S. A. (2010). Responses to wh-questions in English conversation. *Research on Language and Social Interaction*, 43(2), 133–156. doi.org/10.1080/08351811003751680.
- Fox, B., Thompson, S.A., Ford, C.E. & Couper-Kuhlen, E. (2012). Conversation analysis and linguistics. In J. Sidnell & T. Stivers (Eds.) *The handbook of conversation analysis* (pp. 726–740). Oxford: Wiley-Blackwell.
- Freebody, P. (2013) School knowledge in talk and writing: Taking 'when learners know' seriously. *Linguistics and Education*, 24, 64–74.
- Heritage, J. (1984). *Garfinkel and ethnomethodology*. Cambridge, UK: Polity Press.

- Houen, S., Danby, S., Farrell, A., & Thorpe, K. (2016). I wonder what you know ...: Teachers designing requests for factual information. *Teaching and Teacher Education*, 59, 68-78. doi.org/10.1016/j.tate.2016.02.002
- Justice, L. M., McGinty, A. S., Zucker, T., Cabell, S. Q., & Piasta, S. B. (2013). Bi-directional dynamics underlie the complexity of talk in teacher-child play-based conversations in classrooms serving at-risk pupils. *Early Childhood Research Quarterly*, 28, 496–508. doi.org/10.1016/j.ecresq.2013.02.005.
- Koshik, I. (2002). Designedly incomplete utterances: A pedagogical practice for eliciting knowledge displays in error correction sequences. *Research on Language and Social Interaction*, 35, 277-309. doi.org/10.1207/S15327973RLSI3503_2.
- MacWhinney, B. (2000). *The CHILDES project: Tools for analyzing talk*. 3rd Edition. Mahwah, NJ: Lawrence Erlbaum Associates.
- MacWhinney, B. (2007). Opening up video databases to collaborative commentary. In R. Goldman, R. Pea, B. Barron & S. Derry (Eds.) *Video research in the learning sciences* (pp. 537-546). Mahwah, NJ: Lawrence Erlbaum Associates.
- MacWhinney, B. (2015). Multidimensional SLA. In T. Cadierno & S. Eskildsen (Eds.) *Usage-based perspectives on second language learning* (pp. 22-45). Berlin: DeGruyter.
- Mamelia, C. & Molinari, L. (2014). Seeking educational quality in the unfolding of classroom discourse: A focus on microtransitions. *Language and Education*, 28(2), 103-119. doi.org/10.1080/09500782.2013.771654.
- Margutti, P., & Drew, P. (2014). Positive evaluation of student answers in classroom instruction. *Language and Education*, 28(5), 436-458. doi.org/10.1080/09500782.2014.898650.
- Mashburn, A. J., Pianta, R. C., Barbarin, O., Bryant, D., Hamre, B., Downer, J. Burechinal, M. Early, D., & Howes, C. (2008). Measures of classroom quality in prekindergarten and children's development of academic, language, and social skills. *Child Development*, 79, 732–749. doi.org/10.1111/j.1467-8624.2008.01154.x.
- Massey, S. L., Pence, K. L., Justice, L. M., & Bowles, R. P. (2008). Educators' use of cognitively challenging questions in economically disadvantaged preschool classroom contexts. *Early Education and Development*, 19(2), 340-360. doi.org/10.1080/10409280801964119.
- Menninga, A., van Dijk, M. Steenbeek, H. & van Geert, P. (2017). Language use in real-time interactions during early elementary science lessons: The bidirectional dynamics of the language complexity of teachers and students. *Language Learning*, 67, 284–320.
- Nystrand, M. (1997). *Opening dialogue: Understanding the dynamics of language and learning in the English classroom*. New York, NY: Teachers College Press.
- Nystrand, M., Wu, L. L., Gamoran, A., Zeiser, S., & Long, D. A. (2003). Questions in time: Investigating the structure and dynamics of unfolding classroom discourse. *Discourse Processes*, 35, 135–198. doi.org/10.1207/S15326950DP3502_3.

