

Speech-language therapist and teacher knowledge of early literacy skills

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Abstract

Purpose: The purposes of this study were: (a) to compare speech-language therapists' (SLTs') and general education teachers' perceived skill for providing early reading and writing instruction and (b) to compare SLTs' and teachers' knowledge of early reading and writing skills. **Method:** SLTs (n = 28) and general education teachers (n = 25) participated in this study. Participants completed a self-assessment of their own skill level for providing early reading and writing instruction and an objective measure of their knowledge of early reading and writing skills. **Results:** There was a significant difference between groups in self-assessment of current skill for delivering early reading and writing instruction; SLTs rated their own current skill as lower than teachers rated their own current skill. There was not a significant difference in knowledge of early reading and writing skills between SLTs and teachers. **Conclusions:** SLTs and teachers can benefit from continued professional development related to providing evidence-based reading and writing instruction. Because of their different perceptions of their own skills, professional development may need to be approached differently for SLTs and teachers. Future research will examine specific areas of knowledge strength and weakness for SLTs and teachers.

Keywords

professional education, educator knowledge, language impairment, speech-language pathology, reading

Among the two thirds of American children who fail to achieve reading and writing proficiency are children with reading disabilities (U. S. Department of Education, 2015). Many children with reading disabilities experience early spoken language deficits (e.g. Catts, 1991). Given that spoken language skills lay the foundation for reading and writing acquisition, speech-language therapists (SLTs) must work collaboratively with multiple professionals such as general education

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teachers and special education teachers to support reading acquisition in these children (American Speech-Language-Hearing Association, 2010; Every Student Succeeds Act, 2016).

Often, interprofessional collaboration in schools occurs within the response-to-intervention (RTI) approach to instruction and intervention (also called multi-tiered systems of support; MTSS). RTI was designed to prevent reading disabilities in at-risk children through (a) universal screening to identify at-risk children, (b) continuous progress monitoring to ensure adequate growth, and (c) “tiers” of increasingly intense instruction and intervention (Vaughn and Fuchs, 2003). The specifics of implementation vary considerably across contexts (Fletcher and Vaughn, 2009), but “tier 1” typically is high-quality general classroom instruction, “tier 2” typically is small-group standardized intervention, and “tier 3” typically is specialized intervention delivered through special education (Vaughn and Fuchs, 2003).

Within the RTI model, multiple professionals such as general education teachers, special education teachers, and SLTs share responsibility for providing high-quality evidence-based reading and writing instruction and intervention. The specific responsibilities of each professional vary depending on school context, but successful implementation of RTI requires that all team members have sufficient knowledge and skills to provide evidence-based reading and writing instruction and/or intervention. Additionally, effective interdisciplinary collaboration requires a shared knowledge base and cross-disciplinary understanding of professional expertise (Banks and Millward, 2007; Kvarnström, 2008; Postrel, 2002). Pre-service SLTs and pre-service teachers, however, lack the requisite knowledge of spoken and written language, as well as knowledge of professional collaboration (Wilson et al., 2015).

Many large-scale studies have examined teachers’ preparation for delivering evidence-based tier 1 reading and writing instruction with disappointing results. Relatively few studies, however, have compared preparation for evidence-based reading and writing instruction across RTI team members. The purpose of the present study is to examine perceived skills and objective knowledge related to evidence-based reading and writing instruction among SLTs and teachers.

1 SLT knowledge, perceived skill, and practices

SLT knowledge, perceived skill, and practice is highly variable across individuals and contexts. In the United States, preprofessional SLT education routinely includes instruction in the structure of spoken and written language, so SLTs should be well equipped to target skills that support reading and writing acquisition (e.g. phonemic awareness, vocabulary, syntax). However, SLT preprofessional education but does not necessarily tie knowledge of language structure to reading and writing instruction and intervention, so SLTs in the US generally spend little to no time targeting foundational reading and writing skills (American Speech-Language-Hearing Association, 2020; Tambyraja et al., 2014). It would be prudent for SLTs in English-speaking countries to target foundational reading and writing skills such as phonological awareness in language therapy as they do in Australia (Serry and Levickis, 2020).

