What Is Listening Comprehension and What Does It Take to Improve Listening Comprehension?

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Abstract

One's ability to listen and comprehend spoken language of multiple utterances (i.e., listening comprehension) is one of the necessary component skills in reading and writing development. In this chapter, we review theoretical frameworks and empirical evidence of listening comprehension development and improvement, and propose a direct and mediated model of listening comprehension. A review of correlational and intervention studies indicates that many language and cognitive skills contribute to listening comprehension, including working memory, attention, vocabulary, syntactic knowledge, inferencing, theory of mind, and comprehension monitoring. Although limited in number, studies indicate that these skills are malleable. We conclude that listening comprehension instruction should be an integral part of reading and writing instruction, incorporating these multiple language and cognitive skills. Instruction on these components can be incorporated into existing instruction such as bookreading or reading comprehension instruction.

Keywords: Listening comprehension, vocabulary, language, cognitive, intervention, reading comprehension, writing

Introduction

The role of oral language in literacy development is unquestionable in terms of theory and empirical evidence. Oral language, however, is a broad construct encompassing lexical, sentence, and discourse-level skills. A lexical-level oral language skill, vocabulary, has received much attention in terms of theoretical models of reading (e.g., Perfetti, 2007), and empirical studies (see Chapter 5). In contrast, our understanding of listening comprehension has been limited. Recent emerging evidence, however, indicates that listening comprehension is a higher-order skill that requires multiple language (including vocabulary) and cognitive skills (Florit, Roch, & Levorato, 2013; Kim, in press; Kim & Phillips, 2014; Lepola, Lynch, Laakkonen, Silven, & Niemi, 2012; Tompkins, Guo, & Justice, 2013). In this chapter, listening comprehension is defined as one's ability to comprehend spoken language[1] at the discourse level – including conversations, stories (i.e., narratives), and informational oral texts – that involves the processes of extracting and constructing meaning. In this chapter, we review the role of listening comprehension in literacy acquisition, theories of text comprehension, and empirical studies. We close the chapter with a summary of instructional approaches to improve listening comprehension based on a review of empirical studies.

Why Listening Comprehension for Reading and Writing Development?

One of the widely supported models of reading comprehension, the simple view of reading, specifies that linguistic comprehension is an essential skill in addition to decoding (or word reading proficiency) (Gough & Hoover, 1990). Much evidence has provided support for the simple view of reading in several languages (Catts, Adlof, Ellis Weismer, 2006; Johnston & Kirby, 2006; Joshi & Aaron, 2000; Joshi, Tao, Aaron, & Quiroz, 2012; Kendeou, van den Broek,

[1] We acknowledge that comprehension of sign language is listening comprehension, but use spoken language following conventional use of the term.

White, & Lynch, 2009; Kim, 2015a; Protopapas, Mousaki, Sideridis, Kotsolakou, & Simos, 2013), and showed that oral language skills such as vocabulary and listening comprehension are critical to reading comprehension, and their importance increases as children develop reading skills (Foorman, Koon, Petscher, Mitchell, & Truckenmiller, 2015; Kim, 2015b; Kim, Wagner, & Lopez, 2012; Kim & Wagner, 2015). Despite its recognized importance, however, what it takes to develop listening comprehension has been nebulous, which is in stark contrast to our understanding about skills that contribute to word reading (see Adams, 1990; Bowey, 2005; National Early Literacy Panel Report, 2008). Note that according to Gough and Tunmer (1986), linguistic comprehension is "the process by which given lexical (i.e., word) information, sentences and discourses are interpreted" (p. 7), and thus includes lexical, sentence, and discourse skills (i.e., listening comprehension).

Oral language skills including listening comprehension are also important for writing development. Although oral language skills are not explicitly specified in the developmental models of writing (i.e., written composition; but see Kim & Schatschneider, in review), they are nonetheless essential component skills as writing requires generation of ideas, which then need to be translated into oral language at the lexical, sentence, and discourse levels (Berninger et al., 2002). According to the simple view of writing, transcription and ideation are two necessary skills for writing (Juel, Gough, & Griffin, 1986). The ideation component includes generation and translation of ideas, and thus implicates oral language skills. Similarly, oral language is implicated in the "text generation" component of the not-so-simple view of writing (Berninger & Amtmann, 2006). Empirical studies have indeed shown the importance of oral language, operationalized as sentence comprehension (Berninger & Abbott, 2010), vocabulary, syntactic knowledge (Kim et al., 2011, 2014; Olinghouse, 2008), and listening comprehension (Kim, Al

Otaiba, Wanzek, & Gatlin, 2015). Oral language is particularly important to the quality aspect of writing (idea and organization) relative to productivity (amount of writing; Kim, 2014; Kim et al., 2014, 2015; Olinghouse, 2008). These indicate that children's oral language skills, including listening comprehension, facilitate the expression of ideas in an appropriate and rich way in their writing.

In summary, theoretical models of reading comprehension and writing as well as empirical evidence indicate the importance of oral language skills, including listening comprehension, in reading and writing development. One naturally rising question, then, is what it takes to develop listening comprehension.

