Language Input Differences Between General and Special Education Teachers

THESIS

Presented in Partial Fulfillment of the Requirements for the Degree Master of Arts in the Graduate School of The Ohio State University

Morgan Kathleen Donnellan, B.A.

Graduate Program in Speech and Hearing Science

The Ohio State University

2012

Master’s Examination Committee:

Professor Monique T. Mills, Advisor

Professor Rebecca J. McCauley
Abstract

The purpose of this descriptive study is to investigate the relationship between educational placement and teacher language input. Differences in the amount of wh-question types produced between general and special elementary teachers are documented. Findings were gathered from audio recordings of language arts instruction, and indicated that teachers in both classroom types produced a range of wh-questions including: what, who, when, which, where, why, and how. Results indicated that teachers in general education classrooms produced more wh-questions per minute than did teachers in special education classrooms but this difference did not reach statistical significance. The two teacher groups produced more what questions than any other type of wh-question. The role of school-based speech-language pathologists in improving questioning practices of general and special education teachers is discussed.
Acknowledgements

I would like to thank my advisor, Dr. Monique Mills, for providing me with such a great opportunity to do research as well as for leading me to dozens of helpful resources that will be useful for any future research projects that I undertake. I would like to express my gratitude to Samira Sabihi for generously giving her time to assist with reliability coding. Additionally, I would like to thank the participating Central Ohio Elementary School for their assistance in providing subjects for this research. Finally, I would like to extend a special thank you to my clinical supervisor Ellen Bonk, who introduced me to the research gaps that currently exist in the area of teacher talk.
Vita

June 2006………………………………………………Lakota West High School

May 2010………………………………………Denman Undergraduate Research Forum

“Case-Finiteness Contingencies in Child Language”

June 2010………………………………………B.A. Spanish, The Ohio State University

September 2010 to present………………….M.A. Speech-Language Pathology, The Ohio State University

Fields of Study

Major Field: Speech and Hearing Science
List of Tables

Table 1: Four Levels of Abstraction as developed by Blank, Rose and Berlin (1978a, 1978b) .......................................................... 28

Table 2: Teacher Demographic Information ......................................................... 29

Table 3: Total Wh- Question Production Per Session ........................................... 30
List of Figures

Figure 1: Blank’s (1975) Level of Wh-Word Complexity ........................................31

Figure 2: Comparison of Wh-Questions Between General and Special Education
Teachers ......................................................................................................................32
Table of Contents

Abstract .............................................................................................................................................. ii

Acknowledgements .......................................................................................................................... iii

Vita ................................................................................................................................................... iv

List of Tables .................................................................................................................................... v

List of Figures ................................................................................................................................. vi

Chapter 1: Introduction and Literature Review ........................................................................ 1
  Section 1.0: Language Input and Children’s Lexical Development ........................................ 1
  Section 1.1: Discourse Input and Children’s Language Development .................................... 4
  Section 1.2: Questioning .................................................................................................................. 5
  Section 1.3: Present Study ............................................................................................................. 13

Chapter 2: Methods ......................................................................................................................... 15
  Section 2.0: Participants .................................................................................................................. 15
  Section 2.1: Procedures .................................................................................................................. 15

Chapter 3: Results ........................................................................................................................... 17

Chapter 4: Discussion ....................................................................................................................... 18

References ........................................................................................................................................ 24

Appendix A: Tables and Figures .................................................................................................... 29
Chapter 1: Introduction and Literature Review

Children with and without language impairment are situated in language environments at home and in schools. The impact of parental language input on child language outcomes has been established (Hart & Risley, 1995, 2003; Hoff, 2003). Studies examining the associations between teacher language input and child language outcomes are also present in the literature (Dickinson & Smith, 1994; Dickinson, 2001; Peisner-Feinberg & Burchinal 1997; Wilcox-Herzog & Kontos, 1998). Less clear is the relationship between educational placement and teacher language input. Therefore, the aim of the present study is to investigate differences in language input of teachers in general and special education classrooms. In the sections that follow, we outline the impact of parental language input on children’s lexical development. Next, we review literature on teacher talk and its effect on child language. Finally, we discuss current literature on discourse input, particularly questioning and the importance of questioning in elementary classrooms.