SLT experience, caseload size, and perceived time pressures do not explain the variance in SLTs’ practices for supporting reading and writing acquisition (Tambyraja et al., 2014). Ehren and Ehren (2001) suggest that SLTs’ beliefs that they are underprepared to address reading and writing may contribute to their reluctance to do so. This supposition is indirectly supported by the extant literature: SLTs on average report being unprepared to support reading and writing acquisition (Blood et al., 2010; Serry, 2013; Serry and Levickis, 2020), but SLTs who have received training in reading and writing intervention are more likely than their peers to target reading-related and writing-related skills (Fallon and Katz, 2011).

2 Teacher knowledge, perceived skill, and practices

In contrast to preprofessional SLT preparation, preservice teachers usually receive little, if any, instruction in the structure of spoken and written language (Moats, 2009). Unsurprisingly, a large body of evidence demonstrates that teachers internationally lack the pedagogical and metalinguistic knowledge needed to engage in high-quality tier 1 reading and writing instruction (e.g. Stephenson, 2018). Teachers repeatedly have been shown to have weaknesses in knowledge of English sound structure (i.e. phonology; Brady et al., 2009; Carroll et al., 2012; Fielding-Barnsley, 2010; Spencer et al., 2008), knowledge of English spelling conventions and code-based instruction (i.e. orthography; Bos et al., 2001; Cohen et al., 2017; Cunningham et al., 2004; Folsom et al., 2017; Mahar and Richdale, 2008), and knowledge of reading disabilities (e.g. Peltier et al., 2020; Washburn et al., 2016). These limitations in teacher knowledge relate to poorer reading outcomes in children (e.g. McCutchen et al., 2002).

Limitations in teachers' knowledge likely results in part from a lack of sufficient preprofessional education in spoken and written language structure. Although research suggests that teachers need explicit instruction in the phonological and orthographic structure of English (Spear-Swerling and Brucker, 2003; Stainthorp, 2004), many university personnel are ill prepared to teach it (Binks-Cantrell et al., 2012). Further, some textbooks used in university reading education courses present insufficient and/or inaccurate information (Joshi et al., 2009). For example, Joshi et al. (2009) explained that a textbook used in many graduate reading education programs defines a grapheme as a single letter and states that written English includes 26 graphemes. In reality, graphemes are single letters *or letter combinations* (e.g. *ch*, *dge*) that represent a single sound; written English includes more than 200 graphemes (Moats, 2020).

Although SLTs report being unprepared to target reading and writing, limited objective information exists to characterize their knowledge related to teaching early reading and writing skills beyond the domain of phonological awareness. Because SLTs and teachers should work closely in supporting reading and writing in at-risk children, in this study we sought to further characterize the relations between perceived skill and objective knowledge among SLTs and teachers. We asked two research questions:

1. Is there a difference between SLTs' subjective self-assessment of skill for providing early reading and writing instruction and teachers' subjective self-assessment of skill?
2. Is there a difference between SLTs' knowledge of early reading and writing skills and teachers' knowledge?

I Method

Data for this study were collected as part of a larger study of metalinguistic knowledge among education professionals that was approved by the Vanderbilt University Institutional Review Board. The University of Georgia Institutional Review Board determined that as an analysis of extant, de-identified data this report did not meet the definition of human subjects research and did not require additional review and approval.

I Participants

Participants were public school SLTs with experience serving kindergarteners ($n = 28$) and public-school general education teachers with experience teaching kindergarten ($n = 25$). SLTs came from fourteen public school districts and teachers came from five public school districts. Table 1 displays

Table 1. Participant demographics.