Theoretical Models of Listening Comprehension

In order to understand what it takes to develop and improve listening comprehension, we need to know what component skills contribute to listening comprehension. Theoretical models of text comprehension are relevant here as text comprehension includes comprehension of oral and written texts (i.e., listening and reading; Kintsch, 1988) although text comprehension has been mostly examined in the context of 'reading' comprehension. There are several models of text comprehension. Although there are differences, at the center of these models is the "situation model" (Graesser et al., 1994; van Dijk & Kintsch, 1983). That is, successful text comprehension ultimately requires construction of the "situation model" (Graesser et al., 1994; Graesser, Millis, & Zwaan, 1997; van Dijk & Kintsch, 1983) or the "mental model" (Johnson-Laird, 1983). The situation model is the mental representation of what a text is about (Kintsch, 1988) or "the microworld that the text is about" (Graesser et al., 1997, p. 167), and includes representation of multiple aspects such as space, time, causation, intentionality (or goals), and characters and objects (Graesser et al., 1994; Zwaan & Radvansky, 1998). Below is a description of a few

prominent models of text comprehension: the construction-integration model, the constructionist model, and the landscape model.

The construction-integration model was proposed and refined by Kintsch and his colleagues (van Dijk & Kintsch, 1983; Kintsch, 1988, 1998, 2005). As the name indicates, this model hypothesizes that text comprehension involves two phases, construction and integration of propositions. The comprehender constructs initial elementary propositions based on words and sentences in the text. These initial propositions, then, have to be integrated with propositions from preceding parts of the text, and ultimately across the text and with background knowledge. Based on these two phases of processing, the following three hierarchical levels of mental representations[2] have been hypothesized with consensus among researchers (Kintsch, 1988; Graesser, Millis, & Zwaan, 1997): surface code, textbase, and situation model. The surface code is the representation of words and phrases in the text. The surface code representation is the foundation and input for constructing initial, text-based propositions, called textbase representation. As these propositions are initial, first pass propositions based on linguistic input, some are potentially incorrect. To establish the situation model, these initial, elementary propositions have to be cross-checked across the text, and against the comprehender's background knowledge, and missing information has to be inferred to establish global coherence.

The constructionist model (Graesser et al., 1994) is largely similar to the construction-integration model. An important difference, however, is that according to this model, inference generation occurs primarily due to the comprehender's search (or effort) after meaning, a goal-directed, effortful activity, whereas in the construction-integration model, inference generation is

[2] Note that Perfetti and colleagues also had a similar hierarchical representation of comprehension processes in their reading comprehension models (e.g., Perfetti & Stafura, 2014).

automatic. The search-after-meaning principle is based on the following three assumptions: (1) the comprehender's representation of meaning is based on her/his goals, (2) meaning representation is coherent at local and global levels; and (3) the comprehender wants to know causal connections in the texts (e.g., actions and events). Therefore, text comprehension is a consequence of the comprehender's engagement in text to achieve construction of coherent meaning – i.e., search after meaning. The constructionist model specifies a variety of different inferences including referential ones (e.g., what 'it' refers to in the text), causal antecedent, thematic (main idea), character emotional reaction, causal consequence, and state (Graesser et al., 1994). Among these, referential inferences are primarily needed for local coherence whereas thematic and character emotional reaction are needed for global coherence. Not all inferences are generated or needed during on-line processing.

The landscape model (or interactive view) by van den Broek and his colleagues is an attempt to integrate memory-based and constructionist frameworks (van den Broek, Rapp, & Kendeou, 2005). This model is similar to the construction-integration model, but explicitly specifies how the construction and integration processes interact and influence each other, and how they lead to the situation model. The memory-based processes are "autonomous and passive" whereas the constructionist processes are strategic and effortful. According to the landscape model, both memory-based and constructionist processes are needed to operate simultaneously during text comprehension. An important concept in the interaction of memory-based and constructionist processes is standards of coherence (van den Broek, Lorch, Linderholm, & Gustafson, 2001). Standards of coherence refer to the comprehender's "knowledge and beliefs about what constitutes good comprehension as well as the reader's (comprehender's) specific goals for … the particular text" (van den Broek, Virtue, Everson, Tzeng, & Sung, 2002, p. 137;

text in parentheses is not in original, but inserted by authors). Standards of coherence vary across comprehenders and text types and situations. Depending on the comprehender's levels of standards for different types of coherence (e.g., referential, causal), activated information might be sufficient or insufficient to meet the comprehenders' standards of coherence. When sufficient, there is no further engagement in effortful construction processes. However, when the activated information is not sufficient, effortful constructionist processes are activated/triggered.

Note that text comprehension models have been primarily studied in the context of 'reading' comprehension. Studies indicate that oral language comprehension and reading comprehension tap into the same processes, particularly for proficient readers (Townsend, Carrithers, & Bever, 1987), and that reading comprehension component skills for children (e.g., grades 2 and above; Cain et al., 2004; Cromley & Azevedo, 2007) are similar to those that contribute to listening comprehension (Florit et al., 2009; Kim & Phillips, 2014; Kim, 2015a; Kim, 2016; Lepola et al., 2012). However, for developing readers, word reading ability constrains reading comprehension (Perfetti, 2007), and therefore, in the review of literature below, we draw on studies which focused on oral language comprehension, not reading comprehension.