Section 1.0: Language Input and Children’s Lexical Development

Parental input and children with typical development

As they grow and develop, children thrive on the attention and quality of care they receive from their parents. In addition to their child’s health and overall well-being, both mothers and fathers influence their child’s language acquisition and development. It has been suggested that as a child’s language develops over time, caregiver language
increases in syntactic complexity (Huttenlocher et al., 2007). Similarly, Pancsofar and Vernon-Feagans (2006) found that 24 month-old children whose fathers produced a greater amount and variety of word roots demonstrated more advanced expressive language skills one year later. Additionally, findings by Hart and Risley (1995) suggest that maternal language input predicts a 1-2 year-old child’s later language and literacy success in school.

One factor that has been shown to affect parental language input is socioeconomic status (SES). In a longitudinal study (Huttenlocher et al., 2007) caregiver speech to children aged 14-30 months was examined during the period of early language development. Huttenlocher and her colleagues found that between education and income, (both of which are frequently considered together in SES), maternal education was more related than income to the characteristics of caregiver speech. Parents who were more educated spoke to their children with greater syntactic complexity than did parents with less education.

SES was examined in another longitudinal study (Hart & Risley, 2003), in which the interactions and activities of 42 families were tape-recorded during sequential monthly 1-hour observations for nearly 2 ½ years. Of these families, 13 were high SES (professionals), 10 middle SES (working class), 10 low SES (on public assistance), and 6 on welfare. Each family had a child who was 7-9 months old, and observations continued until the children turned 3 years old. Results of Hart and Risley’s quantitative comparison of low SES, middle SES and high SES families showed that during one week, children of high SES parents heard 215,000 words, children of mid-SES heard 125,000 words, and children of low SES parents heard 62,000 words (Hart & Risley, 2003). The researchers
extrapolated that by the time a low SES child reached 4 years of age, s/he could have been exposed to 13 million fewer words than child from a middle SES family. Not only did the low SES children demonstrate decreased vocabulary growth, children from higher SES homes demonstrated more advanced language development than those children from lower SES homes.

In a more specific, cross-sectional experimental study, naturalistic interactions between mother and child dyads were examined to explore maternal language effects on children’s early vocabulary development (Hoff, 2003). Recordings of naturalistic interactions between high SES mothers and their 2-year-old children as well as mid SES mothers and their 2-year-old children occurred at 2 different periods 10 weeks apart. Analysis revealed that children’s vocabulary growth between the 2 time periods was related to maternal speech, which was affected by SES. Specifically, low SES mothers’ speech during everyday interactions with their children showed lower levels of lexical richness, quantity, and sentence complexity when compared to the speech of mid SES mothers. Analysis of the transcripts of these recordings suggests that the children’s productive vocabulary was related to these properties of maternal speech.

Teacher input and the lexical growth of children with typical development

Just as parental input has a strong influence on child lexical development, teacher language also affects children’s vocabulary growth, which in turn influences academic progress. It has been shown that English-speaking students whose teachers use a wider variety of vocabulary show a greater increase in receptive lexical skills compared to students in other classrooms (Bowers, 2010). An observational study (Gerde & Powell
2009) of 60 Head Start teachers and their preschool students found that teacher language practices during group reading predict children’s receptive vocabulary growth. Preschool students of teachers who utilized more book-focused utterances during group reading experienced higher receptive vocabulary growth over the academic year as compared to other classrooms (Gerde & Powell 2009). Results from a longitudinal study (Dickinson & Porche 2011) following 57 low-income preschool students found that their teachers’ use of complex vocabulary predicted reading comprehension and word recognition in fourth grade. Additionally, analytic discussion of books was found to be predictive of 4th grade vocabulary. Wh-question vocabulary also varies in complexity (what being the least complex and why being the most complex). Are there more simple wh-question words used in special compared to general education classrooms?