- Peisner-Feinberg, E. S., Burchinal, M. R., Clifford, R. M., Culkin, M. L., Howes, C., Kagan, S. L. & Yazejian, N. (2001). The relation of preschool child-care quality to children's cognitive and social developmental trajectories through second grade. *Child Development*, 72, 1534–1553. doi.org/10.1111/1467-8624.00364.
- Rivera, C., Girolametto, L., Greenberg, J., & Weitzman, E. (2005). Children's responses to educators' questions in day care play groups. *American Journal of Speech-Language Pathology*, 14, 14-26. doi.org/10.1044/1058-0360(2005/004)
- Roseberry, S., Hirsh-Pasek, K. & Golinkoff, R.M. (2014). Skype me! Socially contingent interactions help toddlers learn language. *Child Development*, 85, 956-970. doi.org/10.1111/cdev.12166.
- Rowe, M. L., & Snow, C. E. (2020). Analyzing input quality along three dimensions: Interactive, linguistic, and conceptual. *Journal of Child Language*, 47, 5-21. doi.org/10.1017/S0305000919000655.
- Ruska, F., Sahlstrom, F. & M. Porn. (2017). Initiating and carrying out L2 instruction by asking known-answer questions: Incongruent interrogative practices in bi- and multilingual peer interaction. *Linguistics and Education*, 38, 55–67.
- Sacks, H. (1992). *Lectures on conversation (Vol. 1)*. Oxford: Blackwell.
- Sacks, H. (1995). *Lectures on conversation (Vol. 2)*. Oxford: Blackwell.
- Schegloff, E. (2007). *Sequence organization in interaction*. Cambridge: Cambridge University Press.
- Steinkrauss, R. (2017). L1 acquisition beyond input frequency. In J. Evers-Vermeul, & E. Tribushinina (Eds.) *Usage-based approaches to language acquisition and language Teaching* (pp. 117-141). Boston/Berlin: De Gruyter Mouton.
- Tomasello, M. (2003). *Constructing a language: A usage- based theory of language acquisition*. Cambridge, MA: Harvard University Press.
- Wasik, B. A., & Bond, M. A. (2001). Beyond the pages of a book: Interactive book reading and language development in preschool classrooms. *Journal of Educational Psychology*, 93, 243-250. doi.org/10.1037/0022-0663.93.2.243.
- Wasik, B. A., Bond, M. A., & Hindman, A. (2006). The effects of a language and literacy intervention on head start children and teachers. *Journal of Educational Psychology*, 98, 63-74. doi.org/10.1037/0022-0663.98.1.63

Appendix

Transcription key based on CLAN conventions (<http://dali.talkbank.org/clan/>).

≈	Contiguous utterances (latching)
[and]	Overlapping utterances
(.)	Micro-pause (0.2 seconds or shorter)
(1.3)	The number represents the length of the pause
ΔwordΔ	Surrounds talk that is spoken faster
∇word∇	Surrounds talk that is spoken slower
◦ ◦	Soft speech
◎word◎	Loud speech
<u>word</u>	Stress/accenuation.
:	Elongation
-	Abrupt stop in articulation. Cut-off
→	Continuing intonation
↗	Rising in pitch at utterance end (not necessarily a question)
↘	Fall in pitch at the end of an utterance
xxx	Unintelligible syllables
&chaha	Laughter

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² The transcription key can be found in the Appendix.

³ Two research assistants collected the data over the course of the semester. Two cameras were used, one to capture the teacher view and the other the student view. The data were transcribed using a modified version of the Codes for the Human Analysis of Transcripts (CHAT) system (<http://dali.talkbank.org/clan/>).

⁴ Thirteen students were enrolled in the course, but attendance varied day to day.

⁵ All excerpts presented in this section and the next are available on CEAPP.la.psu.edu. Accounts are required for accessing the data. See the website for more information.

⁶ To identify this and subsequent excerpts on CEAPP, follow these codes: GR4 = grammar 4; J=Julie, the teacher; 012213=mm/dd/yr; T=teacher view; and 1=clip number.

⁷ A very small percentage of responses were actually questions. For the purposes of this paper, they were excluded from further analysis.