Component Skills of Listening Comprehension: Empirical Evidence from Correlational Studies

The theoretical models above inform us about which language and cognitive skills[3] would be involved in listening comprehension. A few prominent skills that received much attention across these theoretical models are cognitive skills such as memory (working memory and long-term memory), inference-making, and comprehension monitoring; and knowledge such as background or world knowledge (Graesser et al., 1994; Kintsch, 1988; McNamara, &

[3] Note that we use the term, skill, to refer to both processes and knowledge.

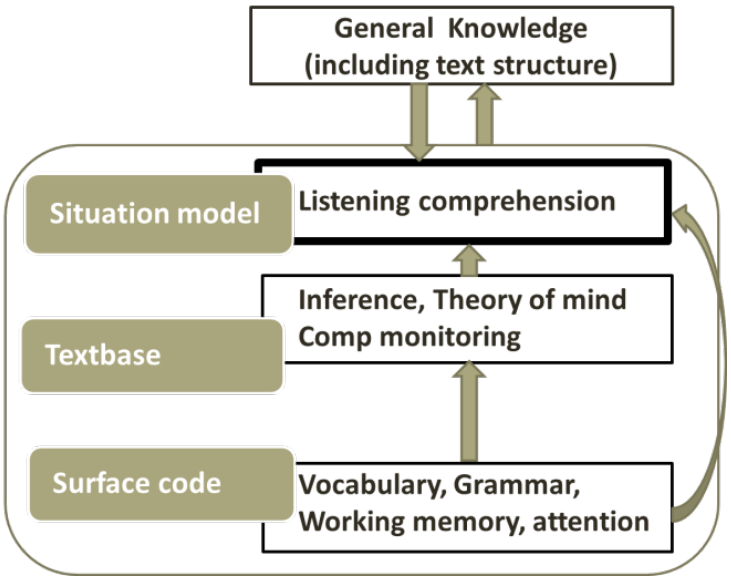
Kintsch,1996; van den Broek et al., 2005). Not explicitly emphasized in these models, but instead implicitly assumed, is linguistic knowledge (vocabulary, syntactic knowledge) needed for parsing. Although these language and cognitive have been primarily examined in the context of reading comprehension, recent studies indicate that these language and cognitive skills are also related to children's listening comprehension. Evidence includes working memory (Floit, Roch, Altoe, & Levorato, 2009; Florit et al., 2013; Kim, 2015a; Was & Woltz, 2007), vocabulary (Florit et al., 2009; Florit, Roch, & Levorato, 2014; Kendeou et al., 2008; Kim, 2015a, 2016; Tompkins et al., 2013), syntactic knowledge (Carrow-Woolfolk, 1999; Tunmer, 1989; Kim, 2015a, 2016), inference (Florit et al., 2014; Kendeou et al., 2008; Kim, 2016; Lepola, Lynch, Laakkonen, Silven, & Niemi, 2012; Tompkins et al., 2013), theory of mind (Kim, 2015a, 2016; Kim & Phillips, 2014) and comprehension monitoring (Kim, 2015a; Kim & Phillips, 2014). It is of note that these theoretical models assume that the same processes are hypothesized to be involved in text comprehension across languages. Indeed, the empirical studies noted above were conducted with children from various language backgrounds such as Italian, Dutch, English, and Korean, and they demonstrated similar magnitudes of relations in bivariate correlations (Kim, 2015a).

Although informative, the majority of previous studies have provided piecemeal information about what is involved in listening comprehension as each study included a limited set of variables aligned with different foci in each study, and they did not systematically examine the structure or mechanism of these relations. That is, the focus of the majority of these studies was whether one or more focal skills were independently related to listening comprehension after accounting for the other variables in the statistical model. However, the fact that one skill is not independently related to the outcome does not mean that the skill does not make a contribution.

Instead, it means that its contribution is likely shared with other skills included in the statistical model, and thus its influence on the outcome is likely indirect or mediated. A downside of this approach (examining unique contributions using multiple regression) is that indirect contributions of potentially very important skills are easily masked. For instance, working memory has been hypothesized to be important to listening comprehension (Graesser et al., 1994; Kintsch, 1988; Daneman & Merikle, 1996; van den Broek et al., 2005) and empirical evidence supports this hypothesis (Floit et al., 2009; Florit et al., 2013; Was & Woltz, 2007). Then, a critical question is whether its influence on listening comprehension direct or its influence is partly or completely mediated by other skills such as vocabulary and inference (e.g., Florit, Roch, & Levorato, 2014; Kendeou et al., 2008; Lepola et al., 2012; Tompkins et al., 2013).