Section 1.1: Discourse Input and Children’s Language Development

*Parental discourse with children with atypical versus typical development*

There is a long-standing controversy concerning children with language impairments, specifically whether their language system is deviant from that of typically developing children or whether their linguistic environment is somehow different from that of children with typical language learning (Shanker, 2002). A cross-sectional study (Conti-Ramsden & Friel-Patti, 1984) assessed the ability of children with language impairment to participate in continual dialogue, and analyzed their mothers’ abilities to adjust their own speech to the level of their children with language impairments. Findings from tape recordings of 14 dyads of mothers and children with language impairment and 14 dyads of mothers of typical language children suggested that children with language
impairment initiate dialogue less often than the MLU-matched children with typical language. These differences in participation abilities were reflected in the mothers’ pattern of initiation; in order to maintain an effective conversation, the mothers had to initiate more dialogue since their children did not. The authors speculated that this was an adjustment in the mothers’ conversational style that fulfilled their children’s needs and served as a conversational model. However, others have also interpreted this finding negatively, reporting that the mothers exhibited a greater degree of control of the conversation, which could negatively influence their children’s language acquisition (Grossfeld & Geller, 1980; Cardoso-Martins & Mervin, 1981). Do teachers follow this same maternal language model with the students who have special needs in their classrooms? Given that mothers exhibit more turn-taking and conversational control with children who have language impairments compared to mothers of children with typical language, we expect that special education teachers of students with increased academic needs and possible language impairments will demonstrate more control over conversational exchanges than general education teachers of students without special needs. That is, special education teachers may provide fewer opportunities for questioning than general education teachers so that they maintain control of the conversational floor.

Section 1.2: Questioning

The ability to question the world around us is an important aspect of learning and acquiring life experience. Just as parental language input is affected by factors such as socioeconomic status, parental questioning practices can vary cross-culturally (Heath,
In her seminal ethnographic study, Heath (1983) examined language practices of children from different SES and racial backgrounds. Low-income Black and White children were reared in language communities that were like and unlike those of Mainstream, or school-oriented, Black and White children. For instance, questioning practices differed in that Black preschool children from Trackton were not seen as “information-givers” or “question-answerers,” especially in the case of questions for which the questioner knows the answer. As such, questions were not structured particularly for children, and children were not expected to display their knowledge about the world. In school-oriented communities, parents and teachers utilize questions to test children’s knowledge and to challenge them in their critical thinking skills. In contrast, Black children in Trackton were expected to learn to recognize differences in language by drawing from their experiences; the most common question asked of them is an analogy, which requires the child to use their own experiences to compare a novel concept with a familiar one. “What you think you are?” or “What’s dat like?” are examples of questions an adult may pose of a child who is jumping around or crawling under furniture (Heath, 1983). Preschoolers in Trackton learned to develop comparisons to make sense of the world around them. A nearby low-income, predominantly White community, Roadville, proved to have questioning practices more similar to Mainstream families. Adults viewed themselves as teachers to preschool-aged children, and so asked them questions since that is what teachers do. The most frequent questions that occur for Roadville preschoolers are those for which the questioner knows the answer (e.g., “What is that?”). These questioning practices are similar to those in Mainstream communities, but different from those in nearby Trackton. When children’s questioning practices from
the home environment are aligned with classroom expectations, children may be best able to engage in classroom discourse and succeed academically.

Wh-questions from parents, teachers, and other caregivers provide a cognitive framework for a child’s language development. Blank (1975) examined the initial development of a child’s understanding of the term why by examining data collected bimonthly in hour-long sessions from a mid-SES child between 18-31 months. It was suggested that questions that include either where, what or who are less complex than questions containing why, how and when (Blank, 1975). Figure 1 visually represents the complexity continuum of wh-questions. As explained in that study, where questions may be responded to by pointing at an object (e.g., Where is your nose?), or a label (e.g., Where are you going? or Where is the ball?). These labels provide clues as to what the responses to these questions need to contain, which decreases the cognitive load they demand. Children are better able to answer questions that contain a label or other prompt that more clearly indicates whether the response should include a person, a place, an object, etc.