Factor	SLTs (n = 28)		Teachers (n = 25)	
	n	%	n	%
<i>Gender</i>				
Male	41	94%	20	100%
Female	27	96%	25	100%
<i>Race</i>				
American Indian or Alaska Native	40	90%	20	90%
Asian	40	90%	20	90%
Black or African American	41	94%	22	98%
Native Hawaiian or Other Pacific Islander	40	90%	20	90%
White	27	96%	22	88%
<i>Ethnicity</i>				
Hispanic/Latino	21	94%	21	94%
Not Hispanic/Latino	27	96%	24	96%

Note. SLTs = speech-language therapists. One teacher chose not to report race.

participant demographics. There was not a significant difference between groups in years of experience serving kindergarteners ($t(50.98) = 1.56, p = 0.13$).

2 Measures

Participants completed an optional demographic questionnaire, a self-assessment of skills related to early reading and writing instruction, and the *Teacher Knowledge of Early Literacy Skills* survey (Folsom et al., 2017).

Self-assessment of current skill. Participants rated their current skill level for various aspects of reading and writing instruction using a 0–100 visual analog scale. On the visual analog scale, participants dragged a slider along a line to indicate their skill level. The position of the slider on the line corresponded with a number between 0 and 100. Minimal skill corresponded with a score of 0, proficient skill corresponded to a score of 50, and expert skill corresponded to a score of 100. Participants rated their skill, based on past success, for (a) providing students with structured practice in phonemic awareness, (b) providing students with explicit phonics instruction, and (c) providing students with vocabulary instruction that incorporates morphology. Instruction in each of these areas supports acquisition of reading and writing skill.

Teacher knowledge of early literacy skills survey, form A. The *Teacher Knowledge of Early Literacy Skills* survey (TKELS; Folsom et al., 2017) was validated in a large-scale study of teacher knowledge and professional development efficacy (Folsom et al., 2017). It includes two parallel forms; form A was used for this study. Each form contains 31 multiple-choice questions that tap a single, broad construct of “knowledge of early literacy skill,” which includes knowledge and skill associated with reading instruction and writing instruction. Questions assess areas such as pedagogical knowledge (e.g. “What is a reading method that focuses on teaching the application of phonemes to letters called? (a) phonics (b) phonemics (c) orthography (d) phonetics,” Folsom et al., 2017, p. B-3) and metalinguistic knowledge (e.g. “Which word(s) is/are phonetically

irregular? (a) done (b) give (c) peach (d) a and b,” Folsom et al., 2017, p B-3). Raw score on the TKELS is the number of questions answered correctly. Readers can access the complete measure at <https://files.eric.ed.gov/fulltext/ED573545.pdf> (Folsom et al., 2017).

3 Procedure

Participants were recruited via email from participating school districts in middle Tennessee and from the Child Language and Literacy Lab email distribution list. This list includes over 1250 SLTs and other professionals who have attended professional development workshops conducted by the Child Language and Literacy Lab. Participants received an email inviting them to participate in the study. They followed a link in the email to provide informed consent, complete an optional demographics questionnaire, and complete the study measures along with a larger battery of meta-linguistic measures online using the Research Electronic Data Capture (REDCap) tool hosted at Vanderbilt University (Harris et al., 2009). Three teachers and twenty-eight SLTs were recruited from this email distribution list. Because SLTs were recruited primarily from a list of professionals who had participated in professional development focused on language and literacy, it is possible that the SLTs in this study performed better than a random sample of SLTs would.

Upon completing the study measures, each SLT had the opportunity to provide email addresses for up to six kindergarten teachers who currently teach or have in the past taught children on the SLT’s caseload. Providing these emails was optional. Seventy-four teachers were invited to participate using the email addresses provided by participating SLTs and eight of them completed the study. We initiated a second wave of teacher recruitment to obtain a sample of comparable size to the SLT sample ($n = 28$). In this second recruitment wave, we emailed all kindergarten teachers in two participating districts, except those who had already completed the study. Fourteen teachers completed the study from the second wave of teacher recruitment. The process for teacher participation was the same as for SLTs. Teachers received an email inviting them to participate in the study, followed a link in the email to provide informed consent, completed an optional demographics questionnaire, and completed the study measures along with a larger battery of metalinguistic measures.