Addressing this question is critical to gaining insight about paths of influences. Recently, we began to address this question of direct and mediated relations among multiple language and cognitive skills – how these various language and cognitive skills are related to each other, and to listening comprehension. We used the multi-level representation framework – surface code, text-base, and situation model –, and hypothesized that different levels of representations would require different language and cognitive skills. For example, the surface representation is a lower level representation than the situation model, and therefore, would not require the same language and cognitive skills as for the situation model. Figure 1 shows our conceptualization about how foundational cognitive skills (e.g., working memory and attention), foundational oral language skills (vocabulary and syntactic knowledge), and higher-order cognitive skills (inference, theory of mind, and comprehension monitoring) map onto the surface code, textbase, and situation model representations.

Figure 1. Direct and mediated relations model of listening comprehension (adapted from Kim, 2016, reprinted with permission)



In this conceptualization, we hypothesized that working memory, attention, vocabulary, and grammatical (or syntactic) knowledge are foundational language and cognitive skills needed for the surface representation, and that they provide input for establishing the textbase representation. Furthermore, elementary and potentially inaccurate propositions in the textbase representation have to be evaluated for accuracy and veracity, and inferences are needed to establish global coherence to ultimately establish the situation model (Kim, 2015a, 2016). Therefore, comprehension monitoring would be involved to evaluate initial, local propositions, and inferencing and theory of mind would be involved to cross-check propositions and fill in missing information. Theory of mind, which is typically defined as the ability to infer others' mental states and predict behavior, was hypothesized to capture inferences and reasoning about characters' intentions, thoughts, and emotions, which are critical aspects in comprehending texts.

When we applied this model to data from Korean kindergartners and first graders, respectively, we found that the model fit the data very well and large amounts of total variance in listening comprehension, 74% and 85%, was explained (Kim, 2015a, 2016). Working memory, vocabulary, and syntactic knowledge were all directly related to higher-order cognitive skills – comprehension monitoring and theory of mind –, which, in turn, were directly related to listening comprehension. In addition, vocabulary and syntactic knowledge were directly related to listening comprehension after accounting for theory of mind and comprehension monitoring. In a follow-up study with children in Grade 1, we found that an inferencing skill (i.e., the ability to identify missing information in the text drawing on background knowledge) and theory of mind made independent contributions (Kim, 2016). A similar pattern was found for English-speaking children in Grade 2 as well (Kim, under review).

In summary, findings from correlational studies indicate that multiple language and cognitive skills are involved in listening comprehension. Furthermore, not all the skills make direct contributions to listening comprehension, and instead some skills are indirectly related to listening comprehension. Although these studies are informative about potential targets to improve listening comprehension, they are correlational in nature, and thus, are limited in terms of causal inferences. Below is evidence from intervention studies.

Component Skills of Listening Comprehension: Empirical Evidence from Intervention Studies

Our literature review turned up only a limited number of empirical studies that targeted listening comprehension for children, including those with learning disabilities. In addition, the majority of studies targeted a single skill (e.g., syntactic knowledge) and few targeted multiple skills. In the review below, we included intervention studies that showed malleability of

language and cognitive component skills of listening comprehension not only for children with learning disabilities but also for typically-developing children. Given that there is a chapter in this volume on vocabulary instruction, we focused on studies that targeted other component skills.

Vasilyeva, Huttenlocher, and Waterfall (2006) examined the effects of an intervention on children's comprehension of passive voice sentences. Seventy-two four-year-old children were randomly assigned to conditions in which they listened to stories that contained mainly passive voice or active voice sentences. The same 10 stories were adapted for use in both groups, and the stories also had pictures that supported children's comprehension of the text. The intervention lasted for two weeks, with groups of 7 to 11 children being pulled from the classroom every day for 20 to 25 minutes. They found that the group who listened to stories with mostly passive sentences rather than active sentences scored higher, on average, on a sentence comprehension task which included passive voice.

Guajardo and Watson (2002) examined the malleability of theory of mind. Preschool children were randomly assigned to a theory of mind training condition (n = 26) or a control condition (n = 28). In the training condition, the story teller told stories and highlighted the main story line and characters' thoughts and mental states explicitly. Children were then asked to explain story characters' thoughts and emotions, and were taught about the relation between people's thoughts and behavior. After 13-15 small group sessions of 10 to 15 minutes over the span of 5 weeks, children in the training condition outperformed those in the control condition on theory of mind tasks.

Kim and Phillips (under review) developed an intervention targeting comprehension monitoring in the oral language context. A systematic and explicit instructional routine for

detecting inconsistency was developed for prekindergartners from low socio-economic families. Children in the comprehension monitoring condition heard sentences and short stories containing inconsistent information. One type of story was inconsistent against their background knowledge (e.g., Sharks live in trees). The other type was inconsistent within the story (e.g., Jane loves blue. She loves anything blue. Jane hates blue). After hearing a sentence or short story, children were then asked whether the sentence or story made sense to them, and the interventionist provided explanation and feedback. Sentences and stories had accompanying illustrations to facilitate comprehension. Instruction was provided in small groups for 5 minutes a day for 4 days a week for 8 weeks. Results showed that children who received comprehension monitoring instruction performed better than those in the control condition (business as usual instruction) with a large effect size (d = .60). These results suggest comprehension monitoring can be taught in the oral language context to prereaders.