However, why questions vary in their referent, which could consist of an action, function, justification, or causal relation. Responses to why questions are also complex and could require stating a motivation, condition, or attribute. Another important note is that why questions contain no clues as to what the response should include, as the where questions do. How and when questions are similar to why questions in that they involve more abstract concepts. As such, a child’s responses to why, how, and when questions are much greater indicators of his/her cognitive abilities than are where, what and who questions.
While young children do produce *why* questions, their occurrence in inappropriate contexts demonstrates a lack of complete understanding of how the word is used. It was observed that adult responses to the child’s *why* questions rarely provide significant feedback about the term that could lead to the child’s improved understanding concerning when and how to use the term appropriately (Blank, 1975). Due to the higher cognitive load required to comprehend *why, how* and *when* questions, it may be important for adults to be aware of their use of these forms as well as of their responses to child questions in order to better facilitate language growth and promote understanding. Given the varying cognitive demands of wh- question words, we explore their use by teachers in general and special education classrooms.

**Teacher discourse and questioning in general education classrooms**

Currently there exists a gap in the literature on questioning in general education classrooms. Like parents and caregivers, the role of the teacher is another important consideration in child language development. Overall, forms of spoken language utilized in the classroom are similar to language spoken in home environments in the use of strategies such as directives and question answer sequences (Wells 1981; Tizard & Hughes, 1984). In order for children to learn, it is important for their language input to promote learning and encourage verbal participation. Children’s learning must occur within their zone of proximal development (Vygotsky, 1978), which has been defined as “the distance or the cognitive gap between what learners can do unaided and what they can do in collaboration with a more competent other” (Gibbons, 2003). An exploratory study (Girolametto et al., 2003) examined the use of several caregiver interactive
language strategies, including alternating the communication exchange style by increasing overall language productivity, making interactions more child-centered, and encouraging child participation and turn-taking. The results suggest that when caregivers implement these interactive language strategies, preschool children in daycare settings demonstrated an increased level of talkativeness to peers and caregivers, as well as an increased number of multiword combinations.

As children progress from preschool to kindergarten, teacher expectations regarding their communication shift in focus from encouraging social interaction with peers in preschool to following instructions and maintaining appropriate behavior in kindergarten (Hains, Fowler, Schwartz, Kottwitz, & Rosenkoetter, 1989). Questioning students becomes increasingly important during this transition, as well as throughout the progression of grade school. The present study examines the type of questions utilized by elementary school teachers and their frequency of occurrence. We expect general education teachers to utilize more cognitively challenging questions more frequently than less cognitively challenging questions to promote learning.

*Teacher discourse and questioning in special education classrooms*

Teacher questioning practices in special education classrooms is another knowledge area of which little is currently known. Children who qualify for special education programs have demonstrated dependence on adults as a way of compensating for ability limitations and experience deficits (Zigler, 1967). Students in special education classrooms may present with disorders that include any combination of cognitive impairments, language disorders, and/or behavior issues. Children exhibiting these
disorders require more support in cognitive framing than do children receiving general education (Zigler, 1967). Despite this acknowledged need, little is known about the language environment in which these children are educated, and whether their surroundings provide sufficient support to meet their needs and promote further development.

The ultimate goal for students placed in special education classrooms remains the same of that of students in general education classroom: that is, for them to achieve their highest potential. It has been reported in efficacy studies that special education placement is not necessarily beneficial to educable mentally retarded (EMR) children (Hurley 1967). A major contribution to this finding could be the language input these students receive, but this factor has not been satisfactorily determined. As previously noted, students placed in special education usually demonstrate an increased dependence on adults in order to compensate for their various deficits (Zigler, 1967). Does the language of special education teachers reflect their students’ increased need for cognitive and linguistic support? Do these teachers use different language according to the needs of their students as compared to general education teachers?

One study of special education instruction comes from observations of one teacher over a two-year period (Levine & Mann, 1985). Patterns in her questioning behavior revealed what seemed to be an emphasis on communicative interactions rather than on eliciting correct answers in response to instruction, contrasting with what occurs in a general education classroom. It was noted, for example, that she rarely paid attention to each of her students’ responses to her questions; she would seem to ignore answers as often as she would correct, assist, and encourage. Analysis revealed she would address
the group more often than individuals; it seemed acceptable for just one student (who was “representative” of the group) to answer the question correctly rather than all students giving the correct answer. This focus on routine in the classroom has important implications for behavior management as well as student learning opportunity. The interactive conditions present in the general or special education classroom are what promote learning, and so are essential to ensure student success and achievement of learning objectives.