Scoring and reliability. Data were collected via online forms and scored automatically using Excel. To ensure scoring accuracy, the author manually scored 20% of the samples and compared to the automatic scoring; no discrepancies were found. We calculated self-assessed skill as the average of an individual’s rating on all three domains assessed. We used TKELS percent correct for analysis. We accepted two answers as correct for question 26 (“How many morphemes are in the word “unhappiness”?”). The published correct answer is three morphemes (un + happy + ness). Unhappiness can be decomposed into four morphemes (un + hap + y + ness; New Oxford American Dictionary, 2013), so we included four as an alternative correct answer.

II Results

Table 2 displays descriptive statistics for both groups on the study measures.

1 Self-assessment

An independent samples *t*-test was used to compare self-assessment of current skill across groups. There was a significant difference between groups for self-assessment of current skill

Table 2. Descriptive statistics.

Measure	SLTs (n = 28)			Teachers (n = 25)		
	Mean	(SD)	Range	Mean	(SD)	Range
Current Skill	51	(14)	30–83	66	(18)	30–90
TKELS % Correct	64	(13)	32–94	57	(14)	26–87

Note. SLTs = speech-language therapists; TKELS = Teacher Knowledge of Early Literacy Skills survey (Folsom et al., 2017).

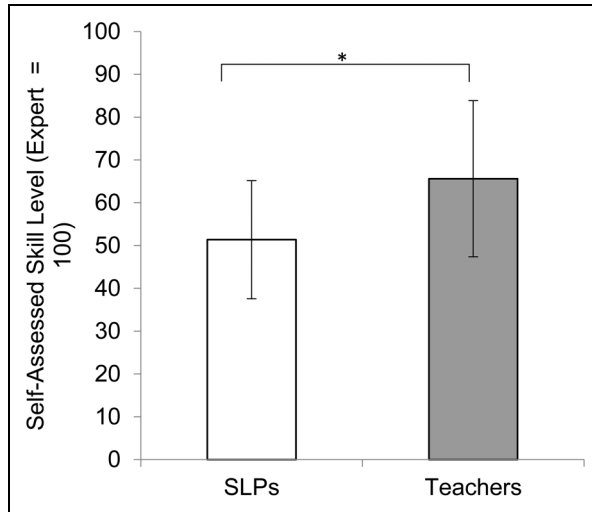


Figure 1. Mean self-assessed skill level by group.

Note. SLTs = speech-language therapists; Error bars represent standard deviation; $d = 0.88$.

($t(44.48) = 3.18, p < 0.01$). The effect size was large ($d = 0.88$). Figure 1 illustrates the between-group comparison for self-assessment of current skill.

2 Performance on the TKELS

An independent samples *t*-test was used to compare TKELS performance across groups. There was not a significant difference between groups for performance on the TKELS ($t(48.98) = 1.86, p = 0.07$), but the effect size was moderate ($d = 0.51$). Figure 2 illustrates the between-group comparison for performance on the TKELS percent correct.

III Discussion

In this study we (a) compared SLTs' and teachers' perceived skill for providing early reading and writing instruction and (b) compared SLTs' and teachers' general knowledge of early reading and writing skills. There was a statistically significant difference between SLTs and teachers in self-assessment of their own skill for providing evidence-based reading and writing instruction. SLTs rated their own skill level significantly lower than teachers rated their own skill level. There was

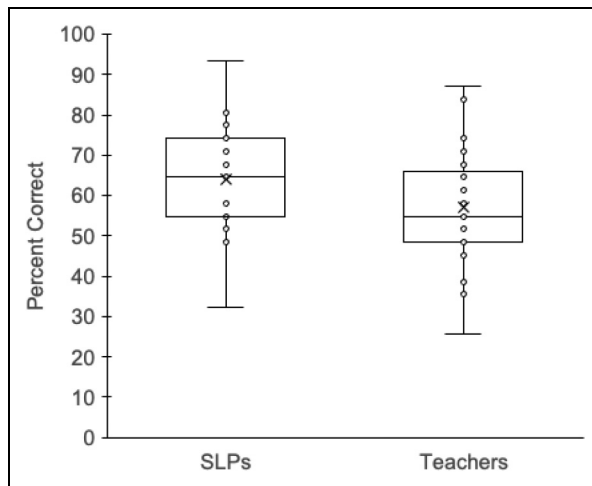


Figure 2. Group performance on the TKELS.