Gillam, Gillam, and Reece (2012) examined the effects of a decontextualized language intervention (DLI) and a contextualized language intervention (CLI) compared to a control condition. The sample included 24 children aged 6 through 9 with language impairment (8 children in each condition). The CLI group listened to stories that were read aloud by the speech language therapist, answered questions about the stories, practiced using comprehension strategies such as comparing and contrasting and generating inferences, discussed narrative story structure, and discussed Tier 2 vocabulary words from the text. During the first session the children listened to or read the story and discussed the new vocabulary words. Retelling the story and practicing specific grammatical targets were the foci for the second session. During the third session students created a parallel story that followed the story structure of the model text. The DLI group played card games from the No-Glamour series published by LinguiSystems. They

practiced using similar skills as the CLI group, but the instruction was conducted without the context of a storybook. The No-Glamour cards focused on vocabulary, sentence complexity, and social language. The grammar cards were designed to point out specific grammatical targets (e.g. plurals) and prompt children to use the grammatical target in a discussion activity. The social language cards were designed to provide socially relevant scenarios for children to discuss as a group such as "Why do some people slurp milk shakes or other drinks through straws when there is almost nothing left?" The category/definition cards were designed to help children learn to detect "categories such as functions, attributes, associations, comparisons, compound words, synonyms, antonyms, multiple-meaning words, and absurdities." For example, children might discuss a prompt such as, "Does this make sense? An angry brush." Children in the control condition did not participate in any language interventions during the period of the study. The CLI and DLI groups met with the clinician three times per week for six weeks. Each session lasted for 50 minutes and included three to four students. The outcome measures included two tasks: the Clinical Evaluation of Language Fundamentals -4th Edition (CELF-4) recalling sentences subtest and the Test of Narrative Language (TNL; Gillam & Pearson, 2004) comprehension subtest. Results showed that the CLI group and the DLI group were not significantly different on either measure, and the DLI group was not significantly different than the control group on either measure. However, the CLI group performed significantly better than the control group with large effect sizes on the CELF-4 recalling sentences subtest (d = 3.08) and the TNL narrative comprehension subtest (d = 0.93).

Bianco et al. (2010) targeted multiple skills in their study. Their sample included 88 classrooms (in 88 different schools) and 1,273 four-year-old children in France. The intervention was conducted in small groups of 4 to 7 students. Children were assigned to three different

conditions: explicit instruction of multiple component skills, a story reading condition, and a phonological awareness training condition. In the component skills condition, children were explicitly taught component skills of comprehension including detection of inconsistencies, inferences, situation model, and story structure. Children in the story reading condition heard stories read aloud multiple times and engaged in discussion of stories. Children in the phonological awareness condition received explicit instruction in phonological awareness. Interventions lasted 12-16 weeks per year. Depending on the cohort, some children received instruction for a year whereas others received two years of instruction. Results revealed that children in the component skill condition during both preschool and kindergarten outperformed children in the other two conditions on listening comprehension. The effect size of .40 was maintained for this group at the 9-month follow up.

Summary and Conclusion: How to Teach Listening Comprehension?

Studies have consistently shown that children's listening comprehension varies, and this variation is an important predictor of their reading comprehension and writing skills. The theoretical models and empirical evidence reviewed in this chapter suggest that listening comprehension is not a simple skill that children acquire easily. Instead, it requires acquisition and coordinated application of multiple language and cognitive skills. The good news is that these skills are malleable. As illustrated and detailed in Chapter 5, studies have shown that systematic and explicit instruction can improve children's vocabulary. Our review also suggests that although the number of studies was limited, grammatical knowledge, comprehension monitoring, inference-making, and theory of mind can be improved with intervention.

One challenge in listening comprehension instruction is how to teach these multiple language and cognitive skills in a limited school day. As educators all know very well, school

days are already overloaded. The theoretical models described above and the practical constraints of school days indicate an integrated approach, incorporating these multiple skills in a lesson rather than targeting each skill in separate lessons. For instance, good vocabulary instruction would include information about syntactic features of target words and their uses in sentences (Carlo et al., 2004). Existing reading comprehension lessons can easily incorporate these language and cognitive skills, and some already do incorporate skills such as vocabulary and inference-making (e.g., asking inference questions). In the oral language context for readers and prereaders, a similar approach can be used. For instance, bookreading is widely implemented in the classroom as a way of improving children's vocabulary and emergent literacy skills (see, for example, Justice & Ezell, 2002; Dialogic reading, Whitehurst et al., 1994). Bookreading can incorporate and target multiple language and cognitive skills systematically and explicitly. For instance, teaching a verb would involve not only meaning(s) of the verb, but also whether the verb requires an object or not, and how it is inflected in the text (third person singular in the present tense, or past tense form). Furthermore, implicit or inferential questions requiring children to infer information either from an earlier part of the story or from their background knowledge can be asked systematically. For example, after reading the text "It was hot and humid. Bugs were buzzing around. How annoying, thought Rachel," the teacher may stop and ask a question "What season do you think it is in the story?" "How do we know?" Theory of mind can be also incorporated into bookreading as characters' and authors' thoughts and emotions, and reasoning are an important part of texts. Comprehension monitoring can be easily taught during bookreading. At an appropriate point in a story, the teacher can stop and ask children about whether the story makes sense, and if not, why it does not. At other times, the teacher can stop during reading and ask a silly question that is inconsistent with the story content

thus far. For instance, in the example story above, the teacher can state that "hmm… it must be winter in the story since it is hot and humid. Does this make sense?" and wait for children's responses.