Results of four case studies of teacher talk with language impaired students (Sadler & Mogford-Bevan, 1997) revealed that the number of child turns within a conversation strongly correlated with the number of teacher turns. This suggests that the amount of teacher talk addressed to students is directly related to the amount of child talk addressed to the teacher. This has serious implications for children’s learning opportunities, especially for those students who are less loquacious, because they may not have the same opportunities to speak with the teacher that are provided to more outspoken students.

A Comparison of Teacher and Parental Questioning

Generally, teachers use questions in the context of eliciting responses and checking for understanding, as well as in many other contexts such as: classroom management, factual elicitation, cued elicitation, building on content, building on thinking, recapping, practicing skills, checking prior knowledge, developing vocabulary, checking understanding, and developing reflection (Myhill & Dunkin, 2005). Several studies have found that approximately one-third of preschool teachers’ utterances are
questions (Massey et al., 2008; de Rivera et al., 2005; Gest et al., 2006). Some teachers of children with language impairment use a mixture of open and closed questions, the latter of which require only a yes/no response (Sadler & Mogford-Bevan, 1997). In a study of 14 preschool teachers, analysis revealed that cognitively challenging questions (e.g., “What do you think this means?” “What do you think will happen next?” “What do we need to do to fix the toy?”) accounted for approximately 10% of preschool teacher utterances (Massey et al., 2008). However, cognitively challenging questions occurred more often than less cognitively challenging questions (i.e. “What is this called?” “Would you like to be the door holder or the calendar person?”).

Parental language input may be less cognitively challenging than teacher language input. Van Kleeck et al. (1997) conducted a study of parental language input to their preschool children ages 3;6 to 4;1. In the van Kleeck et al. study, parent utterances were coded according to four levels of abstraction developed by Blank, Rose and Berlin (1978a, 1978b), (see Table 1). 63% of parental utterances were comprised of the less cognitively challenging questions and comments (Levels I and II). Additionally, the authors noted two types of parental input that were most influential: non-challenging input to promote success and challenging input to promote further learning.

Massey et al. (2008) found that the use of cognitively challenging questions varied across preschool classroom contexts, with the more challenging questions (compared to less cognitively challenging and management questions) occurring during story activities. Current research suggests that preschool teachers utilize story discussions to develop children’s abstract cognitive skills (Massey et al., 2008).
Taken together, research on parental and teacher question input to young children suggests that children will encounter more cognitively challenging and abstract concepts in the classroom than in home environments.

Section 1.3: Present Study

Much of the research regarding teacher talk and children’s use and understanding of questions includes preschoolers. However, examining these components of communication and language across age and grade levels may help determine whether appropriate adjustments are made as children progress through their academic program. The complexity of teacher talk was examined in this study by comparing the frequency of wh-question use in general versus special education classrooms. Specifically, it was hoped that examining the types of teacher questions would lead to a greater understanding of the quality and quantity of language input to children with and without the need for additional learning support.

This study posed the following questions:

1. Does the frequency of wh-question occurrence differ between general and special classrooms?
2. Are some wh-questions used more often than others?

Based on the current literature, we predicted that general education teachers would utilize more cognitively challenging questions (*why*, *when*, *how*) more frequently than less cognitively challenging questions (*what*, *where*, *who*, *which*) in order to promote learning. In contrast, we expect special education teachers to utilize less
cognitively challenging questions in order to accommodate to their students’ supportive learning needs.
Chapter 2: Methods

Section 2.0: Participants

This descriptive study involved 4 teachers (2 general education, 2 special education) representing grades 2-5 at one public elementary school in Central Ohio. Classroom size varied, ranging from 7 to 24 students, as did grade level, ranging from 2nd to 5th grade. Table 2 displays teacher demographics, including highest level of completed education and years of teaching experience. Teachers were recruited during parent-teacher conferences where they consented to the study.