Note. TKELS = Teacher Knowledge of Early Literacy Skills survey (Folsom et al., 2017); $d = 0.51$.

not, however, a statistically significant difference between SLTs and teachers in performance on an objective measure of knowledge of early reading and writing skills. SLTs correctly answered 64% of the questions and teachers correctly answered 57% of the questions. Thus, there was a dissociation between SLTs' and teachers' subjective perception of their own skill and their objective knowledge related to early reading and writing instruction.

Our findings (a) corroborate SLTs' self-reported lack of sufficient knowledge for preventing, identifying, and remediating reading disabilities and (b) align with previous findings that many teachers are overly confident in their ability to engage in evidence-based reading and writing instruction. We extend previous findings related to SLTs' knowledge for supporting reading and writing (e.g. Blood et al., 2010) by objectively quantifying SLTs' knowledge of early reading and writing skills. In this study, SLTs and teachers alike performed at non-expert levels on the TKELS. An early literacy expert should be able to answer most, if not all, of the questions on the TKELS correctly. Thus, SLTs' self-reported concern about addressing early reading and writing skills is warranted. Our findings echo ongoing concerns about professional preparation for early reading and writing instruction and suggest the need for professional development in evidence-based instructional practices for SLTs and teachers alike.

1 Variability in performance

Although there was generally disappointing performance on the TKELS among the SLTs and teachers in this study, there was also substantial variability in performance. Scores ranged from approximately 30% correct to approximately 90% correct in both groups. These findings demonstrate that, of course, some professionals are adequately prepared to use evidence-based reading and writing instructional practices. Prior studies have reported that professionals with training in evidence-based reading and writing instruction are more likely to target early reading and writing skills and facilitate superior reading outcomes among the children with whom they work (Fallon and Katz, 2011; McCutchen et al., 2002). Unfortunately, professionals often must seek training in evidence-based reading and writing instruction after graduating from their

preprofessional preparation programs (Stark et al., 2015). Consequently, the quality of reading and writing instruction that children receive may depend largely on whether their teacher is willing and/or able to seek additional training. This reality highlights the need for changes in pre-professional education such that all professionals are adequately prepared to engage in evidence-based reading and writing instruction, rather than only those who seek additional training.

2 Implications for research

Although SLTs and teachers performed similarly on the TKELS, there may be different patterns of strengths and weaknesses between the groups. The TKELS is a general measure of teacher knowledge; it includes questions that assess a broad range of linguistic skills and metalinguistic knowledge including decoding skill, phonemic awareness, orthographic (i.e. phonics) knowledge, morphological knowledge, and pedagogical knowledge. Based on the nature of their preprofessional education and previous findings, we hypothesize that SLTs may have stronger metalinguistic knowledge whereas teachers may have stronger pedagogical knowledge. Multiple studies have reported that SLTs have stronger phonemic awareness (a domain of metalinguistic knowledge) than other education professionals (Carroll et al., 2012; Spencer et al., 2008). We suspect this difference may hold for morphological knowledge as well. Conversely, we expect that teachers may have relative strengths in pedagogical knowledge (i.e. knowledge of specific instructional practices) and orthographic (i.e. phonics) knowledge. Future studies should examine areas of strength and weakness across RTI team members. Doing so would inform the design of efficient professional development opportunities that target specific knowledge gaps.