As is clear from previous research, creating a language-rich environment is critical for children's language development (e.g., Dickinson, 2001; Hart & Risley, 1995) including listening comprehension. Therefore, targeting multiple language and cognitive skills should not be limited to planned lessons per se. Instead, language instruction should be embedded throughout the school day, exploiting teachable moments. For instance, when a child shares about what he or she did on the weekend, the teacher may find another way of expressing a sentence to improve syntactic knowledge. In addition, the teacher may ask seemingly silly questions that are inconsistent with the child's story, and remind them that stories have to make sense to the comprehender. In a similar vein, listening comprehension instruction should not be limited to classrooms. Ideally, these instructional approaches and strategies are shared with parents and caregivers so that they are implemented and extended in the child's home and community.

A critical aspect of teaching these multiple language and cognitive skills is raising standards of coherence (van den Broek et al., 2005), or search-after-meaning (Graesser et al., 1994). Higher-order cognitive skills (e.g., inference-making) are effortful and strategic processes, and thus, may not be employed, even if the child has the ability, unless the child had a need or a desire for establishing global coherence. Thus, an important part of higher-order cognitive skill instruction is raising standards of coherence – raising awareness that 'stories or sentences they hear should make sense to them,' 'it is important to understand character's or author's goals, thoughts, and emotions,' and 'stories do not tell us everything and therefore, comprehenders

should fill in information.' Being aware of these ideas will require instruction for many children – children do not spontaneously monitor their comprehension of oral texts (Kim & Phillips, 2014; Markman, 1977).

Improving listening comprehension takes a prolonged time, and thus, instruction should be long-term across multiple years. As multiple language and cognitive skills contribute to listening comprehension, developing and coordinating these skills are not likely to occur in a short time span. Like vocabulary (Snow & Kim, 2006), we argue that listening comprehension is a large problem space. That is, a component skill of listening comprehension such as vocabulary is expansive, and continues to grow throughout the life time, and so would listening comprehension skill. This is in contrast to a confined or constrained skill (Paris, 2005) or mastery skill (D. P. Pearson, 2015, personal communication) such as acquiring alphabet letters, which has a limited number of units to be learned, and can be taught to mastery in a relatively short time.

Finally, it is important to note that the involvement of multiple language and cognitive skills in listening comprehension has important implications for assessment – these multiple language and cognitive skills should be included in an assessment battery diagnosing children's difficulty with listening comprehension. This would allow precise diagnosis of potential areas to be targeted in instruction/intervention.

In closing, evidence indicates that improving listening comprehension is no small task, but requires explicit and systematic instruction beyond vocabulary. Explicit instructional attention to vocabulary, syntactic and grammatical structure, inferences, character's thoughts and emotions, and comprehension monitoring is needed. Despite emerging evidence, however, our

understanding is limited about the best approaches to teaching these multiple skills to children, including children with learning disabilities, and thus, future research efforts are needed.

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References

Adams, M. J. (1990). *Beginning to Read*: *Thinking and Learning about Print*. Cambridge, MA: The MIT Press.

Bianco, M., Bressoux, P., Doyen, A.-L., Lambert, E., Lima, L., Pellenq, C., & Zorman, M. (2010). Early training in oral comprehension and phonological skills: Results of a three-year longitudinal study. *Scientific Studies of Reading, 14,* 211-246.

Bowey, J. A. (2005). Predicting individual differences in learning to read. In M. J. Snowling & C. Hulme (Eds.), *The Science of Reading: A Handbook* (pp. 155-172). Oxford: Blackwell.

Cain, K., Oakhill, J., & Bryant, P. (2004). Children's reading comprehension ability: Concurrent prediction by working memory, verbal ability, and component skills. *Journal of Educational Psychology, 96*, 31-42.

Carlo, M. S., August, D., McLaughlin, B., Snow, C. E., Dressler, C., Lippman, D. N., & Lively, T. J., & White, C. (2004). Closing the gap: Addressing the vocabulary needs of English-language learners in bilingual and mainstream classrooms. *Reading Research Quarterly, 39*, 188-205.

Carrow-Woolfolk, E. (1999). *Comprehensive Assessment of Spoken Language*. Bloomington, MN: Pearson Assessment.

Catts, H., Adlof, S., & Ellis Weismer, S. (2006). Language deficits in poor comprehenders: A case for the simple view of reading. *Journal of Speech, Language, and Hearing Research*, 49, 278-293.