Section 2.1: Procedures

Procedures for this study were carried out with approval from The Behavioral and Social Sciences Institutional Review Board at The Ohio State University. Each of the participants was audio-recorded using a digital recorder and lapel microphone. Recordings were gathered at 5 separate observation times at the same time each day, between 9am and 12pm, for each teacher. The observations took place during language arts instruction (which included vocabulary lessons, read-aloud, spelling lessons and tests, class discussion, etc). Length of instruction varied within and across instructors, ranging from 12 to 90 minutes. Variables examined included the type and amount of wh-questions per minute. As the teacher conducted the lesson, a researcher seated in an inconspicuous location in the classroom and recorded by hand number of each type of wh-questions that occurred.
Reliability

Interrater agreement was conducted by a second coder who coded 30% (6 sessions total) the 4 participants from general (n = 2) and special (n = 2) teachers for types and tokens of wh- question words. The first coder coded frequency of occurrence of each wh-question online. The second coder coded frequency of occurrence of each wh-question by listening to the audio recordings. Utterance-by-utterance comparisons were made to determine concordance on type and number of wh-question words using Krippendorff’s alpha to assess interrater agreement. To determine what is deemed a reliable result, Krippendorff’s alpha maintains standard guidelines. If the comparison is greater than .67, it is an acceptable rating. However, reliability ratings are favorable if the comparison is greater than .80. Statistical analysis yielded the following alpha values for each wh-question word: “what” \( \alpha = .75 \), “where” \( \alpha = .80 \), “when” \( \alpha = .88 \), “why” \( \alpha = .86 \), “how” \( \alpha = .62 \), “who” \( \alpha = .1.0 \), “which” \( \alpha = .44 \). Reliability was lower for wh-questions that occurred rarely (i.e., which and how).
Chapter 3: Results

The aim of this study was to examine differences in wh- question production in teachers of general and special education classrooms. General education classroom means are higher than special education classroom means across each wh- question type. In addition, general education classroom standard deviations are larger than special education classroom standard deviations across each wh- question type. Means for what questions, one of the most simple question words according to Blank (1975), were higher than all other wh- questions.

An independent-samples t-test was conducted to compare wh- question production for teachers in general and special education. To control for session lengths between teachers, the total wh-question variable was divided by the average session length in minutes. The independent variable was classroom (general, special). The dependent variable was total wh- question production per minute of instruction. There was no significant difference in total wh- question production per minute between teachers in general ($M = 1.21, SD = .29$) and special ($M = 1.03, SD = .45$); $t(2) = .45$, $p = .69$, two-tailed. The magnitude of the differences in the means (mean difference = .17, 95% CI: --1.47 to 1.81) was moderate ($\eta^2 = .09$). Table 3 displays mean total wh- question production per session for each teacher, as well as the average across sessions for each teacher. Figure 2 displays the mean number of seven different wh- questions produced across classrooms.
Chapter 4: Discussion

Summary of Results

Overall, there was no significant difference in the frequency of wh- questions produced between general and special education teachers. While the mean production of wh- questions appeared higher for teachers of general than special education classrooms, this difference did not reach statistical significance. The two groups produced more what questions than any other wh- question.

Teacher Input in General and Special Education Classroom

It has been conjectured that wh- questions do not require an equal amount of cognitive effort due to differences in complexity and abstraction (Blank 1975). Figure 1, based on Blank’s (1975) model, displays how wh- question words relate to each other based on complexity, with what being the least complex and why the most complex. General and special education teachers utilized more questions containing the most simple wh- question word what than any other (approximately 60% of all wh- question utterances) with why being the second-most produced wh- question (approximately 9% of wh- question utterances). However, questions that appear to be cognitively low-level may actually promote different levels of abstraction (Blank, Rose & Berlin 1978a, 1978b), which was not assessed in the present study. As outlined in Table 1, what questions can carry different levels of abstraction. Although the same wh- question word may be utilized at the same rate between groups, a difference may exist in the level of
abstraction. Questions containing the same wh-question word may still contain abstract concepts, independent of the complexity of the wh-question word itself.

There are several possible reasons why no differences were found between the two classroom types. The first is a small sample size \((n = 4)\). Another is large variability within each group. One general education teacher produced a much higher amount of wh-questions than the other. This occurrence could be related to the teacher having fewer years of experience, though it is difficult to say for certain with the size of the sample. Anecdotally, special education classrooms with negative behavior from students resulted in curtailed lessons and a higher occurrence of behavior management questions (e.g. “What should you be doing?”) and comments (e.g. “I need you to focus”) from the teacher. In these classrooms, managing negative behavior took precedence over the lesson and all related questions, which interrupted the learning process.