3 Implications for practice

The SLTs and teachers in this study performed at a non-expert level on the TKELS; their performance suggests the need for professional development in early reading and writing instruction. Improving teacher knowledge can improve children's reading outcomes (Girolametto et al., 2012; McCutchen et al., 2002), but many contextual factors influence whether professional development results in sustained change in instructional practices. Some factors to consider include (a) team members' existing knowledge and (b) shared knowledge between team members (Postrel, 2002).

Existing knowledge. Our findings are consistent with several prior studies that found that many teachers are unaware of the limits of their knowledge (e.g. Cunningham et al., 2004; Stark et al., 2015; Stephenson, 2018). The discrepancy between teachers' self-assessed skill and their objective knowledge as measured by the TKELS must be considered when designing professional development for teachers. Existing knowledge, whether accurate or inaccurate, affects how adults learn new information (Brady et al., 2009; Nadelson et al., 2018). Peltier et al. (2020) demonstrated the implications of this phenomenon among preservice teachers. They found that a "refutation text," which explicitly states common misconceptions before contradicting them, was more effective for establishing knowledge of dyslexia than a text that provided accurate information without acknowledging common misconceptions. Teachers who overestimate their own skill may need to be shown the inaccuracies in their existing knowledge prior to revising their knowledge and/or acquiring new knowledge.

In contrast, our findings validate SLTs' self-reported concerns about preparation for supporting reading and writing (e.g. Blood et al., 2010). Professional development for SLTs may need to (a) demonstrate to SLTs that their knowledge of early reading and writing skills is comparable to teachers' knowledge, (b) demonstrate to SLTs that they have metalinguistic strengths such as

phonemic awareness, and (c) teach SLTs how to apply their knowledge of language structure to provide intervention that supports reading acquisition.

Shared knowledge. Shared knowledge is critical for teams to work together effectively (Postrel, 2002). The results of this study demonstrate that SLTs and teachers have similar levels of general knowledge of early reading and writing skills, but, as mentioned above, we expect that SLTs and teachers likely have different strengths and weaknesses across the many domains that contribute to performance on the TKELS (e.g. pedagogical knowledge, metalinguistic knowledge). Although we expect different members of the RTI team to maintain specific areas of expertise, it would be useful for all team members to share basic terminology and theoretical understanding of the process of reading (e.g. the simple view of reading;¹ Gough and Tunmer, 1986). Many professionals use terms like phonics, phonemic awareness, and phonological awareness interchangeably and/or incorrectly, which may cause confusion about appropriate intervention targets for individual children. Similarly, collaboration likely is stifled when some team members view reading as a singular construct while others view reading as the product of component sub-skills that should be targeted individually in intervention.

The lack of shared knowledge may be further exacerbated when the team members do not understand one another's potential contribution to reading and writing instruction. Wilson et al. (2015) found that pre-service SLTs and teachers both lacked knowledge of the relations between spoken and written language, as well as the ways in which SLTs can support children's reading acquisition. Thus, although SLTs and teachers may require different professional development approaches for establishing basic knowledge, professional development opportunities that involve all RTI team members may also be critical for ensuring shared knowledge across the team. For example, we suggest that RTI teams could form interdisciplinary professional learning groups to (a) increase their overall knowledge of language structures and functions related to reading and writing and (b) increase shared knowledge among team members. We recommend *Speech to Print: Language Essentials for Teachers* (Moats, 2020) as a basis for such a professional learning group. This resource provides an approachable overview of language structures and functions related to reading and writing including phonology, orthography, morphology, semantics, and syntax, and includes opportunities for practice and application.

IV Conclusion

Our findings suggest that SLTs, like teachers, are generally unprepared to support reading and writing acquisition without additional training beyond their preprofessional education. Future research is needed to determine the specific areas of knowledge strength and weakness for SLTs and teachers. We expect that some combination of (a) professional development that targets specific knowledge gaps and (b) professional development opportunities that bring together RTI team members to ensure shared knowledge and role understanding across disciplines is warranted.

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Note

1. The simple view of reading (Gough and Tunmer, 1986) has substantial empirical support and states that reading comprehension difficulties can arise from difficulties in decoding and/or difficulties in linguistic comprehension.

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