Cromley, J. G., & Azevedo, R. (2007). Testing and refining the direct and inferential mediation model of reading comprehension. *Journal of Educational Psychology, 99,* 311-325.

Daneman, M., & Merikle, P. M. (1996). Working memory and language comprehension: A

meta-analysis. *Psychonomic Bulletin & Review, 3*, 422-433.

Dickinson, D. K. (2001). Putting pieces together: Impact of preschool on children's language and literacy development in kindergarten. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning literacy with language: Young children learning at home and school* (pp. 257-288). Baltimore, MD: Brookes.

Florit, E., Roch, M., Altoè, G, & Levorato, M. C. (2009). Listening comprehension in preschoolers: The role of memory. *British Journal of Developmental Psychology*, 27, 935-951.

Florit, E., Roch, M., & Levorato, M. C. (2013). The relation between listening comprehension of text and sentences in preschoolers: Specific or mediated by lower and higher level components? *Applied Psycholinguistics, 34*, 395-415.

Florit, E., Roch, M., & Levorato, M. C. (2014). Listening text comprehension in preschoolers: A longitudinal study on the role of semantic components. *Reading and Writing: An Interdisciplinary Journal*, 27, 793-817.

Foorman, B. R., Koon, S., Petscher, Y., Mitchell, A., & Truckenmiller, A. (in press). Examining general and specific factors in the dimensionality of oral language and reading in 4^{th} – 10^{th} graders. *Journal of Educational Psychology*.

Gough, P. B. & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education, 7*, 6-10.

Gillam, S. L., Gillam, R. B., & Reece, K. (2012). Language outcomes of contextualized and decontextualized language intervention: Results of an early efficacy study. *Language, Speech, and Hearing Services in Schools, 43*, 276–291.

Gillam, R. B., & Pearson, N. A. (2004). *Test of Narrative Language*. Austin, TX: Pro-Ed.

Grasser, A. C., Millis, K. K., & Zwaan, R. A. (1997). Discourse comprehension. *Annual Review of Psychology, 48*, 163-189.

Graesser, A. C., Singer, M., & Trabasso, T. (1994). Constructing inferences during narrative text comprehension. *Psychological Review, 101, 3,* 371-395.

Guajardo, N. R., & Watson, A. C. (2002). Narrative discourse and theory of mind development. *The Journal of Genetic Psychology, 163,* 305–325.

Hart, B. & Risley, T. R. (1995). *Meaningful Differences in the Everyday Experience of Young American Children*. Baltimore: Brookes Publishing.

Hoover, W. A., & Gough, P. B. (1990). The simple view of reading. *Reading and Writing: An Interdisciplinary Journal, 2,* 127-160.

Johnston, T. C., & Kirby, J. R. (2006). The contribution of naming speed the simple view of reading. *Reading and Writing: An Interdisciplinary Journal, 19,* 339–361.

Joshi, R. M., & Aaron, P. G. (2000). The component model of reading: Simple view of reading made a little more complex. *Reading Psychology, 21*, 85–97.

Joshi, R. M., Tao, S., Aaron, P. G., & Quiroz, B. (2012). Cognitive component of componential model of reading applied to different orthographies, *Journal of Learning Disabilities, 45,* 480-486.

Juel, C. Griffith, P. L., & Gough, P. B. (1986). Acquisition of literacy: A longitudinal study of children in first and second grade. *Journal of Educational Psychology, 78*, 243-255.

Justice, L. M., & Ezell, H. K. (2002). Use of storybook reading to increase print awareness in at-risk children. *American Journal of Speech-Language Pathology, 11,* 17–29.

Kendeou, P., Bohn-Gettler, C.M., White, M.J., & van den Broek, P. (2008). Children's inference generation across different media. *Journal of Research in Reading, 31*, 259-272.

Kendeou, P., van den Broek, P., White, M. J., & Lynch, J. S. (2009). Predicting reading comprehension in early elementary school: The independent contributions of oral language and decoding skills. *Journal of Educational Psychology, 101,* 765-778.

Kim, Y.-S. (2015a). Language and cognitive predictors of text comprehension: Evidence from multivariate analysis. *Child Development, 86,* 128-144.

Kim, Y.-S. G. (2015b). Developmental, component-based model of reading fluency: An investigation of word reading fluency, text reading fluency, and reading comprehension. *Reading Research Quarterly, 50,* 459–481.

Kim, Y.-S. G. (2016). Direct and mediated effects of language and cognitive skills on comprehension or oral narrative texts (listening comprehension) for children. *Journal of Experimental Child Psychology, 141,* 101-120.

Kim, Y.-S., Al Otaiba, S., Wanzek, J., & Gatlin, B. (2015). Towards an understanding of dimension, predictors, and gender gaps in written composition. *Journal of Educational Psychology, 107,* 79-95.

Kim, Y.-S., & Phillips, B. (2014). Cognitive correlates of listening comprehension. *Reading Research Quarterly,* 49, 269-281.

Kim, Y.-S., & Phillips, B. (under review). Five minutes a day: Improving comprehension monitoring for prekindergartners.