**Limitations of Current Study**

There are several limitations of this study that should be taken into consideration for future research on teacher talk. The sample size of this study is extremely small; a more accurate and thorough analysis of teacher talk may be gained through a larger sample. To begin, results of this study showed no difference in wh-questioning between general and special education teachers; however, the effect size for this difference was moderate. In a larger sample, this difference may have reached statistical significance. Additionally, the small sample size hampered our ability to assess wh-question production across each of the five sessions. Without this within-subjects analysis, we were unable to determine whether a classroom by session interaction existed. That is, we
lacked statistical power to assess whether wh-question use differed between teachers in general and special education across sessions. Lastly, a larger sample size will control for the variability that occurs among instructors as a result of individual teaching style, cultural questioning practices, education level, and student behavior, among other factors.

**Future Directions**

The current study did not find differences in teacher production of wh-questions. An important next step is to collect data from a larger set of elementary school teachers. It will be important to determine whether differences between general and special education teachers differ across the course of a school year. Do general education teachers increase wh-questioning while special education teachers decrease wh-questioning? Answers to this research inquiry will provide critical descriptive data on questioning in school-age teachers of students with and without disabilities.

The current study indicated that general and special education teachers in elementary school tended to use simple wh-question words that could possibly cover a wide range of abstraction. Future research should examine abstraction of each wh-question besides the complexity of the wh-question word itself. Can high levels of abstraction be present in questions that utilize simple wh-question words? It would be especially interesting to compare this and other teacher questioning practices between general and special education teachers as academic requirements become more stringent as students progress through school.

Additionally, as noted by Heath (1983), questioning practices vary cross-culturally. It is possible that teacher questioning may vary as a function of each
individual teacher’s cultural upbringing. Perhaps it is not the classroom type that
determines the types and amounts of questions, but rather the teacher’s cultural
background. It may be that teachers of the same cultural background would produce
similar amounts of different types of wh-questions regardless of the classroom level they
teach. Thus, another valuable research contribution would include comparing the teacher
language input and parental language input to the same sample of children. Would
parental questioning practices reflect current research (van Kleeck, 1997)? What specific
differences are there between parental and teacher wh-questioning practices with
children of the same age and grade?

Generally, further research and analysis of teacher talk is needed. Current
literature explores teacher talk in early language environments, such as toddler/preschool
daycare programs and preschool classroom contexts. However, gaps exist in our
knowledge of teacher language in elementary, middle, and high school grades,
particularly in regard to vocabulary growth and overall language development. Since
language continues to develop throughout childhood and increasingly complex language
demands are placed on students as they progress through academic programs, it is
essential to gain a more thorough understanding of the language input they receive from
teachers. Additional comparisons at each of these grade levels include comparing teacher
language to child educational outcomes to determine to what degree a child’s academic
progress is affected by the teacher’s use of language. As previously mentioned, secondary
analysis of wh-question data of general and special education teachers is needed, looking
specifically at the difference in abstraction level associated with each type of wh-
question. How do the contexts in which wh- questions occur differ between general and special education teachers?

Clinical and Educational Implications

Results of this study suggest that general and special education teachers use similar amounts of wh- questions. If teachers are mostly using cognitively low-level questioning, it may be that their students are not being challenged as much as they could be. This could negatively influence their language development and critical thinking skills. Speech-language pathologists (SLPs) could helpfully intervene in the classroom by training educators to become more aware of their language, particularly their questioning habits.

A more thorough secondary analysis of the data is needed to determine the contexts in which wh- questions occur. A higher frequency of more abstract questions in one type of classroom would demonstrate different expectations of students, possibly due to the amount of learning support they require. If trends are noted in teacher language, it is important to take these into account as spoken language curriculum standards and norms are developed. This information could be applied clinically for educators and providers of related services to assist students in meeting these standards and succeeding in school.