Kim, Y.-S. G., & Schatschneider, C. (under review). Expanding the developmental models of writing: A direct and indirect effects model of developmental writing (DIEW).

Kim, Y.-S., Wagner, R., & Lopez, D. (2012). Developmental relations between reading fluency

and reading comprehension: a longitudinal study from grade 1 to grade 2. *Journal of Experimental Child Psychology, 113,* 93-111.

Kim, Y.-S. G., & Wagner, R. K. (2015). Text (Oral) reading fluency as a construct in reading development: An investigation of its mediating role for children from Grades 1 to 4. *Scientific Studies of Reading,, 19,* 224-242.

Kintsch, W. (1988). The use of knowledge in discourse processing: A construction-integration model. *Psychological Review, 95,* 163-182.

Kintsch, W. (1994). Text comprehension, memory, and learning. *American Psychologist, 49,* 294-303.

Lepola, J., Lynch, J., Laakkonen, E., Silvén, M., & Niemi, P. (2012). The role of inference making and other language skills in the development of narrative listening comprehension in 4- to 6-year old children. *Reading Research Quarterly, 47,* 259-282.

Markman, E. M. (1977). Realizing that you don't understand: A preliminary investigation. *Child Development, 48,* 986-992.

McNamara, D. S., & Kintsch, W. (1996). Learning from texts: Effects of prior knowledge and text coherence. *Discourse Processes*, *22*, 247–288.

National Early Literacy Panel. (2008). *Developing early literacy: Report of the National Early Literacy Panel.* Washington, DC: National Institute for Literacy.

Olinghouse, N. G. (2008). Student- and instruction-level predictors of narrative writing in third-grade students. *Reading and Writing: An Interdisciplinary Journal, 21*, 3-26.

Paris, S. G. (2005). Reinterpreting the development of reading skills. *Reading Research Quarterly, 4*0, 184-202.

Perfetti, C. (2007). Reading ability: lexical quality to comprehension. *Scientific Studies of*

Reading, 11, 357-383.

Perfetti, C., & Stafura, J. (2014). Word knowledge in a theory of reading comprehension. *Scientific Studies of Reading*, 18, 22-37.

Protopapas, A., Mousaki, A., Sideridis, G. D., Kotsolakou, A., & Simos, P. G. (2013). The role of vocabulary in the context of the simple view of reading. *Reading & Writing Quarterly: Overcoming Learning Difficulties, 29*, 168-202.

Snow, C. E., & Kim, Y.–S. (2006). Large problem spaces: The challenge of vocabulary for English language learners. In R. K. Wagner, A. Muse, & K. Tannenbaum, (Eds.) *Vocabulary acquisition and its implications for reading comprehension* (pp. 123-139). New York: Guilford Press.

Tompkins, V., Guo, Y., & Justice, L. M. (2013). Inference generation, story comprehension, and language in the preschool years. *Reading and Writing: An Interdisciplinary Journal, 26*, 403-429.

Townsend, D. J., Carrithers, C., & Bever, T. G. (1987). Listening and reading processes in college- and middle school-age readers. In R. Horowitz & S. J. Samuels (Eds.), *Comprehending oral and written language* (pp. 217-242). San Diego, CA: Academic Press.

Tunmer, W. E. (1989). The role of language-related factors in reading disability. In D. Shankweiler & I.Y. Liberman (Eds.), *Phonology and reading disability: Solving the reading puzzle* (pp. 91–132). Ann Arbor: University of Michigan Press.

van den Broek, P., Rapp, D. N., & Kendeou, P., (2005). Integrating memory-based and constructionist processes in accounts of reading comprehension. *Discourse Processes, 39*, 299-316.

van den Broek, P., Lorch, R. E. J., Linderholm, T., &Gustafson, M. (2001). The effects of readers' goals on inference generation and memory for texts. *Memory and Cognition, 29*, 1081–1087.

van den Broek, P., Virtue, S., Everson, M., Tzeng, Y., & Sung, Y. C. (2002). Comprehension and memory of science texts: Inferential processes and the construction of a mental representation. In J. Otero, J. A. Leon, & A. C. Graesser (Eds.), *The psychology of science text comprehension* (pp. 131–154). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Vasilyeva, M., Huttenlocher, J., & Waterfall, H. (2006). Effects of language intervention on syntactic skill levels in preschoolers. *Developmental Psychology, 42*, 164–174

Van Dijk, T. A., & Kintsch, W. (1983). *Strategies of discourse comprehension.* New York: Academic Press.

Was, C. A., & Woltz, D. J. (2007). Reexamining the relationship between working memory and comprehension: The role of available long-term memory. *Journal of Memory and Language, 56*, 86-102.

Whitehurst, G. J., Epstein, J. N., Angell, A. L., Payne, A. C., Crone, D. A., & Fischel, J. E. (1994). Outcomes of an emergent literacy intervention in Head Start. *Journal of Educational Psychology, 86*, 542-555.

Zwaan, R. A., & Radvansky (1998), Situation Models in Language Comprehension and Memory. *Psychological Bulletin, 123*, 162-185.