Conclusion

Research has demonstrated that adults in a child’s world hold a tremendous influence over their language development. In particular, the number of words produced
and lexical complexity of utterances are strong factors in the rate and complexity of a child’s developing vocabulary. Among other reasons, adult discourse is adjusted according to the amount of support the child requires. Parents utilize less cognitively challenging questions, while teachers utilize questions that require more cognitive effort. In the current study, the frequency and type of wh- questions of general and special education teachers was compared to determine if a difference in wh- question complexity exists between educational placement levels. There was no significant difference in the overall mean production or in the types of wh- questions. Further research should be conducted to determine whether general and special education teachers generate similar amounts of wh- questions that involve abstract concepts. Additional research in teacher talk has important educational and clinical implications. A greater understanding of how educators use language could lead to more extensive knowledge of how children learn in U.S. schools.
References


in classes for the mentally retarded. studies in language and language behavior, progress report number IV.


Appendix A: Tables and Figures

Table 1

*Four Levels of Abstraction (Blank, Rose & Berlin 1978a, 1978b)*

<table>
<thead>
<tr>
<th>Level</th>
<th>Components of Abstraction Level</th>
<th>Example(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level I</td>
<td>Labeling, locating, noticing concrete objects</td>
<td>“What is this?”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Find the ball.”</td>
</tr>
<tr>
<td>Level II</td>
<td>Describing characters, recalling information, completing sentences</td>
<td>“What color is this?”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“What is he doing?”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“This book is called…”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“How do you think the girl feels?”</td>
</tr>
<tr>
<td>Level III</td>
<td>Reordering events, making inferences</td>
<td>“Is the bear stronger than the bird?”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“What do you think made that happen?”</td>
</tr>
<tr>
<td>Level IV</td>
<td>Making hypothetical predictions, explaining concepts and problem solving</td>
<td>“Owl doesn’t have any fingers so he has to use his toes to sit.”</td>
</tr>
</tbody>
</table>
### Table 2

**Teacher Demographics**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grade</strong></td>
<td>2nd</td>
<td>3rd</td>
<td>3rd, 4th, 5th</td>
<td>3rd, 4th, 5th</td>
</tr>
<tr>
<td><strong>Class size</strong></td>
<td>24</td>
<td>25</td>
<td>7 to 9</td>
<td>13</td>
</tr>
<tr>
<td><strong>Highest Education Completed</strong></td>
<td>Bachelor’s</td>
<td>Bachelor’s</td>
<td>Master’s</td>
<td>Bachelor’s</td>
</tr>
<tr>
<td><strong>Years of Teaching Experience</strong></td>
<td>1-4 years</td>
<td>5-9 years</td>
<td>1-4 years</td>
<td>5-9 years</td>
</tr>
<tr>
<td><strong>Race/ethnicity</strong></td>
<td>Caucasian</td>
<td>African American</td>
<td>African American</td>
<td>Caucasian</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>Female</td>
<td>Female</td>
<td>Female</td>
<td>Female</td>
</tr>
</tbody>
</table>
Table 3

*Total Wh- Question Production Per Session*

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Session 1</th>
<th>Session 2</th>
<th>Session 3</th>
<th>Session 4</th>
<th>Session 5</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>82</td>
<td>54</td>
<td>46</td>
<td>111</td>
<td>57</td>
<td>70</td>
</tr>
<tr>
<td>2</td>
<td>60</td>
<td>56</td>
<td>49</td>
<td>65</td>
<td>26</td>
<td>51.2</td>
</tr>
<tr>
<td>3</td>
<td>84</td>
<td>31</td>
<td>11</td>
<td>57</td>
<td>47</td>
<td>46</td>
</tr>
<tr>
<td>4</td>
<td>28</td>
<td>29</td>
<td>47</td>
<td>24</td>
<td>71</td>
<td>39.8</td>
</tr>
</tbody>
</table>
Figure 1

Blank’s (1975) Level of Wh-Word Complexity

Complex

why
how
when
which
where
who
what

Simple
Figure 2

Comparison of Wh-Questions Between General and Special Education Teachers

![Graph showing teacher differences in Wh-questioning]

- Teacher Differences in Wh-Questioning
- Mean Wh-Question Per Minute
- Wh-Question Types
- General
- Special

Graph illustrating the comparison of Wh-questions between general and special education teachers.